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The Builder

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FOR THE

Architect, Engineer, Archaeologist, Constructor, & Artist.

CONDUCTED BY

GEORGE GODWIN, F.R.S.

Vice-President of the Royal Institute of Architects, and Honorary Member of several Societies.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seat of self-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private principedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

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The Builder.

Our Last Volume.—Theatres.—Drinking Fountains.



IN the volume we completed last week, besides inquiry into the present condition of architecture amongst us, sanitary investigations, the drainage question, the condition of our barracks, the modern architecture of France, and a running exposition of new processes and materials important to all engaged in building operations or interested in them, it will be found that the arrangements of Hospitals and Theatres, the defects known to exist in those we have, and the improvements required in such as may be hereafter built, have been treated of at more than ordinary length, though not by any means for the first time. In respect of both we have reason to believe that these endeavours have not been without advantage to the public, and will continue

to produce good fruit. Some curative establishments now in progress have been designed, admittedly, in accordance with the opinions set forth in these pages; and there is reason to expect, that greater intelligence will be brought to bear on the subject in planning any future hospitals than has exhibited itself heretofore in such structures. So, too, with theatres, where there still remains so much to be done before we shall have an edifice perfectly appropriate, safe, convenient, and beautiful. The requirements made in our pages, particularly in respect of staircases and approaches, have been thought unnecessarily large and too stringently demanded; and now comes another appalling catastrophe, on the gallery staircase of the Victoria Theatre, to show their correctness and to enforce the warning we have given to the managers of other places of assembly. Every reader has probably heard by this time that on Monday last—"Boxing-day"—while the gallery of the theatre in question was filled with 800 or 1,000 people witnessing a morning performance, a crowd was most improperly permitted to fill the staircase in waiting for the evening performance; that some trifling occurrence, whether it was the ignition of fuses in the pockets of a youth in the boxes, or an escape of gas on the staircase, produced a fire of fire and "a panic" (the old story); that a rush to escape was made by those above, was resisted by those below, and that in ten minutes sixteen boys and youths were killed, and many more injured for life! In ten minutes! Just think of it. And imagine a similar panic at Exeter Hall or on the stairs of the Surrey Music Hall, although somewhat improved since we foretold the sad accident which did happen there, or in half-a-dozen other places that we could readily name, and see what would be the result. The staircase at the Victoria runs up the sides of a large shaft in easy flights round a small well-hole. The stairs are apparently about 5 feet 9 inches

wide, have a strong wooden balustrading and an iron hand-rail against the wall. It is stated that on such occasions, way of egress for the audience already in the house is afforded by means of a staircase to the boxes, but it ought to be perfectly well known by this time to all connected with public buildings, that it is only those appliances which are in constant use that can be reckoned on in such emergencies.

It seems that the Examiner of Plays, under the Lord Chamberlain, is also Inspector of Theatres, and makes official examinations of such buildings. It is time that he took to his assistance some competent architect, and enforced, if he have the power, some improvement in a matter on which so much depends. A proper inspection, indeed, ought to be made compulsory under an Act of Parliament, which should contain clauses requiring entrances and accesses of proper form, and of size proportioned to the number of persons who may be expected to congregate.

In the public buildings of many provincial towns the danger referred to exists; and we have recently received statements to the effect that the restricted means for entrance and egress in the two public halls in Edinburgh render the occurrence of accident there more than likely.

The positively best arrangement of staircases for the use of large numbers of persons, liable to panic and dependent on the behaviour of others, has yet to be determined on. We have asked for, at all events, a larger number of them, in proportion to the number of persons accommodated, than are now provided; in short flights, not too wide, with good landings, no winders, and a handrail on both sides.

Even where the provisions are not in themselves bad, want of thought is oftener seen to prevail and produce evil results than might be expected from men long connected with places of public amusement. On the first night that "Satanella" was performed at Covent-garden Theatre, a fortnight ago, the visitors to the pit, who had congregated under the portico to the number of several hundreds before the time for opening, were admitted by one small door only, although there were several available, and the crowd swayed backwards and forwards, as the pressure to the right or left of the opening was greater, to the serious inconvenience of those composing it, many of whom, doubtless, determined on never risking a repetition of it. A few barriers, so as to form a narrow queue, would prevent all this, and Mr. Harrison has shown himself on another occasion so alive to the value of good means of entrance and exit, that probably, if the same course be still pursued, this intimation will suffice to lead him to improve upon it. At the French theatres, vast numbers of eager visitors are admitted without any inconvenience but that of waiting; and why should it not be so here?

At the opening of the new Adelphi Theatre, on Monday evening last, great confusion and difficulty were caused simply by the omission of a dividing barrier down to the footpath, to separate the unfortunately restricted approach to the boxes and stalls from that to the pit. The result was, that those who desired to get to the latter choked up the lobby; and there was a long string of carriages stretching away towards Charing-cross, and filled with those

who were provided with tickets, but who were unable to obtain admission before a clearance was effected. In the arrangement of accesses to public buildings, and modes of admission and egress, provision should always be made to meet the worst possible case.

Under the present Building Act the district surveyors have considerable power over the plans of public buildings, and should use it; although, considering the way in which they are often thwarted by the police magistrates, it is not surprising if they avoid making any requirement that is not clearly called for by the Act. An example of the way in which they are positively prevented from performing their duties will be found in our present number. Another instance of the difficulties thrown in their way occurs to us. Not long ago a district surveyor summoned a builder to the Clerkenwell Police Court, and, acting with a recollection of what had occurred there on a former occasion, he took a summons for each house, for which, by the way (eight at 2s. each), as the builder ultimately failed, the district surveyor had to pay, besides losing his debt in spite of the magistrate's order. But, when the case came on for hearing, the magistrate expressed surprise that the whole had not been included in one summons, and intimated that expense had been incurred unnecessarily. On the next occasion, therefore, a fortnight or so ago, when the same district surveyor had occasion to summon some builders for similar fees at the same Police Court, he gladly availed himself of the observations that had been made; and, where several houses built by the same man at the same time came together, he included them in one summons. But another magistrate sitting when the cases were heard, the result was, that he positively refused to issue his order for more than one house in each case (notwithstanding the builders had no objection to make to the claim excepting asserted inability to pay at the time), though he offered to adjourn them, the surveyor's time being apparently thought of no value, in order that the other magistrate might adjudicate differently, if he chose. It is quite time that the district surveyors had another tribunal to look to, and the reports of decisions under the Building Act, which we shall continue to give (several will be found in our present number) will probably lead to this one of these days.

In addition to the few more salient subjects to which we have already referred, we have sought to urge forward the Street Fountain movement, as well because the erection of such conveniences may be made to afford architects the opportunity of adorning our highways, as because of the want they supply, and that they lessen the attraction of the beer-house and dram-shop. Up to the present time very little variety or skill has been shown in those set up. The utmost that can be said of the best of them is that they are not offensive. We shall endeavour to aid in improving them. Mr. Gurney, as we have already mentioned, has munificently determined on setting up four fountains at his own expense, including one against the wall of St. Andrew's Churchyard, Holborn (a bad place, as it will deter many from drinking the water), and one in a central position at the Circus, in Piccadilly, surmounted by a lamp. The latter will be of metal, the former of polished granite, and white marble. It might seem ungracious if we commented

on designs in embryo confidentially submitted to us. We must, however, go so far as to remind Mr. Wakefield and others who are kindly aiding Mr. Gurney to carry out his views, that these fountains, once put up, will, without doubt, remain during the whole of their lives, to say nothing of posterity, either to delight or pain them, and will exercise an influence, for good or evil, on the taste of large numbers of persons,—and they will then, perhaps, see that a little further advice as to design may be useful. Mr. Gurney has also headed a subscription to place a fountain in the Royal Exchange. It is proposed that this should take the shape of a female figure. In all these the water (filtered) will run continuously in a small stream. The cups are to be of thick glass, or of iron, enamelled.

AN ACCOUNT OF THE WHOLE SCHEME OF METROPOLITAN MAIN DRAINAGE.

It is not to be expected that all our readers should be exactly informed as to the details, or even the plan, of the works to be undertaken for the drainage of London, though it may be known from particulars we have given, that main sewers on each side of the Thames, at various levels, will run parallel, so to speak, with the course of the river, and then converge in either case into one outfall-channel, which will be continued to Barking Creek at the north, and to near Crossness-point, in Erith marshes, on Halfway Reach, somewhat lower down, for the south,—that the object in planning these sewers is both that sewage may be intercepted, so as not to pollute the river within the thickly-populated district, and that the rain-fall from the upland districts be prevented from flooding the low-levels and dwellings there situated; that, moreover, to get the low-level sewage into the main outfall-channels, recourse must be had to pumping; as well as that storage in reservoirs at the points of outfall during certain hours is essential in the scheme; that some process for “deodorizing” will be applied at the outfalls occasionally or as required; that the sewage of the “western division” (including Hammersmith, Fulham, part of Chelsea, and the land bordering the West London Railway), like that of Shadwell, the Isle of Dogs, and the district of the Victoria Docks, is to pass into the Thames, for the present at least, but deodorized, probably; and that whilst the new sewers are designed to divert the whole of the tributaries of the Thames within the metropolitan district, to a lower point as mentioned, the system requires the provision of certain outlets to the Thames and the Lea for occasional emergencies on days of excessive rain. But as regards the routes of the sewers, as well as the structural details, precise information has not been available. When we noticed the Report to the Metropolitan Board of Works,* which it seems to be acted upon, there were no plans attached; and our recent particulars of the northern high-level sewer were compiled under disadvantages of which doubtless the article itself disclosed evidence, so far as regarded the elaborate contrivances at the pen-stock and overflow chambers and storm-outfalls. These omissions we can supply now or shortly: the information as to the general character of the whole of the intended works of metropolitan main drainage, we proceed to give by way of preface to the notices severally of those portions of the work on both sides of the Thames forming the eleven contracts, as intended; which notices, the commencement during the present year of all or nearly all of such portions, will require us to furnish, and which thus, we hope, each will be understood, as to their larger relations. The tenders for the first portion of the works as received, will be found under the usual heading. It seems that the sixteen tenders for the high-level sewer ranged from 270,000*l.* downwards to 152,450*l.*; whilst the rough estimate previous to the completion of the detailed drawings, but “including land, compensation, and a variety of contingent items,” was 150,000*l.* The rough estimate for the whole sewerage of London was 2,131,000*l.*

Endeavouring, then, to comprehend the general scheme of metropolitan main drainage, and leaving the “western division,” and the exceptional areas before mentioned without notice,—further than that the first-named portion, expected to cost 55,000*l.* is dependant upon arrangements to be made this year as to deodorization,—the intended main sewers are divided on the north side of the Thames into “high-level,” “middle-level,” and “low-level” sewers, and on the south side into

“high-level” and “low-level” sewers. Each of the “main” lines, however, has one branch, or more than one. Thus, the “main low-level sewer” on the south side, being planned to run south of Kennington, and along part of the Old Kent-road to Deptford, a “branch” is required for Bermondsey, which last continues along the Deptford Lower-road, and might be considered as a distinct main sewer. Also, the “Wick-lane branch” spoken of in our article on the high-level sewerage, may be instanced,—though we should explain that in that case, the junction with the storm-outlet channel of the portion of the system about being commenced, is only provisional, and that the “branch” will ultimately be continued, by the “drop under the invert” of that channel, southward, past the Eastern Counties Railway and Stratford-le-Bow, to a point near Bromley-bridge, there to fall into the “main low-level sewer.” The points of convergence of the whole system in each case, are these:—on the north side a spot at Abbey Mills, near Abbey Creek, and the Channel Sea River (the latter the most easterly of the several branches of the Lea); and on the south side a spot by the Ravensbourne, between Deptford and Greenwich. About each of these points, also, will be the station for pumping the low-level sewage to the high-level. Accurately speaking, perhaps we might say, there will be only two lines converging at the pumping station, north as well as south of the Thames, since, although, as will be shortly explained, there will be two channels for the high and middle level sewage, north side, up to the junction of the low-level sewer at the pumping station; the middle-level sewage will join with that of the high level at penstock and overflow chambers (mentioned in our former account) which communicate with each other, or are so contrived that one sewer may afford relief to the other. The parallel course of the two sewers to the pumping station, and inclusive of the penstock and overflow chambers at the commencement of that course, is not much short of 1 mile 600 yards, the branches of the Lea being crossed askew. On the south side, the Bermondsey Branch after running southward along High-street, Deptford, joins the main low-level sewer on plan just south of the railway, the high-level sewer also running there not far distant, or along the New-cross and Greenwich road.

From the point of convergence, already named (near Abbey Mills) on the north side, the outfall for the combined sewage has to be continued, mainly above the natural level, or in a constructed embankment. It is therefore convenient in place of one sewer, to continue three lines or channels side by side—each channel 9 feet in width by 9 feet in height—rather than to have a single sewer equivalent to the three in sectional area. By the embankment also, the sewage arrives at the point of outfall, at a high level, or one by which it can be ejected into the reservoir, or the Thames, as the case may be, under the most favourable circumstances. On the south side, on the contrary, the sewer has to be altogether below the natural level, and therefore pumping must be resorted to at the reservoir and outlet into the Thames. This pumping for the whole sewage of the south side, is additional to the pumping at the Ravensbourne, so far as the low-level sewage is concerned. The last raising would amount to 25 feet. The sewer, however, being below the existing ground, and being required for a smaller volume of water than that of the north side, is designed to be but 11 feet 6 inches in diameter. The total length of the outfall-sewers respectively is on the north side, from the crossing of the North London Railway, to Barking-creek, five miles and three quarters, of which distance the portion in two channels may be considered as one mile and a third, the three lines from the mile and a third, the three lines from the length; whilst, on the south side, the distance from the point of convergence seems to be seven miles and a half. The inclination intended in both cases is 2 feet per mile. The embankment over the northern outfall line will form a roadway 40 feet in width, including the footpaths; and the sides will be laid to a slope of 1½ to 1. We have said that the northern outfall sewer would be in an embankment, or mainly so: we should say rather, that a length of somewhat less than two miles west of East Ham and Barking roads, will be just below the present surface of the ground. Brick-work will be adopted in the case of both outfall lines,—or in that of the northern outfall, in lieu of the iron piping which had been proposed by Mr. Bazalgette; and the three channels will be of

form suited to construction in the embankment; whilst the southern outfall line will be a single barrel-sewer everywhere alike except in the thickness of the brickwork, which varies from 1 foot 10½ inches to 18 inches, and as to the concrete externally, or other details of construction, which must be governed by the nature of the ground. The invert of the outfall sewer—north side—appears to commence at about 9 feet above Trinity high-water mark, and to fall to about 2 feet 6 inches below it, or at the outlet; whilst the southern outfall sewer appears to begin with 13 feet 6 inches below the same level, and to incline to 27 feet below it. On the northern side the quantity of sewage to be received by reservoirs, has been estimated at about 14,000 cubic feet per minute for six hours of the day, and about 4,700 feet per minute on the average for the remaining eighteen hours. The area for the reservoir would be about twelve acres. On the south side, for the like period, as stated by the report, the respective quantities of sewage will be about 8,000 feet and 2,700, and the area of the reservoir about seven acres. The reservoirs would be arched and turfed over. It may be recollected that by the reporters to the Board of Works, these reservoirs were not considered as absolutely required—considering the volume of the river at that part of its course, and the comparatively innocuous state of the sewage when it had reached such distant point; but they would be favourable to the treatment with lime, or other process of “deodorization.” The mean sectional area of the river between Barking-creek and Crossness Point was stated as “four times as great as at London Bridge, and the average volume of tidal water about four hundred times as much as the volume of the sewage water to be admitted into it.” The river, also, was regarded as fresh, or nearly so, at low water, and at high water as only moderately impregnated with salts—compared with the water at any alternative point lower down; and other objections were offered to any lower point. An outfall at Greenwich Marshes was even preferred, as avoiding the expensive construction of the sewer through Woolwich, and as considered to attain all sanitary objects. We should state, that it is proposed to discharge the sewage from the reservoirs, during the first hours of the descending tide, by pipes submerged, or terminating below low-water mark.

The advertisement lately in the newspapers giving notice of works, refers, first, to the ground west of the Lea which will be occupied by the penstock and overflow chambers, and other portions of the high-level sewerage in the first contract,—or commencing from a point about 300 feet west of the crossing of the North London Railway,—from which point, up to the Lea, the sewer being in an embankment, will involve the raising of the thoroughfares, for about 400 feet of their length northward, at an inclination of 1 in 30, and for about 300 feet of their length southward, at an inclination of 1 in 25; and secondly, the advertisement refers to ground on the east side of the Lea, its western branch, and betwixt and beyond the other branches, passing under the Eastern Counties Railway, and by the intended pumping station at Abbey Mills, across Channel Sea river, and up to the North Woolwich Railway, which second portion of ground on the line of the outfall sewer is required at once for the deposit of earth, or somewhat prior to the construction there of the sewer. The whole of this work—belonging to northern outfall sewer—it will have been understood, is included in the work for which tenders have just been received, though the remainder of the earthwork to Barking Creek, and the whole of the brickwork of the main outfall sewer, and the aqueducts over the branches of the Lea, are not expected to be tendered for till after April next.

In the course of the outfall sewer on the north side, the two-channel line, after branching out from the line which is the subject of the first contract, will cross seven different streams or portions of the Lea,—that is to say, it will cross the western branch, usually known as the Lea, by an aqueduct, and according to the terms of the Act as to 8 feet 6 inches headway; then a stream belonging to the East London Water-works Company, whence it will reach the Puddling Mill river, crossing it. After passing under the Eastern Counties Railway, it will cross the City Mill river, and next the Water-works river, otherwise called Three Mills river. The line of the Stratford High-road is next reached, which road will have to be raised, to pass over the sewer, the work involving the purchase of several houses and wharves; and the sewer will then cross Abbey Mill-lane, to be lowered as may be required. The outfall

* See p. 254, ante.

† See p. 799, ante.

sewer, having taken in the low-level sewage and become three channels, will cross Abbey-creek and Channel Sea river and the intervening ozier-beds, and reach the North Woolwich line, as before mentioned. The several aqueducts crossing the streams will be probably of iron pipes. In contradistinction to the chief part of the line of the High-level sewer, which has been described as passing in great part along existing roads and streets, the outfall sewer will pass, we might say, wholly through land now in the hands of private owners or companies, as indeed the notice shows. The pumping station will be formed on land between Abbey Mill-lane and Abbey-creek. The low-level sewage would be raised there a height of about 34 feet. The portion of the outfall sewer described includes, it may be supposed, a considerable amount of work in arching over drains and water-courses which are under the jurisdiction of the Commissioners of West Ham and Plaistow Level. The total quantity of land required for which notice is now given is twenty-nine acres.

The North Woolwich line is to be lowered to pass under the sewer; and, extending beyond it, the sewer intersects the Bow and Barking Railway (which is to be raised to pass over the sewer), Plaistow-lane, Palsy-lane, Green-street, Barking-road, East Ham Manor-road, and Jenkins-lane,—each of these also to be raised. The northern outfall-sewer, just described, the tenders for which were expected to be advertised for in April next, has been estimated to cost 464,000*l.*; whilst the reservoir at the outfall, for which the tenders were to be advertised for in July next, was expected to cost 150,000*l.*

The outfall sewer on the south side, fortunately may be taken to the eastern extremity of Woolwich along existing streets and roads. Commencing with the junction of the sewers from the high-level and the pumping station, or about the middle of the Greenwich-road, it will pass along London-street, Nelson-street, by Greenwich Hospital, Trafalgar-road, the Greenwich and Woolwich Lower-road—intersecting the river-side branch of the railway,—Albion-road, Woolwich; George-street, Church-street, Church-yard, Powis-street, Beresford-square, and to the turn in the Plumstead-road, whence it passes across the Plumstead-marshes to the outfall in Halfway-reach before mentioned, between the Powder-magazines. The sewer was expected to cost 372,000*l.*; and the drawings were to be ready in June next; the reservoir was to cost 90,000*l.*; and the drawings were to be ready in July.

Reverting to the main sewers of the different levels, before the junction into the single outfall,—on the north side we have already described the course of the high-level sewer. The line of the main middle-level sewer on the same side may be traced upwards, and from its junction with the high-level sewer, first southwards for a short distance, then along Old Ford-lane, formerly known as the Drift-way, across the Regent's Canal, and along Green-street, Globe-town; the Bethnal-green-road, and Church-street, to Old-street at St. Luke's Hospital, and thence by Clerkenwell-green, Back-hill; King's-road, Gray's-inn; Hart-street, Bloomsbury; Oxford-street, and the Usbridge-road, or north of Hyde-park and Kensington-gardens; and beyond the latter, northward by Denbigh-street and Portobello-lane to the edge of the jurisdiction, near to the London and North-Western Railway. A portion of the line will be formed with the new street designed to effect a junction between Oxford-street, Old-street, and the Bethnal-green-road. The main line is to have two branches, "Aldgate Branch" and "Piccadilly Branch," the former passing out of the main line southwards from Green-street, along West-street, Devonshire-street, Ducking-pond-row, Princes-street, and other streets which are parallel with the Whitechapel-road and north of it, to the end of Wentworth-street at Petticoat-lane. The Piccadilly branch will start south-westward from the junction of King's-road with the Gray's-inn-lane, and pass across Gray's-inn-gardens to Holborn, at the end of Red Lion-street; whence it will intersect the north-west angle of the garden of Lincoln's-inn-fields, will cross Drury-lane and Covent-garden, passing, we believe, along Duke-street and Little Russell-street to the end of Chandos-street, St. Martin's-lane, from which last point it will run north-westward to the eastern end of Coventry-street, finally reaching along Piccadilly to near the commencement of the Green-park. This branch, it will be seen, must involve some difficulties of construction, and interfere considerably with private property, as will the construction of the whole middle-level sewerage with important traffic in the streets. The middle-level sewerage has been expected to cost 214,000*l.*; and

the tenders it was expected, could be advertised for in March next.

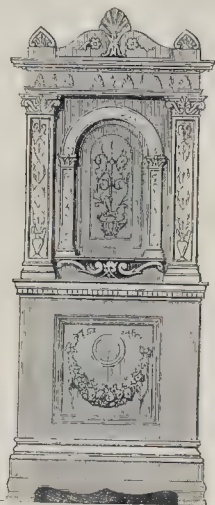
The difficulties of the middle-level, north side, however, cannot be so great as those of the low-level sewerage, since a considerable portion of the low-level sewer must run in the embankment—which we might have referred to as proposed by the advisers of the Metropolitan Board as means of assisting the removal of the present nuisance; though the cost of the sewerage only is included in the 221,000*l.* roughly estimated for the low-level, and though the embankment is not yet decided on,—the question of such embankment even being, perhaps, still *sub judice*. The main low-level line extends south-westwardly from the pumping station, along Devon's-lane, intersecting the Bow and Barking and the Dock railways near where they also intersect, and being joined by the "Wick-lane Branch," as already described, and also by the intended Isle of Dogs Branch, which branch, running beside the Dock Railway, or southward, however would not extend, as a chief sewer, so far even as the Blackwall Railway; whilst the main line continues from Devon's-lane, for a short distance along the Commercial-road, crossing the canal and the North-London Railway, immediately after which it turns south along White Horse-street, and then continues again east along the New-road or line of streets leading near Well-close-square, to Rosemary-lane and Tower-hill, whence it runs along Lower Thames-street to the west side of London-bridge. Here the intended line of embankment commences, and the sewer would continue in it to Scotland-yard, to take the "Victoria sewer," or that line which, passing along Parliament-street, reaches to some distance along Belgrave-street, Picnic. The line is joined in Parliament-street by the "Penitentiary Branch," which would pass between the Houses of Parliament and the Abbey to near the end of Vauxhall-bridge, where it would turn up Bessborough-street.

On the south side, the main high-level line, proceeding along the New-cross and Greenwich road to near the junction of the Peckham and Old Kent roads, continues south of the Peckham-road and parallel with it, through Peckham and Camberwell, on to Stockwell by Loughborough-road, and then south-westwardly to the Clapham-road, whence it continues along High-street, Clapham. It is joined at Peckham by a straight branch, for the sewage of Peckham Rye and Dulwich. The tenders for this portion of the sewerage were expected to be advertised for in February next; and the works were to cost 203,000*l.*

The line of the main low-level sewer, proceeding from the pumping-station across High-street, Deptford, as before described, intersects the North Kent, and the Brighton and South-Eastern Railways, north of the New-cross and Greenwich road, extends along the Old Kent-road to just beyond the Canal-bridge, where it turns again westward, and passes along Neate-street, and south of Walworth, along Grosvenor-street, and intersects the Kennington and Camberwell road, and the Brixton-road, proceeds by Holland-street, across the Clapham-road, along Lansdowne-road, across the Wandsworth-road, and across the South-Western and the West-end and Crystal Palace lines, just at their intersection, whence it continues along the Battersea-road and York-road, and may be extended through Wandsworth and by Wandsworth-lane to the church at Putney. A storm-overflow is to be provided from the point at the end of Holland-street, down the Brixton-road by Kennington Church, round the Oval and into the Thames, a little above Vauxhall-bridge, following, it seems, in part the line of the Effra brook. This line, it appears, is to be contracted for separately from the Bermondsey branch, which on plan shows as joining it. The intention, no doubt, is, for some portion of the distance near the pumping station, to form the lines one above the other. However, following the intended "branch" from the point of junction in High-street, southward under the railway, and then westward along the Deptford Lower-road, the line is found to extend to a point somewhere about the Jamaica-row, or between Rotherhithe and Bermondsey. The work of this branch of the low-level sewer, estimated to cost 60,000*l.* is dependant upon the purchase of land and probable completion of machinery at Deptford Creek, but steps have already been taken towards the speedy completion of the pumping machinery. There would be a storm-outfall to the river from the High-street, Deptford, down King-street. The main line of low-level sewer was expected to be tendered for after May next, and the estimated cost was 152,000*l.*

We now trust we have succeeded in conveying clear information as to the character of the whole of the intended metropolitan main drainage works. We have not gone into the question of the accuracy of the calculations as to the capacity of the sewers for sewage and rainfall, or into that of the sufficiency of the system adopted in regard to the ventilation of the sewers, or disinfection of the sewage in the thickly populated districts, but the points just named have received some notice in our last volume, and we still attach great, and, indeed, primary importance to them.

THE FLUE PEDESTAL.



Under this title Mr. C. J. Richardson, the architect, has provisionally registered an invention for abating smoke in house chimneys. He proposes to wash the smoke by means of jets of water: it could be applied to every flue in a house, and the soot from the whole of them carried down to the drain. Of course this is aided by a new system of flues; unluckily, however, the quantity of water required is so great that it will prevent the application of the flue pedestal for this purpose to more than one or two flues in a building; but there is another service it performs, apart from its abating smoke, for which he expects it will be extensively used, and which was not at first foreseen. Fully one-half of the heat from our domestic fires passes up the flues, and is lost in the atmosphere. The flue pedestal, Mr. Richardson's design for which we insert, retains the greatest portion of this lost heat. Thus, placed in one of the upper rooms of a house, it becomes a hot-water pedestal, supplies warm water to the room, and moderately warms it by means of the fires in the lower parts or floors of the buildings, &c. Mr. Richardson has been long known to our public, and we shall be very glad to find his invention prove serviceable to him.

LASSUS'S INTRODUCTION TO VILLARD'S ALBUM, AND PUGIN'S "TRUE PRINCIPLES."

THE following communication was addressed by Mr. Darcel to the hon. secretaries of the Royal Institute of British Architects, but it has been thought that by being inserted in our journal "it would have a more immediate circulation than through the medium of the Institute," and we have therefore gladly translated it with that end in view. It will doubtless find a commentator!

In addressing to you the following letter, which Madame Lassus desired to write to the Royal Institute of British Architects, to express her thanks for the interest with which it had regarded her husband's book, "The Album of Villard de Honnecourt," permit me, as the editor of that book, to present, in my own name, some observations to the Institute.

These observations relate to a material fact wrongly advanced, as I think, by one of its members. In No. 824 of the *Builder*, and in the paper, "Some Remarks," &c. that you have addressed to M. Didron, I read, sir, the expression of an opinion of Mr. Papworth (fellow) that,—“In truth, all

that is really good in the preface of the Album is taken from 'The True Principles of Painted Architecture,' by Pugin.*

I believe, sir, and I am persuaded that if the hon. member had remembered more distinctly Welby Pugin's book when he read the Introduction placed by Lassus at the head of the Album, he would not have mistaken for a copy or imitation of an English book what is quite an original work, and which owes nothing to your illustrious compatriot.

In the first place, I have indicated with too much scruple the sources whence Lassus and myself have borrowed—he to compose his notes, and I to complete and put them in order—to have omitted the name of Welby Pugin, if we had taken anything from him.

I cannot recollect if Lassus possessed Pugin's book; but I can affirm that I have not found, either amongst the papers or the list of works to be consulted, any mention of it. Moreover, although I possess, myself, the translation of 'The True Principles,' published, with comments, at Bruges, in 1850, it did not occur to me to refer to it, unfortunately, perhaps, during my work. I had read the book on its first appearance; and it seemed to me to be such a superficial criticism (the fault is perhaps due to the translators and arrangers); its examples of fifteenth-century work chosen to be opposed to a wrongly represented antique had appeared to me to be in such doubtful taste,—that I had preserved the recollection of it as a potential work, not resting upon any certain foundation, nor likely to be of any value against serious adversaries. Since receiving the accusation of plagiarism, I have again read it, and have not changed my opinion.

If the Introduction by Lassus be compared with W. Pugin's book, the same antagonism to the antique style will certainly be found; but the cause defended is different, and differently conducted.

Welby Pugin extols the fifteenth century, English; we, the thirteenth century, French.

Welby Pugin supposes that the antique temple was in its origin a construction in wood: we do not find it justifiable and worthy of antiquity, except it be constructed in stone. Then we set out from the sincerity of construction that we recognise in the antique temples, to find that the Gothic churches of the thirteenth century are their equals in an æsthetic point of view, and their superiors as respects science, and to note marked with the stamp of thoughtlessness the Roman constructions where the arch is made to yield to the lintel.

Lassus saw, with the introduction of Christianity, the arch freeing itself from this subordination, and developing itself to its highest expression in the thirteenth century, where its functions are employed and utilized with admirable sincerity, art, and beauty.

There is another point on which I must insist, for the memory of Lassus, because it is an honour to his sagacity, and that is the difference in the principle of unity amongst Classic and Gothic works.

In the first the module is variable, and once adopted, it assigns to the building all its dimensions. In the second it is invariable—the module is man. That is to say, in every Gothic monument, whether great or small, all the elements of architecture having, everywhere and always, sensibly the same dimensions, regulated by those of the materials in common use, man finds himself in a known and familiar relation, so to speak, with all these elements, and estimates at first sight the real dimensions of the edifice, according to the apparent dimensions of the parts composing it. In this consists the true originality of Lassus's 'Introduction;' and I suppose that if it had not claimed for France the honour of having created and developed Gothic architecture, Mr. Papworth had, perhaps, done him more justice, imitating, in that, Mr. Scott, one of ours, and Mr. Donaldson, though that honourable member be one of the partisans of Classic architecture.

In praying you to excuse this long letter and my importunity, which prove with what interest we regard in France all that is said of us in England, and especially in an association so eminent, by the quality of the persons composing it, as the Royal Institute of British Architects, I beg you to receive the expression of the distinguished sentiments with which I have the honour to be, sir, your very humble and devoted servant,
Paris, Dec. 22. A. DALCEL.

WENNAL CHURCH.—We are asked to state that the geometrical tiles laid in St. Martin's Church, Wensley, were those of the Patent Architectural Pottery Company, of Poole, Dorset.

ON THE GREEK CANON OF THE PROPORTIONS OF THE HUMAN FIGURE, QUOTED BY VITRUVIUS.*

It has been remarked, that although all nature bears the impress of law, to men in general she presents only a number of detached phenomena: to the diligent inquirer alone, or to those whose mental vision is acute enough to discover some link in the secret chain of her laws, does she gradually unfold all the relation which these phenomena bear to each other. Thus the laws that govern the analogy, or proportion, which the several parts of the human structure bear to each other, although very anciently sought, were probably not entirely discovered, or entirely accorded, till sixty years or more after the birth of Phidias, at which time, Polykleitos, a famous sculptor of antiquity, made a statue so exact in all its proportions that it was considered the most perfect model of a full-grown man. This statue furnished the canon or law of the proportions of the human figure, which from that period is said to have been observed by all the sculptors of antiquity.

Part of a canon or record of the proportions of the human figure is preserved in the second chapter of the third book of the 'Treatise on Architecture' by Vitruvius, in which book that learned architect treats of the proportion, or analogy, which the several parts of an architectural structure should bear to each other; and enforces his argument by a reference to the human frame, in which he tells us certain affinities exist, which were always observed by the most celebrated of the ancient painters and sculptors. This part of the Treatise is obviously a quotation, probably from the writings of the ancient sculptors or painters then in existence, and most probably from the canon of Polykleitos.

I will now proceed to read this part of the third book, in the translation by Professor Wilkins, uniting certain variations in an Italian version of the same text by Leonardo da Vinci. "Nature, in the composition of the human frame, has so ordained that the face, from the chin to the highest point of the forehead, whence the hair begins, is a tenth of the whole stature: the same proportion obtains in the hand, measured from the wrist to the extremity of the middle finger. The head, from the chin to the top of the scalp is an eighth, and as much from the bottom of the neck. From the top of the chest to the highest point of the forehead is a sixth; to the top of the skull a fourth.† If the length of the face, from the chin to the roots of the hair, be divided into three equal parts, the first division determines the place of the nostrils; the second, the point where the eyebrows meet. The foot is a sixth part of the height of the entire frame; the cubit and the chest are each a fourth.‡"

"The other members have certain affinities which were always observed by the most celebrated of the ancient painters and sculptors, and we must look for them in those productions which have excited universal admiration."

"The navel is naturally the central point of the human body; for if a man should lie on his back with his arms and legs extended, the periphery of the circle which may be described about him, with the navel for its centre, would touch the extremities of his hands and feet." With respect to the extremities touching the periphery of the circle, it is clear from the diagram that if the arms be raised above the horizontal, touching the top of the head, or not quite so high as the horizontal, the extremities of the hand will not touch the periphery. So likewise if the legs be extended beyond the equilateral triangle, or more or less than 60 degrees, the feet will not touch the periphery.

"The same affinities obtain if we apply a square to the human figure; for, like the contiguous sides, the height from the feet to the top of the head is found to be the same as the distance from the extremity of one hand to the other, when the arms are extended."

"The standards according to which all measurements are wont to be made are likewise

* Read by Mr. Joseph Bonomi at the Royal Institute of British Architects, Nov. 29th, as previously mentioned. For report of the discussion that followed, see p. 816, vol. 2, col. 1.

† This last sentence is irreconcilable, and does not occur in Leonardo's version.

‡ A sixth part is given to the distance from above the chest to the highest point of the forehead; and from the same point to the top of the skull is a fourth of the whole stature. In this sentence there is obviously a mistake in the numbers, which is corrected in part in Leonardo da Vinci's translation. It should be a seventh part is given to the distance from above the chest to the highest point of the forehead; and from the same point to the top of the skull is a sixth. The fourth is from the line which crosses the vertex of the angles to the top of the skull.

§ Leonardo makes it a seventh. In the best antique statues it is something more than a seventh, but not quite so long as a sixth.

deduced from the members of the body; such as the digit, the palm, the foot, and the cubit, all of which are subdivided by the perfect number which the Greeks call Teleios.*

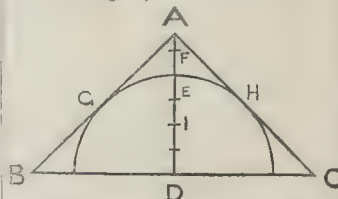
It will be observed that there is no such division in this ancient canon as that adopted by Andran, the Count de Clarac, and all modern artists,—the division of the head into four equal parts. It will also be observed that all the propositions here laid down relate to the longitudinal divisions of the human frame except only one, which bears reference to the width of the shoulders; for the transverse dimensions differ very considerably in every individual, and it is in these measurements alone that the differences between a Hercules and an Apollo, a Mercury and a Jupiter, are to be sought, but for which no law or canon is given.

With regard to the longitudinal proportions in this canon, however, I shall be able to show that they are the normal proportions of a full and well-grown man equally removed from two opposite qualities of growth; namely, that quality of growth in which the characteristics of the infant are retained in a greater or less degree,—as, for example, a large head, long body, and short extremities; and equally removed from that opposite quality of growth in which the characteristics of the adult are exaggerated,—as, for example, a small head, a short body, and long extremities.

To illustrate the first-mentioned quality of growth, I have brought a small ancient statue of the Egyptian god Ptah, and for an illustration of the second quality of growth, I must refer you to the engraving and description of a statue in the beautiful work of the Count de Clarac, vol. v. plate 840. The statue alluded to is in the marble of Mount Hymettus, and, therefore, probably a Greek work; nevertheless, it is remarkable for the disproportionate smallness of the head, and the length of the extremities.†

Now, according to this canon, you will observe that the measure from the crown of the head to the sole of the foot is exactly equal to the measure from the extremity of one hand to the extremity of the other, when the arms are extended. This exact equality of measure, we shall find, is the normal affinity or proportion which should exist between these two dimensions of the human frame; for if any given number of persons whose occupations and habits of life are conducive to the full development of the structure be measured, it will result that in nearly half the number the measure of the entire height will exceed, in various degrees, the measure of the extended arms; that in the other half, the measure of the extended arms will exceed, in various degrees, the measure of the entire height; and that only a few in each section will correspond exactly to the proportion given in this canon. Thus, then, the normal proportion or affinity which should exist between these two dimensions of the human frame is established to be exactly equal, the mean measurement between the two great sections confirming the canon. In the same way, or by an analogous process, have all the other affinities recorded in the canon, and set forth in the diagrams, been ascertained.

I need not dwell, in this room, on the necessity of producing strictly what may be called geometrical elevations of the human figure in the elucidation of this subject, and also for explaining a most ingenious discovery appertaining thereto, by our celebrated countryman, Mr. John Gibson, and by which, in practice, precisely the same proportions of the figure may be attained that have already been quoted from Mr. Gibson has allowed me to place in the hands of his brother-artists in a small pamphlet on the subject of the proportions of the human figure.‡



* That is to say, those numbers 6 and 28 which are equal to the sum of their factors or divisors, were called *teleios*—e.g. $3+2+1=6$, and $1+2+4+7+14=28$; and 6 is the number into which the cubit is divided.

† This statue was found in making an excavation in the Trastevere, in 1849. It is larger than life, and represents an Abilite using the strigillum, and is now deposited in the Museo Chiaramonti.

‡ "Proportions of the Human Figure," by Joseph Bonomi. Second edition. Chapman and Hall, London, 1857.

Mr. Gibson directs that the sculptor should draw a right angled triangle, having the two sides, AC and AB, that subtend the right angle, equal to each other. From the centre of the hypothenuse, D, describe a semicircle which shall touch the lines AC and AB. Draw a line from D to the apex A. Divide this line from D to the periphery E into four equal parts. Make EF equal to one of those parts. The diagram thus constructed contains all the dimensions of the principal divisions of the human figure. For instance, the hypothenuse, BC, represents a measure that is repeated three times. First, from the heel to the middle of the patella; secondly, from the middle of the patella to the superior spinous process of the ilium; thirdly, from the bottom of the abdomen to the pit of the neck. Thus, the hypothenuse of the triangle furnishes the measure of the distances from each other of three very important points or divisions of the human figure, both in the perfectly erect position, and in that of standing at ease.

The sides of the triangle, AC or AB, represent a measure that is repeated five times in the same figure. Namely, first from the top of the instep to the bottom of the patella; secondly, from the top of the patella to the pubis; thirdly, from a little above the navel to the pit of the neck; fourthly, from the top of the shoulder to the point of the elbow (of the straight arm); and, fifthly, from the elbow to the knuckle of the middle finger. Thus, the measure of five very important divisions of the human structure are ascertained by the sides subtending the right angle.

The remaining dimensions for completing the structure are contained in the line AD, for from D to I is the length of the neck; from D to E is the length of the face, measured from the chin at its juncture with the neck to the highest point of the forehead. From D to F is the measure of the head from the chin to the top of the scalp, taken in the direction of the red line in the drawing; and, lastly, from D to A is the measure of the foot from the heel to the end of the great toe.

All these measures obtain exactly when measured with the callipers on the finest Greek statues, and on the best living models; but, you will observe, as indicated by the red lines on the drawings, these measures are taken obliquely, and in some instances inclining in two directions, as, for example, that from the heel to the middle of the patella inclines outwards in the front view, and forwards in the side view, which two obliquities reduce the vertical measure of the distance of the middle of the patella from the ground to the level, corresponding exactly with the middle of the patella, as obtained by the Vitruvian canon; so, likewise, do all the measures obtained by the triangle of Gibson coincide exactly with those designated or obtained by the four horizontal divisions or lines of the Vitruvian diagram. This accordance of the Vitruvian canon with the practical method invented by Mr. Gibson is further demonstrated by the perfect similarity of both halves of the figure in the drawing, half of which is constructed according to the Vitruvian canon, and the other half according to the simple and practical invention of Gibson, a remark that applies equally to the two profiles of the same figure.

As before stated, all the proportions given by the triangle of Gibson obtain exactly when measured by the callipers on the finest antique statues, and on the best living models of both sexes; only those, however, which have but one inclination can be measured with the compasses on these geometrical elevations; this circumstance alone determines the inadmissibility of perspective delineations by way of elucidating the subject, for in drawings in which that essential of the painter's art is admitted, no measure at all can be taken. The two profiles and front view of the same figure standing at ease are exhibited in the diagrams in strong black lines, while the faint red lines show the same figure in the perfectly erect position; by the change from the perfectly erect position to that of standing at ease, one fourth of a head, or, in other words, a thirty-second part of the entire height is lost.

The centre of gravity is removed $1\frac{1}{4}$ inch from where it fell in the erect figure, of six feet high, namely, from between the ankles to nearly the middle of the ankle of the leg, which sustains the whole weight of the body, while in the profile it remains where it was in the erect position. Also, it is to be remarked that by this change of posture, where the black contour departs from the red contour on one side, there is an exactly corresponding departure on the opposite side; or, in other words, the excess on one side is balanced by an exactly corresponding loss on the other.

The remarks I have had the honour to address to you would be lengthened to an undue extent by referring to a work of Albert Dürer, on the "Symmetry of the Human Body,"* illustrated by about 200 woodcuts. However useful and curious this extensive treatment of the subject may be, it does not appear to me to supersede in any degree the valuable text of Vitruvius, as elucidated by Leonardo da Vinci, and considered in connection with the practical discovery of our celebrated countryman, Mr. John Gibson.

THE NEW FOREIGN OFFICE.

THE following is from a letter addressed to "Sylvanus Urban," touching the appointment of Mr. Scott:—

I hope and I believe, that it by no means follows, that the design which was exhibited by Mr. Scott is to be implicitly followed: it will of course be subject to such modification and improvement as Mr. Scott's judgment and experience may suggest to him, and I hope that the effect of this will be to get rid of the *foreign* look which pervaded it, according to my ideas, and entitled to more weight than mine. It is true that the mediæval palaces of Italy are very tempting models, or rather storehouses to furnish ideas, because there is more street architecture of the middle ages remaining in Italy than in the northern countries, and these Italian palaces are very beautiful examples in their way; but the Gothic of Italy differs much from our own Northern Gothic, and is generally late work copied from Northern buildings, and a jumble of all the styles, mouldings, and details of the twelfth century, such as the cable and billet, with trefoil cornices or corbel-tables of the thirteenth, and windows with tracery of the fourteenth, all jumbled together in the same palace really built in the fifteenth. However beautiful such buildings may be in their proper place, they will never be satisfactory to English eyes in England. If, indeed, it has been decided to employ brick, and especially moulded brick, there is more ground for going to Italy for authorities: such buildings as the public hospital at Milan, or the palace of Mantua, may well excite emulation, to show what can be done in brick: the beautiful and minute details are admirably executed, and relieved with great judgment by large intervals of blank wall, a feature of which our modern architects seem rather afraid.

But even if moulded brick is to be used, I doubt whether the mediæval brick-work of the north of Germany is not more consistent with the bold, vigorous, manly Early English style, than any to be found in Italy. Some beautiful specimens of these have been published by Mr. Street, and others years before by Mr. Repton in the "Archæologia," vol. xxi. It may, indeed, be asked, why look out of England at all for examples of our own national style? We shall not find the same pure unmixed Gothic anywhere else; and although it is true that we have no street architecture of the thirteenth century remaining, there is the more scope for the genius of the architect to display itself. We must not yield to the clamour of popular ignorance, which always supposes that church architecture is one thing, and house architecture another. Our ancestors knew of no such distinction: the windows of a church, of the refectory of a monastery, or of the hall of a castle or a palace, are all exactly alike at the same period, at least externally: within they are distinguished only by the seats in the sill of a window required for secular purposes.

Some persons, I am aware, dispute whether the Early English Gothic is peculiarly English at all, but this arises from want of observation or misapprehension. No one means to say that England had a monopoly of the beautiful style of the thirteenth century, which arose almost simultaneously among all the Gothic nations settled in the northern parts of Europe; but, while the general character of the age is very marked, it is modified considerably in each country, and each has thus a national style of its own: the Early English Gothic is not the same as the Early French or Early German Gothic, and there is no such thing as Early Italian Gothic: the style was not introduced into Italy until a later period. The peculiar characteristics of the Early English style are the round abacus to the capital, the fine suites of mouldings to the doors and windows, deeply cut in bold rounds and hollows, and the free foliage. In foreign Gothic the abacus is always square (a classical feature inconsistent with the spirit of Gothic), the windows have usually no mouldings at all, and the doorways few in comparison to the

English. In the general proportions of the parts of building, also, there is in England always a harmony and consistency which is wanting in foreign examples. Every one who has travelled must have noticed the heavy, lumpy appearance of the French cathedrals at a distance, as contrasted with the well-proportioned, elegant outline of our own Salisbury. There is also, as no one knows better than Mr. Scott, a material difference in the principles of construction between English and foreign Gothic. In English Gothic, the vaults are always constructed on the principle of the dome springing from corbels, fully developed in our beautiful fan-tracery vaults. This principle is not found in French Gothic, as has been shown by M. Viollet-le-Duc, the highest living authority on such a subject. These differences are quite sufficient to show that the Early English Gothic was not copied from the French; and the question naturally arises, from whence then did it rise? No question has been more frequently asked, or had a greater variety of answers given to it; and I do not presume to suppose that I can give a satisfactory answer. But every one has some theory on the origin of Gothic architecture, and I may be allowed to have mine. I believe, then, so far as I have at present been able to investigate the matter,—I believe that our English Gothic originated at Angers in the time of Henry II., king of England and count of Anjou, who held his court there for several years, at a time when all the west of France formed part of the dominions of the king of England. His court was attended by the nobles and higher clergy of England, of Normandy, and Aquitaine. It was a great building age, one of the periods of a great movement in the human mind,—what we call, *par excellence*, THE PERIOD OF TRANSITION; and it was natural that when the leading minds of the English dominions were thus congregated together, they should compare notes on the architecture of their respective provinces. The men of the south had domical vaults and pointed arches, but their buildings wanted height and lightness. The men of the North had more aspiring notions, but had not ventured upon vaulting over large spaces, and were ignorant of the domical principle of constructing vaults. Actual domes had been introduced from the East into Portugal, and although lofty domes did not spread beyond that province, the principle on which they were constructed had been already introduced extensively into Anjou and Poitou. Just at the period to which I have referred, the public hospital at Angers was being built: it was founded, endowed, and completed by Henry II., and opened by him with great pomp in 1184, having been commenced in 1177. The buildings of this hospital, including the fine hall and the chapel, remain nearly in the state in which they were left at that time. It has always been, and still is, the public hospital of the town and neighbourhood: the endowment is barely sufficient to support it and keep it in repair, and there is neither any record nor any probability of its ever having been rebuilt or materially altered. This I believe to be the earliest Gothic building in existence, and the origin of the Early English style. It is almost pure Gothic, with lancet windows, with some remains of the Norman style. Becket's crown at Canterbury was also finished in the same year 1184, and is exactly in the same style. This I need hardly say is the work of William the Englishman, after the departure of William of Sens in 1179. There is a marked advance in the style of that part of the cathedral, and Professor Willis, in his admirable history of it, has enabled us to see exactly where the work of each year commences.

Your readers may naturally ask, What has all this to do with the new public offices? I answer, that it gives a reason for directing the attention of Mr. Scott and of the public to the English provinces of France, for any new ideas that may be wanted, in preference to any foreign country, more especially one with which we had so little connection as Italy. I am quite aware that the mere fact of different provinces being under the same crown had little or no effect upon their architecture, but the intercourse of the people had the greatest possible effect upon it. The architects of those days borrowed new ideas or new forms from each other quite as much as those of our own day. The recently-published album of Villars de Honnefont, an architect of the middle of the thirteenth century, contains sketches of Rheims Cathedral and other buildings, then just erected, or in the process of construction; and these sketches were evidently made with the intention of using them freely in any buildings he might have to construct elsewhere. If it is desirable to revive the English Gothic of the

* "De Symmetria partium humanorum corporum."

thirteenth century, it is evidently also desirable that our architects should follow the example of Villars de Honnecourt, and examine the neighbouring provinces and neighbouring countries for other buildings suitable to give them new ideas; and they should have recourse, in the first instance, to those provinces and those countries which the architects of that period would have gone to, therefore to those provinces and countries with which the people of England had most intercourse at that time. These were, first and chiefly, the English provinces of France, and next the other adjacent parts of France, or rather the different countries which are now included in France.

The influence of commerce in producing this intercourse between the people is well known, and accordingly the line of commerce at particular periods is always marked by the buildings on that line being in advance of others which are remote from it. In the twelfth and thirteenth centuries, the line of commerce, the direct high road from England to the Mediterranean, to Rome and to the East, was through the English provinces in the west of France, in as direct a line as possible through the northern parts of Normandy and Brittany, along the line of hills through Lisieux and Perigueux, and skirting the foot of the Pyrenees, and by the Mediterranean port of Aigues Mortes, now blocked up, the sea having receded in this part. This line is said to have been taken originally at an earlier period to avoid the incursions of the pirates in the plains near the sea, perhaps also to avoid the embouchures of the rivers before any bridges were built. Whatever the cause, this was the line which English architects in the thirteenth century were most likely to take, and this seems the most natural line for us now to follow, without adhering to it rigidly, or refusing to make such excursions to the right or to the left as our predecessors were very likely to have made. But with Lombardy they had no intercourse at all, and it is the last place we should go to for authorities. Our neighbours the French were always jealous rivals, and their architects kept pace with our own, and although the French Gothic of the thirteenth century is different from the English, it is more like it than any other, and therefore the best suited now to furnish us with ideas or forms suitable for our purpose. Whether the massive, heavy, transitional work of Notre Dame at Paris or St. Denis is earlier than the corresponding work at Malmesbury and many other places in England, is immaterial to the point, the English and the French architects each developed rapidly, and the two styles run nearly *pari passu*, and bear frequently a close resemblance to each other, although still distinct. There is abundance of house architecture and street architecture of the thirteenth century remaining in various parts of France, and it harmonizes far better with our English style than any other.

JOHN HENRY PARKER, F.S.A.
President of the Oxford Architectural Society.

THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

It is always ungracious, as well as ungrateful, to appear to complain at all of the result of efforts which, being purely voluntary, deserve the warm thanks of all who profit by them; and in what I am about to say, therefore, I wish only to throw out a suggestion, and not to make a complaint.

I think many of the subscribers to the Architectural Photographic Association must have felt, as I did, that the photographs now being exhibited did not, in one respect, fulfil all their expectations. Probably most of us feel that there can be no very great architecture unadorned by sculpture, whilst we may think that the architectural lines of a building are even better seen and better understood by an elevation than by any picturesque view, or even by a photograph. To all who feel this, the collection now being exhibited is so far a disappointment, inasmuch as it scarcely contains any examples of purely architectural sculpture. And I think there is a double danger in this fact; for whilst it may make the Association less practically useful than it might be, it may also lead the world to suppose that our profession, as a body, ignores, to some extent, this necessary connection between the two arts, and is content, only, to aid in prolonging the practical aversion to sculpture, which has distinguished (in a very bad sense) our English architecture for a very long period.

I can quite understand the difficulty which the committee, no doubt, have in meeting all views, and during the popularity of their association;

but I think it will be an aid to them rather than the contrary, if those who know (as I do) that there is a growing feeling, which this year they have in no way satisfied, venture in a very friendly spirit to express that feeling. The truth is, that most of us know tolerably well the general outline and effect of most of the buildings of which it is likely we shall obtain photographic views; whilst comparatively few have been able to travel sufficiently to see with their own eyes all the delicate detail which often distinguishes them; and even to this happy and select class the value of absolute *fac-similes* of the decorative sculpture is of infinitely more value than any other kind of illustration can possibly be. Most of us know, *e.g.* the general idea of the west front of Orvieto Cathedral, but how very few have the least conception of the exquisite beauty of the sculpture which adorns the whole of its lower stage! And again, though we have been again and again at Chartres, or Rouen, Amiens, Paris, or Rheims, how difficult—is it not?—to carry away with us all the lessons which the wonderful sculpture enshrined in their buildings teaches us!—and how full of instruction, on the very point on which we all stand most in need of it, photographs of such sculpture are, all who have carefully examined or used them know very well.

I dare say there may be very many difficulties in the way unseen by me. But if it were possible next year, instead of employing Mr. Bedford's powers on the reproduction of such thoroughly well-known buildings as Chestow, Tintern, and Raglan,—to obtain from him photographs, to a large scale, and in detail, of the west front of Wells, the sculpture at Higham Ferrers, or Lincoln, or elsewhere, I predict, confidently, that a large, sale of whatever he did, would be an immediate result, and an improvement in our own work a natural consequence. Whilst, again, if one of the French photographers would obtain large details of the doorways at the west end of the aisles of Rouen Cathedral, or of some of the foliage sculpture of the capitals of the same cathedral; or if one of the Italian artists would do the same for the glorious west front of Genoa, a want which many of us must have felt would be supplied, and we should be additionally grateful to the committee.

The truth is, that our Association ought not to think first of all of popularity. Like the Arundel Society, its functions would be best fulfilled by obtaining for us illustrations of work, which is not of sufficient popular interest to be done by private speculators; and which is, nevertheless, to the true artist very often of a value and interest which cannot be exaggerated.

GEORGE EDMUND STREET.

BRITISH MUSEUM—THE CHRISTMAS HOLIDAYS.

ON Monday last the scene presented at this public institution was of the most gratifying description. At the hour of opening, streams of school boys and girls, and family groups, both town and country bred, might be seen flowing along the streets towards the main entrance. As the day advanced the number of holiday folks continued to increase, until the galleries of antiquities and natural history, and the manuscript room and king's library presented a most animated appearance. At one time there could not have been fewer than 30,000 persons within the walls of the building. It was curious to contrast this crowd with a recollection of the deserted appearance of old Montague House, in those days when parties were admitted by tickets, which were limited to a small number each day, and when it was considered dangerous to admit the English public amongst works of art. It was also a matter which raised curious reflections to see those bustling thousands wandering so life-like and animated amongst the relics of past ages and peoples.

The bulk of the visitors evidently belonged to the working classes, and it was pleasant to see the comfortable and well-clad appearance of the majority. The conduct of all was admirable, and although in the course of Monday upwards of forty-two thousand persons were admitted, no case of intoxication or ill-behaviour was noticed. Such a gathering as this was creditable to the intelligent part of the working population of the metropolis; and although it must be admitted that some passed by the rare objects collected here in a somewhat hurried manner, having scarcely learnt to see; it is certain that not even the most careless can pass through these galleries without gathering wholesome materials for future thoughts. During the day large numbers were admitted who

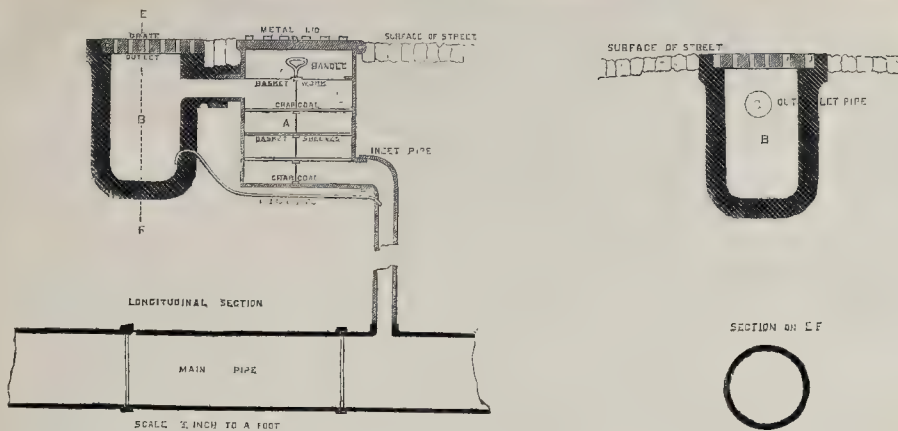
applied in the proper quarter for permission to get a glance at the new reading-room, and it was quite right that the opportunity was given.

The document which has been addressed to the Premier by thirty-six leading men in painting, sculpture, and architecture, in connection with the immediate necessity which exists for additional space for the proper reception of the rare treasures of ancient art which are arriving in this country, is worthy of the gravest attention. In this memorial attention is directed to the circumstance that numerous cases containing sculptured antiquities from Halicarnassus, Miletus, and Carthage, about to arrive, will require considerable space, and that considering the expedients to which the authorities of the British Museum have lately been driven, in order to find room for other important works of the kind, the means of accommodating such monuments are lamentably difficult. The manner of disposing of many of these remains is alike injurious to the works and discreditable to the country.

After noticing the great value of the ancient sculptures in the Museum—some of which are the undoubted work of Phidias and his contemporaries, and are unrivalled by any specimens preserved in foreign galleries—the other archaeological monuments, illustrating the development of art from the earliest time of value to the historian and scholar beyond calculation, are alluded to. The first and immediate object of this address is to secure for these works such accommodation as may insure their preservation. The collection of sculpture from all parts of Greece, Asia Minor, Italy, Egypt, and Assyria, has during the last few years accumulated to an extent that imperatively demands attention on that ground alone. The latest and some of the finest of our acquisitions, comprising remains of one of the most remarkable monuments of antiquity, one of the so-called "wonders of the world," the Mausoleum of Halicarnassus, and the undoubted works, in statues and relief, of the most eminent sculptors of the fourth century before our era who were employed in its decoration, are now placed outside the building under the portico, while the only protection against injury from our variable climate from the soot and dirt of London, and other accidents, is provided by encasing or enclosing them in unsightly glazed magazines and workshops. The additions just announced must also, for want of space, be treated in the same way—be unworthily treated—and probably it will be necessary to enclose in this way for their reception the whole of the colonnade in front of the Museum!

After alluding to the great risk to which these precious works are liable from frequent removal, the memorialists truly remark that "the study of archaeology and of the history of the various schools can only be carried on with advantage when the examples for reference are of easy access, and when the various subjects which are the foundations of those studies can be directly compared with each other. It is felt by scholars and the students of antiquity especially, that the close association of examples of sculpture of various periods and schools, whether they consist of marble or bronze statues, relief, busts, coins, or other objects, whatever their class, is indispensable for the proper and useful prosecution of their inquiries. Any division or distribution of such works in different and distant localities is to be deprecated; and, therefore, in earnestly pressing upon the Government the expediency of taking such measures as may seem fitting in the first place for the preservation of the valuable monuments we may possess, the hope may at the same time be expressed that such extensive accommodation may be afforded as may include and combine all these works in one accessible collection."

All visitors to the sculpture-galleries of the British Museum must acknowledge the truthfulness of the remarks which have been made by the memorialists; and the matter for consideration is in what manner the increased space can be best provided. A glance at the ground which skirts the present building will show what noble galleries may be made by extending the present building to form a front to the south side of Montague-place. If the whole square bounded by Montague-place, Bedford-square, and the street forming the eastern boundary, were purchased for this national purpose, we should have a site which would admit of not only a magnificent architectural display, but would also afford space for centuries to come for any possible demand for proper room for sculptures, books, and prints. As regards the library, the accommodation provided by the recent alterations will prevent care in this respect for a long time yet.



VENTILATION OF SEWERS.

REFERENCES.

- A. Purifying box with basket-work slides to hold charcoal.
B. Débris trap to prevent débris or water falling on the charcoal.

- C. Syphon pipe for taking water from débris trap.
D. Metal lid for all wing access to purifying box to recharge purifier.

VENTILATION OF SEWERS.

I HAVE seen of late several reports respecting the ventilation of the City sewers, first by Dr. Letheby, the medical officer to the City Commissioners of Sewers, and lastly by Mr. F. Haywood, their engineer, both of whom concur in the use of charcoal as a defecting substance to be used at the outlets of the ventilators. Knowing a little of the matter, I beg to submit to you the following facts:—In the years 1852 and 1853 I commenced to lay out the system of sewerage of this borough, which comprises about 5½ miles of public sewers. At that time I had a little difficulty about the ventilation, and in conversation with an eminent surgeon of this borough, then in our council, and a gentleman who had paid great attention to sanitary matters (Dr. Mordey), he stated, as I had also observed myself, that in the sewerage of the city of Durham the ventilators were merely pipes brought up into the centre of the street, and from which there arose a very offensive smell, and he thought that the use of charcoal would prevent this, and asked me if I could put it into a working shape. I stated I should do so, and, after making an experiment, I produced the plan annexed. I afterwards spoke to Professor Johnson, who stated that the peat charcoal would cost from 3*l.* to 4*l.* per ton, and, when charged with the gases emanating from the sewers, would probably be worth from 8*l.* to 9*l.* per ton. About four years ago this plan was enrolled, and now forms part of our system of sewerage; and I have in my possession the sheet of drawings submitted to the General Board of Health, on which is their official stamp. At that time several copies of the plan were forwarded to London for the opinion of men whom I considered at that time better able to judge of the scheme than myself. Without any arrogance in the matter, I state that, in this borough, the application of the plan was first introduced as a part of the much required sanitary requirements of large towns.

WILLIAM CROZIER, Borough Engineer.
Sunderland.

ADVERTISEMENTS ON STREET LAMPS.

AN offer has been made to several of the metropolitan parishes, and amongst others that of Clerkenwell, for the use of the street lamps for advertising purposes. At the Clerkenwell parish board this proposal led to much discussion. One gentleman thought that the plan would interfere with the public light, and said that one of the members of that body—an undertaker—would be likely to cover a large part of the street-lamps with mourning coaches, and other funeral devices; another member would cover the glazing with pots and pans; and that others in various ways would avail themselves of this means of directing attention to the peculiarities of their trades. It was also said that Clerkenwell had been called the “prison parish,” and that it was to be feared if this suggestion was carried out, that it would be called the “advertising parish,” and that it would not be right to let out the public property for the purpose of personal advertising. It was, however, suggested that it would be well, before coming to

any decision, to hear the merits of the plan, and eventually Mr. Pringley, the projector, was called to answer questions put by various members. Mr. Pringley said that he held in his hand a copy of a contract which had been entered into by the Bernandsey board, and which only required signature. St. George the Martyr, Southwark, had also agreed to adopt the plan, and it had been favourably viewed by the parish board of Islington. He proposed to give the inhabitants of each parish the first choice. The lamps should be offered in the first instance to those living nearest to them; when, after the parish had been exhausted, strangers would be allowed to engage them. He bound himself in his contract not to place the advertisement of a hatter, a jeweller, &c. near to persons carrying on any of these trades, &c. &c. He was quite sure of being able to take up the whole of the 377 lamps in the leading streets: he was not so sure about the 216 in the by-streets.

It appeared that if this system were carried out in Clerkenwell, the profits to the parish would be about 377*l.* per annum, or about 25 per cent. on the whole amount of lighting. It was eventually agreed to postpone the consideration of the question for a time.

It is to be hoped that nothing will be done to disfigure the streets. We have before now suggested that the street lamps should be made use of in directing wayfarers at night.

PROVINCIAL NEWS.

Letcombe (Berks).—The new school of this parish was opened by the Bishop of Oxford on the 11th ult. The school-house is a simple structure of red brick, with string-courses and window rear-arches of red and yellow bricks in the interior. It was designed by Mr. Butterfield, and has cost between 300*l.* and 400*l.*

Ilfracombe.—Mr. Richard Bligh, an old and influential resident in this town, has offered to build schools at his own expense, provided the committee already at work would purchase the site, and fit up the building, after it was completed. This offer was readily accepted. The building, it is thought, will cost some 600*l.* or 700*l.* while the money already collected will provide for the purchase of the site and its conveyance to trustees. The site of the school-building is close to the church, lying between it and the sea. A design has been furnished by Messrs. Foster and Wood, of Bristol, architects, and approved. The building will be proceeded with in the spring, and probably be completed before the end of the year.

Plymouth.—The new building at the corner of Treville-street, leading into Old Town-street, is nearly finished, and the scaffolding having been removed, the elevation is open to view. The block of buildings consists of three houses of four stories, the height being 50 feet. The style is Lombardo-Venetian. The walls are built for the most part of red and light gauged bricks, while the ornamental portions are executed in freestone and Portland cement. Polished Devonshire marble has been introduced in the windows of the first

story above the shops, and tiles (from the architect's drawing) in those above. Mr. James Hine is the architect; and the builders are Messrs. Call and Pethick. The ornamental ironwork has been executed at the Plymouth foundry. Another improvement is being effected (under the direction of Mr. Hine) in Old Town, at the corner of Drake-street, by the erection of business premises, in the Italian style of architecture.

Milford.—The capabilities of Milford as a port of arrival and departure are about to be brought out by the construction of docks upon an extensive scale. It is proposed to make the enclosure of Hubberstone Pill, in the first instance, at an expense of 100,000*l.*; and this is shortly to be commenced. A company has been formed with every prospect of success. Arrangements have been made for steam communication between Milford, Neyland, the Dockyard Angle, and Dale, with steam-tugs for the harbour. The present dry dock at Hakin is also being enlarged.

Portrush.—The obelisk at Portrush to the late Dr. Adam Clarke is now finished. It is entirely composed of Newry granite, and is about 50 feet from the base to the summit, and occupies an elevated position at the principal entrance to Portrush, being 30 feet above the road. It is placed at the rear of one of the school-houses which the commentator himself had built.

Bradford.—New school-rooms are to be erected in Caledonia-street and Moody-street, at Bradford, Yorkshire. The works have been let to several tradesmen of the town. Mr. Paull, of Cardiff, is the architect employed; and the building is to be occupied on Good Friday next.

Leeds.—An addition has been made to the design for the New Grammar School. It has been decided to add a tower, over the junction of the roofs of the great school and the middle building. A tower, somewhat of this description, formed part of the original design, and was reluctantly struck out, on the ground of expense. At a late meeting of the Board, the architect was desired to furnish a design for a central tower, at an outlay of 200*l.*; and the trustees present, although the members of the board have contributed more than half the 7,000*l.* already raised, resolved to defray the expense by a new subscription among themselves, and, accordingly, sums ranging from 10*l.* to 50*l.* were at once subscribed, to the amount of upwards of 200*l.*

Jarrow.—The docks, constructed by the North-Eastern Railway Company, at Jarrow Slake, are so far completed, that the water has just been let in through the sluices at the north end of the works. The event was celebrated by the firing of cannon, &c.; and the workmen at the docks were entertained at the various inns in the neighbourhood. The dock and tidal basin, according to the account of them in the *Shields Gazette*, will contain about fifty acres of water, and accommodation will be provided for between 400 and 500 vessels. The tidal lock, 100 feet in width, and upwards of 250 feet in length, has entrance-gates 60 feet wide; while the tidal entrance, 80 feet in breadth, will admit ships of large size. There will be a depth of 24 feet 6 inches on the dock sills at high tide, and 24 feet on the inner area. When the docks

are in operation, vessels will come round the dock pier into an unenclosed tidal basin, and afterwards pass the 60 feet lock into a small dock. On the water being admitted from the main dock, these vessels will be raised to its level, and admitted into the principal dock; thus enabling vessels to be docked from the time of low to high water, when the whole of the gates will be open, thereby relieving a fleet of ships which may arrive at one tide pressing upon each other. The docks will be used as a place of shipment for coals by the North-Eastern Railway Company, by whom they have been constructed; and it is expected that the first shipment will take place early in the new year. A tier of ships, at the old drops, lie side by side, at the end of the staith or jetty; and the nearest one can alone take in her coals from the waggons. At the new dock, and at the landward end, there are four jetties, stretching far inward, and each having five shipping-places at each side, making ten in all. These ten vessels can be lying and loading at every jetty at the same moment, there being a distinct line of rails to every spot. From ten to twelve thousand tons of coal may be put on board the ships in a day. At present, but two of these jetties have been fitted up for the shipment of coal, comprising twenty shipping places. One jetty is set apart for ballast purposes, and possesses four of Armstrong's powerful hydraulic cranes, constructed on a new principle. From three to four hundred thousand feet of timber have been consumed in the construction of the jetties alone. Of ashlar work in freestone, the quantity exceeds 600,000 cubic feet. The granite measures from 15,000 to 20,000 cubic feet; and the rubble masonry, upwards of 80,000 cubic yards. The cellular iron gates of the 60-feet tidal lock, and 80-feet tidal entrance, manufactured by Messrs. Robert Stephenson and Co. Newcastle, weigh from 500 to 600 tons; and their heel-posts work in hollow granite quoins. They are worked with hydraulic power, on the newest principles of Messrs. Armstrong, who have fitted up the hydraulic machinery. The road behind the sluice, running between Gateshead and South Shields, is spanned by five bridges (one of which is constructed of wrought iron, the remainder of brick and stone), which connect the dock with the North-Eastern Railway. The earth removed in the construction of the docks, amounting to two million yards, was principally silt. The locks and gates have been designed by the engineer-in-chief, Mr. T. E. Harrison, and carried out under his resident representative, Mr. R. Hodgson. The contractors for the whole works are Messrs. Jackson, Bean, and Gow.

"THE BUILDER'S" LAW NOTES.

Highway.—After a verdict against the inhabitants of a parish upon an indictment for the non-repair of a highway, it is no answer to an application for the imposition of a fine, that the road never has been repaired by any one.—*The Queen v. The Inhabitants of Clatby.*

Auction—Deposit.—The purchaser at a sale, which turns out abortive from vendor's inability to make a good title, cannot recover the deposit from the vendor as money had and received, though paid over to him, but must sue the auctioneer, he being the agent of both parties, to appropriate the deposit to the party entitled to it.—*Johanson v. Roberts.*

Exclusion—Fencing Machinery.—On the trial of an action against millowners for not securely fencing a part of the machinery of their mill, whereby injury was occasioned to one of the persons employed therein, the judge left the question to the jury whether the machinery was fenced in the ordinary manner used and approved as sufficient at the best regulated mill in the district. It was held that this was not enough, for that the proper question was, whether the mill was securely fenced according to the best method of fencing known at the time.—*Schofield v. Shuck.*

THE CONVENTIONAL ORNAMENT OF THE THIRTEENTH CENTURY.*

If we take the best and purest periods of architecture—and the thirteenth century eminently claims to be one of them—we shall find that the architect always more or less departed from nature, according to the requirements of his work; thus the architecture was wholly and entirely conventional, and the figure sculpture, with some slight modifications, such as giving it more angu-

larity, entirely naturalistic; while the ornament, although referable to real foliage, was yet so altered and conventionalized, that it always harmonized, and seemed part of the building, and did not look like a handful of leaves stuck on at random. In the later development of the thirteenth century, this conventionalism was abandoned, but still the change took place gradually, and bit by bit. Thus in a capital the strong horns which appear to support the abacus were at first retained, the only change being in the leaves at the end. Gradually these masses of leaves grew larger and still more natural; then leaves began to sprout out of the sides of the horns, and shortly the whole capital became covered with them, the horns being discoverable only by a close inspection, until at last they are got rid of altogether, and the heavy abacus, and arch moulds, as in most late Decorated examples in our own country, rest simply on a mass of delicate leaves, and give to the eye anything but the idea of security. Unfortunately, of late there has been a great tendency to this method of treating architectural ornament, and, as usual, we have begun with the full development, and are now proceeding through the phase of the horns with natural foliage at the ends, until I hope we shall finally arrive at the conventionality of the early part of the thirteenth century. In the mean time we have been wearied to death by pulpits and fonts covered with baskets full of leaves, and when we do get figures, the scene appears to be taking place rather in the arbour of a tea-garden than under an architectural niche, as it ought to do. The consequence is, that the rigid lines of the architecture which ought to set off the more soft and sweeping lines of the figures entirely lose their effect. However, we are now gradually improving, and when we do arrive at the proper point, it is to be hoped that our architects will set to work in the proper spirit, not copying the old work servilely, but finding out new conventionalities of nature for themselves. The subject of our architectural sculpture has been so well and so often treated in the former lectures delivered at the Architectural Museum, that I have thought it better, in the present instance, to confine my attention to the flat ornament alone, such as was used for stuffs, tiles, stained glass, and decoration generally, although, indeed, many of my observations will be equally applicable to the latter sort of sculptured ornament. Again, I by no means put forward the following principles as the only true ones on the subject, but simply as means by which certain combinations may possibly have been produced, and by which they may be so again.

It appears to me that most patterns are referable to the diaper, although some writers consider that the starting-point should be the border, inasmuch as a diaper may be considered to consist of many borders laid side by side. I think, however, that it is quite immaterial which of the two systems we select; but perhaps as many borders contain parts only of forms, which forms would be completed in the diaper, I feel upon the whole inclined to take the diaper as the point of departure, and to consider the border simply as a part cut off from a whole.

The Diaper.—If we draw any number of parallel lines at right angles to another set of similar parallel lines, all equidistant, and then mark the points of intersection, we shall have a number of dots, each of which is at an equal distance from its neighbour (fig. 1). These lines again can be drawn at an angle of 15 degrees, producing another set of points, which, in fact, are nothing more than the first set turned round (fig. 2). These appear to me to be the foundation of most systems of diaper, and, indeed, of ornament generally. They can be varied by making one set of parallel lines farther or less apart than those with which they intersect, thus forming parallelograms instead of squares (fig. 3), or by varying the distances (fig. 4); but as I have before observed, the first system of squares is the more general one, and which I propose to take as the basis of my illustrations, although any of the others would do very nicely as well. Now, if we apply any figure, either geometrical, natural, or conventional, such as a circle, a leaf, or a fleur-de-lis, to each of these dots we shall obtain the simplest form of a diaper, which is generally called a powdering, but if we wish for a more elaborate composition, or have a larger space to fill, there are several ways of going to work.

The first and chief of these is to put a geometrical form on each dot, and then place on it a piece of foliage or a scroll, or an animal. These forms are very numerous, and may be suggested by almost any object, and, indeed, they are not

be geometric, but they are generally so, in order to present greater variety and to relieve the eye. These geometric forms may touch each other (fig. 5), or be at some distance from each other (fig. 6), or their edges may overlap (fig. 8), or they may be connected by other geometric forms (fig. 7), by lines, or alternate with others of equal size.

Another mode of making a diaper is to connect the dots by means of lines, and these again can be overlaid by another system of lines drawn at a different angle (figs. 9, 10), or the vacant spaces can be filled with a leaf, scroll, or animal; these lines again can be curved (fig. 11). Frequently, however, the geometrical forms are applied to the dots as in the preceding case, but then they are not supposed to be solid, but are simply lines. Very often other geometrical figures are laid upon them, so that a mass of lines are produced around our dots (fig. 12). These masses of lines are liable to the same laws as the geometrical forms, or they can touch or be far apart, or be connected by lines, or alternate, &c. or they may have ornaments in the spaces between them. Again, these lines often become ribbons and overlap or underlap at the intersections (figs. 13, 14). It is well known to what perfection this system has been carried by the Irish, Anglo-Saxon, and Eastern nations. In the thirteenth century, however, it was far more sparingly used, being mostly employed in conjunction with other ornament, and very seldom by itself.

But by far the most beautiful and universal way of connecting our dots with one another is by means of the scroll or spiral,—a form which occurs in several shells, and which has been drawn by the Greeks geometrically in the Ionic volute. A piece of elastic substance, such as parchment or paper, rolled up lightly and then let go, will also give the scroll, although in a much less perfect degree. Now the simple scroll can be variously applied to our dots; thus it can be placed in series, following one another, either face to face, or back to back (fig. 15); or it may be connected with its neighbour (fig. 16), so as to assume the form of a C, or, when reversed, resemble an S. These compound scrolls are employed in the same manner as the geometrical forms, but generally extend over two dots instead of one. The more common way is to connect the scrolls one with another, at the same time reversing each member, so that a continuous flowing line, with curved offshoots, is produced (fig. 17). This form of scroll is more frequently employed in every style of architecture than all the other forms put together. It is applied to the dots in the same manner as the other scrolls, but occasionally runs over the whole ground, the centre of each scroll corresponding with each dot, and one scroll joining into or growing out of the other almost anyhow, so long as the main lines are not too weak (fig. 18); if the diaper is large, other little scrolls grow out of the interstices. Now, a regular geometrical scroll is rather a weak form, and consequently various expedients are resorted to in order to strengthen it. Thus, in the thirteenth century we generally find a short, straight line added to the end, a little above the point where it joins into, or springs out of, its fellow (fig. 19). I have also seen scrolls in MSS. in which the artist has tried to get strength by making them almost of a square form. Another way to strengthen the scroll is to increase the number of convolutions, and to let the succeeding scroll grow out from the inner or second convolution instead of from the outer (fig. 21): the lines then cross, and seem to sustain one another. The same effect is got by making two scrolls overlap one another (fig. 21). Strength is also obtained by means of the stalk, which is often made of two lines; in this case we can get variety by making the subsidiary details spring from the inner (fig. 22) or outer (fig. 25) line, or from both equally (fig. 24). Occasionally one of these lines is very much thicker than the other (fig. 23). When, however, the stem is supposed to have substance, and ceases to be a line or lines, it is strengthened by various ornaments, such as pearls or diamonds placed between two edgings, (figs. 45, 46) or by having leaves springing out of one or both of these edgings (figs. 26 and 27), and going to the opposite side. By this means the sides of the stalk, which in this case is generally very thick, are connected together by the old, i.e. transverse lines, which help and follow the general movement of the scroll. The same thing, although to a greater degree takes place when the leaves are prolonged from one convolution to another, or beyond it altogether (fig. 28). Sometimes the ornament in the eye of the scroll does the same thing by throwing out leaves or little scrolls which cross the convolutions (fig. 29). Sometimes the rigidity of the scroll is

* Read by Mr. W. Burgess, at the Architectural Museum, on Wednesday, 22nd ult.

helped by the addition of purely conventional lines (fig. 30).

A scroll is also greatly strengthened by a judicious treatment of its point of junction with or divergence from its next neighbour; this can be done in several ways: thus we can make use of a leaf or ornament, simple or compound, or a human or animal head, or simply by thickening the convolution at that point, or by an annulet, or by a dividing line or by serrating the edge of stalk at that particular point, as if there were an outer bark or skin vigorously pushed back. This latter is a very common and graceful expedient (fig. 31).

The centre or eye of a scroll can be filled either by a simple ornament, or compound one, with several curves. In the latter case it will be treated in a very similar manner to any other geometrical form. (See farther on.) Great variety and beauty are got by the introduction of birds, animals, or human figures, in scrolls, and, indeed, in all ornament generally. The prominence given to the eye ornament depends very much on the size of the stem, but generally it is as well to have scrolls or lines issuing from it, to connect it well with the convolutions.

The Border.—Having got thus far with our diaper, it may be remarked that the border may generally be reduced to a slip of diaper cut out and enclosed between two lines (fig. 32), and applied to the edge of another diaper entirely different to it in arrangement and colour. A cresting is a slip of diaper, with vertical or inclined members, but with no line at top: it is generally placed above a border (which in this case is often reduced to two parallel lines), and applied to an unornamented ground (fig. 33). A border is often supposed to be repeated at certain intervals over a diaper; but then it should be of a different composition: thus, if the border has a scroll, the diaper should have a powdering (fig. 34), or *vice versa*,—the most intricate composition, as the border in the present case, being made thinner than the other to restore the balance.

The system of superposition is often carried to a great extent, especially in the coloured backgrounds of the MSS.; thus, in fig. 35, there is, first of all, the blue ground; then come the thick straight black lines, and over them the network of white quatrefoils; and, last of all, the scarlet crosses. Occasionally the ground and lines are nearly of the same colour, such as murray and white, while over all are animals, birds, &c. in a colour strongly contrasting with the ground. Mr. Winston has shown that the secret of the composition of the Salisbury grisaille lies in the superposition of sundry discs, lozenges, and quatrefoils.*

We must now consider the geometric forms to be placed on the dots, and which generally have some ornament placed on themselves. Almost any geometrical form will answer the purpose, besides the more simple of them, such as the square, the parallelogram, the triangle, the hexagon, octagon, &c. (fig. 36); we have the circle, with its various combinations of 3-foil, 4-foil, 5, 6, 7, 8-foil, &c. (fig. 37). Then these again can be combined with other forms or with themselves, and they can also be reversed; but, as a general rule, I think it better to avoid the pointed phase of the foils, as they are not very harmonious when used in conjunction with each other, and are apt to suggest disagreeable reminiscences of tracery,—that last refuge for the destitute. Again, two or three geometrical forms can be superposed, but then they are generally considered simply as lines or strings, and not solids; they thus form a knot of lines (fig. 12), and require little or no ornament to complete them. Now, in mediæval art† is a well-known fact that the details increase with the size of the object. Thus in diapers sufficiently large for compound geometrical forms, or for simple ones of a large size, the edges of these forms have always a border, or, as heralds would say, they are fimbriated. Thus a golden quatrefoil would be placed on a green ground; upon this golden quatrefoil would be put another quatrefoil, say of red colour, but smaller in size than the golden quatrefoil, so that a thin piece or border of the latter would be seen all round it; then upon the red quatrefoil might be placed a golden or silver ornament, or animal, or bird, &c. This border is capable of all sorts of ornamentation, like the stem of the scroll: thus it can have pearls or diamonds (figs. 45, 46),

or even inscriptions, or if it be very large, small scrolls (fig. 47). Occasionally it has a cresting, but this seldom occurs in early thirteenth-century art, and perhaps upon the whole had better be omitted. The same mode of ornamentation can be applied to the compound geometrical patterns, when the lines are enlarged to ribbons; occasionally parallel ribbons touch one another so as to give greater intricacy (figs. 38, 39).

The next thing is to fill these geometric forms with ornament. If the form is small, the ornament must be simple, but the great point is to make it *well fill up the space it has to cover*; thus the *fleur-de-lys* goes well into a lozenge, and a rose into a circle. But if the geometrical form be large, the ornaments must spring from straight lines, or curves or scrolls. Of course the number and direction of these will vary according to the shape of the form, some forms receiving certain combinations better than others: however, we will take a square, as it is one of the simplest and most frequently occurring (fig. 40). First of all the lines can spring from the centre, and go either towards the sides or towards the angles, or, if the square be large, towards both: or they may spring from a centre-line, and follow one another either in simple or compound scrolls, converging or diverging, as the case may be, or they can spring from the sides or angles, and converge to the centre; or the square can be occupied by a single curve springing from the angles; or straight or curved lines may be laid in various positions on the field, and others laid over them: in fact, the variety to be obtained by various combinations of curved or straight lines is almost infinite. Again, if the square be very large, a smaller geometric pattern or patterns may be superposed on the larger (fig. 41), and the foliage spring from them, or they may have their own system apart. This is a very good way of treating ceilings, for anciently a diaper was *never used by itself over any extended space*, except a pavement. In MSS. and in wall paintings, it is used simply as a background to figures. Grisaille windows seldom present any very large surface, and even then it is often cut up by a band of shields, as in Salisbury Chapter-house, or by a series of histories. But in the stoffs and tapestries, where the repetition was unavoidable, the dresses were generally so contrived as to show an under-garment of a different pattern, and thus vary the general effect. While if we examine the MSS. we shall seldom or never find a representation of a room entirely hung with tapestry of the same pattern; on the contrary, it is almost always counterchanged. Thus we may well cease to wonder that certain churches whose interior walls are covered with a sea of diaper, after all do not look like ancient work, but, on the contrary, unpleasantly remind us of our very old friend, the paper-hanger.

The last point to be noticed is the conventional foliage applied to the lines and scrolls, and the treatment of the animals, so often introduced for the sake of variety. Fig. 42 shows some of the conventional foliage taken from various sources. Here we may observe that the general type is the side view of the leaf, with or without an indented edge. The same principle of increasing the details with the size of the objects, obtained here as elsewhere. Thus, if the leaf be small, the edges are plain; if, on the contrary, it be very large, it has secondary indentations; sometimes, instead of these, we have lines round the edges. If the leaf be long, the point turns over, and occasionally part of the side (fig. 43). The body of the leaf has generally distinctly-marked fibres going from the middle stem to the centre of the indentations, and often ending in a sort of triangle or circle, as in the incised snubs at St. Omer. It should also be remarked that the indentations are invariably distinctly separated from each other; and in drawing a leaf, it is always the best way to draw the indentations separately along the line of the edge of the leaf, and to add the body of the leaf afterwards. Occasionally we see a border or strip running across the leaf: in this case it can be ornamented with pearls, diamonds, &c. like any other border; as also can the stem of the leaf, or even the edges. In the eye of a scroll we generally find a flattened leaf trefoiled, or trefoiled and indented, or cinquefoiled; but it is usually supported by two or three other leaves, of which we have only a side view. A line or scroll occasionally ends by two or three side leaves springing from separate and parallel stalks.

Another point to be attended to is, that whenever a leaf springs from the end of a line or stalk, although the inner edge may spring from the centre of the stalk, so as to give it greater grace at the point of starting, still the stalk always continues itself in its full thickness, and butts up

against the last lobe to give it strength—that great necessity of ornament. The theory of this would be that the leaf or flower is not at the end of the stalk, that the stalk continued much beyond the leaf, but has been cut off, the cut end being hidden by the said leaf or flower. Sometimes the stalk is so covered with leaves that we can see but very little of it. Occasionally two or three natural flowers and leaves may be introduced with the very best effect, as in the case of some of the Chertsey tiles; but then the designer has taken pains to make the stalk at least five or six times as thick as it would be in nature, and to cut up this stalk by sundry leaves placed upon it, the said leaves having their inner lobes or indentations supported in the manner above described (fig. 44). The borders and backgrounds of stained-glass windows, the encaustic tiles and the MSS. of the thirteenth century, will afford an almost exhaustless mine to the student of ornament, the only advice requisite being to study always from the objects themselves, and not from books. Stained glass, it is true, is very difficult to get at; but there are the Chertsey tiles (the very finest known) at the Architectural Museum, and an order to draw from the illuminated MSS. in the British Museum is not very difficult to obtain, while nothing can exceed the courtesy of the present officers and attendants.

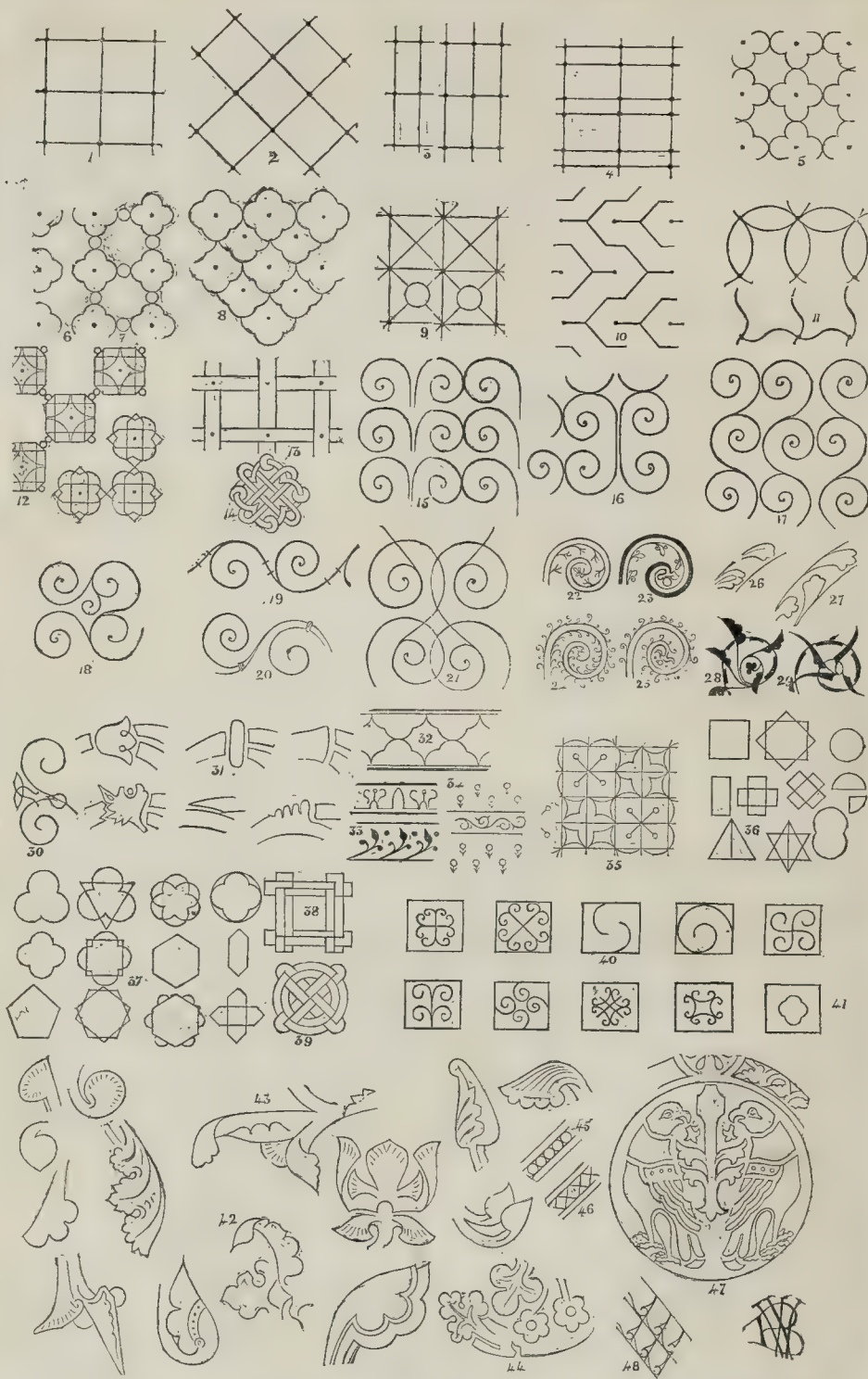
Animals and Birds.—Animals, again, are very much conventionalised when introduced into ornament. As to their position, they can be placed on the dots like the geometric forms, or in the fields of these latter, or in intervals between line diapers. Sometimes they are single, sometimes in pairs, sometimes *dos-à-dos*; very often an elaborate scroll is put between them, or foliage springs from them, or they occur in the convolutions of scrolls. In eastern work they often have patterns on their bodies, like the leaves, which contain another leaf of a separate colour. The details are also very conventionalised: thus, a lion's mane is represented by a diaper of lozenges, the point of each lozenge finishing in a little curl. The same remarks apply also, in a less degree, to the human figure, which it, indeed, behoves every ornamentist to study if he wishes to attain any thorough facility; for, as Haydon remarked, a man who draws a figure can always draw a leaf, but the converse by no means holds good. I have not touched upon the question of colour, for that is sufficiently important to demand a lecture for itself: it only concerns us in one point—*viz.*, where the details of an object are not put in with a black line, in consequence of there being but two colours—one for the ground, and another for the ornament. In this case the details of the latter must be got by cutting away parts, and letting the ground show through, as in encaustic tiles; the ornament, therefore, should be made rather thicker, to allow for this. I have rather shortened the latter part of the subject, because it is less material to us than the principles of diaper and the disposition of lines and scrolls. With regard to these latter, indeed, it is not very likely that we shall produce anything new and which has not already been done; but as for the details, when we look around, and see the wonderful variety of animals, flowers, and leaves with which the good Creator has blessed us, I think we ought to set to work and strike out a new line for ourselves, by conventionalising all these various objects, thus making good use of them in the proper manner; not merely taking a branch of a tree, and simply copying it with a curved stem instead of with a straight one, as we have been accustomed to do of late years, but, on the contrary, bestowing our best thoughts to adapt it to our own purposes and wants, like we do other productions of nature; thus, it is not sufficient simply to flatten out a flower, and then to work or draw it: we must get new combinations by taking a side view of it, or a perspective view, or a section, or parts of the section. Indeed, I suspect that perspective and shading had far more to do than we generally believe with even the most conventional forms and systems of colour.

It is only by means of this strong exertion of our thinking faculties that this present age has attained its wonderful perfection in machinery,—for the first half of the century the world has been in its working clothes; however, there are signs that things are going to mend, and I am perfectly convinced that, if we do really and energetically set about it, taking the architecture of the early part of the thirteenth century as our *point de départ*, our future art will rival, and perhaps surpass, all that which has gone before it; for, as our poet tells us,—

"We are ancients of the earth,
And in the morning of the times."

* See the Salisbury volume of the Archaeological Institute.

† I suspect it was the same in good Greek art, only they managed the matter by means of the polychromatic decorations, whereas we did it by multiplying the stone details, our climate permitting very little external colour. It is Roman art, and above all what is called modern Italian, which is so different in its principles to the art of the thirteenth century.



CONSTRUCTION OF CONVENTIONAL ORNAMENT OF THE THIRTEENTH CENTURY.



LIFE ASSOCIATION OF SCOTLAND, EDINBURGH. — MR. DAVID RHIND, F.R.S.E. ARCHITECT.

LIFE ASSOCIATION OF SCOTLAND,
EDINBURGH.

WITH the illustration of the building for this Association, which we publish to-day, it is not necessary to give any lengthened description, as our engraving speaks for itself. It is just being completed in Princes-street, one of the best situations in Edinburgh, with a fine southern exposure, and the advantage of a distant front view, from its being opposite the Mound and the Princes-street Gardens, some of the trees and enclosure of which are seen in our view.

There is a large loggia in the centre of the building, the circular-headed opening of which enters directly into the Life Association Office, while the small openings on either side of it enter respectively into an hotel and to rooms occupied as club chambers. There is also a large shop at each end of the building.

The interior of the Insurance Office consists of a large room for carrying on the general business of the office, with managers', directors', and medical officer's rooms, waiting-rooms, &c. necessary for transacting life insurance business on a large scale.

The Insurance Office is expected to be ready to be occupied early this year. The other portions of the building are already in the occupation of different tenants.

The whole front is executed of Binny stone, a material well known as having been used in nearly all the public buildings lately erected in Edinburgh.

The modelling of the sculpture was by Mr. Thomas, of London; its execution by Mr. Handyside Ritchie, of Edinburgh.

The architect of the building is Mr. David Rhind, of Edinburgh. At first it was the intention to keep up the old shops, not even removing the ceiling; but, after progress had been made, this economy was found somewhat to interfere with and hamper the design, and brought about negotiations for changes in the detail which unfortunately for a time caused a want of unanimity between the architect and some of the parties interested in the work, chiefly regarding a difference of opinion about the use of *entresol* windows. This led to the architect putting himself into the hands of Sir Charles Barry, whose friendly assistance and decision speedily put an end to the difference that existed. The whole works have throughout been carried on by Mr. Rhind, and the selection of the style and the authorship of the general design are entirely his.

This explanation from Sir Charles Barry and Mr. Rhind would not have been so long,—indeed, would not have been necessary at all,—but for statements which have been elsewhere made.

SUPPLY OF WATER TO LONDON AND
PARIS.*

LONDON is at present supplied with water by ten independent companies. The chief sources of supply are from the river Thames and the River Lea—five of the companies, with a daily supply of 35,372,782 gallons, being furnished by the former, while two companies, with a daily supply of 41,000,000 gallons, are furnished by the latter. The remaining three companies, with a supply of 4,653,000 gallons, are taken from the river Ravensbourne and the ponds and chalk wells of Hampstead, Plumstead, and Woolwich. The great power employed for its distribution is steam applied to pumping, amounting to a nominal power of 7,254 horses. The length of the mains and branches extends to 2,086 miles. The area of subsiding reservoirs extends to 141 acres, and of filter-beds to 40 acres. The number of houses supplied amounts to 328,561, and the gross quantity supplied per day reaches 81,025,842 gallons. The entire cost of the several works in the year 1856 was 7,102,823*l.* which shows that for every pound expended there is a daily supply of 11-4 gallons.

Few cities have improved their water supply in the course of a few years more than London, both in quantity and quality. In 1850 the whole number of houses supplied were only 270,581, whereas in 1856 water was furnished to 328,561 of the 340,000 houses which now form the aggregate within the Registrar-General's district; while the daily supply of water for all purposes, which in 1850 was 160 gallons per house, was in 1856 no less than 246 gallons. In 1857 the whole population within the bounds of supply amounted to 2,667,917, which leaves, after deducting one-sixth for trade purposes, 26 gallons for every individual, or, without deduction, 30-4 gallons. Pre-

vious to the passing of the Metropolis Water Act of 1852, considerably more than half of the supply was not filtered, the impurities in suspension being alone cleared by subsiding reservoirs. Now, however, no less than an area of 40 acres of filters has been added to these subsiding reservoirs. According to the chemical report of Messrs. Hoffman and Blyth, the waters now supplied to the whole metropolis contained not more than one-half of the organic matter which was present in these during the year 1851—a diminution of organic matter which, it appears, is neither due to the influence of the season nor to any difference in the mode of determining its quality in 1851 and 1856, but solely to the alteration of the localities from which many of the companies derive their present supply, and to the manifest improvement which has taken place in the collection, filtration, and general management of the supply of the metropolis. It has been stated by the Board of Health inspectors that the various companies have more than complied with the obligations placed upon them by the last Parliamentary Act, and have evinced a most anxious desire to discharge the duties imposed upon them for the public good. The only difficulty experienced in drawing supplies from such rivers as the Thames and Lea arises from the increased drainage operations pursued by the towns and villages situated on their banks, which, by discharging therein their polluted sewerage even above the improved sources of supply, threaten ere long to contaminate or destroy such an enormous supply of what is yet pure and sanitary, if measures be not immediately adopted, indeed, for the prevention of this growing evil—an evil which, by poisoning all large streams, cannot be remedied without a total abandonment of the whole present system of town drainage, and of turning the sewerage to some useful instead of deleterious purpose. This, indeed, is the great problem of the day; for while London at this moment can boast of a water supply commensurate with the just demands of its mighty population, it is at the same time threatened from the drainage which its abundant supply of water so greatly facilitates, with a pestilential evil, against which it is the imperative duty of every well-wisher for the comfort and health of the greatest metropolis in the world strenuously to combat.

Let us now turn to the water supply, present and prospective, of the French capital, which, among its other late magnificent embellishments, has not been inattentive to the advantages of an improved supply of water.

Paris is at present supplied with water from various sources. The maintenance of the water-works and the expense of distributing the water works are paid by the municipality. The sources whence the supply are brought are—firstly, from the Canal d'Ourque, by gravitation, which is 52 metres above the level of the sea, and about 20 metres above the lowest point of Paris; secondly, from the river Seine, whence it is pumped by steam-engines, and raised to the varied height of 75-30, 72, and 66-24 metres above the level of the sea, and to 43-30, 40, and 34-24 metres above the lowest levels of Paris; thirdly, from the artesian well of Grenelle, the basin of which is 90 metres above the level of the sea; fourthly, from the aqueduct of Arcueil, the reservoir of which is 57-39 metres above the level of the sea; and, fifthly, from sources to the north, which are at much greater elevation, but which, in respect of quantity, furnish but little water. The water d'Ourque is distributed to all the low or less elevated quarters of the city, or to about two-thirds of the entire surface of the town: the others supply the higher districts. The total length of the principal conduits is 218,213 metres: the length of the smaller pipeage extends to 190,048, or to a total of 408,254 lineal metres, or about 253-6 English miles. The length of the conduits of the water d'Ourque extends to 281,525 metres, while all the others are only 126,729 metres. The whole length of the streets of Paris is about 400,000 metres, which is less than the extent of the pipeage; but there are many streets without water, while there are several with a double pipeage. It would require about 30,000 metres of small pipeage to give water to all the streets of the capital. The daily quantity that can be at present sent into Paris, is as follows:—

Water d'Ourque	102,000 metres cube.
" from Seine	30,000 "
" from Grenelle	950 "
" from Arcueil	700 "
" from northern sources	200 "
	133,850 "
	or about 29,417,000 gallons.

The total quantity distributed varies consider-

ably. During the hot weather of last year the consumpt rose to about 120,000 metres cube, viz. from l'Ourque about 100,000 metres cube, and from other sources 20,000 metres cube. In winter the consumpt diminished much, but never below 70,000 metres cube. The number of houses within the boundaries of the water-supply of Paris, amount to upwards of 30,000, of which only 9,936 were, in December, 1857, supplied with pipes, showing that scarcely a third of these receive water directly. The population amounts to 1,093,262, and the number of the houses directly supplied with water being only a third of the whole, it follows that not more than 351,081 persons are enjoying the advantages of water within their houses. Assuming that 120,000 metres cube, or 26,850,000 gallons, are sent daily into Paris, and that the population amounts to 1,100,000, it shows that there is a daily supply afforded of about twenty-four gallons to each individual inhabitant. The quantity, however, actually used for domestic purposes is, comparatively speaking, small. It has been calculated that the average daily quantity furnished to each house into which pipes are introduced into the court is about 1,444 litres, or very nearly ten gallons for each inhabitant in such houses. But the average quantity of water furnished to the whole city (one-fifth of the surface of which is above the level of the distributing reservoirs of the several sources) amounts only to 750 litres per day to each house, or to 54 gallons per individual. It appears, in fact, that, between the *fontaines monumentales* and the purposes of trade and police, about three-fourths of the volume of water is consumed, and that little more than one-fourth is used for domestic purposes. It may be here remarked that the inhabitants of the French capital have not yet made use of water as an agent for carrying off the impurities of their houses into the sewers which debouch in the river, and, consequently, the Seine has not yet become, like the Thames, a great *cloaca maxima*, but is still pure—an ornament, and not a nuisance to the city. The peculiar character of the present sewerage of Paris is, that nothing but the rain and waste water of fountains, or other uncontaminated water, goes directly to the Seine, the soil, &c. of houses, being run into tanks attached to each building, which are cleaned out at certain times, and carried away to La Valette, beyond the bounds of the city.

It may be supposed strange that in such a city as Paris, where there is water in almost every leading street, and where it is given at a very low price to all who wish it, there should be so few proprietors who take it in. The explanation, however, is very simple, and arises from the two following causes:—First, the rich population continue, as formerly, to take the water for domestic purposes from the carriers of water, drawn from fountains, in which the water of the Seine is carefully filtered, and absolutely refuse to drink the water of the Ourque Canal; while, secondly, the poor population avails itself of the 2,000 *bornes fontaines*, or pipes opening in the streets close to the kerbstone, and of the sixty-nine public fountains scattered throughout the city, whence any quantity of water required may be drawn, free of any cost. It appears that the market fountains, the state and the municipal establishments, consume about 13,000 metres cube: the remainder, or 77,000 metres cube, is expended on the streets and roads, through the *bornes fontaines* and the sixty-nine drawing and thirty-three monumental fountains, and, in fine, on the Bois de Boulogne, where there is alone not less than 16,000 metres cube expended. In throwing so large a volume of water along the public thoroughfares, and in permitting the drawing of supplies from so many openings, the municipality has not succeeded in the end which they proposed to attain. If these public openings were suppressed, the proprietors of houses would each and all be forced to become recipients of water from the city, enabling their tenants thereby to draw water in the courts instead of seeking it in the street, while the street would be freed from two running gutters which line each of the foot pavements. Up to this moment all the water introduced into houses is drawn from stopcocks placed in the courts, the proprietors having obstinately refused to distribute it throughout the interior of their property, fearing, as they say, the accidents which might arise from the negligence of their tenants. What the present cost of the water supply of Paris has been it is difficult to say. Certain of the works have existed for 250 years, while the Canal d'Ourque, which affords the greatest supply, was formed for navigation purposes, for which it is still chiefly used. According to the valuation of M. Belgrand, the chief engineer of the present and projected works, we

* From a paper by Dr. Strang, read at the British Association for the Advancement of Science, Leeds.

may assume the cost of the existing works at about 20,000,000 francs, or 800,000*l.* sterling; and taking the daily quantity of water that is sent into Paris to be 26,350,000 gallons, it follows that for every 1*l.* expended there is provided a daily supply of about thirty-three gallons. To meet the interest of this cost and annual expenditure there is no special tax or forced rate, proprietors being free to take or not, as they please, the water of the city; but those who take it into their houses pay a very small annual charge. The gross receipts from water paid annually to the municipality in 1857 were 1,276,550 francs, while there was received from the fountains where the filtered water of the Seine is sold 390,499 francs, or a total of 1,666,950 francs, or 66,690*l.* sterling.

DISFIGUREMENTS THROUGH THE WINDOW.

DAMAGE is often done to the artistic appearance of the interiors of some of our most important buildings by the unpleasant views which obtrude themselves through the windows. Unfortunately, architects cannot always, particularly in large towns, choose such outward prospects as will correspond with the style of their buildings. We might mention many structures on which large sums have been expended, which are disfigured by the views seen through the windows; and in no instance is this defect more evident than in the British Museum, that great storehouse of the most rare and choice art works of many ages.

In the sculpture gallery, and other parts, the eye is offended by peeps at the exterior of the Reading-room, which is rough, and not intended to meet the eye: there are also scaffold-poles and other matters which destroy the effect of the architectural decorations. The windows in the British Museum, as they are at present arranged, are an evident disfigurement; and yet this might be prevented by the use of slightly dulled glass; and when, for the purpose of ventilation in the summer time, it is necessary to open the windows, the objectionable out-view might be hidden by properly contrived blinds, which would answer this purpose as well as admit a sufficient current for ventilation. It may be thought by some that such an alteration as this now recommended would prevent a sufficient admission of light: in a sculpture gallery, however, it is more desirable to have a subdued and steady light than the glare which now exists in bright weather.

While mentioning this, and acknowledging the great improvements which have been recently made, it is worth while to suggest that some of the most important of the Greek statues are not well placed. The famous Venus should be in some situation where it could either be foiled by a background of suitable colour, or where its beautiful proportions would not be interfered with by the flutings of a column, or by other objects.

THE ESSEX ARCHEOLOGICAL SOCIETY.

A MEETING of the members and friends of this institution was held at Stratford, on the 9th ult., when several papers relating to antiquarian matters in the locality were read. The Rev. Guy Bryan took the chair.

A paper on the ancient history of Stratford, prepared by a member, and read by the Rev. A. J. Ram, stated that in Saxon, if not in Roman, times, the highway from London into the eastern parts of England passed very near their present place of meeting. It crossed the Lea at the place still known as Old Ford; and from this road (or, in Saxon parlance, street), by the Ford, is derived the name of the modern town of Stratford. It probably soon branched off—one way leading the traveller through the forest to the ford in the wood, where Woodford-bridge is now; another tending more to the east, passing the river Roden by the Hford. The legend of the removal of the body of St. Erkenwald (fourth Bishop of London, and founder of Barking Abbey) from the latter place to London, in A.D. 685, was considered by some topographers as the earliest mention of this road. The district through which it passed was called by the Saxons, Ham, meaning home or village. It included the whole of the present parishes of East and West Ham, marsh, arable, and forest. At the close of the paper it was remarked that in April, 1636, Forest Courts were held at Stratford. Charles I. desired to revive the old forest laws, in the hope, as is supposed, to obtain a revenue independent of parliament. Clamour and discontent ensued. The Solicitor-general demanded, in the name of the Crown, that the fences should be kept up *no higher than a doe and her fawn could go over.*

Such a regulation enforced from Bow-bridge to Colchester would destroy the agriculture of half the county. Thus was enacted at Stratford one of those fatal mistakes of the reign of Charles I. that produced the civil war, led to his own death, and the ultimate fall of his dynasty. At this point modern history may be said to commence. Here, therefore, this sketch of the "Early history of Stratford and some of the surrounding villages" comes to its close.

Mr. R. H. Clutterbuck read "An Account of the Abbey of West Ham, otherwise Stratford Langthorne." He first quoted a statement in Weever's Funeral Monuments, published in 1631, that "Queen Maud, wife to Henry I. passing over the River of Leue, at Old Forde, hardly escaped danger of drowning; after which shee gave order that a little beneath at Stratforde there should be a bridge made over the water,—going over which to West Ham I saw the remains of a monastrie, pleasantly watered with several streames;" and mentioned that the site of the Abbey of St. Mary, here referred to, was now occupied by a silk-printing work. The history of West Ham Church is intimately connected with the abbey, having been given to the monastery by the son of the founder. After describing the general arrangements of Cistercian monasteries, the paper proceeded to notice the few remains of the monastery and its probable extent and character. In 1845, in excavating for the Woolwich railway, the workmen lighted upon some interesting remains of the abbey, apparently the lavatory, with a well from which the supply of water was obtained. In conclusion, Mr. Clutterbuck said he could not leave the subject without expressing regret at the ruthless annihilation of almost all the remains of our conventual buildings; and a hope that this meeting, and the society's proceedings generally, might diffuse a sufficient amount of reverence for ancient things to prevent any of the remains which still adorn the county from sharing the fate of those of the Abbey of St. Mary, Stratford.

A paper on the Church of East Ham was read by Mr. H. W. King. The church, he said, was a perfect Norman structure throughout, and of somewhat unusual plan, consisting of nave, chancel, and sanctuary, sometimes described as a double chancel. He then proceeded to give a minute description of the various parts of the building in their present and original state; and strongly denounced the use of "Compo," with which the recently-erected porch, and also the tower, are coated, as "a wretched modern imitation of stone which has been brought extensively into use in this age of sham and unreality, partly for the purpose of hiding bad work, and partly for the purpose of producing a neat, showy, perhaps a grand, exterior at a small cost, but at the entire sacrifice of artistic skill, propriety, and good taste, and which ought to be condemned wherever it is seen, whether in an ecclesiastical or domestic edifice, or even in a shop frontage."

Mr. H. W. King read a paper on Bow-bridge, in which he enlarged upon several of the points mentioned in the early history of Stratford.

A conversation followed the reading of the papers.

The Rev. Walter Field, F.S.A. called attention to some Roman remains (fragments of pottery and bones of animals) which had been discovered that day at the Cemetery at North Ockendon. Mr. Field was of opinion that the place was the site of an ancient British barrow.

Mr. R. H. Clutterbuck gave a description of many of the antiquities arranged for exhibition.

The Rev. E. L. Cutts reminded the meeting that the most perfect remains of Roman walls in England were to be found at Colchester, and therefore, he said, they had reason to take especial interest in the remains of Roman walls in France, which are even more perfect than those at home. This led him to direct their attention to the little town of Dax, mentioned in our last, which lies between Bayonne and Bordeaux. Until recently it was a fortified town, but the fortifications had been given up, and the local authorities, who had been permitted to do what they pleased with the walls, proposed to level them. However, before permission was given to do this, an architect was sent to survey them. He reported that they consisted of Medieval repairs of old Roman walls. Since then they had been inspected by an eminent French antiquary, and also by Mr. Charles Roach Smith, who reported them to be the most perfect remains of Roman walls existing in the ancient province of Gaul—more perfect than anything that could be found in England—and that therefore they ought to be preserved. The rev. gentleman also announced that the general annual meeting will

take place next year at Saffron Walden, before which, however, a meeting of the society will probably be held at Barking.

GLASGOW ARCHITECTURAL SOCIETY.

At a meeting of this society held on the 21st of December, Mr. John M'Dowall in the chair, a paper was read by Mr. John Honeyman, jun., architect, "On the Drainage of Glasgow, with special Reference to the Disinfection of Sewage and the Ventilation of Sewers."

The writer very properly dwelt on the necessity of ventilating sewers: the drains must themselves be drained of sewage gases; and he showed that in the present state of the sewers of Glasgow the sanitary condition of the city would not be materially improved by the purification of the Clyde. He urged that, for the efficient drainages of Glasgow, were required, first of all, well constructed sewers, both as to form, size, and gradient; secondly, clean sewers and the disinfection of the sewage by means of a continual system of flushing, so that putrefaction and the consequent evolution of noxious gases in the sewers might be prevented; and, thirdly, well-ventilated sewers, so that in the event of injurious exhalations rising from the sewage they might be disposed of in such a way as not to be obnoxious to health; and he submitted that if such a system were in operation it would practically be of no consequence what manner of filth the sewers contained. It would all be speedily got rid of, and without being permitted to affect comfort in any degree. There would, therefore, be no excuse whatever for abandoning the water-closet system, except the introduction of some apparatus superior in cleanliness and convenience.

At the close, Mr. Carrick, superintendent of streets, mentioned that in several instances he had been obliged to remove traps from gullies to prevent the traps of the house drains in their neighbourhood from being forced, and that the houses, in fact, would not have been habitable unless he had done so, showing the necessity of combining ventilation and trapping.

The Chairman stated that during the whole year at no time had the slightest smell risen from the Clyde except on one occasion, and then only for one or two days.

CHURCH-BUILDING NEWS.

Lincoln.—The Rev. Augustus Sutton, and Mr. H. Sutton (sons of the late Sir Richard Sutton, bart.) lately placed a stained glass window in the chapel of St. Paul in the south arm of the lesser or eastern transept of Lincoln Cathedral. They have since extended their contributions to the ornamentation of the cathedral by placing in the adjoining chapel—that founded by Joan Cantilupe—a window intended to be a companion to that already alluded to. The subject is "The Life of Elisha," and is, as it were, a continuation of the subject of the other window—"The Life of Elisha." It has six distinct illustrations, viz.,—"The Mantle of Elisha falling upon Elisha,"—"The Sons of the Prophets coming to Elisha,"—"Elisha healing the bitter Water,"—"Elisha raising the Shunammite's Son," and—"Gehazi coming Home to Elisha after being despatched to Naaman." Beneath the apex of the window is the monogram of the Sutton family, with the coat of arms at the bottom.

Norwich.—The extensive repairs which St. James's Church, Norwich, has been undergoing are sufficiently advanced to admit of its now being re-opened. For some time past the church had been in a most dangerous state, and the appearance of the interior was so alarming as to deter many from entering it. The evident settlement in the chancel arches at length made it necessary that immediate steps should be taken for their reparation. The arches were accordingly removed and rebuilt. The western arches have also been tied and strengthened; the roofs opened and repaired, and several other works essentially important to the safety of the fabric executed. The expense has been entirely defrayed by voluntary subscriptions, but there is yet a considerable balance to be obtained.

Heigham.—Much has been done, says the *Norfolk Chronicle*, but much still remains to be done, towards obtaining the requisite amount for building the proposed new church on the Untham's-road. The sum actually in hand and promised is about 3,600*l.* to which, if what may be hoped and expected from various Church Extension Societies, be added, there is probably a total of 4,300*l.* or 4,400*l.* to be relied upon. But at least 6,000*l.* are needed.

Rochester.—St. Peter's Church, King-street,

roy-town, is advancing towards completion. The exterior walls are up, ready for the roof, those for the nave being carried to a height of 40 feet from the floor. The timber framings for the nave roof are being hoisted on the walls, and the roof for the aisle is also in a forward state. It is expected that the entire building will be roofed before the end of this month. The building is a combination of red, white, and grey brick dressings, with Kentish ragstone. The contractor is Mr. A. Stump, who has just handed over the Soldiers' Wives Nursery at Brompton, built by him for the Rev. D. Cooke, and also the model canteen at the Hut-barracks, erected for Mr. J. Budden.

Hawthurst.—An offer has been made by the Rev. H. A. Jeffreys to build and endow a new church at High-gate, the most central part of the parish. The site is selected, and the material for the edifice is to be the sandstone of the neighbourhood. The ground has been given by Mr. Joseph Jennings, the owner of an adjoining estate. The stone also has been offered by Thomas Ayerst, esq. When the new church shall have been completed, and the houses now in course of erection finished, this part of the parish will be much improved. A few perches were sold by public auction some months since, at the rate of more than 900*l.* per acre. It was proposed to accommodate the entire congregation on the floor of the old church, for which more than a thousand sittings were to be provided. The erection of a new church, however, will give the opportunity for an enlargement of the seats. The galleries and high pews are all cleared away, and temporary sittings of tolerably uniform appearance, manufactured for the occasion out of the old materials, have taken their places, and the warming apparatus is just got into working order. Mr. Edward Loyd, jun. has presented a suitable organ to the church, which will be erected as soon as circumstances will permit. While the workmen were removing the earth preparatory to the laying down of the hot water pipes, they discovered the foundations of what was no doubt the original church, some four or five feet within the walls of the present one. These are of a very solid and durable kind, but neither the cause nor the date of the enlargement appears to be known.

West Tarring.—The church here has now in erection, by Mr. G. Cook, of Worthing, a stained glass memorial window, at the east end of the north aisle, to the memory of the late Ann Barker, Broadwater. It is a two-light window, with pointed arches, and a rounded cross between. The subject is the "Resurrection and Ascension," and on the circular cross, between the pointed arches, is the Lamb, surrounded with the words, "I know that my Redeemer liveth." The whole corresponds with a window in the south aisle in memory of Mr. Lucas, of Heene, who bequeathed a donation to be expended on the church, which led to a general repair, and a new peal of six bells.

Winchester.—The restoration of the southern part of the west front of Winchester cathedral is nearly completed, under the superintendence of Mr. J. Colson, architect, and Mr. Gillingham, statuary, both of this city, and it is hoped the other portions of the front will soon be similarly treated by the Ecclesiastical Commissioners, so as to lose all traces of the abominations committed by the dean and chapter, in bedaubing that part of the fabric with Roman cement.

Rock.—An effort is being made towards the restoration of the parish church here. The rector, at a parish meeting held on the 17th December, stated that he was then in a position to guarantee 500*l.* in furtherance of this object, and that an offer of 250*l.* more had been conditionally made by a friend; so that more than half of the estimated cost of the restoration is provided, and an appeal is now made to the landowners and general body of the parishioners. Rock church has a chancel, with large south chapel and western tower, and remains of Norman work, especially the chancel arch, and the north doorway. The south wall of the church and the tower belong to the Perpendicular period, having been rebuilt by one of the Coningsby family in 1510; but although this work is not so old by some centuries as the Norman remains, it is in a much more dilapidated state, the south wall having long been cramped with iron. The building has been greatly disfigured at various periods of its history: whitewash and plaster have done their work; deal galleries, bad pewing, wooden partitions, and other eyesores abound; the whole of which it is now contemplated to remove.

Alcester.—A new organ has been opened in the church of Alcester. The builder of the instrument is Mr. Hewins, of Stratford-upon-Avon.

Church Fenton.—The church at Church Fenton

has been reopened for divine service, having undergone extensive internal repairs. The roof has been plastered between the spars, and coloured with ultra-marine blue. The whole of the old floor has been removed, and the ground excavated two feet, a space which has since been filled up with concrete, upon which the pavement has been relaid. The walls of the edifice have been dis-vested of their coat of whitewash, and the masonry, where requisite, repaired. The old pews have been removed, and substituted by open stalls. The pulpit and reading-desk are also new, as well as the communion rails, which, in addition, have been fitted with ornamental upright bronze standards. A new three-light window has been introduced into the west end of the building, the gift of Mr. Weatherley, the contractor for the restoration. The window, which is of the geometrical pattern, is filled with stained glass, and has been manufactured by Messrs. W. and T. Hodgson. The organ is new from the manufactory of Mr. Postill. The churchyard has been excavated to the depth of two feet round the building, so as to remove the dampness from the walls. The architect employed was Mr. A. Salvin, of London. The work was executed by Mr. Lawson, of Holdgate, for Mr. Weatherley. The restoration has been effected through the liberality of the late vicar, the Rev. W. B. Taylor, who left 700*l.* for the purpose.

FOREIGN RAILWAYS AND OTHER WORKS.

THE Charleville and Sedan Railway was inspected on Thursday last, by the Committee of Engineers appointed by the Minister of Public Works. The principal structures on that section of the Ardennes Railway are two bridges over the Meuse. This line is to be open for public traffic on the 14th inst. as far as Douchery, a small town on the Meuse, about two miles from Sedan.

The receipts of the French Railway Companies during the present year will probably exceed 350 millions of francs. The companies have to pay at this moment about 115 millions of francs for interest on their bonds, and if their working and other expenses are estimated at 50 per cent. on their receipts, or 150 millions, there will remain 85 millions to be divided among the shareholders.

The French press states that the subscription for shares to the Isthmus of Suez Canal has closed. It was proposed to reserve 80,000 shares, representing 40,000,000*l.* for the total capital of France, but in France alone 250,000 shares have been subscribed for. As Egypt and Turkey had subscribed for 150,000 shares, the total of 400,000*l.* is already made up. The subscriptions of Austria, Russia, Holland, the United States, Spain, Italy, Belgium, Switzerland, and Germany, for which 40,000 shares were reserved, are not yet known.

The Frankfort paper states that a large railway bridge, near Creutznach, fell on the night of the 28th ult. in consequence of the inundations of the Nahe River.

While waiting for the completion of the Spanish railways to develop the rich resources of the Bordeaux and Bayonne countries, their construction has already opened an important channel to the products of these districts. The Northern Spanish Railway Company has just made the adjudication of a contract for the supply of 300,000 sleepers of pine, from the Landes, prepared by the process of M. Boncherie, to be delivered in the course of the year 1859. Without the help of these railways, and the farm roads of Bayonne, such a considerable development of the timber of this district would have been impossible.

WORKS IN IRELAND.

A NEW railway terminus is to be built at Enniskillen, for the Dundalk and Enniskillen Railway Company. It consists of a central building, two stories high, with projecting wings, and containing on lower floor a booking-office 30 by 17, off which are situated in one wing a waiting-room and luggage store; and in the other, ladies' waiting-room, master's kitchen, &c. One-story buildings at either side respectively comprehend 1st, 2nd, and 3rd class refreshment-rooms and kitchen; and superintendent's office, porter's room, lamp-stores, water closets, &c. On first floor are two suites of apartments for locomotive superintendent, and station master, containing parlours, bed-rooms, kitchens, &c. The central building extends 68 feet, has segmental headed ope, with sandstone dressings, a central doorway, covered way, and cantilever roof. The total length is 184 feet. The platform is 21-9 wide at centre of building, and 15-0 throughout. The structure when completed

will be of important and tasteful character. Mr. William Murray is the architect.

The Lady Chapel in the cathedral at Killarney (designed by the late Mr. Pugin, and now being completed under the direction of Mr. McCarthy, architect), is being decorated by Mr. Barff, at the expense of Lord Castlerosse and the Countess of Kenmare. Stained glass windows are being erected, and in the south transept one is completed on which the Royal Psalmist, Isaiah, St. Joseph, and St. John are represented on the higher lights: on the second are SS. Augustine, Ambrose, and Stephen; and on the lower SS. Francis, Ignatius, Alphonsus, and the present Pontiff Pius IX. These lights are surmounted by a circular light, which represents the Virgin surrounded by angels. The altar is being constructed by Mr. Lane, from the architect's designs. An altar decorated with Mosaic has also been erected in the Sacrament Chapel.

A new church, to accommodate 1,500 of the Molyneux Congregation, is to be built at Dublin, at a cost of 7,000*l.* we hear also of a proposed new church at Rathgan, near the same city.

Mr. Meares is declared the contractor for the new buildings to be erected for the Society of St. Vincent de Paul, according to the drawings of Mr. John S. Butler, architect, to whom was awarded the first prize in a recent competition.

A glebe house has been lately completed at Violet Hill, near Enniskillen, for the Rev. Josiah Crampton, according to plans by Messrs. Carmichael and Jones, architects; Mr. Hugh Kelly, T.C., builder. The style is Tudorized Gothic; pointed gables, high-pitched roof, mullioned, transomed, and hood-moulded windows being chief features. Interiorly it comprises the ordinary arrangements of a dwelling-house.

Contracts are about being entered into for the erection of a new and important District Model National School at Derry. The design is early English with rubble walling and Scotch stone dressings.

A new monumental chapel in the Gothic style, in chiselled limestone, with buttresses, handsome entrance doorway, traceried window, and gabled ends, has been erected in Glasnevin Cemetery, near Dublin, from designs by Mr. McCarthy. An entrance, said to be ostentatious and inappropriate, has been made in the same cemetery to the O'Connell monument (a round tower 170 feet high), designed by Dr. Petrie, and previously fully described. A stained glass window to the memory of some members of the Gould family, including the late Wyndham Gould, M.P., has been erected in the new church of Attea, county Limerick, designed by Mr. Fogerty, architect, and built at the expense of Archdeacon Gould. Messrs. Silvery, of Dublin, were the manufacturers.

THE "PEOPLE'S FREE" PARK AT BIRMINGHAM.

ASTON Hall and Park, which the Birmingham people induced her Majesty and the British public to believe had been "subscribed for by the people" of Birmingham, and to inaugurate which, in great state, her Majesty was persuaded to visit Birmingham, now becomes the subject of some rather curious disclosures. "Nearly all the money," it appears, is still unprovided for. The Queen's presence, ostensibly for the purpose of inaugurating a work already done, was really intended "to promote the success" of the scheme by "benefits to be legitimately derived" from her Majesty's visit: in short, this star of the first magnitude was to "draw" such a multitude into the grounds, at so much a head, that the "people" of Birmingham were to pay for their park, or something like it, by virtue of the Queen's "attraction." But, unfortunately for this scheme, her Majesty did not "draw": "there were not more people to greet her Majesty in the park than there are on many ordinary occasions." Mr. Thomas Lloyd has the penetration, somewhat rare it would seem, to perceive that this Brummagem style of doing the thing is "a great disgrace" to the town—at all events, that the failure of the scheme will be so; and he appeals to the "thrice mayor" to "pay up" for his knighthood on that celebrated occasion by heading a grand subscription-list, in course of which Mr. Lloyd himself offers humbly to "follow" suit "at some distance" with the small sum of "1,000*l.*" if the working people of Birmingham subscribe 5,000*l.* out of the 18,000*l.* or at the very least 10,000*l.* which is "immediately" required, to prevent a catastrophe that is now imminent. "It is your cause," says Mr. Lloyd, addressing the mayor. "The Queen's visit is to you [and why not to the whole town as well?] made memorable by the honour you re-

ceived on that great occasion. To you, therefore, we look for help. Assist us with your purse, and, more than all, with your example," &c.; and "every one who took part in the reception of the Queen did promise ['to the Queen'] to make Aston Park a free park." Yet "it is a workmen's affair," too, although the workmen seem to have been, admittedly, the only party who "have done well;" but their names having been taken in the matter, they are hence also called upon to pay up for that over again, like the knighted mayor, and thus save the shabby corporation from opening the park free to their constituents—the people. The influential class of Birmingham would seem to have wished to acquire a park as meanly as they realized a town-hall some years since. The Birminghamians have, at this moment, another grand scheme in hand. They propose to collect a fund of 2,000*l.* "for a statue of the Queen, to commemorate the royal visit," and have already realized 103*l.* of the requisite sum. Could they not turn her Majesty, *in propria persona*, to account, and make her both "draw" and "pay" for her statue? Pending the requisite arrangements, they had better see to the collection of the 18,000*l.* for the People's Free Park.

CONCRETE BUILDING IN FRANCE.

It is stated that in the camp of Chalons a new species of building material was employed some months back—namely, a mixture of lime, sand, or earth, and a peculiar species of cement, being, it is said, 60 per cent. cheaper than other materials, and of remarkable solidity. It struck the emperor that perhaps the same material could be employed in the construction of a port which it is proposed to form at Saint Jean de Luz, and which, it is estimated, will cost 30,000,000 francs. On being consulted, the inventor said that his material would do for the purpose, but he could not tell what chemical influence sea water would have on it. The emperor immediately gave orders that experiments should be made, and gave 10,000*l.* from his privy purse for that purpose. The inventor, with several men and the necessary implements, arrived a few days ago at Saint Jean de Luz, and is now making blocks six inches square by means of a mixture of sand from the beach (q.v. and beach stones), lime, and of his cement. These blocks, when hard, are to be cast into the sea, and are to remain there till next autumn, when the emperor himself, in the course of his annual stay at Biarritz, will examine them to see the influence of the salt water. If the new material should be found to answer, the projected port, the accounts go on to say, would only cost 6,000,000*l.* instead of 30,000,000*l.*

DECISIONS UNDER METROPOLITAN BUILDING ACT.

Marylebone Police-office.—Richard Holding, builder, was summoned by Mr. Baker, district surveyor of St. Pancras, for constructing habitable rooms less than 7 feet in height, in the roofs of nine houses in Inkerman-road, Kentish town. The surveyor produced a plan and section of the rooms, which were 6 feet 6 inches in the highest part, and 2 feet 10 inches only in the lowest, and gave evidence that they were entirely contrary to the twenty-third section of the Act: they contained but 170 cubic feet of space or air, and were wholly unfit for occupation; and to prove that they were not only inhabitable, but actually inhabited, he called one of the tenants, who proved that the defendant had induced him to take the house by vaunting the "great convenience" of these berths, and that his servant had slept there nightly in consequence. The defendant denied that he built the places for sleeping in, but for cupboards or store-rooms, and contended that, on account of their very small area and height, it was impossible he could ever have intended them to be inhabited within the meaning of the Act. The magistrate, Mr. Long, adopted this view, and discharged the complaint, because he could not believe it likely that such holes were meant for occupation, although it had been proved that as soon as the houses were let, the holes, nevertheless, were actually occupied. He thought the penalty was upon the tenant, and not upon the builder: so he cautioned the former, but let the latter go free.*

Westminster Police-court.—Henry Smith, of Layham-place, South Lambeth, bricklayer, was summoned to the Westminster Police-court, on Thursday, the 23rd of December, and fined twenty shillings and costs, for not giving notice to the

* This decision seems to us entirely in opposition to the requirements of the Act, as we will take an early opportunity to shew.—Ed.

district surveyor of South Kensington, of rebuilding an addition to the premises, No. 12, Queen's buildings, Fulham-road.

Clerkenwell.—James Thorn, bricklayer, was charged with neglecting to give the district surveyor of St. Pancras due notice of works at No. 2, Leigh-street, Burton-crescent, whereby he had become liable to a penalty of 20*l.* Mr. Baker stated that the defendant had erected a stove on the top story of the house, without cutting away the joists or floor-boards, and had carried up an earthenware due through the ceiling and roof contiguous to the timbers and boarding. The whole was very dangerous, and it was just one of those cases which the Metropolitan Board had, by a recent special circular to the district surveyors, required them to prosecute in the most stringent manner. In consideration, however, of the defendant having at once removed the stove and pipe on the complaint of the surveyor, the magistrate, Mr. Corrie, would not impose any penalty, but desired him to pay 2*s.* costs.

William Carr was also summoned for a like offence, in having built over the yard at 31, Aldham-terrace, without notice. He was fined 5*s.* and costs.

James Tilbury appeared in answer to a complaint for irregularly building a public concert-room in Middlesex-street, Somers-town, in so slight and insubstantial a manner as to be almost dangerous, and no part of which had been approved by the district surveyor, as required by section 30. Mr. Baker stated that the building covered 1,600 superficial feet, and was built for the ostensible purpose of a lay-stall or stable, for which use the notice had been given; but that, soon after it had been covered in, the defendant fitted it up as a penny theatre, and converted it into a public building, for which the walls, roof, floor, and galleries were wholly inadequate. The magistrate, Mr. Corrie, said he had heard of this nuisance before, from the circumstance of having seen many of the audience—youths, thieves, and vagabonds—on his own stage. He severely admonished the defendant, and made a peremptory order upon him to comply with the requisitions of the district surveyor within ten days.

STRIKE OF WORKMEN.

At the Marylebone police court, last week, Frederick Nash, a carpenter, appeared to answer a summons which had been obtained against him upon a written information, made upon oath, in compliance with the requirements of the Act 3 Geo. 4, cap. 129, sec. 3, better known as the Intimidation Act. The information laid in the summons was, that he did, on the 14th December instant, make use of such threats towards George Whitlock, also that he was so intimidated as to be prevented from going to work.

Mr. Herring, solicitor, appeared for the complainants, and Mr. Lewis, junior, for the defendant.

Mr. Herring, in opening the case, said he appeared for Mr. Henry Brunow Austin, a builder in the parish of Paddington, and who employed between 300 and 400 men. Last Monday week these men thought proper to go upon a strike. Mr. Austin had been in the habit of letting his men work for nine hours a day, for which he paid 5*s.* In consequence of not allowing fires in his buildings and the shortness of the days, he only let them work eight hours, for which he paid them 4*s.* 6*d.* Last Monday week, Whitlock and another man, hearing that Mr. Austin was in want of men, applied for work. After coming out of the building into which they had been, and when crossing the road, near a public house, they were called to by the defendant, and told that "if they went to work, they would be pulled out of the b— building." The two men then went back and acquainted the clerk of the works with the language and threats that had been held out to them if they went to work. He came out with them for the purpose of having the man who had used the threats to be pointed out to him, when the defendant was identified as the man, and upon his being spoken to he said that he had done no more than the rest of the men who were out. As regard punishment, Mr. Austin had no vindictive feeling in the matter. He only wished these men to return to their employ. The defendant was liable to three months' hard labour; but his client did not wish for that, he only wanted the men to return peaceably to their employ.

Evidence being given,

Mr. Broughton said,—with regard to the summons, I find, upon looking over the Act, that the wording of it is not quite good. The Act says:—

"Preventing or endeavouring to prevent." This summons in this case is not made out so; it merely says, "preventing," which in fact was not the case, for it appears the man has been to work for Mr. Austin. As it is not properly made out, I should advise the prosecutor to withdraw, and he can have another summons to amend this. The prosecution was accordingly withdrawn, and the summons dismissed.

RECENT BUILDING PATENTS.*

APPARATUS FOR BAKING FIRE-BRICK CLAY. Dated May 26, 1858.—A communication.—*Joseph Louis, Welbeck-street, Cavendish-square, London.*—This apparatus can be made according to a given dimension, the largest size possible being from 45 feet to 48 feet of entire surface, that is, from the base to the centre of the arch. In an apparatus of this dimension more than a ton of clay can be baked at each burning. The burning lasts four hours, including the filling of and emptying the furnace. The same apparatus can be used for baking the sand, of which a certain proportion is employed to prevent shrinking in making fire-bricks. The advantages are thus described:—"Firstly, it economises 75 per cent. on the time, and 60 per cent. on the actual expense of baking the bricks. The clay baked by this apparatus makes a much better and more cohesive paste, and when made into the different articles of trade, does not crack on a transition from hot to cold, or the reverse; it is also much less liable to breakage. By using this apparatus an economy of 50 per cent. is effected in the manufacture of steel (where it is used at once for the powdered matters baked and unbaked), and in all cases of high temperature."

FLOORING CRAMP. Dated May 26, 1858.—*George Cheadle, Wolverhampton.*—This consists of a flooring cramp in which the mechanism for compressing the boards is actuated by a worm and worm-wheel, the said worm-wheel being situated upon the axis of the screw from which the compressing bolt or ram derives its motion.

SKYLIGHTS AND GLASS ROOFING. Dated May 25, 1858.—*Charles Stanley and Joseph Fittall, Birmingham.*—This invention consists in giving the glass plates used for skylights and glass roofing a trough-like figure, the said trough-like plates being supported and fixed on suitably shaped bars or framing, by means of clips or clamps engaging with the said plates, the said clips or clamps being fixed on the bars or framing.

STOVES AND FIREPLACES. Dated May 3, 1858.—*John Taylor, Rouppell-park, Streatham-hill, Surrey.*—This invention has for its object improvements in stoves and fireplaces, and consists in arranging them so that they may either be worked as ordinary stoves or fireplaces, the smoke and products of combustion rising from the ignited fuel passing directly to the chimney; or, by closing the direct passage to the chimney by a register door, the direction of the draft may be changed in such manner that the smoke and products of combustion are in part caused to pass down through the ignited fuel and between the bars, or through openings at the bottom of the grate, whilst at the same time a portion of the smoke and products of combustion still rise from the top of the fuel. The part which passes downwards through the fuel enters a chamber, which becomes heated partly by the products of combustion passing thus directly from the fire down with it, and partly by the heated fuel lying against the back of the grate which forms one of the walls of the chamber. The smoke and products of combustion which rise from the top of the fuel, are also caused to pass into the heated chamber before escaping to the chimney, in order that the smoke may in this chamber be consumed.

APPARATUS FOR MIXING AND MOULDING MATERIALS FOR THE MANUFACTURE OF FUEL, APPLICABLE TO MOULDING BRICKS AND OTHER ANALOGOUS ARTICLES. Dated May 4, 1858.—A communication.—*William Edward Norton, Chancery-lane, London.*—This invention relates to a former patent, dated March 29, 1858. The apparatus consists principally of, first, a mixing apparatus, and second, a moulding and pressing apparatus, whereby the ingredients, when intimately mixed, may be moulded into any convenient form.

BRICKS AND SLABS FOR PREVENTING DAMP IN THE WALLS OF HOUSES AND OTHER BUILDINGS. Dated May 10, 1858.—*William Charlton Foster, Great Tower-street, London.*—This invention consists in the production of a vitrified substance in the interior of bricks or slabs, where-

* Selected from the lists published in the Engineer.

by the out surfaces remain unglazed and adhesive, and the absorption of water or damp from the lower surface to the upper surface is prevented.

Books Received.

The Fairy Tales of Science: a Book for Youth. By JOHN CARGILL BROUGH. With Sixteen Illustrations by C. H. BENNETT. London: Griffith and Farran, St. Paul's Churchyard, 1859.

SCIENCE, perhaps, never was made more attractive and easy of entrance into the youthful and imaginative mind than in the form of these "Fairy Tales," which are excellent, both in idea and in execution. It is no light task to prepare a concise and readable account of the leading branches of science; but familiarly and ideally to play with them, as it were, and skilfully to intermix and amalgamate their often cold, harsh, and stern truths with the more palatable and youth-pleasing condiments of fancy, implies a still more grave and intimate acquaintance with their salient points than what is requisite in the preparation of a mere literal and matter-of-fact compendium, or compilation, from the heavier and more ponderous tomes of science.

The Fairy Tales open with "the age of monsters," introduced by a few sketches of the griffins and dragons of fairy mythology, between many of which, by the way, and the actual monsters of "once upon a time," there is a far closer resemblance than could have been originated by mere idealism—a resemblance which indicates something like a former personal human acquaintance with at least some stray remnants of the primitive ancestors of the monster tribes, other than the mere alligators, crocodiles, boa-constrictors, whales, elephants, dodos, and others of more recent or modern ages.

"The amber spirit,"—the "fairy messenger," electricity,—is next taken in hand, and attractively treated of, as it should be; then the "four elements," the "life of an atom," and "modern alchemy." The "magic of the sunbeam" follows, and the kindred and stereoscopic truth, that "two eyes are better than one." There are various other chapters, equally interesting and as gracefully sketched; such as "the mermaid's home," "animated flowers," insect "metamorphoses," "water bewitched," in the state of steam and the spheroidal state; "a flight through space," on the modern wizard's brownstick—the telescope; "a tale of a comet," the infusorial, or "invisible world," the mining "Gnomes," and "Plato's" volcanic kingdom, &c.

A better "new year's gift" to the young for 1859 probably has not appeared than these "Fairy Tales of Science."

We have before us a pile of books, to which early attention will be given. It includes, "The Arts connected with Architecture, illustrated by examples in central Italy, of Stained Glass, Fresco Ornament, Marble and Enamel Inlay, Wood Inlay, etc. from the Thirteenth to the Fifteenth Century," by J. B. Waring;—a very beautiful work, containing forty-one plates, executed in the highest style of Chromo-lithography, by Mr. Vincent Brooks;—"Original Unpublished Papers, illustrative of the Life of Sir Peter Paul Rubens, as an Artist and a Diplomatist," collected and edited by W. Noel Sainsbury (of the State Paper Office). (Bradbury and Evans.);—A new edition of Wordsworth's "Greece," with a History of the Characteristics of Greek Art," by Mr. Scharf (Murray);—"Designs for Factory Furnace and other tall Chimney Shafts," by R. Rawlinson, C.E.;—"A History of the Knights of Malta," by Major Porter (Longman);—and "Painting Popularly Explained," by Thomas John Gullick, painter, and John Timbs, F.S.A., published by Kent and Co.

Miscellaneous.

WEDGWOOD MEMORIAL.—The gentlemen who have recently taken up this matter contemplate, we hear, the erection of a suitable memorial building. The spot upon which Wedgwood was born is said to be attainable.

LONDON BRIDGE.—A correspondent, "J. C." suggests, in order to aid the traffic over London-bridge, what has been proposed before in the case of Waterloo-bridge, namely, the formation of a road above it for foot passengers, on the principle of a ship's deck carried on columns; and that this should have a glass covering.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—The next ordinary general meeting of the session will be held on Monday evening, the 10th of January, when a paper will be read on the recent improvements in Paris by Mr. Edward l'Anson, fellow. An interesting series of photographs of the magnificent collection of classical marbles and terra cottas belonging to the Cavaliere Gio. Pietro Campana, hon. and corr. mem. will be exhibited.

THE LEICESTERSHIRE ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—The second meeting of the Melton section of this society was held on Monday before last. The paper read was on "Melton and the Reformation," by Mr. James Thompson, of the *Leicester Chronicle*, who gleaned the particulars chiefly from an ancient box containing churchwardens' accounts, and other documents recently found in a cellar where it had lain for many years, the person occupying the premises thinking it or its contents of no value whatever. Upon opening this mysterious box, it was found to contain a great number of old papers, written in old court-hand. They were much tattered and very damp. After drying, and in some sort arranging them, they were placed in the hands of Mr. Thompson, whose knowledge of all such matters, and antiquarian taste, secured the paper based upon these town records, which Mr. Thompson read to the meeting, and which settled various questions as to the town lands, the ancient guilds to whom they originally belonged, the origin of the free grammar school, &c.

OPENING OF THE NEW MARKET-HALL, SMITHFIELD, MANCHESTER.—On the 23rd ult. the new market-hall, in connection with the covered market, in Smithfield, was formally opened. It is built of stone, and fronts Swan-street, Eagle-street, Goadsby-street, and Coop-street. There is an entrance from each street, the principal one being that in Goadsby-street. The style of architecture may be designated Roman composite. The principal front is divided into a centre recess and wings, the centre being formed by ante, or pilasters, with moulded bases, and capitals of carved rams' and bulls' heads, interlaced with foliage. The pilasters support an entablature and pediment: the entablature extends completely round the building. The recesses are designed with semi-circular arches, and wrought in sunk stone-work. The cornice is surmounted by a low attic, or roof parapet. The Swan-street entrance is similar in design to that in Goadsby-street. The exterior dimensions are—length, 105 feet; width, 90 feet; interior, 77 feet by 60 feet; height, 44 feet. Internally, on each side, there are four shops, and in the central area twenty-eight open stalls of ornamental workmanship; the whole of the latter being for butchers. A gallery 12 feet wide, formed over the shops, runs round the building, for the sale of jewellery, baskets, &c. The central portion of the roof is supported by sixteen iron columns, formed of decorated ribs of cast iron. These support lighter ribs which compose the framing of a lantern light, and also a sort of clerestory. The roof over the galleries has a continuance of sheet sky-lights 9 feet wide. The pendant gaslights were designed by the architects, Messrs. Holden and Son. The total cost of the building will be about 5,000*l.* Mr. S. Taylor was clerk of works.

SUBSTITUTE FOR RED LEAD.—An invention, based on the discovery and application of a certain earth or ochre, to which the name of Burgundy red has been given, has been patented for Messrs. Bouchard and Clavel, of Paris. This red ochre is very rich in silica and alumina, and is found on the estate of La Gruerie, in the Commune of Fontenouille, Canton of Charney, department of Yonne, France; but as it is probable that ochre of the same or very similar quality may be found in other parts, the inventors wish to reserve to themselves the application of such earths or ochres in general to the preparation of the substitute for red lead. The composition of this ochre (Burgundy red) is:—Silica, 50.00 parts; oxide of iron, 14.50 parts; alumina, 26.60 parts; carbonate of lime, 7.80 parts; sulphate and phosphate of lime, magnesia, loss, 1.80 parts; = 100.00. A cement may be prepared with this earth which may be used with considerable advantage as a substitute for red lead in making the joints of boilers, water and gas pipes, and other joints, by mixing the said earth with grease, oil, lime, and with fragments of unburnt earthenware, Roman cement, and chalk in about the following proportions:—Burgundy red, 66 parts; grease or oil, 15 parts; lime, 11 parts; unburnt earthenware, chalk, or Roman cement, 8; = 100. This Burgundy red, or other analogous earth, may also be used very advantageously as a coating for preserving metal to prevent oxidation, by diluting it with volatile oil.

THE GLASSMAKERS' DISPUTES.—The disputes in the glass trade, between the journeyman makers and their employers, which have hitherto been confined to the district in and around Stourbridge, have at length made themselves felt in Birmingham. On Saturday last, according to the *Birmingham Post*, the men employed at some half-dozen or more of the largest firms in the borough received the customary notice of fourteen days, either to leave their employment or cease being members of "The Glassmakers' Union." The men have a fund of between 3,000*l.* and 4,000*l.*; and, in many instances, those in work are subscribing double contributions to the union.

LIVERPOOL BATHS AND WASH-HOUSES.—The quarterly returns of the superintendents of the various bath and wash-house establishments to the Baths Committee of the Liverpool Council show that at the Pierhead and Paul-street Baths there has been a slight falling off in the bathers; but at Cornwallis-street the bathers for the three months ending on the 24th November were 4,446 more than in the corresponding quarter of 1857, amounting in the whole to 31,988. Whilst there is a decrease in the number of female bathers at the Pierhead, there is an increase in the number of such bathers at the Cornwallis-street establishment, principally among women belonging to the industrial class. During the quarter, for all the baths, the number of visitors was 56,528. The wash-houses are beginning to be better appreciated, as is evident from the circumstance that the receipts for the Frederick-street establishment, which generally amounted to 8*l.* per week, reached during one week upwards of 12*l.*

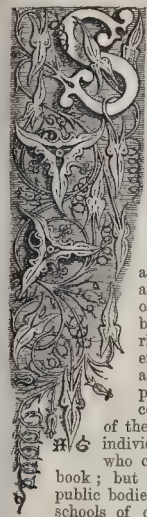
HANLEY CEMETERY COMPETITION.—The local burial board, having selected six designs from those sent in, recommended that the council should name the prize designs. The council then devoted some time to the inspection of seven plans sent in; and, after some conversation, it was resolved that each councillor should write on a piece of paper the title of the design which he considered entitled to the first prize. This was accordingly done, and upon the papers being examined it was found that fifteen votes had been given for the design numbered 15*A*, and bearing the label "Albion." Votes were then taken in a similar manner for the second prize, and it was found that thirteen councillors had recorded their votes in favour of the design No. 1, labelled "Fides." The corresponding envelopes were then opened, and it was found that the first prize had been gained by Messrs. Ward and Son, of Hanley, and the second by Messrs. Bellamy and Hardy, of Lincoln. It was then resolved that the two successful candidates be requested to furnish specifications and estimates for approval.

NEW PROCESS FOR FIXING CHALK DRAWINGS.—M. Ortlieb has just communicated a paper to the Academy of Sciences on this subject. The first methods for fixing works of art executed in chalks, charcoal, and other substances which are in danger of destruction from the slightest touch, date from very far back, and in some cases are perfectly successful. Sometimes the drawing is rapidly dipped into a bath of some glutinous liquid, and sometimes the liquid itself is applied with a brush. This, however, cannot be done with chalk or charcoal drawings. A very thin and transparent sheet of bibulous paper is laid on the drawing, and the brush is then passed over the protecting sheet; the glutinous liquid penetrates to the drawing, and the wished-for effect is produced. In the case of chalk drawings (pastels), however, this process has the inconvenience that certain tints, which, on being wetted, change their tone, do not return to their former state on drying. This circumstance led M. Ortlieb to make some experiments with a view to find a better fixing liquid than those now in use; and after many trials he found that the silicates of potash and soda answered very well, but with the serious drawback that during the application the colours were liable to be disturbed, so as to give the drawing the appearance of being "smudged." At length, however, he succeeded in obviating this inconvenience by a very simple plan, which merely consists in executing the pastel upon thick but sized paper, such as is used in copperplate printing, and afterwards applying the fixing liquid to the back: it is thus quickly absorbed, without causing any disturbance of colours on the other side. To this it must be added, that none but mineral colours should be used, these being the only ones that can combine with the silicates, which have no action on vegetable colours. These rules being observed, the picture will not only resist damp, but will even resist washing with water: acid vapours have no effect upon it; and it becomes almost incombustible.

The Builder.

VOL. XVII.—No. 831.

The Arts connected with Architecture.
Mr. Waring's Book.



Delaborate, costly, and suggestive work as that which has been produced by Mr. J. B. Waring, with the aid of Mr. Vincent Brooks, deserves to be set as prominently before those who are interested in the subject of it, or are likely to be acted on by it, as our means will admit of.* To produce a work by means of chromolithography, containing forty-one large folio plates, blazing with colour, accompanied with historical and descriptive letter-press, on paper *de luxe*, solidly bound, involves no small risk financially; and the effort, when worthily made, as this is, should be supported by those who concern themselves with the arts of the country. It is not every individual, however well-disposed, who can afford six guineas for a book; but the more wealthy buyers, public bodies, municipal libraries, and schools of design, should consider it

part of their duty to assist in such cases by the purchase of copies. For years our architecture has been bald and lifeless;—restricted to ill-understood imitations, and permitted no aid from her children arts. "It is true," says Mr. Waring, "that constructive science is of primary importance to the architect, yet it can do no more than form the skeleton, which it is his duty to render not useful merely, but agreeable to the eye; and in order to effect this, he must of necessity call in the aid of the artist in stone, in colour, in metal, wood, and mosaic work, and possess the knowledge and good taste requisite to apply them to his subject;—the useful should never be separated from the beautiful. The last is the complement of the first, of which every work of the Divine Creator, the great architect and artist of the universe, affords striking and inimitable proof." This is now becoming more generally understood, and those who would profess architecture will find that they must give long attention to all the arts of design, with a view to their general application to Architecture. The art of chromolithography is affording, and will afford, considerable assistance in making known even to those who do not travel, what was formerly done in this respect, bringing before them representations of stained glass, enamels, mosaics, and mural decorations, at comparatively small cost, such as no verbal descriptions could possibly supply. With these examples before us, our present object should be to consolidate and arrange the information we have, "and from the lesson thus gained, the examples thus given, strike out a new path for the powers of the architect, and bring back the art to its normal state, which is one of gradual but sure progress founded on scientific and artistic knowledge," we should perceive that merit exists more or less in all styles, and is irrespective of fashion, which is mutable and often unjust; that the principles of our art are fixed and certain; that however much long-received rules may be altered as circumstances may require, they are not to be despised or disregarded without careful consideration; that true construction is the vital principle of real

progress; and that besides the excellent and numerous examples of ornaments we already possess, Nature still has varied and inexhaustible resources in store for our study; and above all, that for the appliance of these means at our disposal, an earnest study, a just appreciation, a practical knowledge of all art is indispensably necessary, and can only be obtained by an industrious use of the hand and of the eye, as well as of the mind."

The forty-one plates in the work before us are appropriated to stained glass, eight; fresco ornament and figures, eight; wood inlay, five; and marble and enamel inlay, twenty. Those representing stained or rather painted glass include examples from the Cathedral at Florence (prophets and saints from the transept), from Santo Croce, Santo Spirito, and S. M. Novella, in the same city; from Arezzo Cathedral, and elsewhere. These are mostly of the third system of glass-painting, termed the Mosaic-enamel method, wherein pot-metal is used for the large masses of colour, while the flesh, hair, ornaments, and general accessories are painted with enamel colours on a white ground. Mr. Waring does not agree with those who object to the practice of making windows pictures on glass. The brilliant tones and solidity of windows of this class of the latter part of the fifteenth century found in Central Italy are well conveyed by the illustrations given. By a slip, the window in the choir of Lucca Cathedral is dated on the lithograph 1489, whereas the letter-press says, that "this window, according to an inscription on one of the series, was executed by Ugolino da Pisa, A.D. 1433."

Decoration in fresco is illustrated from San Piero, near Pisa (an early specimen, say 1230, showing the manner in which the walls of Romanesque churches were ornamented), the Capella de Spagnuoli at Florence (latter part of the fourteenth century), the sacristy in San Miniato, at Florence, the vaulting of the Baptistry at Siena, and other buildings. The last-named is the most elaborate piece of colour printing in the book, and required sixteen printings. In the introduction to this branch of his subject, Mr. Waring points out that—

The general characteristics of the Italian Gothic, or Giottoesque style of mural decoration are,—a dado, or base, panelled with imitations of various marbles, contained within borders painted in imitation of the glass mosaic-work usually known as Opus Grecanicum, having at times central designs of intricate geometrical and leaf ornament. About 6 feet from the floor is a cornice with small brackets or consoles, all radiating in perspective to a central point of sight; above this the wall is divided into large compartments, containing historical or religious figure subjects, the figure being strongly outlined, and the colours flat and distinct, with but a slight use of chiaro-oscuro: these compartments are also enclosed in painted mosaic borders, and beneath each is a description of the subject illustrated, written in peculiar Gothic letters, of a very good style. The vaulting of the roof springs immediately from above these pictures, the only actual projection being one large central rib, ornamented with winding foliage and mosaic borders and painted mouldings, to carry it off more agreeably on to the flat surface of the vaulted compartments, which are almost always painted of a deep blue, studded with gold stars, and in the centre of which are painted figures, usually holding written scrolls descriptive of their meaning. Sometimes the names are written on the clouds beneath, from which they frequently appear to rise. The intersection of the rib is masked by a gold boss, carved and gilt, but not of great size, having a ring in the centre, from which depended the lamp. The ornament is generally a mixture of mosaic work, Roman reminiscences, especially in the painted mouldings, and transcripts from Nature, the first two, however, being predominant. The colours are well arranged, and the ornamental accessories, such as dresses, buildings, thrones, armour, &c. are of great variety and beauty, and are very carefully executed.

These characteristics obtained for some time, slightly modified. Perugino introduced a new style, though scarcely so much superior as Mr. Waring considers it.

We hope the time is not far distant when the internal decoration of our own buildings will be made to afford opportunity for the development of our school of painting. What is being

done at the Westminster Palace, Lincoln's-inn Hall, the church in Margaret-street, and elsewhere, will expedite the movement. The Corporation of London, and the wealthy City Companies, should give their aid.

The examples of Wood Inlay are drawn from Siena, Pisa, Assisi, and Orvieto. Marquetry would scarcely be considered one of the arts connected with modern architecture. Some would be surprised to hear that Brunelleschi gave lessons in the art of inlaying woods, work in "tarsia," as it was called, or *intarsiaturo*, to architects; and that the earliest known professor of the art was an architect, one Giuliano da Majano (1432-90), who executed the seats and presses of the sacristy in the church of the Annunziata, in Florence. Vasari gives the names of several artists who executed tarsia-work, and produced marvellous effects in decoration. The art has been revived in a modified form for furniture, but as yet architects have not sought to avail themselves of its effects, which is to be regretted; for, as Mr. Waring remarks,—"it is every way commendable, so long as it is confined to a mosaic of different coloured woods (as in the best examples of the Italian school), without attempts at pictorial effect." The stalls in the choir of the Duomo, at Pisa, exhibit some very interesting specimens of wood inlay attributed to the fifteenth century. In the stalls of the choir in the upper church of Assisi, which present a large amount of marquetry, including heads, the graduated tints appear to have been produced by means of burning.

Of marble and enamel inlay the specimens, as we have already said, are numerous, and include pavements, mural decorations, altars, fonts, and a fountain,—namely, the Fonte Goia at Siena, executed by Jacopo della Quercia, who was afterwards called Jacopo della Fonte, because of the admiration it excited. Jacopo, with assistants, was occupied on it during twelve years, and he died about 1424.

Mr. Waring properly urges that, for memorial purposes, the art of marble inlay might well be revived. A vast number of such slabs have been walked over for centuries in the churches of Florence and elsewhere, and are still as perfect as when first executed. Our author quotes from Rumohr a contract from the archives of the cathedral of Siena for a memorial stone of this class, which is interesting. It was for one placed over the grave of the Rev. Father, Misser Karlo d'Agnolino, formerly bishop of Siena, who died in September, 1441. Separate payments are here made:—To Maestro Giugliano da Como, for forty-five days' work on the great slab, for hollowing out the tabernacle and figure. To Maestro Antonio di Federigho, for twenty-five days' work of the same nature. To Lorenzo d'Andrea, for thirteen days' work in cutting the foliage of the frieze. To Francesco di Stefano, for thirteen days' work on the frieze, and filling in with black stucco. To Maestro Giovanni Sabategli, for nine days' work on the frieze. To Maestro Castorio di Nanni, for seven days' work on the frieze. To Pietro da Como, for three days' work, filling in and polishing the friezes; and to Maestro Pietro del Minella, head master of the work, for overtime in drawing, ordering, and filling in the above work. Moreover, we obtain the composition, at the end of the contract, used in filling in the ornament, viz.:—Sixty pounds of pitch (*pecie*), twenty-four pounds of wax (*ciera*), and ten pounds of "bolo" (?). From the above we see that great value was attached to this art. Different hands being employed on different parts; as many as seven artisans working on it, under the direction of the Capo Maestro.

Of enamel-inlay only a few examples are given, but these include a representation of the altar of St. John, in the cathedral of Florence, which is an admirable drawing, most exquisitely reproduced by the chromolithographer: indeed we know no finer specimen of this kind of work. The altar is mostly of silver, ornamented with translucent enamel, and includes the work of numerous artists, extending over a period of more than a hundred years, having been commenced in 1366, and completed in 1477. It is an unrivalled example of the ancient metalworker's art, and has

* "The Arts connected with Architecture, Illustrated by Examples in Central Italy, of Stained Glass, Fresco Ornament, Marble and Enamel Inlay, Wood Inlay, &c. from the Thirteenth to the Fifteenth Century." By J. B. Waring. From drawings lately purchased by the Board of Trade for the Department of Science and Art. The Plates, forty-one in number, executed in chromolithography, by Vincent Brooks.

afforded the opportunity for an unrivalled example of the modern printer's.

The process of chromolithography may not be understood by all our readers. A drawing of the subject, in outline, on transfer tracing-paper, is made in the ordinary way: when transferred to a stone, this drawing is called the *keystone*, and it serves as a guide to all the others, for it must be transferred to as many different stones as there are colours in the subject: as many as thirty stones have been used in the production of one coloured print. The first stone required, generally for flat, local tints, is covered with lithographic chalk, where the parts are required to be of solid colour: the different gradations are produced by rubbing the stone with a tint-ink, made of soap, shell-lac, &c. and with a pointed lithographic chalk where necessary. The stone is then washed over with nitrous acid, and goes through the ordinary process for lithography: a roller charged with lithographic printing-ink is then passed over it, to ascertain if the drawing comes as desired, and the ink is immediately afterwards washed off with turpentine. If satisfactory, this stone is ready for printing, and is worked off in the requisite colour. The next stone undergoes the same process for another colour, and so with the rest, till the work is complete. It will of course be understood that before any single impression is finished, it will have to pass through as many separate printings as there are drawings on stones. The colours used in printing, we may add, are ground up with burnt linseed oil, termed *varnish*.

When all this is remembered, it will be seen how much labour and skill are involved in the production of such a book as that we have been describing and commending.

CESSPOOLS.

It is very difficult, when making a sanitary inspection of dwellings, to learn, without disturbing the premises, whether there are cesspools or not; for, in many instances, the disguise of the pits of pestilence is so artfully managed that it is only by the actual removal of parts of the closets that the truth can be ascertained. We have before referred to the results of these disguised cesspools in St. Anne's-court, Soho, and other places, during the last cholera attack. We have lately been surprised at the number of open cesspools, some of which are in course of alteration in a decent part of Islington, whence most persons would have fancied that such matters had disappeared. Such, however, is not the case; and this circumstance shows it is necessary, particularly in the cold weather, that sanitary inspectors should make a very careful house-to-house visitation of their respective districts, in order that they may know where danger lurks, and cause the removal of the cesspools during seasonable weather. Some say that as the Thames is already bad enough, the remaining cesspools should be retained until the main-drainage scheme is completed. We must maintain a different opinion. The operations which have already been so beneficial to the health of the metropolis must be continued.

In the part of Islington above referred to, such complaints were made of the open cesspools, that in some instances they have been treated as follows:—On a hot September day, the workmen proceeded to demolish the closet, and remove the water-cask, which was placed on the top of the dust, close to the cesspool,—no tap in the water-barrel,—so that the tenants were obliged to dip in their vessels at the top. The work of demolition of the closet and dust-bin was completed in the middle and hottest part of the day; and then the circular pit, overflowing with soil, was emptied without any application of disinfectants, into a shallow trench dug in the garden, where it was left to evaporate. On the pit being emptied, the bricklayers proceeded to arch it over, and in the centre of the arch introduced a trapped pan. Supposing the walls of the cesspool are firm, and the drains in thorough condition, the sinks, and every other aperture carefully trapped, it is argued, by the advocates of this plan, that gases of the cesspool would be so enclosed that they could not be injurious. It is, however, admitted, that cesspools of this construction are being constantly disturbed by the waste water, which soon fills them; and that in course of time the contents will thicken; and if not again emptied, flow into and stop the drains. And if there is the least flaw in

them—if the traps are deficient—it is evident that such arrangements are far more dangerous than the open cesspool, which, being in sight, causes precautions to be taken, that might not be used in other circumstances: at any rate, few persons who could help it would live in a house accommodated in this manner.

In the cases above mentioned the work has been well done, with new cisterns and a means of supplying the closets with water, new dust-bins carefully covered, and all this at a considerable cost. Although an ordinary observer would feel that everything necessary for health had been done, still there is a pit of about 10 or 12 feet in depth which must in a few months be filled with poisonous matter; and it is remarkable that while all this good work has been done, the drains have never been examined, and in a little time it is probable that persons living here will find the houses unwholesome and not know how to account for the circumstance; and it is certain that the pit will soon fill up and occasion fresh expense and inconvenience. The outlay of a very small sum would have enabled the workmen to fill up the cesspool, and make complete the drainage by pipes to the sewer, and then such houses would have been wholesome, and not have needed the repeated expense which the present system will occasion.

This work has been completed, and the results will be better understood by reference to the annexed engraving.

A, cesspool; B, arch over cesspool, trapped at C; D, waste pipe from cistern, passing into cesspool; E, imperfect surface drain; F, one of two drains, which convey the refuse of two other houses into this cesspool; G, untrapped sink, in washhouse (the washhouse communicates directly with the main body of the house); G, copper; H, dust-bin; I, matter from the drain beneath the floor.

The sure effect of such an arrangement as this has taken place. The water-closet without the house has been trapped with a view to deceive: this drives a most poisonous air through the untrapped sink, F: other sinks closer to the house than the closet, are also untrapped: it is, therefore, evident, that a house conditioned as this is at present is more dangerous than if the open cesspool had been allowed to remain.

The most ordinary knowledge of sanitary arrangements should, one would think, have caused the trapping of the sinks, if not the removal of the cesspool. At present the smell is not only the washhouse, but also other parts, is described as being very bad,—worse when the fires are lighted on the basement floor, and below the copper in the washhouse; but when the water runs in and disturbs the soil of the cesspool, it is unbearable.

Nearly four months have elapsed since the cesspool of one of the houses here referred to, was disguised in the manner described; and it is worth while to record the following circumstances connected with this house:—The cesspool* had been covered over and trapped: this, of course, was speedily filled with liquid, which got daily more impure: it was passed to the imperfect drain, and to the untrapped sinks. Moreover, the whole basement of the house was impregnated with impure matter.

The upper part of this house (three rooms) was occupied by a family of eight persons (six children—the wife was soon after arrival confined). At the time of removal to this place, a more healthy-looking group of children could not be seen: soon after moving hither from a more northern part of Islington, where the drainage was complete, the complexion of the children became daily more pallid. It was difficult, notwithstanding all endeavours, to get ventilation at night, or to rise in the morning in consequence of a heavy drowsiness. In a few weeks the children were more or less troubled with eruptions of the skin. Soon after four of them were attacked by measles.

—In two instances followed by whooping-cough, and in another by low fever. After the confinement of the wife she was placed in great danger, and the symptoms would not have been likely to occur in a well-drained and properly-ventilated dwelling. The infant, from its birth, had a cough which seriously affected its chest. The eldest child failed in health, and was, eventually, seized with rheumatic fever. It should be mentioned, that this ill-conditioned habitation was situated in rather a low position, not far from the Regent's-canal. This, no doubt, added to the evil. The change in the children, in the short space of about two months, was remarkable; and was practical and clear illustration of the consequence of unsanitary conditions. Besides the ill-health above-men-

tioned, a young man, living in the lower part of the premises, had a very serious attack of typhus fever, about the time the infant and another child were suffering from bronchitis, which rapidly ended fatally in the case of the former. We will not maintain that this might not have happened in other conditions. Only six or seven weeks have now elapsed since the removal of this family to a healthy locality, and the improvement in their condition is as remarkable as its change for worse was on the other occasion.

An example like this may have more weight than a volume of precepts.

The island of Ely one of the old fen islands, a place not well situated for health, must be taken as a remarkable example of what can be done by proper sanitary measures.

In 1851 the Ely, Board of Health was established, and commenced some important works: one of these was for supplying the town with water, and the other for carrying off that water from every house clear of the town. These works were completed in 1854, and the houses were gradually connected with the sewers, leaving, however, at the end of 1857, 200 in 1,200 houses out of connection.* Mr. Marshall, the superintendent registrar of that district, shows the effect of this sanitary change. Before the Public Health Act was brought into operation, the mortality was at the rate of twenty-six deaths annually in every thousand; in the subsequent years, 1851-57, when the sanitary measures were only partly carried out, the mortality fell from twenty-six to the rate of nineteen deaths, in the same number of persons; and the mortality in the last two years, when these sanitary measures have been more completely carried out, has been reduced to seventeen deaths annually in each 1,000 of the population. The surveyor of this district says, with just pride, "There is still a number of cesspools remaining, and the sooner they are done away with the better. After this is done, I may truly say, that I found Ely a city of cesspools, filth, sickness,—but I shall leave it a city of drains, health, cleanliness; and that is something to be proud of;" and surely it is a matter which a man may well feel pleasure in, that, by well-directed exertions, nine lives in every thousand have been saved.

Medals are given very properly by the Humane Society, for saving lives from fire and water: might it not be wise to give honour to those who, by the aid of sanitary science, certainly prevent death? In the small city of Ely, by the aid of sanitary science, upwards of seventy-two lives are saved in each year. It is terrible to think of the multitudes who die annually from preventable causes in large towns.

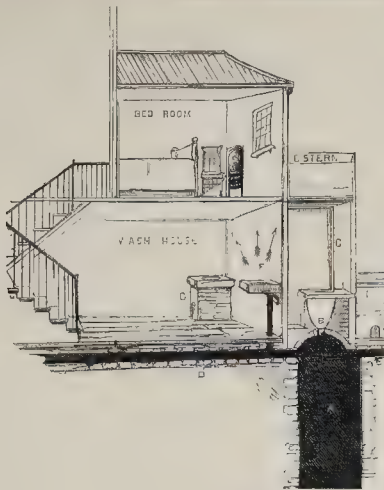
WREN AND HIS CHURCHES.

LIVERPOOL ARCHITECTURAL SOCIETY.

At a meeting of this society, held last week, Mr. H. P. Horner in the chair, Mr. J. A. Pictou read a paper on "Wren and his Church Architecture: a Study;" and commenced by observing that in glancing over the roll of English architects there were three names which stood out by common consent as distinguished from the rest—William of Wykeham, Inigo Jones, and Sir Christopher Wren. After alluding to some of the events of Wren's life, the reader proceeded:—The mind of Wren was so fertile in its resources, and his conclusions so firmly based upon true geometrical principles, that difficulties were turned into triumphs, and elements of almost hopeless deformity became under his plastic hand modelled into harmony and beauty. Let them first look at the general plan and arrangement of his city churches. Here it was impossible to lay down beforehand any general principle. The sites with which he had to deal had either been originally contracted and misshapen or had become so by encroachments in the course of time. It was necessary, therefore, keeping in view the special requirements of a Protestant church, to adapt many of his edifices to the peculiar shape of the land, and this he had done in most instances very successfully. An eminent instance of this occurred in the case of the church of St. Benet Fink, near the Royal Exchange, taken down a few years since. The peculiarities of the ground-plan determined, to a great extent, the points of support, the form of the roof, and the general character of the interior of a building. Allowing for accidental modifications, Wren's interiors might be divided into three types or classes. When uncontrolled by circumstances, with a site sufficiently large, he seemed to have adopted the basilica form of a central vaulted body, separated by columns from two side aisles,

* The closets of three houses flowed into it.

* The population of Ely in 1851, was 6,176.



CESSPOOL MYSTERIES.

with or without clerestory windows, with a projecting tower at the west end and a shallow recess for the altar: another form was that of the Greek cross, with a cupola at the intersection: the third was that of a simple apartment, without columns; but there were some instances of peculiar adaptation which could hardly be brought within any of these classes; as, for instance, All Hallows, Lombard-street, St. Mary's, Abchurch, St. Mildred's, Bread-street, and St. Swithin's, Cannon-street. Referring to the diversity of designs adopted by Wren in his carpentry, Mr. Picton said that a question arose in considering all this wonderful variety of adaptation and interior design and composition. Were these timber-framed vaults and arches and domes quite legitimate? Was the practice one of imposture and sham, concealing the real construction and violating the first principle of architectural truth? He could not himself come to that conclusion. It would, no doubt, be better for durability and safety from fire that all vaults and dome coverings should be of stone or brick; but, independent of the additional cost, the attainment of the same lightness of internal construction would be unattainable under such a system. Arches and vaults might be constructed of any material, and the covering them with plaster was not necessarily a deception, unless it was disguised so as to represent another material. It was by no means necessary in all cases to exhibit construction, provided it was strong enough for its purpose; the vice began when the construction was varnished over to represent something which it was not. If we had more of the vaulted construction in our own day, if only in timber and plaster, it would be a considerable relief from the monotony of flat ceilings. A few words might also be said on the subject of galleries, which Wren had introduced pretty freely into his churches. Undoubtedly, all things being equal, no architect would elect to building a gallery on the score of its intrinsic beauty; but without a gallery a place of Protestant worship must of necessity be limited to a very small congregation, if all were to see and hear. Sir Christopher had closely studied and practically investigated this subject, as he had most others which were connected with his profession, and the result was that an ordinary voice could make itself heard 50 feet in front, 30 feet on each side, and 25 feet behind, making an area of 75 feet by 60 feet. If a larger number than this area could accommodate was required, then galleries became indispensable. Wren's galleries were never obtrusive, as they were always kept within the line of columns supporting the roof, and the ceiling being usually lofty they did not constitute a very prominent feature, or interfere materially with the architecture. In regard to the body of the churches, there did not appear to have been very much consideration or study bestowed upon them. The principal reason for this might probably have been the crowded manner in which they were shut up amongst other buildings; but when an opportunity for display did manifest itself, it was not employed with any great result in the way of design. Although they could not award a very high meed of praise to the exterior of Wren's churches generally, there were many portions and

detached parts which might be studied with advantage; but in his external architecture Wren seemed to have reserved his strength for his campaniles, which were of several kinds,—plain towers without lanterns, towers with wood lanterns, towers with stone lanterns or coronals, and towers with lofty spires above. The towers generally rose well from the ground, but in the mere towers themselves there was not usually much to attract attention: some of them were positively ugly, as that of St. Swithin's. The two campaniles, which by a common consent, were considered as Wren's masterpieces in this kind of construction, were St. Bride's, Fleet-street, and St. Mary-le-Bow, Cheapside; and between these two beautiful compositions it was difficult to decide which should bear the palm; but after a close comparison he should be inclined to award the prize to St. Bride's. It was a common opinion, but based, so far as he could perceive, on no sound principle, that a true spire could only be constructed in the Gothic style. It was said that a spire required unbroken vertical lines, which were contrary to the genius of Classical architecture where horizontal lines predominate over the vertical ones, and that any attempt to overcome this difficulty must result in a mere piling up of disconnected stages, or in an utter departure from the principles of Classical architecture. He was not prepared to admit either of the alternatives. If they examined the most beautiful Gothic spires extant, they would find that so far from preserving the vertical lines intact, considerable efforts were made to black or roughen them by means of spire lights and crocketed angles. The reason for this was obvious: a simple unobstructed line was travelled over by the eye in an instant: there was nothing to dwell upon, no scale of comparison, nothing to attract a second look. Now, the spire of St. Bride's had quite enough of the pyramidal form to satisfy the eye, whilst its varied play of lines and diminishing forms allowed the eye to rest delighted, as it leapt and climbed to the summit to which it was guided at last by the straight lines of the *flèche*. In conclusion, Mr. Picton said all must admit the wonderful versatility and power of adaptation evinced by the architect of the buildings which he had alluded to. His success in this respect involved a corollary somewhat at variance with the sentiment which passed almost as an axiom at the present day, that no style of architecture was at all to be thought of for ecclesiastical purposes except the Gothic. Far be it from him to deny or depreciate the merits of our mediæval architecture. He only wished to enter his protest against those who could only recognize beauty and fitness in one particular system of forms. In estimating Wren's success as an architect, regard must be had not only to the intrinsic merits of the works themselves, but to the opportunities enjoyed by their author for cultivating his taste and extending his knowledge by the study of the best models. In England, beyond the works executed or projected by Inigo Jones, there was little or nothing in the revived classical style in existence. At the mature age of thirty-three, and after he had designed the Sheldonian Theatre, he paid a visit of a few months to Paris, where the great works at the Louvre were progressing, and where

he enjoyed the society of Bernini and Mansard; then in the zenith of their reputation. In France they had his own record that he made the best use of his time. Italy, the great storehouse of classical forms, he never visited; and the works on architecture then extant scarcely could give a conception of the existing buildings, whether ancient or modern. Under these disadvantages the great master had to grope his way, from ignorance to science, from darkness to light.

In the discussion which followed, Mr. Verelst and Mr. Huggins were of opinion that Wren had been overrated as an artist, and the former thought that some of the best buildings attributed to him were the work of other hands.

STOUP, IN THE CHURCH OF ST. MERRI, PARIS.



A GOTHIC STOUP, bearing sculptured arms, is rare, and I therefore send you this sketch of one in the church of St. Merri, Paris. The greater part of the present church was not begun till 1520. M.

THE MEDIÆVAL ARCHITECTURE OF ITALY.

HOW IS THE REVIVAL TO BE PURSUED?

MR. PARKER'S letter, in the last number of the *Builder*, appears to require some answer from those who do not agree with his peculiar views, lest from their silence it should be supposed that all are ready to accept his statements without hesitation, coming as they do from the "President of the Oxford Architectural Society." I believe and trust, however, that Mr. Parker's views are peculiar to himself: they have never, to my knowledge, been adopted by any one else; and, though a very recent article in the *Guardian* might be quoted against me on this point, I venture to assume that this was written about the same time as the letter to "Sylvanus Urban," and by Mr. Parker himself.

Mr. Parker's greatest alarm seems to be excited by the dread lest architects, in pursuit of their studies, should venture to devote some of their time to the careful investigation of the Mediæval architecture of Italy; but I must be allowed to state that when he says "there is no such thing as Early Italian Gothic," he betrays the fact that he is but little acquainted with Italy, and unable, therefore, to speak with authority on the subject. If the cathedral and the churches of S. Matteo, S. John Baptist, and S. Stefano, at Genoa, the churches at Lucca and Pisa, the cathedral of Siena, the church of San Francisco at Assisi, Santa Maria and the cathedral at Arezzo, Sta.

novelty pleases the vulgar, and the true principle: are not known but to a few architects, whilst the greater part give the name of genius to *bizareries* produced by an ill-regulated imagination. It is that which, in the same age, varies to infinity the form and the kind of ornaments which take the place of architecture when they ought not to be other than accessories. All forms are more or less condemnable, according as they diverge from the general principles of good architecture.*

Anquetil,† the historian of France, draws a very unfavourable picture of the court of Louis XV. 1715, when the splendour of the former monarchy was extinct. The manners, there little respected, were degraded among the people: a number of books, as contrary to the regal authority as to religion, inundated France. There was a habit of questioning and putting as problems, principles; to proportion, so to speak, what obedience was owing to ancient laws; and, in short, to persuade each other that the time was come to abrogate them, and create from them new ones. Yet none of the kings his predecessors has surpassed Louis XV., called the *Bien-aimé*, for the extent and variety of his knowledge. The progress which France had made in experimental physics, in astronomy, geography, and chemistry, and the greater part of the liberal arts, by the enlightened protection that he accorded to them, and the liberalities with which he loaded those who cultivated them with success, rendered his reign memorable for ever. The most distant posterity will remember the voyages undertaken in his time, at the expense of government, by Maupertius to the Arctic Pole, and by other naturalists and *savans* to California, to the Philippines, in Siberia, &c. to enrich natural history, and to improve navigation. Commerce owes to him also more than our thanks, on account of the great roads and bridges that he constructed in the provinces. His example in these respects has served as a model to almost all Europe.‡ It was the age of voyages and discoveries. In 1792-95 Vancouver, an Englishman, undertook a voyage principally with the object of ascertaining if there existed across the continent of America a passage for ships from the North Pacific Ocean to the South Atlantic Ocean; and he made with Cook the second and third voyage round the world.§

The sixteen years of the Restoration have not been without glory to the country. The peace of Europe and the force of government were maintained by men of the State whom the Restoration had formed. The storm which had thrown down the House of Bourbon (1789-1812), or, to speak more properly, the monarchy of Louis XIV. had its origin in the school of the eighteenth century, in those ideas which had spread themselves among all classes of society since the regency. The dramatic and bloody part of the French revolution was, to say the truth, but the realisation of the systems of Baron d'Holback, of Helvetius, of Rousseau, the sensuality of life, atheism, immorality, the sovereignty of the people in government.¶ In France, for two centuries, poetry and painting, hand in hand, have always travelled together, sometimes crowned with the ancient laurel, sometimes with the common rose; sometimes severe and lofty, sometimes vulgar and ridiculous. The same force or the same grace prevails among them all. Poussin, Le Sièur, Champaigne, and Le Brun, make a very good pendant to Corneille, Molière, Boileau, and Racine. As to Fontaine, he has not a pendant, but he was himself both painter and poet. In the eighteenth century grandeur and simplicity are effaced. Voltaire, whom Villemain** calls "the preserver of taste, the representative of French poetry, the creator of an original prose,—three titles that no other man has united in himself;—Voltaire is born in the same time as Watteau: there is the same fire and the same caprice. Fontenelle, Gentil-Bernard, L'Abbé de Bernes, Dorat, and Bouffiers, are found against De Lancret, Lemoine, Boucher, Baudouin, and Fragonard. Towards the end of the age Greuze and Florian appeared in the same horizon. Soon David, Prudhomme, and Gérard, came, nobly to struggle with Maïeu-Joseph Chénier, André Chénier, and Châteaubriand. There are now a hundred poets living at hazard. Are there not as many painters living at adventure? The inspiration of Heaven passes in the mind, in the ray of the sun, in the per-

fume of roses: painters and poets catch it with the same ardour.*

There were cradled then in France two delicate children, who, in time, gave spirit and colour to their age. These were Voltaire and Watteau, who have become, the one the poet, and the other the painter, of the eighteenth century. The school of Watteau only had a fugitive reign—that of a pretty woman who abuses her coquetterie. The Vanloos, Lemoine, and Boucher shared the royalty. Which of the four was most celebrated has given rise to much discussion and contradiction. In the middle of the eighteenth century, French painting, like poetry, madly abandoned itself to all the charms and all the extravagances of fancy, in order to divert itself a little from its severity: it was pretty and coquettish; it was, little marchioness disguised as a shepherd for dancing at the court.†

At the commencement of the seventeenth century, Versailles was only a little village, when Louis XIV. built there a hunting-lodge. Louis XIV. wished to make it his habitual residence, and we know what that became under the magic touches of Mansart and LeNôtre;—a palace, which was soon surrounded with houses. Versailles, dowered with a palace, became a city in 1713. A treaty of peace was signed there in 1763, and the kings inhabited it until the Revolution.

The period of sixteen years, which the Restoration embraces, was not only an epoch of literary labour with brilliant results, but also a time of intelligence and of activity for the fine arts and for science. Must we attribute the cause of it to the Bourbons, protectors of everything which illustrated their reign in memory of Louis XIV.? or the pacific action of those epochs of public peace, where talents would show themselves on a large scale? There is so much of it that you will not find, in the history of France, a period of sixteen years so fertile in capacities of every kind. We are too forgetful of the past time, too ungrateful, perhaps, for what it has accomplished: our actual studies rarely permit us to cast an attentive look upon the intellectual fecundity of the Restoration: the levity of the habits of the French nation, the rapidity of the emotions which succeed and press upon each other, prevent us from comparing the facts to enlighten the judgments of history. There was there, however, a number of artists of the first order; some of them still living (1842); and for those who are no more, why should we not recall their names to the public gratitude in this fatal necrology, which centuries bear away.

Every epoch in the arts is marked by a common direction: one man appears who moves the crowd and conducts it a slave behind his car: David made the academic school infatuated with the arts of Greece, and caused to grow in the republican sentiment, by their attractions, the absorbing study of antiquity. However, at the end of the Empire, David grew old: he was no longer the same: this soul of fire finished with the Republic. David, first painter to the emperor, baron, or count, made no more paintings. Gérard and Gros, his most favourite pupils, continued his school. Le Brun and Van Meulen attended Louis XIV. in his conquests. Gros and Gérard accompanied Napoleon to reproduce his battles. All the great easel-pictures then retraced the fields of the slaughtered, and the episodes of peace and of war. Gérard, in preserving the principles of the school, had a large and expansive manner of seeing and embracing a subject, a wonderful rendering of personages, the art of grouping them, as in the "Battle of Austerlitz." Gros had made more profound studies from the Academy: he followed David for the attitudes, the positions, for the nude: necessarily he poetises in the magnificent cupola of Ste. Geneviève, which is his second beautiful manner. Girodet appears as the painter of the Restoration: he was for painting what Chateaubriand had been for literature; a solitary mind which had toiled in the regions of the beautiful without adorning the power: he loved vague ideas, poetical conceptions: he thought that the art ought to abstain from material things, and that the gods should be nourished with ambrosia. So, in the *Galatée*, one of the great works of Girodet, and which ornaments the first hall of the Restoration, the poetry is magnificent: it is evidently the offspring of a beautiful imagination. Horace Vernet followed in the art the same route as Delavigne in poetry: he made painting the subject of circumstances: rapid as the events, he worked to serve them. Delavigne, in his *Messénienne*, had exhibited the great disasters of the French army. Horace Vernet

gave himself up to the painting of wounded and dying soldiers, horses rushing to battle, and in all kinds of forms: he did all for popularity. Selections of groups from his pictures are familiar objects in the Paris print-shops. Delaroche came at the second period of the Restoration, the epoch of Sir Walter Scott, and historical subjects. Romances in the old time are written, which much assist the arts, and save the traditions of the past. Paul Delaroche selects dramatic subjects, and renders them with great expression. Sculpture made great progress under the Restoration: at every new epoch there were required monuments of public magnificence, trophies of military prowess, arches of triumph, and cenotaphs. The restoration continuing the works of the empire, concerned in architecture, wishing to leave a *souvenir* of themselves, erected some monuments: the Exchange rose in splendour, the streets of *la Paix* and *Rivoli* were finished, with the immense building, with its large quadrangles and arcades, of the Minister of Finances: they continued the Madeleine, the Panthéon, the palace of Condi, the Chambre des Députés. During this vigilant administration of Paris, they were especially occupied in markets (*halles*), *abattoirs*, places for slaughtering cattle out of the city, fountains, and the lighting by gas, which gave to the capital the aspect of an advanced civilization. In the first period of the Restoration many ancient monuments were demolished. Pradier, Cortot, Lemoine, Lemaire, and Bosio, were the well-known sculptors of the Restoration.—Pradier, whose graceful female figures enchant all eyes, and are distinguished among many others which claim admiration. Cortot modelled his works. Bosio was for sculpture what Gros and Gérard were for painting: his first days were passed under the Empire, and it may be said that his talent finished with the Bourbons.*

The Restoration found the theatres in a splendid state: the taste of the emperor for tragedy and high comedy had brought out artists; for, when protection is dominant, talents develop themselves. Talma, the celebrated French tragedian, made his first appearance at the Comédie Française, and obtained great success. It is to him that the stage owes the reform of theatrical costume, for he was the first who was seen in 1789 tracing the stage clothed in the Roman toga in all its severity. From this moment his theatrical life was a train of uninterrupted success. Napoleon, who honoured the rare talent and character in him, admitted him to his intimacy.†

The public are advantaged by the sciences when they are applied to the arts or to commerce, to great agricultural or manufacturing ameliorations, and the Restoration did much to extend industrial education.

The eighteenth century attracts our attention and wins our praise for many things; but we ought not to forget the zeal of Louis XIV. which embraced and extended itself to all knowledge; that by precious treasures and immortal monuments, he encouraged the sciences, which time brought to perfection, and which became great with the experience of after nations. In the progress, also, of the modern mind we ought to recognize that the first movement was given to it by this powerful hand.‡

[The writer's admiration of the state of art in France, at the period in question, is less qualified than our own would be.—Ed.]

COST OF THE BRIDGE OVER THE HAVEN OF YARMOUTH.—At a recent meeting of the Great Yarmouth Pier Commissioners, the clerk read the award of arbitrators appointed with reference to the payment of Messrs. Grissell, for the construction of the bridge over the haven of Great Yarmouth, and other works. The sum awarded was 2,769*l.* 5*s.* 4*d.* to be paid by the commissioners on or before the 1st of January. The original contract for the bridge was 23,731*l.* 10*s.* besides which the sum of 1,849*l.* 11*s.* 10*d.* was allowed for extras by Mr. Walker, the commissioners' engineer, and these amounts, with the 2,769*l.* 5*s.* 4*d.* now allowed by the arbitrators, make a total of 28,353*l.* 7*s.* 2*d.* as the actual cost of the bridge. Of this, 25,581*l.* 1*s.* 10*d.* has already been paid. The amount claimed by Messrs. Grissell was 32,241*l.* 5*s.* 7*d.*

* Capefigue, "Hist. de la Restauration."

† Talma, published, in 1845, "Réflexions sur l'art du Comédien." The life of Lekain, a tragic actor, is also interesting. By the influence of Voltaire, he appeared on the stage in 1750.

‡ Villemain.—Capefigue, "Hist. de la Restauration." For an account of the moral and political state of France at the end of the eighteenth century, see Thiers's "Histoire de la Révolution" (4th edit. Paris, 1834, vol. i. ch. 1).

* Blondel, as above, quoting M. Boffrand (1750).

† "Histoire de France."

‡ "L'Art de Vérifier les Dates, Chronologie des Rois de France, Louis XV." Third edition, folio. Paris, 1783.

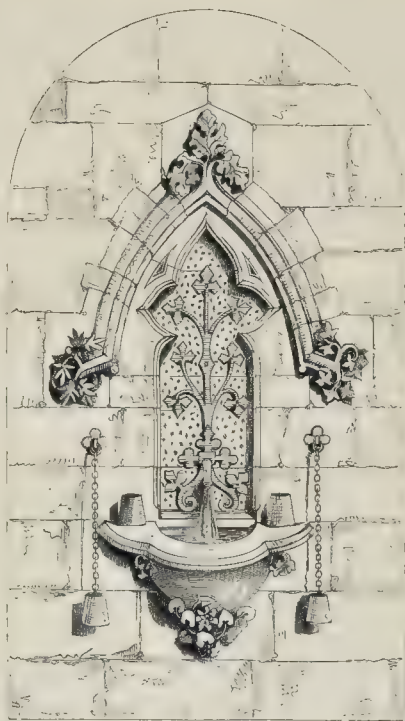
§ "Biographie Universelle."

¶ Capefigue, "Histoire de la Restauration."

** Villemain, sur les Avantages et les Inconvénients de la Critique. Discours. 1814.

* A. Houssaye, "Le Dix-huitième Siècle."

† A. Houssaye.



SKETCH FOR A MURAL DRINKING-FOUNTAIN.

DESIGN FOR A MURAL DRINKING FOUNTAIN.

ANNEXED we give a design, from a sketch by a contributor, for an inexpensive mural fountain, which has at any rate the merit of looking like what it is. The almost universal practice of causing the water to issue from the throat of a lion or a tiger is avoided. The fixings of the spouts, which might be of bronze, or of iron so prepared as to prevent corrosion, are floriated. The basin and niche might be of stone or terra-cotta. Encaustic tiles may be usefully and effectively employed in such erections, if only as a floor beneath them.

FALL OF STONE STAIRCASE AT THE POLYTECHNIC INSTITUTION.

LATE on Monday evening last, at this Institution, a very deplorable event occurred, resulting in the death of one person, and serious injuries to six others, of whom three can hardly be expected to survive, besides more or less wounding some twenty other persons. It appears that after about 800 of the audience had left the building, the staircase (on the left-hand going in), well known to most of our readers, was being descended by the remainder of the thirty or forty lingerers, who always wait to see the complete exhibition, when those upon the middle flight were hurled to the bottom of the well of the staircase by the fall of that flight of steps on to the one below it, carrying the under one also into the basement. The immediate assistance of police force and the officials of the Institution saved the surviving sufferers, almost all females, from the immediate perils of their position.

Pending the coroner's investigation, we shall abstain from any comments upon this additional disaster in the midst of the festivity of the new year, in order that no injustice may be done by casting blame in wrong quarters.

The steps are of Portland stone, feather-edged, and were put up twenty years ago, under the direction of Mr. James Thomson, the architect of the building. Not long ago the treads having become worn, open iron-work, the interstices filled in with cement, was let in on the face of them, and it has been urged by some that cutting

into the steps for this purpose has led to the calamity. The iron facing on each step weighs about 1 cwt. Each step probably weighs 2½ cwt. On the other hand, it is stated that the fall commenced at the upper landing, and that it has been found that the joggle here was not soundly made.

The appearance presented by the staircase is most extraordinary; every step being broken sharply off about 4 inches from the wall. The accident will not fail to inspire the gravest considerations.

A jury, under Mr. Wakley, coroner, met on Thursday morning last, and, after viewing the body, adjourned for a week, to enable two architects, unconnected with the establishment, to examine and report on the cause of the accident.

NEW TOWN-HALL AT ALSTON.

THE new Town-hall at Alston has been inaugurated. It is Mediaeval in style, and with its clock tower, gables, and pinnacles, is a conspicuous object from many points of view. The tower is the principal entrance to the building. Its doorway is enriched with two carved lions, and its spandrels with carved foliage and shields, which, with the other carvings, are by Messrs. Patterson and Barstall, of Newcastle. Within is a porch 10 feet square, and beyond is a corridor of the same width, which gives access to news-room, board-room, and waiting-room, and, by means of a staircase, to the floor above. On this floor is a large landing, ante-room, and the public room or lecture hall. The latter measures internally 54 feet long, 25 feet wide, and 30 feet high. The roof is of ornamental construction, and displays to view the whole of its timbers, which are stained and varnished. It is lighted by five windows: those at the ends are of four lights each, and the whole have tracery heads and deeply moulded arches, with hood mouldings and carved corbel heads. The gable next the street has its window flanked by two niches with carved corbels and crocketed canopies. Besides the above, accommodation is provided to the right of the corridor for the purpose of a savings bank and a residence for its agent.

The whole of the building is provided with the means of lighting by gas, the fittings for which were supplied by Messrs. Hart and Son, of London. The various works have been executed by Mr. Thomas Marsh, of the designs of Mr. A. B. Higham, of Newcastle. Mr. McAdam, of Alston, acted as clerk of the works. The cost has been 2,199l. 13s. 3d.

PROPOSED GOVERNMENT OFFICES.

THE views of the Government in respect of new public offices have undergone a change. Without professing to be quite exact in a matter which seems not yet to have reached the stage of exactness, we believe the present intention is that a building shall be erected in Downing-street, for the purposes of the Colonial Office and the East-India Board; and that Mr. Scott and Mr. Digby Wyatt (the latter holding the appointment of architect to the East-India Company), will be associated as architects.

SCENERY AND MUSIC.

A VERY large amount of new scenery, both pictorial and mechanical, has been prepared for the Londoners this Christmas,—quite enormous, indeed, viewed together, and but for the great pressure on our space this week we should allude to it more specially, following the course we have pursued for years, and which course, commenced at a time when theatrical painters were seldom named than now, has admittedly had a good effect upon the profession.

At the *English Opera House*, Covent Garden, the effect of which is certainly improved by the alteration of the private boxes on the pit and grand tier into open circles, Mr. Balfe's new opera, "*Satanella*," is drawing full houses, very deservedly. Well mounted and well sung, it is seen to be a fine work as a whole, and includes several compositions which the "organs" of Europe will not willingly let die. Miss Fyne and Mr. Harrison, who fill the chief parts, will find six performances a week too much for the voice.

At the *Haymarket*, Mr. Calcott has been successful in producing the required two fairy scenes for Mr. Buckstone's very good pantomime, "*Undine*." At the *Princess's*, Mr. Grieve has provided as usual some effective pictures. At the *Lyceum* ("*The Siege of Troy*"), Mr. Fenton has made an original use of the Greek Honeysuckle in his elaborate transformation scene, but elsewhere has missed availing himself of the architectural characteristics of the period. One Martin-like picture is elegant. The burlesque is itself a very good one.

Of Mr. Beverley's achievements at *Drury-lane*, we may find some other opportunity to speak.

THE "BUILDER'S" LAW NOTES.

Bankruptcy.—Two separate petitions for adjudication of bankruptcy were presented against two members of a firm, and subsequently a joint petition was presented against the firm under which assignees were chosen. They applied for an order to annex the earlier separate petitions to the later joint one, but though the district commissioner made the order, it was held by the Court of Appeal in Chancery that he had no power to make it, and the order was accordingly discharged.—*Re Powell and Another*.

Auction.—Two persons desirous of purchasing property at an auction agreed not to bid against each other, but that one should bid for and purchase the property if it should be sold under a fixed sum, and that if purchased they should divide the lot. An effort was made to set aside this agreement as inequitable, but it was held to be not so, for that the vendors might have fixed a reserved price, which would have made it immaterial what agreement was entered into between the parties.—*Re Carew*.

Brickburning.—Burning bricks on a man's own ground, so as to be offensive to a neighbour, is a nuisance, and can be restrained by injunction.—*Walter v. Selfe*.

PRINCIPAL ENTRANCE OF THE LEEDS TOWN-HALL.

WE have illustrated, on the opposite page, the principal doorway of Mr. Brodick's building at Leeds, inaugurated by Her Majesty, as our readers will remember, in September last. The doors are of oak, covered on the outside with sheet-iron, and have cast-iron ornaments fastened to the sheet-iron. The large centre panels of the three doors are open, with glass behind.



PRINCIPAL ENTRANCE, LEEDS TOWN-HALL. — MR. CUTHBERT BRODRICK, ARCHITECT.

THE CONVENT AND PALACE OF MAFRA.

AMONG the magnificent relics of ancient grandeur to be met with in the Peninsula, the Convent and Palace of Mafra is worthy of attention, as well for its vastness as for the profusion of ornament upon which no expense was spared. The little town of Mafra is situated in the Sena de Cintra (Estramadura), at a good height in the mountains, contains 2,000 inhabitants, and its treeless deserted appearance is dismal to the eye. Yet Mafra seems to have been an important place, as it was carefully fortified, and its ancient walls now exist.

On entering the *enceinte*, an immense construction is presented to view, before which the town seems to kneel as a slave before its master. This is the celebrated real Convento e Palacio de Mafra, the greatest and most magnificent monastery in all the Peninsula, except the Escorial. Founded by John V. in the beginning of the sixteenth century, it cost, in building, twenty millions of crusades, or forty-five millions francs.

On the side facing the town there stands a basilica, surmounted by a dome and two lofty towers: on each side of the church extend two immense palaces, terminating in pavilions; finally, the lower wings stretch in parallel lines from one to the other of the palaces, forming numerous courts between them. Jean V. was accustomed to reside a part of the year in these cloisters, in the company of the religious men known under the name of *frades arabidos*. The palace of Mafra was built from plans of the architect, Ludovici (a German), and under the direction of his son, and a Milanese architect. Italian, French, Dutch, and other artists decorated it with pictures, statues, and sculptures, in gold, bronze, and other precious materials. The palace is particularly rich in statuary. The portico of the church and the lateral chapels contain fifty-eight pieces, representing the Apostle, and different saints of colossal proportions. All these statues are in Carrara marble, many being *chefs-d'œuvre*. The altars were originally adorned with paintings, which were afterwards replaced by *bas-reliefs*, in white marble, executed by Portuguese artists, under the direction of Romain Fusti. Throughout the palace, the pilasters of the doors, and the steps of the stairs, are in black marble. Skillfully worked railings and vases are met with at every step. The king's apartments number more than 200 rooms, as do also the cells of the brethren. The library contains 50,000 volumes, arranged in two spacious halls. The cloisters and palace united comprise 860 rooms, with about 6,000 windows.

The terraces on the roof of this vast edifice are all paved with white marble. From this elevated spot the eye can discover in the distance points of view, enchanting enough to make one forget for a while the poverty of the immediate neighbourhood. These promenades, for such they are, agreeable, varied, with round seats, lounges, bowers, &c. were enriched at great expense, with plants from the Botanical Gardens of Palermo, when the cloisters were in an inhabited and flourishing condition. The cupola forms the centre of the walks, of which the extent is so great, that a person can lose himself as easily as in a labyrinth. From the snow-white sonorous floor, at equal distances from the centre of the building, rise two steeples, in black marble, containing chimes, after the Dutch fashion, which sound every quarter of an hour. The hours are struck on an immense bell in the dome.

ELY LOCAL BOARD OF HEALTH AND THEIR SURVEYOR.

A RATEPAYER has forwarded to us a copy of a letter addressed to this Board by their surveyor, wherein he refuses to certify certain manure-tanks, and inquires if the Board "cannot force the surveyor to comply with their orders." The surveyor says,—

"As an officer of the Board, I consider that I am in duty bound to do all that is in my power to serve the Board, consistently with my duty to myself and the public; and as I consider it would be very improper to commit an illegal act (and to empty the tanks in the open air would be a public nuisance, and therefore an illegal act), I must decidedly decline to do it."

At the end of his letter he advises the Board "to erect some sort of building over the works previous to emptying the tanks. A wood shed, such as was recommended before, 145 feet long, by 40 feet wide, by 20 feet high, will cost about 300*l*."

Instead of answering our correspondent's inquiry, we prefer to say that we incline to think the surveyor quite right. The Board would incur great responsibility if they acted in opposition to their officer's report on the subject.

BEDLINGTON AND MORPETH.

MR. WOODMAN, clerk to the Morpeth Board of Health, having tendered his resignation, it was accepted with a vote of thanks for his services. In reply to this Mr. Woodman addressed a letter to the Board, wherein he gives some parting advice. He says:—

"In Morpeth the means of promoting the public health have been obtained, but main sewers and water-supplies are but means to an end; and much remains to be done by your Board to give to these works their full value to the people. Cholera has happily been averted, and in 1856 and 1857 there were but three deaths from fever—two of these being remittent fever of children under five years. What would the people of Newcastle and many other towns not give could they say the same?"

But in Bedlington all those causes which produce disease not only exist, but no adequate effort is made to remove them. It has been shown by the reports of the Registrar-General that the average of deaths in England and Wales is 22 in 1,000, and that in ordinarily healthy parts of the kingdom it varies from 15 to 17. The population of the entire parish of Bedlington, according to the last census, was 5,101. The following were the deaths in the last three years, viz.:—

1856	118	23.13 in 1,000
1857	136	25.66 "
1858	adding 2-10ths to the deaths in the first ten months, 181	35.43 in 1,000

From this it appears that at Bedlington the death-rate is steadily increasing year by year, that the poison from filth and cesspools and the want of water are increasing and producing their certain results. Few places occupy a situation more adapted by nature to be healthy than Bedlington. Placed upon the summit of a rising ground, having a rapid fall on all sides, it is of easy drainage. With an ample stream of pure water flowing past one end, there is no reason why its numerous inhabitants should be without sufficient water for the ordinary necessities and amenities of life.

Take 17 as the number of inevitable deaths in every 1,000; it follows that in Bedlington, in the year 1856, there were 32 deaths, which, to a certain extent, were preventable; in 1857, 50; and in the present year, if the mortality of the remaining portion equals that of the last ten months, there will be 95; in all 177 deaths from causes which might have been removed.

The inhabitants of Bedlington were warned by Mr. Rawlinson in 1849: they were afterwards advised by the late Dr. Gavin. Both were unattended to. Cholera has twice visited their town, on both occasions making its first appearance in the same house. Yet this remarkable instance of cause and effect has produced neither conviction nor action, and the wretched house is now as well prepared again to receive its deadly guest as in 1849.

PROVINCIAL NEWS.

Dorchester.—The water works and drainage of Dorchester will probably soon be brought into operation. The steam-engines are erected, and have worked. The water increases, and no doubt is entertained of a full supply. The engines were made by Messrs. Winter and Hussey, engineers. They throw about 14,000 gallons per hour a rise of 150 feet. The well is 90 feet to the water, 34 feet of water, and there are headings in four directions of 75 feet each.

Higher Hurst.—The new schools for Higher Hurst, near Ashton-under-Lyne, have been opened. They have been erected at the cost of Mr. John Whittaker, cotton manufacturer, and will cost between 3,000*l*. and 4,000*l*. On Sundays the building will be used as a place of worship for the denomination to which Mr. Whittaker belongs—the Methodist New Connexion. One feature connected with the schools is, that young women will be taught household affairs, including cooking, for which arrangements are made.

Holbeck.—The New Mechanics' Institute at Holbeck has been inaugurated. The new building is in Sweet-street, and the foundation-stone was laid on the 24th of March last. The lecture-hall is 69 feet 3 inches by 34 feet 6 inches, the height being 21 feet, and in connection with it are several other rooms, for classes and the various requirements of a mechanics' institute. The designs were prepared by Mr. E. Milnes, of Bradford, and the work has been executed by Mr. Woolley, builder, and by Messrs. Midgley and Ogden, joiners, Bradford. The total cost will be about 1,800*l*. nearly the whole of which has already been subscribed.

Bolton.—A new cotton-mill, calculated to hold 40,000 spindles, and a shed for the preparatory

process of cotton spinning, are about to be erected at Great Lever, near Bolton, by Mr. Alderman Harwood.

Dunfermlie.—A market-hall has been erected in Dunfermlie by a private firm, Messrs. Sloan, Brothers. This hall, which has been opened, is situated in Irish-street, from which there are two entrances. It is nearly equi-distant from the present site of the Corn Market and the White Sands, where extensive cattle markets are held. The hall, according to the local *Courier*, is 90 feet in length, by 40 in breadth. The walls are 12 feet high, and are panelled to the height of 5 feet. The roof is supported by wooden girders, the centre of the roofing composed of rough plate glass, by which the room is lighted. Provision has been made for artificial light.

Dundee.—A block of houses for the accommodation of the working classes is about to be erected at Clepington, Dundee. The block will be in flats, and accommodate about fifty families, each having a room for occupation during the day, a bed-room, and closet. They are to have at the back a large washhouse fitted up with tubs, and a bleaching-green.

PREMIUM FOR DESIGN.

AMONGST the prizes offered by the Society of Arts, and of which a list has been published and may be obtained, is a Silver Medallion, in conformity with the will of the late John Stock—

For a design for an Institute, comprising a hall for lectures and music, two or three class-rooms, a reading-room, and a library, which must be in one or in communication offices, and apartments for the librarian. The principal rooms should be so arranged that they may be easily used together for the purposes of exhibition. The plan must be suited for an institution having two hundred members, and be capable of extension so as to meet the wants of institutions having 1,000 members.

Provision must be made for lighting and ventilating the whole of the building. The design must be exhibited in the following drawings, which must be to a scale of one-eighth of an inch to a foot:—

1. A general block plan.
2. A plan of each floor.
3. At least two elevations.
4. Sections showing the construction of all parts of the building.
5. An estimate of the cost.

N.B. All the dimensions must be figured on the drawings.

PAYMENT OF FEES UNDER METROPOLITAN BUILDING ACT.

Wandsworth Police Court.—Mr. W. Moore, of Putney was summoned before Mr. Ingham, by Inspector Dodd on behalf of Captain Labalmondiere, for neglecting to pay the sum of 30*s*. being the surveyor's fee for the survey of dilapidated premises in his occupancy.

The defendant said he was only a yearly tenant. A wall was cut in two places, 3*s*. 6*d*. for a wall, and 2*s*. for the building. One fee had been paid by the owner, and he thought he ought to have paid both. He went to the police-station at Scotland-yard four times, and he was told he had nothing to do with the fee, as he was only a yearly tenant.

Mr. Ingham said the defendant had been led into error by persons who had probably never read the Act of Parliament. It appeared that the occupier whose rent did not exceed the amount of the expenses claimed was liable for the payment of the fees.

The defendant wished to know how he was to recover the fees.

Mr. Ingham said that was a question between him and the landlord. He thought the words of the Act pretty clear. It stated, "In the first instance," and, therefore, when the defendant paid his rent he could deduct it.

The defendant then paid the 30*s*. fee, and also 2*s*. the cost of the summons.

THE BUILDERS OF BIRMINGHAM.

THE Birmingham town council, being about to erect baths in Woodcock-street, advertised for tenders, but received only two, one of which was afterwards withdrawn, and the following letter:—

"Proposed New Baths, Woodcock-street.—Gentlemen: We, the undersigned builders of Birmingham, having received your circular in which you extend the time for receiving the tenders for the above work from the 2nd to the 16th instant, beg most respectfully to offer you an explanation why we still adhere to our former resolution of withholding them, and trust that the same will be received by you and laid before the council. We are informed that the Public Works Committee have privately entered into arrangements for large works about to be done in erecting deodorizing tanks at Salfley, and have themselves bought materials for that purpose. We cannot but think that such works should be submitted for competition to the builders of the borough, who are very large contributors to the local rates. For these reasons, and conceiving we have not been well treated, and that the mode adopted by the Public Works Committee is not calculated to advance the interests of the ratepayers, we are induced to decline tendering for any more works until the subject is fairly brought before the council.—We are, Gentlemen, your obedient servants, John Cresswell, John

Webb and Sons, William George, Chambers and Hilton, William Matthews, Cornish, Brothers; James Wilson, Benson and Gwyther, John Hardwick and Son, Thomas Pesby, Thomas Mills, Jacob Nowell, W. and B. R. Smith, Charles Jones, James Mountford."

The council deny the right of the builders to dictate, say they did get tenders for the tanks, both for excavating and for the bricks, and have determined to advertise again.

THE BLACK BEETLE NUISANCE.

SIR,—In a work devoted, *inter alia*, to the comfort of dwellings (as the *Builder* has shown itself to be), a few remarks on a successful extermination of those pests to domestic comfort—black beetles—can scarcely be out of place. I may premise that my house (in London) is some hundred and fifty years old, but in a state of perfect repair and cleanliness; also that these insects appear, like crickets, to prefer warm and dry places; indeed, I do not recollect having ever seen them elsewhere. Now, my kitchen formerly swarmed with them. Stragglers were very numerous in the day time; but at candle-light, and especially when (on the servants retiring to bed) darkness and stillness prevailed, they might, on going down, before they had time to retire to their hiding-places, be counted by hundreds and thousands. The floor and dressers were covered with them, including some of the largest and finest bread—for "there were giants in those days"—and by getting on the servants' dresses, and on cloths, &c. they were occasionally carried over the house, and the nuisance became so intolerable, it was determined to try to get rid of them; so a regular *battue* was planned. The first thing was to discover their chief places of resort: these were found to be chiefly about the fireplace and the flues of the hotplate and coppers, only occasionally used, and cracks and small holes round and adjoining the chimney. The smaller of these entrances were well stopped with strong red lead glazier's putty; the others, where practicable, with pounded glass mixed with cement, and the copper and boiler being full of water, all the furnaces to these and to the hotplate, &c. were lighted, so as to burn them out of their nests, and so that the insects could not escape out of a flue which was lighted into one that was not, which drove them into daylight; and as fast as they appeared they were well plied by having boiling water poured over them, and being then thrown into a pail of the same; for like other insects, there is such tenacity of life within, that it is only by continued force (where not absolutely crushed) that vitality can be destroyed. This took place some ten or more years ago; and whether, according to an old saying, peculiarly applicable to this case, "the insects found the place too hot to hold them," whether the colony was destroyed, and none other have found their way here since; or from what other cause, I know not; but, from that day to the present, I have not seen or heard of one single insect. The last few nights I have carefully searched, after the kitchen has been quit for the night, to make quite sure before penning this communication; and, on a careful examination (the same as previously), I have not been able to find one. The hint may be useful others.

AN OLD SUBSCRIBER.

PRESERVATION OF STONE IN BUILDINGS.

SIR,—I have to request of you the favour to allow me the use of a small portion of your columns, to offer a few remarks, in reply to the observations of Professor Ansted, in No. 829 of your journal, upon the above-mentioned subject.

I must preface my observations with a positive denial of the truth of Professor Ansted's assertions, with regard to the materials which I employ for the preservation of the stone in the New Palace at Westminster; and I feel that I have reason to complain that, in the position which he justly occupies in the scientific world, he should have published such assertions, without having taken the proper means to satisfy himself of their accuracy. If, however, Professor Ansted will favour me with a visit here, I shall, I doubt not, be able to convince him, by demonstration, that he has been entirely misled in respect of the materials employed in my composition.

In the meantime, I think it right to declare that the composition which I employ for the preservation of the stonework of the edifice in question does not contain any *animal* or *vegetable* ingredient whatever; but that it is altogether a mineral compound; and that it is applied to the surface of the stonework by labourers only, with a brush, and that the stone is thereby impregnated

with it to considerable depth; that it effectually closes the pores of the stone with a material which, in a day or two, becomes excessively hard, and renders the stone proof against all atmospheric influences whatever; and that it will prevent all future decomposition of the stone, and, to a considerable extent, any discolouration of its surface.

N. C. SZERLEMET.

STREET LAMP ADVERTISEMENTS.

I SEE by the last number of your publication that propositions are being made to the authorities of some of the metropolitan parishes to use the street lamps for advertising purposes; a project which I am glad to find you dissent from, as any reasonable man would naturally. Only fancy, for one instant,—and it is scarcely an imaginary idea if the plan be carried out,—a street lamp thus ornamented; on one side, Mr. Smith's "Little Gridiron;" on another, Mr. Skinner's "Golden Boot;" on a third, Mr. Myson's "China Tea-pot;" and on the fourth, Mr. Beaver's "Parisian Hat." Would not this be a pretty addition to our street architecture and street decorations? In an age when so much is being done towards the improvement of our highways and byways, though not half so much as is needed, it is positively disgusting to find such a proposal tolerated for a moment: it ought not to have obtained even a hearing. If carried out,—and it seems likely to be in some parishes, according to your report,—I only hope the public, at least such as pay some degree of respect to the appearance of our streets, will show their sense of the outrage upon good taste thus perpetrated, by refusing to purchase of these street-lamp advertisers: it is the only way to cure the evil, and one I shall most certainly act upon, as will many who have mentioned the subject to me.

Apart, however, from the consideration of *taste*, our streets are not so brilliant with light from the lamp-posts that we can afford to be deprived of any portion of that we already have.

FLY-BY-NIGHT.

CHURCH-BUILDING NEWS.

Ipswich.—The east window of St. Mary-at-Tower, in the Decorated style of architecture, consisting of five lower lights and tracery, has been filled with subjects set forth in a material representing stained glass. (?) In the centre is the "Agnus Dei;" with the pelican and sacred monogram on either side are placed the emblems of the four Evangelists. The whole are surrounded by circles containing the instruments of the Passion. The backgrounds of the lower lights are filled with scrolls inscribed with "Gloria in Excelsis" on ruby and blue grounds alternately. In the principal tracery light is a figure of our Saviour, one hand raised in the act of benediction, the other holding a book. The surrounding tracery is filled with sacred emblems and floral devices. The design and execution are by Mr. H. Day, of Ipswich, ecclesiastical decorator. The material used, says the local *Journal*, "is the most perfect substitute for glass that can be imagined; whilst it is warranted to last fifty years." The invention, according to the *Suffolk Chronicle*, is entirely Mr. Day's own.

Chelmsford.—The east end of Chelmsford church, at the cost of the Mildmay family, is about to have a new stained glass window, as a memorial to the late Lady Mildmay. The design of the window, which is in the Gothic style, is by Mr. F. Chancellor, and it has been executed in Bath stone by Mr. Hardy. The stained glass is designed and carried out by Messrs. Clayton and Bell, of London. The subjects in the main lights are to be the Agony of our Lord in the Garden; the Crucifixion; and the Resurrection. In the upper lights are to be heads of the Evangelists, and below, Our Lord feeding the Five Thousand, Blessing Little Children, and Healing the Sick. To give full scope and proportion to the work, the panelling and picture below the present window are to be removed, and there is also to be a new communion rail.

Whitfield.—The church of Whitfield, near Haydon-bridge, was an inelegant structure of debased Italian style, and moreover, inconveniently situated. In its place, a new church is now being erected, next the high road. It is in the Early English style, and will be finished inside with polished stone instead of plaster. The seats will be of oak. It is a cross church, with tower and spire at the intersection. The church will accommodate 130 persons, and is being built as a memorial to the late Mr. William Ord, formerly M.P. for Newcastle. The architect of the church is Mr. Higham, of Newcastle.

West Tarring.—We are asked to say that the window now being put into the church here, as mentioned last week, was designed and executed by Messrs. Lavers and Barraud.

Westbromwich.—Christ Church, West Bromwich, having been greatly damaged during the last four years by mining operations, has been restored and beautified. The altar screen, which darkened the church and curtailed its length, has been removed, and a stone arch erected in its place, from the design of Mr. Christian, the effect being to give light to the body of the church, and display the proportions and tracery of the east window, which only wants stained glass to complete the work. The church has been re-opened.

Monk Bretton.—Through misinformation Monk Melton was named instead of Monk Bretton in our number for the 18th ult. as the place where a church and school were about to be erected on a site given by Lord Wharnclyffe, and from a design by Mr. J. G. Stapleton, junior.

Wales.—A new chancel organ, built by Messrs. Forster and Andrews, of Hull, has been opened in the parish church of this village. The instrument is small, ranging from C to G with three stops, viz. stopped diapason, dulciana, and principal.

Kirklington.—The church here has been undergoing a complete restoration during the last nine months, and is to be reopened for divine service on the 5th of January by the Bishop of Ripon. The church is built in the early English and Decorated style, consequently about the twelfth century. The exterior has had several additional portions of masonry in character. Mr. R. Weatherley, of York, has carried out the restoration. In the interior the stone work has been re-chiselled and the walls replastered. The chancel arch is new—the old one having been discovered to be in a very dangerous condition. The present one is five feet higher in the apex than the original one, and is now in character with the other arches. The Gothic roof of the chancel is quite new, as also is that of the whole church, which is high pitched. The entire church has also been new-seated with carved heads or ends. The woodwork has been stained and varnished by Mr. C. Girling, of Boroughbridge. The whole of the woodwork has been completed by, and under the superintendence of, Mr. J. Wright. The windows are all new, and have been furnished by Mr. J. Humphries, York: they are of cathedral glass, bordered with stained glass. The heating apparatus has been supplied by Messrs. Longbottom, Leeds. The font is new, and of Caen stone. It is a gift from the architect, Mr. J. G. Jones, of York. The whole has been under the superintendence of Mr. Harrison, of York, Mr. Jones's clerk.

Barton-upon-Humber.—The chancel of the church of St. Peter, Barton, has just been further embellished by a memorial window. It is the north-east window, which is, with the chancel itself, architecturally speaking, of the "Late Perpendicular" character, and consists of three panels, or lights, surmounted with tracery. The panels contain, in the lower parts, as many Scriptural subjects, viz.,—"Jesus wept," "The Resurrection of Jairus's Daughter," and Jesus appearing to Mary Magdalen." These are inclosed by pedestals and columns that support the tabernacle work which surmounts them, and the canopies contain, in niched panels, angels holding scrolls, inscribed thus:—"As we have borne the image of the earthy, we shall also bear the image of the heavenly." Surmounting these occur enriched and entwined vine branches, which are intended to bear allusion to our Lord's expression,—"I am the vine and ye are the branches." These continue in the tracery, and combine it with the lower part, by which means bosses are formed, containing sacred monograms and symbols. The pedestals below have labels inscribed with the dedication, "To Mary, widow of the Rev. George Uppley," &c. Mr. Warrington, of London, is the artist.

Doncaster.—It is proposed to erect another Wesleyan chapel in Doncaster. The estimated cost will be 1,500*l.* and the style Gothic. Accommodation is to be given to between seven and eight hundred persons, without galleries except a small one above the entrance. The plan, according to the local *Gazette*, will resemble that of the Ackworth chapel. A site will probably be sought for in the direction of Balby.

Durham.—St. Nicholas Church, Durham, has been opened for divine service, after being rebuilt. The church, which has been about eighteen months in hand, has cost about 5,000*l.* nearly 600*l.* of which sum remain to be provided for. It is built in the early decorated style of Gothic architecture, and has a spire about 80 feet high. There are about 560 sittings, all free, and all provided

with cushions and hassocks at the expense of the Rev. G. T. Fox.

Edinburgh.—The late Miss Barclay, of Edinburgh, has left by will a number of bequests to the Free Church. The most important are the following:—10,000*l.* to build a place of worship in the new town of Edinburgh, with power to the trustees to invest the amount until it shall be doubled, so as to build and endow the church; and 16,000*l.* for educational purposes, chiefly, if not wholly, for the benefit of ministers' families.

Dundee.—St. Mary's Episcopal Church at Broughty Ferry has been consecrated and opened. It consists of a nave and chancel, the former 60 feet by 24 feet inside. With the chancel, the extreme length is 88 feet, and the open-timbered roof is 35 feet high to the ridge. The entrance is at the north-west corner of the building, through an open Gothic porch. The pews are low, and of plain design, with the natural wood stained and varnished. The pulpit is placed at the north-east corner of the nave, and is of carved oak, resting on a moulded stone pedestal. A lectern, carved in oak by Farmer, of London, and the gift of the bishop, stands before the chancel steps. Within the chancel on either side are stall seats for choristers, &c.; and a recess on the north side contains the organ, by Mr. Bevington, of London. The large east window over the communion-table consists of three lights, the archivolts mouldings of which are supported by malachite shafts. This and the other windows of the chancel are filled with stained glass, by Mr. Scott, of Carlisle. One of the windows near the entrance is filled with stained glass, the gift of a member of the congregation, from a design by Mr. Cattermole, of London; and another memorial window will shortly be put in. The church is lighted at night by Gothic standards of iron and brass, manufactured by Mr. Skidmore, of Coventry. The design for the church was furnished by Mr. Scott; it has been carried out by Mr. James MacLaren, of Dundee. The contractor for the mason work was Mr. William Gibson, Carnoustie; and for the wright work, Messrs. Clark and Cable, Dundee.

RECENT AMERICAN PATENTS.*

COATING METALLIC SURFACES.—*Wm. and Wm. A. Butcher*, Philadelphia, Pennsylvania.—Claim.—The process of coating metallic surfaces, consisting of heating the metal to be coated to about 350 degrees of heat, containing the mixture, prepared as described, and in placing the metal to be coated in a baking oven, heated to about 200 degrees of heat, to harden the coating.

COMPOSITION FOR VARNISHES.—*Damon R. Aerill*, assignor to self, and *James F. Davis*, Pulaski, New York.—Claim.—The composition of matter, consisting of water and acetate of lead, with spirits of turpentine and coal tar, for the purpose of making a cheap, quickly-drying, and superior varnish.

COMBINED RAILROAD TRACK AND CAST-IRON PAVEMENT.—*Walter Bryant*, Boston, Massachusetts, assignor to *Daniel D. Badger*, City of New York.—Claim.—The combination of a cast-iron pavement and railway, cast and united together in suitable sections; also, the combination of the tenons and mortises on the ends of the rails, and the alternate over and under-lapping tongues on the edges of the pavement, for the purpose of interlocking the adjacent sections of the combined pavement and railway.

FARM GATE.—*Andrew Dietz*, Raritan, New Jersey.—Claim.—The combination or arrangement of the rotating incline and friction roller, for the purpose of causing the gate to open or shut of its own weight, according to the position of such incline, and in connection therewith the arrangement of the cords and their springs, or their equivalent, to raise the gate and turn the incline.

ATTACHING TOOLS TO HANDLES.—*John Henn*, New Britain, assignor to self, *Anton Daniel*, and *Leopold Lankan*, Hartford, Connecticut.—Claim.—The arrangement and construction of the plate, with projection, acting against a spring in the back of a handle, in such manner that when opened it will relieve the said spring, to allow a knife or tool to be attached to the upper end of the said handle, and when closed force the spring against the tool, so as to hold the same perfectly steady in the handle.

PANTOGRAPHIC TELEGRAPH.—*Giovanni Caselli*, Florence, Italy.—Claim.—The mode of rapidly transmitting the fac-similes of writings, drawings, ciphers, and arbitrary signs, in coloured characters, upon ordinary white or chemically-prepared

papers; also the mode of receiving and transmitting different despatches at the same time, and with a single wire; also, the use of local piles, with circuit always closed, for the production of the characters in chemically-prepared paper.

METROPOLITAN BOARD OF WORKS.

At the last week's meeting of this Board it was resolved to devote the 140,000*l.* borrowed from the Clergy Mutual Society to general purposes. The Report of the Main Drainage Committee stated that they had acquainted themselves with the relative cost of the ordinary blocks for the invert of sewers, and those patented by Mr. John Taylor, junr., and they had referred the subject to the engineer, with liberty to use the patent invert blocks in any situation where he may be of opinion that they may be advantageously employed.* The report also stated that they had entered upon the consideration of the reference of the Board instructing them to report as to the best means for ascertaining the flow of water over Teddington Lock, and approximately the quantity of fresh water from the tributaries of the Thames between Teddington and Barking, more particularly in dry weather, and as to the most effectual means for ascertaining from time to time the chemical condition of the water and depth of mud in the Thames at various points of the river. A Report from the Works and Improvement Committee recommended that the Board contribute towards the cost of effecting the purchase, by the vestry of Camberwell, of Camberwell-green, to be preserved as an open space to the public. The Board conditionally voted for the purpose 330*l.* The remainder of the day was occupied, with closed doors, in a discussion on the financial arrangements for carrying out the main drainage.

Books Received.

A History of the Knights of Malta or The Order of the Hospital of St. John of Jerusalem. By MAJOR WHITWORTH PORTER. In two volumes. London: Longman and Co. 1858.

If Gibraltar be the key of the Mediterranean, Malta is its lock, and both are in the possession of Great Britain. A history so closely connected with Malta as this book is, therefore cannot but be interesting to us as a nation, even had we no other interest in those *élite* knights of all Christian nations, who, by their deeds of renown, turned the eyes of the world towards Malta for many a year, ere the Moslem fell into hopeless imbecility. In themselves, and apart altogether from national feeling in the matter, there is a powerful interest in the giant deeds of the Knights of Rhodes and Malta, under such truly "grand" masters as a L'Isle Adam, and a La Valette,—an interest which is only rendered all the more touching by the sad degeneracy which latterly converted Malta into a scene of reckless debauchery, but too well preparing the way of Napoleon, the scourge, and of Britain, the regenerator of that important isle. The subsequent grand-mastership of the Russian emperor appears to have completed the ruin of the Maltese knights militant, as a political power, just when their mission as a check to the theretofore aggressive Turks had fairly come to a natural end.

The account given by Major Porter, of the construction of the Maltese city of Valette, by the Grand Master, La Valette, after whom it was named, is interesting, and will afford a specimen of the style of the author.

"On the 28th of March, 1566, the ceremonial of laying the first stone was performed by La Valette, with great pomp and magnificence. The spot selected for this purpose was the corner of St. John's bastion; and here La Valette, following the ceremonial still customary upon similar occasions, spread the mortar in due form; and, when the stone was lowered into its bed, struck it with his mallet; and, having ascertained its correctness with the square, proclaimed it duly laid, in the most approved fashion. Beneath the stone were deposited plans of the proposed city, as also several gold and silver coins, with medals bearing the legend, "Melita renascens;" together with the day and year on which the building was commenced.

* The improvement effected is in the construction of the brick inverts of sewers, whereby the hitherto objectionable butt or through joint of a 9-inch brick sewer-block is avoided, and the proper bonding together of the blocks is accomplished simply by the introduction of moveable fillets into the usual sewer block boxes.

From this time La Valette devoted himself entirely to his new city. He took up his abode in a temporary wooden structure upon Mount Sciebarra, and spent his days in the midst of their chiefs. The example thus set by their chief was followed by all his knighthood, and each one strove, by precept and example, to urge forward the progress of the work. All the leading towns in Sicily and Italy were ransacked for artificers, and at one time no less than 8,000 labourers were employed to assist the masons.

The original design had contemplated that the high ridge of rock which formed the Mount Sciebarra should have been cut down to a level platform, upon which the city was to have stood, surrounded by its ramparts, formed mainly from the natural rock, scarped down to the water's edge. Whilst, however, this work was in operation, and before it had become far advanced, rumours reached the island of a new expedition preparing at Constantinople, and of which the destination was supposed to be Malta. . . . The only result of the expedition which Selim was now preparing was to destroy the symmetry of the new city of Valette, which, instead of being on a level platform, was, owing to this alarm, built upon the sloping ridge which constituted the natural conformation of the ground. Hence those interminable flights of steps which in the present day weary the unfortunate pedestrian, whilst toiling upwards under the blaze of a July sun, and which have invoked the metrical malediction of the greatest poet of modern ages.

Adieu, ye joys of La Valette!
Adieu, siccroso, sun, and sweat!
Adieu, ye cursed streets of stairs!
How surely he who mounts you swears.

BYRON.

La Valette had not progressed far with his new city, before the want of funds began to make itself seriously felt. . . . He caused a large quantity of copper money to be coined, bearing a fictitious value far above that which it was intrinsically worth. These coins bore upon one side the symbol of two hands clasped in friendship, and on the obverse, the motto "Non sed fides," "Not money, but trust." This money was freely taken by the artificers, and passed currently throughout the island for its nominal value; and the Order faithfully redeemed the trust which had been reposed in them, by promptly calling in the fictitious coinage as they received remittances from Europe, until it had been entirely withdrawn from circulation.

Whilst the Grand Master himself superintended the construction of the town, the fortifications by which it was to be surrounded were intrusted to the care of Jerome Cassan, the engineer of the Order, a knight who had rendered himself celebrated for his proficiency in the art of fortification; and under his fostering superintendence were commenced the first of those stupendous bulwarks which have since rendered the city of Valette one of the most impregnable fortresses of Europe. The raising of the ramparts, the levelling of the ground, and the tracing of the streets, occupied rather more than a year; and, after these preliminary works had been executed under the direct auspices, and at the expense of the Order generally, private individuals were encouraged and invited to erect houses within the space allotted for that purpose."

ILLUSTRATED BOOKS.

Odes and Sonnets. With Illustrations by Birket Foster, and Ornamental Designs by John Sliegh; Engraved and printed in Colours by the Brothers Dalziel. London: G. Routledge and Co. 1859.

PERHAPS it would be difficult to point out a more convincing demonstration of how far anything good and graceful is likely to meet with appreciation, than that afforded by the extraordinary demand for the elaborate and exquisitely got-up present books, which have really become a feature of the age. Apparently there is little fear to be entertained of the supply falling short of the demand; and in so many instances have the "Dalziel Brothers," by their famous skill and wonderfully manipulated engraving, assisted to produce it, that we feel the greater pleasure in congratulating them on these "Odes and Sonnets" when, in addition to their usual deserts, they have earned extra praise as printers in colours. Of the "Odes and Sonnets," little need be said; but that "Shakspeare, Spenser, Herrick, Herbert, Sir Philip Sidney, Pope, Smollett, Byron, Southey, Wordsworth, Burns, Gray, Kirke White, and many others, are here to warble like a choir of singing-birds, in delicious concert, each aiding the other,

* Selected from the condensed lists published in the Journal of the Franklin Institute of Pen.-sylvania.

though strenuously distinguishing and individualizing himself by his *note*, albeit they nearly all

"Sing of books, of blossoms, birds, and bowers,
Of April, May, of June, and July flowers;"

and a choice garland of verse-buds these same flowers compose, fit to deck any affection's shrine. Although nothing extraneous can add to the intrinsic value of such text, the drawings of Mr. Birket Foster are of that unpretentious character, harmonizing with the sentiment rather than illustrating it, that they are the more acceptable for their own merits, delicacy, and beauty. Anything approaching to positive colour has very wisely been eschewed, and only such tints as an artist would use to set pencil drawing and suggest a sky have been employed. These effects have been most perfectly reproduced by the printer. A more decided application of colour is used in the clever and tasteful ornamental designs of Mr. Sligh; but, secondary and tertiary hues predominating, they are by no means chargeable with that garish vulgarity and harshness that appear to be leading objections and difficulties in polychromatic printing from wood-blocks. The time-honoured custom of marking the advent of the new year by a gift is so general, and the choice of something appropriate so perplexing, that some of our readers who do not count their spare guineas by handfuls may thank us for directing their attention to this charming little volume, embracing all the improvements of illustrated and decorated literature, at a small cost.

VARIORUM.

In a pamphlet, titled "Wrongs which cry for Redress" (Houlston and Wright, Paternoster-row), Mr. Thomas Hopley, F.S.S. ably urges the necessity of still agitating for the restriction of hours of labour amongst children and women. He adduces a mass of most painful evidence from Parliamentary reports of different dates down even to 1857, showing that this is a subject requiring, as much as ever, if not now still more than ever, the formation and expression of an indignant public opinion, in order to compel the Legislature to put an end to so crying and so nationally suicidal an evil. The dreadful overworking of children and women throughout the country must be ruinous to the stamina of its wealth-producers as a class, and what that must inevitably end in, it is easy to see, apart altogether from the question of moral feeling in the matter. Mr. Hopley has our best wishes for the success of his kindly and commendable endeavour.—A new and enlarged edition of "Ince and Gilbert's Outlines: English History" has been issued by Gilbert, of Paternoster-row. It is said that no less than 140,000 copies have already been sold; and we need only further mention, that this appears to have been the only book appointed by the Educational Branch of the Society of Arts as tests for their examinations, in June, 1856, of the prize students on the subject of English history. Nevertheless it is not altogether free of error. The very last and latest paragraph states, as if by way of a satire on history, that the great comet of 1858 was discovered by "Diodata," of Florence, the fact, as every one knows, being that the discoverer's name is Donati. Doubtless this, however, is a mere printer's error.—That somewhat eccentric but very able writer, Mr. G. H. Lewes, is engaged in the monthly issue, by Blackwood and Sons, of Edinburgh and London, of a serial work on "The Physiology of Common Life," written in entirely popular phraseology, although comprising the latest discoveries of European investigators, as well as the results of original research. The first sixpenny part treats of "Hunger and Thirst," in a lively and interesting way, with anecdotes, including some details as to the much-quoted case of the Black Hole of Calcutta.—"The St. Thomas's Charter-house Church and School Calendar for the year 1859," gives an account of the district and schools, teachers, libraries, and reading-rooms, &c. of St. Thomas's Charter-house.—Mr. G. W. S. Piesse, the well-known author of "The Art of Perfumery," &c. has prepared a gay little book of the season (Longman and Co. publishers), titled "Chymical, Natural, and Physical Magic; intended for the Instruction and Entertainment of Juveniles during the Holiday Vacation." We imagined, of course, that Mr. Piesse's Chymical Magic must relate to such weird tricks as that of the conversion of coal tar into attar of roses, and hence of metropolitan gas-works into sweet vales of Cashmere; but, to our surprise rather, we found on opening the leaves that they smelt neither of tar nor of roses, and had not even the faintest odour, indeed, of "the shop." The

contents, in fact, comprise the genuine stock in trade of wizards of the north, south, east, and west,—young ones to be sure; for Mr. Piesse, the old wizard, tells us he has four young sons, whose Christian names begin with N, S, E, and W, respectively, and who have hence been dubbed by their playmates, North, South, East, and West; and it was to amuse and instruct these juvenile wizards that Mr. Piesse collected the materials of the present really amusing little volume. It will be no easy matter for the professional wizard, shortly, to astonish the natives of Cockaigne.

Miscellaneous.

PAPER-HANGINGS AND PARQUETRY.—We have seen some drawing-room paper-hangings at Messrs. Arncliffe's, wherein gold is employed with better effect than usual. It appears to be affixed to the paper by pressure, and is engraved on the surface. The patterns and arrangement of colours are also of good character. The solid Swiss parquetry produced by this firm—of which we have already spoken approvingly more than once,—is getting into use, especially for borders of floors. Amongst other works, they are preparing the floor for the new Assembly-room at Manchester, a handsome apartment, 85 feet long and 35 feet wide. Messrs. Mills and Murgatroyd are the architects.

MONUMENT IN ST. CLEMENT'S, WORCESTER.—A monument, raised by subscription amongst the parishioners, has been erected in St. Clement's Church, Worcester, to the memory of the late rector, the Rev. John Davies. The monument, which has been placed in the chancel, is from a design by Mr. Truett, of London. It is 6 feet high and 3 feet in breadth, and as the church is of Norman character, so also is the monument. It is chiefly of Caen stone. The base is supported by brackets of the same material, and contains a large tablet with the inscription. Green marble columns with carved alabaster capitals rise from the base and support a pediment, beneath which is a large book with an angel sculptured in white marble. The ornaments are simply zigzags and roses let into the Caen stone.

THE MODEL DUSTYARD NEAR ST. PAUL'S.—Did you ever expect to see a working model of a dustyard within a furlong of St. Paul's Cathedral? Well, there it is, beside St. Anne's-lane; and the place selected for it is the yard of the Post Office, where you would think the hurry of important business, and the general order and cleanliness requisite to business of every kind, would have rendered such a thing impossible. There is no charge for inspecting the model: the public are admitted to wander among the *débris* if they choose, and break their blessed necks over old boxes, heaps of mortar, and other rubbish, supposed to have been exhumed from the foundations of the old property-room at Covent-garden. Some people have an idea it will all disappear on Boxing-day, to serve as pantomime properties again; but we are afraid some other change must take place on the premises, ere the yard of the Post Office will have anything like the decency which belongs to it as a visible part of a great public establishment. Malicious people ask, if the Post Office is ragged and dirty outside, what must it be within?—*City Press*.

LECTURE ON ART AT CHESTER.—On the 22nd ult. the sixth of the present series of free lectures in connection with the Chester Mechanics' Institution, was delivered in the Town-hall, by Mr. E. A. Davidson (head master of the Government Schools of Art at Chester and Crewe), on "Painting and Sculpture in England, from the earliest period to the formation of the Royal Academy." Mr. W. Wardell presided. Mr. Davidson introduced his subject by a few appropriate remarks on art; and then proceeded to outline the history of painting and sculpture in England. The early history of painting in England was skilfully sketched. The manifold occupations of the artists of the Middle Ages were then referred to. The state of the arts in England, in the reigns of Edward I., II., and III. was next adverted to. The art of tapestry practised by ladies afforded the lecturer an opportunity of paying them an elegant tribute. Then followed extracts from curious documents belonging to the church of St. Mary Redcliffe, Bristol, illustrating the value attached to works of art in that day. Next, the reigns of Edward VI., Mary, Elizabeth, James I., Charles I., Cromwell, Charles II., James II., and George I. were passed in review, and sketches given from the lives of the celebrated painters who flourished in each.

THE TUNNEL UNDER MOUNT CENIS.—The works of this tunnel still attract attention. It is found that on the Savoy side, at Modane, the filtration of water opposes considerable difficulty, yet not so as to interrupt the boring process.

AN IRON ENGINE-HOUSE FOR CHILL.—A large iron house has been erected by Messrs. E. T. Bell-house and Co. of Manchester, for shipment to Santiago. It will cover a space of 24,000 square feet, forming a regular polygon of forty-eight sides, whose diameter is 171 feet. The height at the eaves (which project 2 feet) is 17 feet 9 inches, including an ornamental iron grating, 2½ feet deep, running round the entire building. The roof consists of sixteen bays, supported by as many ornamental columns, disposed in a circle 61 feet in diameter. The length of the principals, supported by these pillars, is 80½ feet rising from the eaves, and continuing to the spring of the cupola. The roof is surmounted in the centre (where it is 40 feet high) by a ventilating cupola, 17 feet in breadth, and rising to a total height of 62 feet. There are eleven large entrances or archways for engines, and five smaller ones. The external limits of the building are supported by forty-eight moulded pilasters.

DAMAGE TO SEA AND OTHER WORKS AT BRIGHTON.—The new groyne at Kemp-town, Brighton, lately erected by Messrs. Cheesman and Son, under the direction of Mr. J. Wright, C.E. at a cost of 800l. has been damaged to the amount of, it is said, about 300l., from the force of the sea. A portion of the next groyne eastward has been lately washed away by the sea while under repair. Part of the earthwork extending from the Battery to Ship-street, immediately under the cliff, has also been washed away. The late heavy rains have caused a portion of the new upper Esplanade, extending from the Battery past Regency-square to exhibit numerous cracks and a partial sinking within about a yard of its edge.

BATH HOT-WATER FOUNTAIN.—Mr. James Williams, engineer, has laid before the City Act Committee two designs for alterations in the existing structure. In both the present basin disappears, and its place would be supplied by iron railing. The stone panels would also be removed, and a display of water in the centre would be presented. In the first design a figure of King Bladud, in the character of a shepherd, surmounts the structure, indicative of the discovery of the hot springs, the water being projected upwards in several jets at its feet, and falling into the large tazza (which would be rendered lighter by carving), and thence out of the four corners into shells supported on the heads of four mermaids. In the other design a figure of Minerva, as the presiding goddess of the springs, surmounts the structure, and the water, after falling into the large basin at the top, descends through the middle of the open stonework. Instead of the mermaids, there is on one side of the structure a female figure, representing Venus rising from the Bath, and on the other Æsculapius, indicative of the healing qualities of the waters. The figure at the top would, in each case, be 6 feet high, making the whole 3 feet higher than the present structure. It was agreed that the designs should be submitted to a sub-committee.

ART IN THE CHURCH: RECOLL FROM PRIMITIVE IN SCOTLAND.—The *John O'Grady's Journal* quotes some remarks by the Rev. Dr. Alexander, of which the following is an abstract:—Among all nations the temple of the Deity has ever been the place on which they have sought to expend their utmost efforts of costly decoration. Shall Christian temples alone be mean? and shall it be in the worship of the one true God alone that taste, and wealth, and skill shall be forbidden to offer their resources as a sacrifice to him? If it be proper that the preacher should exert his utmost resources of thought, and imagination, and eloquence, to engage the minds and impress the hearts of the audience, why should it be thought wrong that the music of the sanctuary should strive also to influence them in the same direction, and that the silent eloquence of wall and roof and aisle and window should be brought all the while to bear upon the sustenance and elevation of the devotional emotions? It seems natural for those whose hearts are filled with a sense of worship and gratitude to the Almighty to give expression to that by accumulating the most costly ornaments they can obtain on the place consecrated to His service. Whatever genius or art can accomplish—whatever gold, or ivory, or marble can supply—to beautify the House of the Lord, it would seem only becoming that those who erect it should strive to procure, that it may stand to coming generations as a venerable monument of their piety and devotion.

THE PHOTOGRAPHIC SOCIETY.—The sixth annual exhibition by this society will be opened to the public on Monday, in the Gallery of the Society of British Artists, Suffolk-street.

THAMES TUNNEL.—In the week ending 1st January, 26,900 passengers passed through, and paid 1127. 1s. 8d.

ARTISTS' AND AMATEURS' CONVERSATION.—The nights of meeting, at Willis's Rooms, St. James's, for the ensuing season, are Thursday, February 3rd; Thursday, March 3rd; Thursday, April 7th; and Thursday, May 5th. The number of members is restricted to 150. Mr. Henry Ellis, of Bernard-street, Russell-square, is the honorary secretary.

LANGUAGE OF ARCHITECTS.—I do not know whether it may have the same operation upon other men as it has upon me, but when I hear our architects thunder out their bombast words of pilasters, architraves, and cornices, of the Corinthian and Doric orders, and such-like stuff, my imagination is presently possessed with the palace of Apollonius, when, after all, I find them but the paltry pieces of my own kitchen door.—*Montaigne.*

IMPROVEMENT OF ROUENNE HARBOUR.—The commission appointed to examine the question of a low-water landing, or *quai de marée*, have been unanimous in approving of the plan which has been sanctioned by the Government. We learn from the best authority that the works will be commenced next month, and that there will not be twenty times in a year on which a vessel cannot land her passengers at low water.

NEW VICE-CHANCELLORS' COURTS.—According to the *Law Times*, the benchers of Lincoln's-inn contemplate building new courts for the three Vice-Chancellors on a site to the west of the chapel. The requisite area would be cleared by pulling down the middle block of old buildings, comprising Nos. 10, 11, and 12, and also the Vice-Chancellor Kindersley's Court.

IMPROVEMENT OF LONDON.—M. Hector Horeau is exhibiting at the Hanover-square Rooms a number of his designs having this end in view, including a bridge at Charing-cross, with Government offices on each side of its termination, next the river. M. Horeau's chief object is to urge the necessity for some grand scheme being determined on, to which all steps as they are taken should be made to tend. M. Horeau is a poet.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.—The following meetings have been appointed:—Tuesday, January 11, at the Marylebone Literary and Scientific Institution,—Evening meeting for reading papers and discussion; Wednesday, April 13,—Christ's Hospital, at twelve, thence to examine St. Bartholomew's the Great and Less, St. Giles, Cripple-gate, Barber's-hall, Crypt under St. James's in the Wall and Bastion of London-wall; Thursday, May 5—Annual general meeting; Tuesday, June 11,—Guildhall, at twelve noon, and Crypt, Crypt under Bow Church, St. Mary Aldemary; Wednesday, July 27—Harrow-on-the-Hill, meeting at One p.m.—Descriptive visit with historical memoranda; Tuesday, December 13, Crosby-hall—Evening meeting for reading papers and discussion.

ON ARSENICAL PAPER-HANGINGS.—Dr. Alfred S. Taylor says,—"I procured from the shop of Messrs. Marratt and Short, opticians, 63, King William-street, London-bridge, a quantity of dust for the purposes of analysis. The walls of this shop are covered with an unglazed arsenical paper, and, as I am informed, they have been so covered for a period of three years. In collecting this dust from the tops of the instrument-cases, great care was taken not to touch the walls. The quantity thus collected for examination amounted to about 450 grains. It was nearly black, and under the microscope it appeared to consist of fibres and sooty particles. It was very light and flocculent. 150 grains of the dust were examined by Reinsch's process, and enough metallic arsenic was obtained from this quantity to coat about 10 square inches of copper-foil, in addition to a piece of copper-gauze. From the deposit on the latter, by the application of heat, octahedral crystals of arsenic were readily obtained. The cases had not been dusted for a period of nine months. These facts lead to the inference that the air of a room, of which the walls are covered with an unglazed arsenical paper, is liable to be charged with the fine dust of the poisonous arsenite of copper. Those who inhabit these rooms are exposed to the risk of breathing this dust. The poison may thus find its way by the pulmonary membrane into the system, or it may affect the eyes, nose, and throat by local action.

WILTS ARCHÆOLOGICAL SOCIETY.—The general meeting of this society was held last week at Devizes, when office-bearers were elected, and Archdeacon Macdonald read a paper on "Bishops Cannings," and Mr. Cunningham one on "Witchcraft."

COVERING HEADS OF NAILS.—Mr. W. H. Van Gieson, of Newark, New Jersey, has patented a machine for covering the heads of nails. The nails and the shells or caps for covering or plating their heads are conveyed singly from separate hoppers to a series of dies in an intermittently rotating table, on which they are carried in rapid succession under a punch, by which the shells or caps are closed upon the nails.

FAIL OF WALL AT TORQUAY.—Two persons have been killed by the fall of a wall at Beacott-terrace, Torquay, which supported higher ground. A length of 80 feet, 20 feet in height, fell during the night. An inquest was held, and the jury returned the following verdict:—"That Edward Hambling and Louisa Hambling, his wife, on the 21st day of December, were killed by the falling of a certain wall. The jurors consider that proper precaution was not used in the construction of the wall, and that the old wall was not in a fit state to receive the addition."

SURVEYOR TO THE CONSERVATIVE LAND SOCIETY.—The executive committee having resolved that the surveying business should be carried on at the central offices, a large number of applications were made for the appointment, and out of a reduced list of twenty-nine candidates, Mr. James Wilson, who was for some years surveyor to the National Freehold Land Society, was ultimately selected.

PLATE GLASS SCREEN, WINDSOR.—The Dean and Chapter of Windsor, having lately placed warming-apparatus in St. George's Chapel, have, in order to confine the warm air in the choir, caused the upper portions of the two arches on the south side, opposite the royal closet, to be glazed with thick plate-glass. Each opening, which is 9 feet wide and 12 feet 6 inches high, from the top of the carved wooden screen to the point of the arch, is filled with two transparent plates, placed one over the other, with ground joint, so that the view of the south aisle, with its painted windows, is not interfered with.

REPORT ON THE MANCHESTER ART-TREASURES EXHIBITION.—The executive committee's report is now in shape, and the *Manchester Courier* gives some extracts from an early impression of it in the printed form. The report is divided into the following general divisions:—1. The origin and organization of the Exhibition. 2. The public ceremonials on the visits of the Queen and the Prince Consort. 3. The financial results and general statistics of the Exhibition. 4. A series of appendices, containing in detail tables of admission, cash-receipts, temperature, excursion traffic, music, and other matters of interest. The total number of visits registered at the turnstiles was 1,336,715, of which 1,053,538 paid at the doors, and the remainder, 283,177, were admitted by season tickets. The largest attendance on any one day was on the 13th October, 1857, when close upon 30,000 visits were registered. The committee remarked that the total admissions would have been considerably larger had the various railway companies commenced at an earlier period of the year a system of cheap excursion-trains from various parts of the kingdom direct to the Exhibition. The buildings, which had cost 37,933l. odd in their erection, brought (by auction, in lots), at the close, only 7,109l. odd.

ACCIDENT AT A THEATRE IN GLASGOW.—Evidences of the want of increased attention to the accesses of public buildings, asserted by us, are multiplying, with fruitful accompaniments. At the Theatre at the Green, in Glasgow, a girl named Montgomery was killed on Saturday last by the rush of the crowd. It appears that on that occasion, and throughout the whole day, performance succeeded performance in rapid succession, and that crowds were waiting to go in so soon as those in were ready to go out. From the pit there are two doors leading into a passage of considerable length, and three feet and a half wide, which in turn leads into Greenhead-street. These doors are kept by a person who directs his attention solely to the duties of that office. Shortly after one o'clock, and on the conclusion of one of the performances, the keeper unlocked one of the doors, and so great was the heedless rush out, that he was jammed between it and the wall, and could not get freed. Meanwhile, the poor girl we have named, being among the first in the passage, fell within two yards of the door, and was run over by the crowd that madly followed.

FAIL OF A BUILDING IN WARRINGTON.—A portion of the building occupied by a joiner and coffin-maker, in Mersey-street, Warrington, has fallen into a complete ruin. It was stored with joiner's work, dried timber, and tools, all of which are damaged. The building was a very odd one, the type of a class with which Warrington abounds.

NEW NATIONAL SCHOOLS FOR ST. GILES'S.—Active steps are being taken in the parish of St. Giles for the erection of new National Schools, with accommodation for 900 children. The cost of the site and building is estimated at 9,000l.; and, according to the plan specified, there will be separate class-rooms, residences for three teachers, apartments for female pupil teachers, and a playground for infants. The site is in the immediate neighbourhood of Seven-dials, Dudley-street, Church-lane, &c. The ground has been purchased for 4,000l.

THE LAND FOR THE DRAMATIC COLLEGE.—The Provisional Committee of the Dramatic College have found the stipulations made by Mr. Henry Dodd in connection with the piece of land which he offered, so likely to be injurious, and his proceedings altogether so troublesome, that they have declined any further communication with him. Land was immediately offered by other friends. It is not generally known, that the land offered by Mr. Dodd was that which the Builders' Benevolent Institution declined to accept; and, if the statement of the Committee of the Dramatic College be correct, the Builders saved themselves some trouble by their determination.

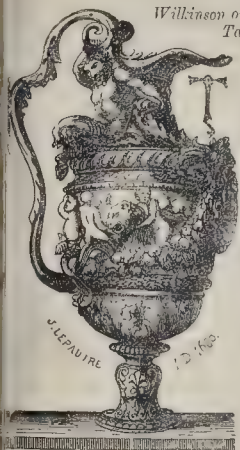
ELECTRIC LIGHT.—Mr. C. W. Harrison, it is said, has patented the use of mercury, or other fluid or semifluid body, as one or more of the electrodes; but surely mercury was used for this purpose within the last year or two. He employs, it is said, a tube within the lamp, so arranged that it shall remain full or nearly so during waste or consumption by the light. He contracts the supply of the fluid electrode by a tap; divides the stream so that any number of lights can be produced from it, instead of one as heretofore; provides a self-regulating means of maintaining a constant degree of separation between the points; forms reservoirs for holding the fluid electrodes of a highly infusible material; prevents the condensation of vapour on the lamp, by causing a constant flow of water over the glass; and prevents the rise of vapours from the waste fluid by introducing a stream of water into the waste-pipe.

POTTER'S CLAY.—Clay, as we find it in nature, may be regarded as a compound of alumina and silica, with lime, magnesia, and iron, and also, not unfrequently, with much organic matter. Hence we have clays varying greatly in their degrees of fusibility; some in their tenacity, both in the wet and in the dry state; in their contractibility, or shrinkage when exposed to fire, and in their colours; while some of them are without plasticity, or the facility of being moulded,—all of these being points of the utmost moment to the manufacturer. The clays that we usually employ are the clays of our coal formations, these being generally the result of the decomposition of the older rocks, which have formed, in a large majority of cases, the soils upon which the plants have grown from which our fossil fuel has been derived. The clays of the carboniferous series vary one from the other, almost as much as they do from the clays which we derive from other geological formations. The most remarkable of these argillaceous deposits are those which are so extensively worked in the neighbourhood of Stourbridge: they are largely used, on account of their infusibility, in the manufacture of glass-house pots and fire-bricks. We also find them employed, in some few instances, for the production of ornamental works. At some of the large coal and iron works of Yorkshire considerable attention has also been given to the production of articles of use and for ornament, from the clays which are interstratified with their coal and ironstone beds. Under the denomination of *common clay*, or *loam*, we have every variety of clay, from a very tenacious aluminous mass to the poorest brick-earth. The better varieties of this clay are soft to the touch, forming with water a tenacious paste, and being tolerably diffusable in that fluid. Although soft to the touch, such clays want tenacity. Nearly all the common clays, also, as they contain much lime and iron, are fusible at an ordinary furnace-heat. The best example of this argillaceous substance is afforded in the London clay formation, which consists chiefly of bluish or black clay, which is very tough; it is not, however, adapted for the production of works of an artistic character, owing to its coarseness, its contractibility, and its fusibility.—*Art-Journal.*

The Builder.

VOL. XVII.—No. 832.

Wilkinson on Colour and Taste.*



HAT Sir J. Gardner Wilkinson has produced a work which deserves to be well studied admits of no dispute. His remarks on general taste we are able almost wholly to coincide with; and those on colour include much that we must approve, as doing away with half-formed theories

prominently advanced, but which have never been understood, nor, as it seems to us, ever acted upon by their authors. We can the more readily come to a decision on the merits of one portion of the book, as the bulk thereof appeared, with the cuts, in our volume for the year 1854. Long prior to Sir Gardner Wilkinson's contribution, we had devoted space to the argument for structural truth in works of combined decorative art and utility, and had shown that the impression of the beautiful, however necessary to be universally catered for, really could not be given unless the use of the object were also fully attained and made apparent. At that time the Department of Art had not been established, and very different principles were being acted upon by those who are now the most valuable auxiliaries in the right work of improvement. We had had indeed no difficulty in forming our views: they are such as arise from study of principles, recognized by the very nature of architecture, and common to all arts related to it, and, therefore, essential to modern development from any assumed basis or groundwork of style. The principles, after having been departed from under the degenerate reign of taste which succeeded the best periods of architecture in Italy and decorative art in France, as during the reign of George III. were again indoctrinated by a new revival—that of Mediæval architecture—and notably in England by the "True Principles," and the designs of Welby Pugin, whose works in the Exhibition of 1851, in contrast to the non-structural and the naturalistic works with which they were surrounded, showed how the decorative purpose, including variety of feature, might be united, even with rigid adherence to a very small number of simple structural forms. To Welby Pugin present expression of sound views on architecture and decorative art must be held, in some measure, traceable; and the debt should be admitted more frequently than it is. What Pugin found in one family of styles, and sought to apply in a particular manner, would now be considered as of very general application.

With regard to our author's observations on "Dressed or Geometrical Gardens," forming Part III. of the work, and extending only to twenty-eight pages, it may be sufficient to say that the main argument accords with our own, as put forth lately in certain articles in which we endeavoured to show that the London parks,

squares, and gardens, would be greatly benefited by the introduction of terraces and steps and other architectural features, as would buildings generally by a spreading base and foreground formed of natural objects combined with architecture and sculpture, after the practice of the architects of the Italian and Elizabethan schools. But Sir Gardner Wilkinson has added to the value to the public of this portion of his work, by many excellent remarks, and plans of sunk gardens with terraces, and by a list of plants of different colours, showing when each would be in flower.

The drawback to the merit of the work is the peculiarity of its arrangement. The pages comprise three unequal parts, without other division except that of numbered paragraphs; and as there is no table of contents, and the part on colour comes first (Part II. "On the Necessity of a Diffusion of Taste among all Classes," going into the subject of principles of decorative art, as we have mentioned, and being extended so as to form the largest portion of the book, by addition of historical inquiries connected with architecture, painting, and sculpture), we apprehend the author's reasoning may be not so clear to the student as it would otherwise be; though we should say, there is a good index, and care is taken in the text to direct the reader by cross references.

Choosing to look, first, at the second part of the work, we find our author demonstrating, as in our columns, that taste, to be of use, must pervade all classes; that it is one of the greatest errors to suppose that wealth alone can obtain objects of good taste; and that the public mainly are in fault—good designs not being appreciated. He goes on to show how the Greeks excelled in art—regarding no object as too mean; and he contrasts their works, as the vases, with the modern furniture compounded of parts having no proper relation to one another; whilst he dwells on the importance of drawing and the study of proportion, and of rules—the latter as necessary, though there should be no dependence upon them. He perceives, with Mr. Wornum and others, that actual copies of natural objects in works of decorative and utilitarian art, are in general opposed to the very principle of nature; that perspective, as in the attempts at landscape in bas-relief; pictures in positions unsuitable as to viewing them; false pretences in place of forms designed specially for the use, and many other practices which have become frequent, have nothing in common with good art. He considers the question of monuments,—columns, obelisks, and colossal sculpture,—to the modern use of all of which he sees objections. The forms and decoration of vases are treated of by him at some length; but a certain inaccuracy in the drawing of one or two of the illustrations,—for example, in the vase which is repeated on the cover of the volume,—is to be regretted. In speaking of the decoration of walls, after contending that churches are unsuitable places for pictures, he enters at some length into the question of painted sculpture, deciding by the evidence that the practice was adopted by the Greeks, though not in all works, whilst he does not recommend it for modern adoption. He next reminds the reader, in what is not the least interesting portion of his book, how one style arose from another, and that the pointed arch was commonly used by the Arabs as early as the ninth century—if, indeed, it be not discoverable centuries earlier in date, and even in the works of the Assyrians; how the best-known Greek ornament was in fact Egyptian; how in great probability much was due to the Sidonians or Phœnicians; and how the early Christian art was indebted to Pagan models. He follows the history of mosaic work as further illustration of the manner in which so many arts have been indebted to one another for development; notices the rise of painting and decay of art; disputes the notion that Protestantism is incompatible with high art, and speaks of the undue importance attached to landscape and scenes from common life. In regard to architecture, he advocates the claims of the Elizabethan style for country houses, and of the Italian for towns, but avoiding the use of the parapet and of the low-pitched roof.

Sir J. Gardner Wilkinson considers, whilst both the Italians and the French are far more

successful than ourselves in decorative design, the Germans have not the superiority they assume to have, especially in regard to colour. As to the English, he regards any distaste for bright colours as in great part accidental. Some persons, it is true, may be as much insensible to harmony of colour as many are to harmony of sound: others have a perverted or false taste; and others are unable to distinguish colours—being affected by "colour-blindness." Perception of the harmony of colours is a natural gift: theory will not supply it. He complains that—

"Because such and such colours stand in a certain relationship to others, or are compounded in a particular manner, it is affirmed that they must therefore accord or disagree with some other one; and the question asked is, not whether they do or do not agree, but whether they ought or ought not to agree."

To begin with theory is contrary to all inductive reasoning. We have first to deal with facts, and their results; and—

"* * * though the three primaries, blue, red, and yellow, in certain proportions, constitute white light, all inquiries respecting the proper quantities required for it, and every appeal to philosophical experiments, in seeking the proper method of ornamenting with colour, are quite irrelevant; and the Arabs attained to the great perfection we admire, in the Alhambra and elsewhere, without theories."

Our author thus rejects the idea that as the colours in white light, as it is said, "neutralize" each other, they should therefore be so employed for decorative purposes. He says, most properly, that if the colours really did neutralize each other, "they would then be deprived of their real effect," so that we should counteract the very object in view. "To ornament with colour and neutralize the colour is a contradiction." The accordance of the three primaries in juxta position is another matter; but "it has been found necessary to employ artificial means to obtain any approach" (and that, our author says, a very imperfect one) to the white light they compose. Colours in ornamentation are never whirled round before the eye: so far from desiring to give the impression of white or of colourless light, our object is the reverse,—we want to ornament with colours, not to deceive with colours, nor to place them so that they may disappear or be confounded." One theory our author describes as that any primitive colour may be destroyed by its opposite derivative or accidental colour, or we should say its complimentary, as red by green, and blue by orange. But the effects of red on green, and of blue on orange, he says, "are totally different; and if the two former diminish each other's intensity, the latter mutually increase theirs, being contrasts, and each giving to its companion its full power." Another theory supposes that the decoration of a room should be the counterpart of nature: if so, it may be asked, what phase of nature should be followed; and would the Arabs of the desert be condemned to give up the lively carpets they weave, and confine themselves almost wholly to blue (of the sky) and an ochry yellow (of the sand); whilst, excepting blue, the primaries would be sparingly used in many countries. And when green "is actually copied" we do not welcome that abundance which it is a pleasure to behold in the fields. Nature, however, "has not taught us to abstain from using brilliant colours in those objects which are nearest to our sight." Also (Sir Gardner Wilkinson adverts to another theory) "when some one tells us that in the interior of buildings the stone should retain its 'natural' hue, he seems to forget that a building is not a work of nature, but of art."

In the last of these theories we may, however, say there is a certain element of truth which should not be disregarded. What our author says may be quite correct: it is not sufficient that a material should exhibit its natural appearance; the particular detail must be good chromatically, or in the effect of the whole interior or building. Nevertheless, it is objectionable to offend against structural truth; and therefore unless we can attain the chromatic object, preserving consistency with the real character of the material, we must modify our

* "On Colour, and on the Necessity of a general Diffusion of Taste among all Classes; with Remarks on playing out dressed or geometrical Gardens: Examples of good and bad Taste, illustrated by woodcuts and coloured plates in contrast." By Sir J. Gardner Wilkinson, D.C.L. F.R.S. F.R.G.S. M.R.S.L. M.R.I.B.A. &c. &c. pp. xvi. 408; 8 plates, 62 cuts. London, John Murray, 1858.

scheme of colour or build with a different material,—that is to say, if the best art as intended is to be attained. Questions of the like character, to be solved in the course of architectural design, involve the whole difficulty of it; and the ordinary failures arise from leaving one or other of the considerations out of recollection. This requirement of meeting a certain contrariety of objects, and of working with a multitude of agents varying from one another in their physical character and at every fresh conjunction, is, in short, the difficulty of colour.

"The first step in studying the harmony of colours, is certainly to ascertain what two, or more, when placed together, are concords or discords. But this is not all that has to be determined. The quantity of each must also be regulated, as well as their proper position; and the same set of colours, put together in different proportions and positions, will have a different appearance. Colours also borrow from each other, and thus mutually change their effect; while others heighten each other's power by contrast; and others soften, or diminish it."

"Blue and orange, which are accidental colours, are a harmonious contrast; but red and green, or yellow and purple, are not necessarily so because they are also accidental colours. (See Sec. vi.) We must, therefore, understand which colours agree by contrast, which by analogy, and which tend to diminish or otherwise alter each other's effect; for some of these are apt to be confounded, and a very fallacious doctrine has been propounded—that the union of one of the primaries with its accidental colour is analogous in effect to that of the same primary with its two companions; as, for instance, that red with green has the same effect as red with blue and yellow."

He again observes that it is not enough to know that *theoretically* all the colours are present in such a case as that last mentioned: the green is not only to the eye a new colour, but it has a different effect in combination with other colours from that produced by blue and yellow. It is true that red and blue in juxtaposition have the appearance of purple; and the latter with green would be discordant—though, were a yellow hue placed between the blue and the red, the purple would not be produced, and there would be harmony of effect. Yellow next to red, also, gives it an orange hue; but similar illusion is not caused by the contact of blue and yellow.

"It is not, therefore, necessary to lay down the same general and *invariable* rule respecting the three primaries;—that 'in making new patterns or ornaments, red and blue should not join, nor yellow and red, nor yellow and blue; as though the three combinations were exactly similar and subject to the same laws.'"

The differences between a *neutralising* or *balancing* effect, harmony by contrast, and other harmonious unions of colours, he says, are sufficiently obvious; and that,—

"* * * nothing shows them better than the juxtaposition of such colours as black and red, or black and green, which really do *neutralise* each other, or lessen each other's effect; and that of black and white, which *contrast* with and set off each other; and that of blue, red, and yellow, which *harmonise* with, and set off, but do not *neutralise*, each other."

In the course of a classification of the colours he gives a valuable table of the English names of about one hundred colours and hues, with their nearest equivalents in several other languages, and thus shows the indefiniteness of every attempt at the description and nomenclature. This, we may say, has arisen from the difficulty of finding, unless in the spectrum, any existence of the central colour—the chief colours in flowers and dyed materials being so many hues,—like the scarlet and the orange, or the crimson and the pink, beside the red. The terms for the variations in colour and intensity, as "hue," "tint," "shade," and "tone," appear to be understood by Sir Gardner Wilkinson, as we are accustomed to use them. Upon the proper definition and comprehension of *harmony*, much, if not the whole of the subject, depends. Harmony of colour is not merely *similarity*; but there is also harmony by contrast. Contrasts are of various kinds. There is the contrast of warm and cold colours; and there is the contrast of green with red as

complementary colours—very different to the contrast which there is in the case of blue and yellow. We may have "Harmony by Contrast," "Harmony by Analogy," "Harmony of Tones," and "Harmony of Hues;" whilst there are colours which diminish or raise each other's effect, and light colours which brighten those of a deeper kind. "Harmony" may be defined to be "the due proportion of two, or more colours, which are concords; and the balance of colour is equally required for those which accord by contrast as by analogy." As regards contrast,—

"Colours are opposed to each other in different degrees. 1st. The strongest opposition is by *positive contrast*, when the colours are of different hues and natures: as black and white; blue and orange; scarlet and blue, &c. Of these, Mr. Field says (p. 26), the only two contrasting colours which are of equal powers are 'black and white,' 'orange and blue;' and 'all other contrasts are perfect only when one of the antagonistic colours predominates.' 2nd. *Opposition, or contrast, of warm and cold colours*; among the former of which are reds, yellow, orange, brown, red-purple, &c.; among the latter, blue, grey, green, blue-purple, white, blue-black, &c. 3rd. *Opposition, or contrast, of dark and light colours*; or *opposition of tones*, is when the colours are tones of the same hue, one stronger than the other, as dark and light yellow. 4th. *Opposition, or contrast, of accidental colours*, is when a colour and its accidental companion are opposed to each other, as red and green; blue and orange; yellow and purple. And though black and white are accidental to each other, they cannot be said properly to belong to this class; nor is positive white ever mistaken for its accidental companion, as other accidental colours are, through a defective vision or colour-blindness. These two properly come under the first class as positive contrasts; and the greatest and most violent contrast is between those two colours. Nor do all other accidental colours contrast with each other in an equal degree, or under the same conditions; and I cannot too often repeat that, because blue and orange are most harmonious contrasts, it does not follow that red and blue-green should be so, and still less green and reddish violet, which are a most obvious and disagreeable discord."

Two colours may agree by the Harmony of Contrast; by the Harmony of Analogy; by the addition of a third (without which they would be wanting complete harmony), or by the addition of several colours: whilst sometimes a colour is better by itself; and sometimes a colour is disagreeable as a ground for others. Some colours *disagree* "from being positive discords;" some fail to accord from their tones being of unequal intensity; some in cases where proportions in quantity have been disregarded; and some, as mentioned, from wanting another colour to complete the harmonious combination,—as blue and red, "though concords," require the addition of yellow.

Our author gives a list, of considerable length, of combinations of colours, with remarks, and adds references to well-known books as regards examples; and in the course of a summary of his observations, after repeating that the eye is the proper judge of colour, and that the perception of it is a natural gift, and that we should abstain from theories till the subject is understood, he sets forth that,—The primaries (which are a concord) should predominate in ornamentation, though scarlet will generally combine better than red: that the purple effect of red and blue should be obviated by other colour, or as before mentioned: that the accidental (complementary) colours do not necessarily harmonize: that harmony is not limited to similarity, but includes contrast, whilst there are contrasts of different kinds: that the effect of the "simultaneous contrast" (of Chevreul), is to be taken into account; and that the "intensity of tones of colours should be equal in the same composition; but a dark and light hue may be used together with good effect." Also, quantities are to be balanced: some colours being required in smaller quantity when combined with others; and the relative positions of the colours; the effect by candlelight and by daylight; the things decorated, whether carpet, wall, or dress; and the kind of ornament; the requirement of "repose;" and avoidance of spots and monotonous lines, have all to be con-

sidered. Bright green may be introduced to lighten up a composition, but not in masses unless as a ground, though candlelight allows the use of a greater proportion of green.

The first part of the work, on colour, we should say includes several pages on the proper treatment, and the characteristics of the different styles, of stained glass.

Whatever comes to us from the hand of so painstaking and minute an investigator as Sir J. Gardner Wilkinson, could hardly fail to be worthy of attention. He may not have adopted the best arrangement of his matter, and may have introduced some which might be called irrelevant; but his work will be read by many who have felt the defects of previous theorising, and who will get the juice of it, to the clearing of their own ideas and the improvement of their handiwork, possibly forgetting the debt they will owe.

VENTILATION IN WHEELED VEHICLES.

THE question of ventilation has been much discussed of late, and no doubt, some persons act up to their knowledge; but such individuals form only a small fraction per cent. of the entire population; and the numbers who fully understand what ventilation is, and who consistently strive to secure it, probably constitute only a fraction of the fraction.

Ventilation has been ventilated under many headings, and volumes have been written and published, explaining systems and apparatus calculated to secure it. We only propose, however, just now, to throw together a few remarks on the absence of any adequate means for ventilation in wheeled vehicles, generally. Ventilation should secure change of air for the breathing of human beings, in private houses, in public buildings, and in public and private carriages;—that is, there should be means of instant escape for air that has been once expelled from the lungs; or, for such extreme dilution as to reduce the chances of any consequent injury to a minimum.

That vitiated air may escape from the vicinity of a living human body, there must either be certain cubical space around each person, or proportionate areas of openings. To box up four persons for the shortest time, in, say a private carriage, containing not more than some 60, 80, or 100 cubic feet of space—empty—must be injurious. Now, how many of our readers commit this folly during cold weather? Again. Look at first-class,—or, indeed, at railway carriages generally, and say, if means to change the air are provided. In some railway carriages there are small ventilators; but when there are six persons in a first-class compartment on the narrow gauge and eight in a compartment on the broad gauge, the means for ventilation are inadequate—injuriously inadequate; but during cold weather, there are persons who will close these ventilators, and keep them closed during a journey of several hours. We fully admit the evils of a draught, the unpleasantness of cold; but there is a consideration superior to these. Take the space of any railway-carriage compartment, and the air-space for each person when the compartment is full will not amount to 50 cubic feet,—all things considered, scarcely half this. Now, in a prison cell, each occupant has 1,000 cubic feet of air-space, with regular change of air by artificial ventilation; so that, at the best, a close-carriage compartment is some twenty times worse, as regards means of ventilation, than a prison cell. The best railway carriages, as at present constructed, have two evils: they are insufferably hot and dusty in summer, and the means of ventilation are miserably inadequate at all times. Take another class of public vehicles—public cabs and omnibuses. Are these sufficiently ventilated? For four-wheeled cabs we say "No;" and who does not remember the old omnibuses with horror, especially when full, on a damp and foggy evening? The new Metropolitan Company, whether French or English, and in spite of dreadful mismanagement, deserves the warmest thanks of the community for the vastly improved 'bus of the present time. The fixed openings, modified by perforated zinc, and the top louvre windows, allow of rapid change; but not more than is necessary for comfort and health.* Shall we ever see analogous changes and improvements in cabs, in railway carriages, and in private carriages?

There are some persons who cannot ride in any conveyance with the windows up, and there are

* In some of them, however, the zinc perforations open right upon the heads or necks of all above the average height.

many persons who suffer by being exposed to a direct draught of air: it must, therefore, be a desirable improvement so to build wheeled vehicles that both class of persons may be accommodated. There should be abundant means of ventilation arranged so as not to inconvenience or injure by draughts, and which cannot be tampered with. The new omnibuses may teach a most useful lesson to carriage-builders, as in the best of these vehicles there are abundant means for change of air without injurious draughts.

The questions of draughts and ventilation deserve more consideration than they obtain. All our old proverbs are against draughts, but we are not aware of any against foul air, and yet the latter works more injury than the former. "If you sit near a hole, God mend your soul," has frightened many a person into closing up means of ventilation. We may invent a new proverb, and say, "If you sit in foul air, in comes your heir." Another proverb has it, "Avoid a draught as you would an arrow;" and it is wise advice. Still we check this proverb, by "Avoid stagnant air, if for life you have care." Englishmen, probably, dread draughts and fresh air less than the inhabitants of any other nation; but even in England we see that the best means are not taken to secure change of air in public and private wheeled vehicles. Improvement has been commenced, and we do not doubt but that it will go on. If any carriage-builder will take our hints, and usefully work them out, both credit and profit will arise to him we are sure. If the improvements deserve it, he may patent them, for anything we care. Public cabs, railway carriages, and private carriages should each have means for change of air at all times, with both windows fully up. The Hansom cab is taken not more for its lightness and speed than for its means of freedom to the open air.

Travelling has become so common that it is of the utmost importance to secure comfort and health during a journey. The weariness, nausea, and headache, after a journey, come not so much from the motion as from the vitiated air of a close carriage. As private carriages are now built, it is a misfortune to some who are in a condition to use one. To be ordered "carriage exercise," may be the contrary of an advantage. An open carriage for invalids is not at all times desirable, and to some temperaments not agreeable; but certainly a close carriage must be injurious at any time. There should be means to secure a full change of air without the chance of palpable draughts. This may be done, and will be shortly accomplished, if we interpret the spirit of the times aright. Cabs and carriages, as ordinarily built, are too low even for comfort, and this makes them too low for safe ventilation. The roofs require to be raised a few inches; and, if double, the means of ventilation may be provided by a false roof, properly chambered, so as to admit of infowing fresh air and outflowing currents of foul air from the "ceiling," or inner roof, over the largest practicable area. Invalids may have carriage-caps especially provided to protect from colds. The question of colds is, however, as much one of defective ventilation as it is of any changeableness in the climate. Trace the coughs to their domiciles, and we shall find, in nine cases out of ten, rooms full of foul and stagnant air. Medical men have found out the fact that even consumptive patients require fresh air rather than warm stagnant air. Fresh air is a prime requisite of health, and this must be secured in our wheeled vehicles.

We write in accordance with our convictions, and in opposition to our sensations.

SCIENCE AND RELIGION.

MUSEUM OF GEOLOGY.

At the close of the first course of Lectures to Working Men this session, delivered by Professor Huxley, F.R.S. ("On Objects of Interest in the Collection of Fossils"), the lecturer made some observations on the subject at the head of this article, and it has been urged by several of his hearers that the publication of these remarks in our columns would be useful. In complying with the request, we take the opportunity to mention that Professor Ramsay will deliver a course of lectures here on Geology, and Professor Willis one on Applied Mathematics. It ought to be known that the professors of this Institution derive no profit or advantage, direct or indirect, from them. Even the nominal registration fee goes to the Government.

The lectures have now been given for seven years (in fact, ever since the School of Mines was established); and, as an invariable rule, the tickets have been applied for at once, and the attendance has been extremely good. So far as

we know, the tickets are always disposed of to *bona fide* workmen, and it is impossible to speak too highly of the attention and intelligence of the audience.

The professors may reasonably expect, therefore, that they are doing some good, and they are entitled to the thanks of the public.

And now, gentlemen, the proper subjects of this course are ended. My duties towards you, as an officer of this institution, cease; but I am glad to have the opportunity, on my own responsibility, of saying a few words on a subject which, judging from the letters I have received, interests you as much as it does me. At the same time, I am most desirous not to be misunderstood; and, therefore, instead of taking up this subject in the lecture which immediately followed the letters to which I refer, I have allowed myself a longer interval for reflection; and, contrary to my wont, I have written down in full, and will read, what I have to say.

The whole history of the gradual discovery of the significance of such apparently unimportant indications of formerly existing life, as those which I have been describing to you to-night, is fraught with instruction. It is one of the most striking of the many justifications which might be found, of the methods, not only of geological, but of all other science; and it helps, as much as any of these, to teach us what implicit and absolute faith we may place in the conclusions of the human intellect, when that intellect is rightly guided.

In fact, this is the moral of all science; and the great and peculiar benefit which a fair course of scientific study confers, even on those who do not follow it as a profession, is, that it compels such a firm and entire faith in our mental processes, so far as their range extends; that it teaches us what this range is, and enables us to distinguish between the natural and the artificial limitations of man's powers.

And let me bid you remember that this faith does not rest upon mere testimony, however respectable, however solemnly supported. The works of science are her witness. Her age of inspiration and of miracles is not over, but beginning, and its duration will be coeval with that of the intellect of man. Nor is access to her deepest secrets restricted to a race or to a priesthood. Every man can, if he so pleases, apply to the sources of all scientific knowledge directly, and verify for himself the conclusions of others. In science, faith is based solely on the assent of the intellect; and the most complete submission to ascertained truth is wholly voluntary, because it is accompanied by perfect freedom, nay, by every encouragement, to test and try that truth to the uttermost.

I have said that our faith in the results of the right working of the human mind rests on no mere testimony. But there is *One* that bears witness to it, and He the Highest. For, the winning of every new law by reasoning from ascertained facts; the verification by the event, of every scientific prediction, is, if this world be governed by providential order, the direct testimony of that Providence to the sufficiency of the faculties with which man is endowed, to unravel, so far as is necessary for his welfare, the mysteries by which he is surrounded. Donati's comet lately blazing in the heavens above us at its appointed time; the first quiver which betrayed to the anxious watcher of the telegraphic needle on the other side of the Atlantic, that an electric current would follow, even under such strange conditions, the laws which man's wit and industry had discovered; the bone which, laid bare by Cuvier's chisel, justified his trust in the law of organic correlation which he had discovered; all these, and hundreds of other like cases which I might cite, are to my mind so many signs and wonders, whereby the Divine Governor signifies his approbation of the trust of poor and weak humanity, in the guide which he has given it.

The present state of civilized nations and their past history bear witness on the same side. So far as any nation recognises, or has recognised, the great truth, that every dictum, every belief, must be tested and tried to the uttermost, and swept ruthlessly away if it be not in accordance with right reason, so far is that nation prosperous and healthy; and so far as a nation has allowed itself to be hood-winked and fettered, and the free application of its intellect, as the criterion of all truth, restricted, so far is it sinking and rotten within.

There is one restriction, and only one, so far as I know, placed upon our supreme arbiter. It is, that it shall be actuated by an uncompromising

and unswerving love of truth. With that, the human intellect is the nearest impersonification of the Divine; without that, it is, in my apprehension, the worst of conceivable devils.

Such being my inmost and deepest belief on these matters, the friend, if I may so call him, who was good enough to write me the letter an extract from which I am about to read, will readily anticipate what answer I am about to give him. I can but regret that it should be so directly opposed in appearance to his own views, but he has asked me to speak out, and I will do so. After all, there is perhaps less difference between us in reality than in seeming.

Referring to a previous lecture, he says,—"One or two imagined that you, in your own theory, advocated the idea that a lower animal might, by development or progression, pass, in time, into one of a higher organization; and they would apply this through the whole animal kingdom up to the human race, in opposition to the first pair being brought into existence by the direct power of our Creator."

The one or two are nearly, but not quite, right. What I said was this: that the bringing into existence of an animal, at once, is a thing which is, in the nature of the case, capable of neither proof nor disproof, and is, therefore, no subject for science, which concerns herself only with matters capable of proof or disproof. And I went on to say, that if the appearance of the successive populations of the globe had followed laws at all similar to those by which the rest of the universe is governed, I could not conceive but that these successive races must have proceeded from one another in the way of progressive modification.

And that is my hypothesis, and I do include man in the same category as the rest of the animal world. But you will recollect, that I begged you particularly to understand that I regarded this notion of mine simply as a hypothesis, reasoned out from general principles, and wholly devoid of evidence amounting to proof.

Well, if you see good to reject this hypothesis, if you think that my reasonings from the principles I started with are fallacious, or that those principles themselves are erroneous, reject it by all means; and if you can show me, on *these grounds*, that you are right, I will reject it also as speedily as possible, and thank you for the refutation. Why should I cumber myself with the burden of an untruth?

But you all know right well that such are not the grounds on which hypotheses of this kind are objected to. The real reason is, that such doctrines are supposed to be antagonistic to religion, or rather, to be opposed to certain traditions handed down to us with our religious beliefs, from a venerable and remote antiquity.

Now let me tell you quite frankly, that I almost think it beneath the dignity of my calling, as a man of science, to listen to such objections as these. If it be *really* true that science is opposed to religion, all I can say is, so much the worse for religion. If science is *really* opposed to traditions, the sooner the traditions vanish and are no more seen or heard of, the better. For science, and the methods of science, are the masters of the world.

But it is not true. If you have seen occasion to put any faith in what I tell you, believe me now when I say, that of all the miserable superstitions which have ever tended to vex and enslave mankind, this notion of the antagonism of science and religion is the most mischievous.

True science and true religion are twin-sisters, and the separation of either from the other is sure to prove the death of both. Science prospers exactly in proportion as it is religious; and religion flourishes in exact proportion to the scientific depth and firmness of its basis.

The great deeds of philosophers have been less the fruit of their intellect, than of the direction of that intellect by an eminently religious tone of mind. Truth has yielded herself rather to their patience, their love, their single-heartedness, and their self-denial, than to their logical acumen.

And all the reformations in religion—all the steps by which the creeds you hold have been brought to that comparative purity and truth in which you justly glory—have been due essentially to the growth of the scientific spirit, to the ever-increasing confidence of the intellect in itself—and its incessantly repeated refusals to bow down blindly to what it had discovered to be mere idols, any more.

It is above all things needful for you, working men, to note these truths. For with the limited time, and the limited means for study at your disposal, you run the risk of flying to one of two extremes—bigoted orthodoxy, or conceited scepticism.

The more earnest and deep-thinking of you are not always able to distinguish the eternal truths of religion from the temporary and often disgusting investiture which has grown round them, as, at this Christmas time, we see the ivy and the mistletoe overgrowing the oak; and when science comes, and would tear away these mummy-wrappings, and show you the form within in all its beauty, you—too often urged by those who call themselves your teachers—raise a cry of sacrilege, as if the holy of holies itself were defiled.

And, on the other hand, the quicker-witted and less serious spirits are apt to rush from a like misconception into the opposite error. They imagine that because no honest man can, for one moment, reconcile the plain teachings of geology with the statements contained in the book of Genesis; because no astronomer believes that the sun and moon have stood still at the bidding of a Jewish commander-in-chief; because, in short, whenever and on whatever pretext science and authority have come into conflict, authority has always been signally worsted, and will be till the end of time; because of these things, they imagine they may disown all the Ten Commandments, and treat with foolish ridicule the book which the true man of science will ever hold in the highest respect, as containing the noblest and the clearest exposition of human rights and human duties extant.

I warn you solemnly against both of these evils. Despise both bigotry and scoffing doubt, and regard those who encourage you in either, whether they wear the tonsure of a priest, or the peruke of a Voltaire, as your worst enemies. And, if you seek a preservative against these snares, I say, strive earnestly to learn something, not only of the results, but of the methods of science, and then apply those methods to all statements which offer themselves for your belief. If they will not stand that test, they are nought, let them come with what authority they may.

THE TURIN AND GENOA PRISONS COMPETITION.

THE Minister of the Interior has published the Report of the Commission nominated by the Government, to examine the designs for a prison at Turin, and for one at Genoa, submitted in competition. It appears that seventy-eight designs were sent in—forty-two for the Turin prison, and thirty-six for that of Genoa—and the following is a list of those competitors of whom mention is made:—

TURIN.

Premium to No. 11.—“*Le prigionieri debbono essere incombustibili.*” Luigi Dan and Carlo Dan, civil engineers, Naples.

1st Accessit,—No. 30.—“*E a salute e non e danno.*” Pollani Giuseppe, architect.

2nd Accessit,—No. 51.—“*Salubrité, sécurité, surveillance.*” C. Schack Jaquet, architect, Geneva.

GENOA.

Premium to No. 11.—“*La trombe idrauliche arrestano gli incendi, ma non li prevengono.*”

1st Accessit to No. 40.—“*E pluribus unum.*” Paolo Olivari, engineer, Genoa.

2nd Accessit to No. 4.—“*Ainsi soit-il.*” A. Morsaline, C. architect, Paris.

Competitors may obtain their designs after the 1st of February next.*

PHOTOGRAPHY.

THE PHOTOGRAPHIC SOCIETY'S EXHIBITION.

THE Exhibition opened by the Photographic Society, in the Gallery of the Society of British Artists, Suffolk-street, includes 613 works, contributed by ninety-four photographers! What a hive of industry has been put into action by Messrs. Fox Talbot, and Daguerre! Who that listened to Mr. Talbot's first paper on the subject, read a very few years ago at the Royal Society, imagined that it would put so many minds and hands to work,—afford such wide-spread enjoyment, or profitable employment, to so many hundreds of persons all over the world, as it has done? The Colloid process reigns supreme, and we do not find any new masters in the art threatening the position of those who are best known in it. The great feature of the Exhibition is the set of photographs from the cartoons at Hampton Court, by Messrs. Caldesi and Montecchi, an admirable work, supplemented by Mr. Thurston

* Those gentlemen who were concerned in sending us a letter some time ago on this subject, giving the names of English architects as the successful competitors, will probably think it necessary to inform us on what grounds that statement was made.

Thompson's fine studies of heads at large, from the same originals, so that these remarkable creations are now crowned to the near study of all. Mr. Hamilton Crake contributes some valuable additions to our knowledge of Indian remains; such, for example, as the views of the Parthasahia Pagoda, Madras (156), the Seven Pagodas, in the same presidency (165), and others. Mr. Roger Fenton is an important contributor; and has sent, besides numerous landscapes, showing that amount of air and distance for which his works are remarkable, some illustrations of Eastern costumes and manners. Mr. Frith has some charming specimens; notice particularly 547 and 558. For delicacy and clearness conjoined, Mr. Francis Bedford is unrivalled,—see, for example, his North Transept, Tintern (137), Pembroke Castle (139), and the West Front of Tintern (143). Mr. W. H. Bosley's frame (522) lends a countenance to the abuse of the art to be seen in some of the shop-windows, which it ought not to find on these walls. Dr. Diamond, to whom photography owes much, exhibits amongst other things an excellent set of interesting portraits of “Our Club.”

The frame of stereographs, 510, is remarkable as the result of the first important photo-literary exploit. It consists of views in Brittany, by Mr. Taylor and Mr. Lovell Reeve, illustrative of a walking tour by Mr. Montney Jephson. We shall have many such before long.

Looking now more to the general question, we may note that, as regards the application of photography to wood for the purpose of engraving, there is still much difference of opinion. When looking at some of the best efforts of the art, a person of artistic taste, but who was not acquainted with the conventionalities of engraving on wood, would think that these sun pictures of bold objects would be the very things to suit the engraver. Engravers, however, have a strong opinion that photography cannot in this way be rendered available to any great extent. They say that the immense amount of detail in a photograph would cause an amount of labour which would greatly overbalance the cost of a drawing on wood, by a practised artist, which would be adapted to the engraver's taste; besides there are certain arrangements of light and shadow which they say are necessary for the purposes of printing. They refer, for instance, to the works of Gilbert, Thomas, Foster, and others, which, when engraved and printed, are remarkable for the force and brilliancy of their effects, and contrast them with the engravings from photographic pictures which have been executed on prepared blocks, or from a careful *fac simile* drawn by the draughtsman on wood. It is argued that the appearance of any architectural object or landscape can, if faithfully sketched and then transferred to the wood in the ordinary way, be conveyed to the great bulk of observers in a more striking manner than by means of photography.

While submitting to some extent to the opinions of many who have for years practised the art of engraving on wood, we cannot but notice the wonderful progress which photography has made during the last few years. Our belief is, that for many purposes photographs on wood will supersede the hand-drawings at present in use, especially for engravings of art-manufactures, objects of natural history, illustrations of anatomy and scientific subjects, &c.—in all of which the greatest neatness and attention to detail ought to be a chief recommendation. The value of photography in this department is evident, and no doubt some engravers will break through the present conventionalities, and adapt these sun pictures on the wood both to the engraver and printer.

Even in other subjects the application of photography may be useful to the present English school of wood engraving, which, notwithstanding its great merits, might be improved by a little more of the work which is a characteristic of the German and French wood engravings.

The *Photographic News* details a new mode of applying photography to engraving on wood. A suitable block is selected, in the darkened laboratory, or by candle-light, with a mixture composed of oxalate of silver and water, to which may be added a little gum or pulverised Bath brick, to suit the convenience of the engraver. The mode in which the oxalate is spread over the surface is exactly the same as that employed by the draughtsman on wood in applying the preparation of lake-white and gum-water. A little of the substance—that is to say, about as much as would lie on a fourpenny-piece for a block 4 inches

square—is sprinkled on the surface, and the finger then being dipped in water (either with or without a little gum), the mixture is spread evenly over the whole surface of the block by rubbing

the finger backwards and forwards across the block in various directions, until the evaporation or absorption of the water leave the surface impregnated with a delicate and almost impalpable coating of oxalate of silver. The block may then be placed in a drawer, or any other place from which the daylight is excluded, and left to dry, or for any length of time until required; and it has been stated that no deterioration or loss of sensitiveness has been detected, in blocks thus prepared, in six months, so long as they remained protected from the light.

Oxalate of silver is susceptible of being acted upon by the actinic rays, and when the block has been prepared in the manner above indicated, it is only necessary to expose a negative in the printing frame to sunlight, and a positive picture is obtained in the same manner as on paper prepared in the ordinary way. The block requires no subsequent washing, nor any preparation of any description before being placed in the hands of the engraver, so that he receives it precisely in the same condition, as regards the surface to be operated upon, as under ordinary circumstances. The engraver, however, must not expose the block to the direct action of the solar rays while working at it, as it will gradually blacken on the surface;* exposure to diffused daylight, however, has no deleterious effect on it, unless it be continued for a length of time—say several hours.

It is impossible, when looking at the examples of this art which have been lately produced, to avoid speculating on the probable results of the processes which enable photographs to be printed from with rapidity in the same manner as in lithography. Wise men shake their heads at this, and say, “It will never do.” The same was said when etching was applied to plate engraving; and it is remarkable that for a long time the etcher endeavoured to the utmost to imitate the stiff lines which were produced by the graver instead of those of the free pencil which the etching needle could so readily produce. People shook their heads at lithography when in its infancy: the race of head-shakers never dies. The locomotive, the electric telegraph, and all other great things, have been doubted and looked upon as impossibilities or absurdities; but these, by the labour of those who would not doubt, have been made to confer benefit on the world at large. In the same way we have faith that the exertions which are being made to apply photography to the purposes of printing will be attended with important results.

The greatest desideratum in photography at the present moment, is the certainty of obtaining a picture which will not fade.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE first meeting since the Christmas recess was held on Monday evening last, at 16, Grosvenor-square.

Mr. Hussey, V.P. occupied the chair. Mr. Edward J. Payne, of Birmingham, and Mr. Albert J. Humbert, associate, of 12, Middle Scotland-yard, were elected fellows of the Institute, and Mr. Josiah Houle, of 9, Guildford-street, Russell-square, was elected an associate.

A very fine series of photographs, from the celebrated collection of Etruscan antiquities belonging to the Cavaliere Gio-Pietro Campana, honorary and corresponding member, were exhibited, and excited a good deal of attention. Models of windows, by Mr. B. Shaw, and of Pugh's patent clock, were also exhibited.

Sundry donations were announced, and thanks were voted to the donors.

Mr. C. C. Nelson (honorary secretary) stated that he had received notification of the decease of two associates—Mr. T. C. Tarring and Mr. F. T. Digweed.

The Chairman said it devolved upon him, as president of the meeting, to announce that the late librarian had been expelled from the institution.

Professor Donaldson observed that the circumstance to which the chairman had referred had caused the council a good deal of regret, and that it was proper to state that there was no connection, either by relationship or in any other way, except the accidental one of name, between the person referred to and a respected Fellow of the Society whom they all knew. He had also to announce, that by direction of the council he had written a letter of condolence to the widow of

* This would not be a great drawback; for, in order to protect the pencilling of drawings executed in the ordinary way, it is usual to cover all drawings on wood with cover white in the hands of the engraver, and only to tear off a small portion of the paper at a time.

M. Montferand, of St. Petersburg, lately an honorary and corresponding member of the Institute, and one of the most distinguished architects in Europe. He had also to state that he had been directed by the council to put himself in communication with the Sardinian Government in reference to the competition for the intended public works at Turin and Genoa, and that he had received from the Minister of His Majesty Victor Emmanuel a copy of the *Piedmontese Gazette* of the 8rd of the present month, containing the report of the commissioners who had examined the various designs sent in for competition. Mr. Donaldson then stated the names of the successful competitors, which will be found elsewhere, and pointed out that of these none were English.

Mr. M. D. Wyatt called attention to the volumes of photographs lent to the Institute by Mr. Robert Phillips, representing several of the classical marbles and objects in terra cotta in the museum of the Marquess de Campana, at Rome. He observed that the marquess, having considerable property in the Campagna of Rome, had caused extensive excavations to be made at his own expense, and had purchased up every antiquity that came into the market. His great competitor in the work of collection was the late Pope Gregory, who also succeeded in collecting an immense number of objects of ancient Etruscan art. The Gregorian museum, as a whole, excelled no doubt that of the Cavaliere Campana; but the collection of the latter contained some features superior to those of the pontiff's museums. The Cavaliere embarked the greater portion of his wealth in buying up works of art. His collection consisted of twelve parts, of which the marbles and terra cottas were alone represented in the photographs submitted by Mr. Phillips. The Majolica, the bronzes, and other objects were, however, equally fine. Should the Great Exhibition of 1861 be carried out as contemplated, he (Mr. Wyatt) hoped that some means might be found to bring the entire collection to this country. The Cavaliere Campana was one of the most distinguished and liberal-minded among the Roman nobility, but he had now, unfortunately, reaped the fruits of his liberality, and was imprisoned in a prison.

Mr. Asphitel observed that the Marquess de Campana had been at the head of the Mont de Piété, at Rome, which was a sort of bank, intended more especially for the advance of money to necessitous persons. In his capacity of head of the bank, he received money from depositors, and lent it out at a higher rate of interest than he paid, as all bankers were accustomed to do, otherwise there would be no profit from the operation of banking. He had lent himself, from time to time, considerable sums of money, which were entered in the books of the bank in the usual manner, and the interest upon which was regularly paid as it accrued. It was well known that the Marquess de Campana was accumulating his museum, and that, in point of fact, it was security to the Government for the advances made to the owners. It seemed that, during the revolution at Rome, the marquess committed what was considered to be a great crime by remaining in the city after the Pope had fled. That one of the old nobility should remain at a moment when every one said that Rome was going to ruin because the pontiff had fled, was considered to be a crime, and the enemies of the marquess came down upon him in a moment, and he was charged with embezzling the money which, as director of the bank, he had advanced to himself for the purpose of buying up antiquities. In vain he assured them that he had abundance of property to meet every demand upon him; that it was well known that he had borrowed from the bank on the security of his museum, and that he had duly paid the interest like any other customer. It was all to no purpose: he was seized and flung into prison. This gentleman, who was one of the noblest-minded men in Italy, a scholar and a virtuoso, most intimately acquainted with art, was condemned as a common galley-slave. There was no trial by jury, or appeal, and although he was not been actually set to work at the galleys, he was at this moment a close prisoner in one of the vilest holes in the castle of St. Angelo, which was known to be one of the worst prisons in Europe. His final liberty now mainly depended upon the sale of his museum. If, therefore, any of the members of the Institute could forward the sale of the museum, or assist in any way in bringing it to Europe, they would be doing the greatest service to the cause of humanity and art.

Mr. Charles Barry inquired what steps had been taken towards bringing the museum to England or selling it.

Mr. Wyatt replied that nothing had as yet been done. The trustees in whose hands the property was at present vested had not adopted any measures for the purpose; but if the Great Exhibition of 1861 came off, it was believed that certain capitalists in this country might be enabled to obtain possession of it under a guarantee or otherwise, so that it might be exhibited here, and ultimately sold either in Paris or in London.

Professor Donaldson called attention to the proposition for the improvement of London, as suggested by M. Hector Horeau, and exhibiting at the Hanover-square Rooms; and stated that any members of the Institute would be admitted to the private view on the 17th instant, on presentation of their cards.

Mr. Edward P'Anson (Fellow) then read a very elaborate paper on the recent improvements in Paris, with special reference to the enormous Works completed or in course of construction since the accession of the present Emperor of the French. The writer gave the cost of the various works and improvements effected, and included an account of the mode adopted in Paris, of arranging the amount of compensation with the owners of property required, particulars of which are given in one of our recent volumes. At the conclusion,

The Chairman said that the meeting had reason to feel indebted to Mr. P'Anson for his able paper, on a subject which had special claims upon the attention of those whose lot it was to inhabit a metropolis which needed considerable improvement. Paris was admitted to be the gayest and most beautiful metropolis in the world, while London, although the largest and the most wealthy, was, with the exception of its noble parks, the dulllest and least interesting in an architectural point of view. There were, no doubt, some portions of the metropolis which might not come within this definition; at the same time, it must be admitted that neither our public buildings nor our street architecture were, as a whole, such as we could wish to see in such a capital. It was to be hoped, however, that in time we should improve in these respects. The French, as a nation, possessed a large share of innate taste, and they looked upon ornamentation as an essential part of architecture, little caring, or, indeed, perhaps inquiring in what proportion it might add to the original cost. This could not be said of the English people, who looked upon ornament rather in the light of a luxury, and not as an essential and component part of architecture. John Bull was a calculating animal, and first counted the cost of a building (as he was quite justified in doing), and then came a fit of grumbling and a yearning for economy. The consequence of this was, that when the scheme was carried out, it ran the risk of being spoiled, either from want of efficiency in the general arrangement, or from being starved. Many people, for instance, would rather see pumps in the streets than drinking-fountains, on the narrow principle that pumps would answer quite as well, and cost much less money. It was gratifying, however, to perceive that the public taste was improving in the matter of architecture; and as a considerable advance had also been made in the profession of the architect, it was to be hoped that the two-fold effect would produce a gratifying result in the improved appearance of the metropolis. Many of the public buildings lately erected were very much superior to their predecessors.

Mr. Asphitel observed, that Mr. P'Anson had omitted one important point, when describing the manner in which compensation for land and buildings was arranged in Paris; and that was, that a large proportion of the claims were settled by arbitration, each party appointing an architect as umpire, and leaving the question of compensation to be settled by them. He mentioned this fact to prevent the meeting from supposing that in disputed cases everything was left to a jury. The great difference between French and English juries was this: that the former constituted themselves judges of the fact, while the latter sometimes allowed themselves to be led away by the flashy speeches of counsel. He believed that with this exception the *modus operandi* of adjusting claims, was nearly on a par with that adopted in England. He begged to suggest, that as the hour was so late (owing to the length of the paper read) it would be desirable that an opportunity should be afforded of discussing it on a future night. At the same time it was becoming that Mr. P'Anson should receive the thanks of the meeting, which he begged to move accordingly.

The vote having been agreed to, several members expressed their desire that an opportunity

should be afforded for discussing the subject of the paper, and it was ultimately left to the council to name an evening for that purpose.

KING'S BILLIARD-ROOMS, MARK-LANE.

FENCHURCH-STREET and its neighbourhood have been considerably improved during the last three or four years by the erection of several first-class buildings adapted to the requirements of the business of the day and locality. Great indeed have been the changes since the time that Queen Elizabeth dined at the well-known tavern "The King's Head," at the corner of an ancient avenue called Star-alley, leading from Fenchurch-street to Mark-lane, in which is situate the ancient church of Allhallows Staining. Here, overlooking the churchyard, and immediately opposite the mediæval tower of the church, stood several ancient timber erections of the Fire of London period. These have been recently removed, and an improvement to the locality comes in the shape of a building now in course of completion for Mr. George King, under the superintendence of Mr. John Young, jun. architect, of King-street, Cheapside. It has a frontage of 70 feet in Star-alley, with a return frontage of 28 feet (at which point it is connected with the tavern adjoining), and the total height from the level of the pavement is upwards of 50 feet. The entrance, beneath an enriched doorway, is in Star-alley, and leads to a flight of stone steps therefrom to the top of the building, having panelled balustrades of cast-iron. On each landing an arched vestibule is formed next the stairs, having enriched friezes, entablatures, semi-arches, with spandrels having a "King's Head" surrounded with foliage, supported by Ionic columns and caps with wreaths, and moulded subrises and plinths. The floors consist each of two large and lofty rooms, divided by screens of similar construction to those next the stairs, but with attached columns. The ceilings are panelled and enriched with flowers, being prepared to receive coloured decorations, but these are not yet determined on. The windows have large squares of plate glass with embossed patterns. The doors of the best rooms are of Spanish mahogany. The chimney-pieces, from the manufactory of Mr. Magnus, are good specimens of enamelled slate. Mr. Robert Walbton, of Great Trinity-lane, is the general contractor.

ARCHITECTS AND SCULPTURE.

THE following is an extract from the speech of M. Fould, Minister of State, pronounced at the recent distribution of prizes of the "Ecole des Beaux-Arts," as reported in the *Journal des Débats* :—

"Without confounding the painter with the statuary," said M. Fould, "or the architect, I should like to see you generalize more your studies, and restrict yourselves less to what pleases you the most. I should like that a good architect could, if not execute, at least judge with authority of the works of the statuary or the painter whom he calls to adorn his buildings. I should like that, in their turn, the painter and the sculptor, initiated in the rules of architecture, could adapt to the places which are to receive them works whose effect in their final places is often very different from that which they produce in the studio. Harmony and unity, which are the true beauty and the true grandeur, should thus be attained in our monuments. It is not with the arts as with industry, where subdivision of labour produces prodigies. In the arts the perfection of a whole does not result from the perfection of each of its parts. A work of art is not a thing quite inanimate: life exists really in it: it is that sentiment which is found everywhere and cannot be assigned anywhere. The ancients have excelled in the art of animating their works only because they possessed that general and complete instruction which sound studies give. To remind you only of the most brilliant models, Leonardo da Vinci was as excellent a sculptor as he was a great painter, and joined to the practice of these two arts almost universal knowledge. Michelangelo, the painter of 'The Last Judgment,' has built St. Peter's at Rome, and decorated with matchless sculptures that chapel of the princes of which he had directed the construction. Raffaello himself, the first of the painters whose days can be numbered by his *chefs d'œuvre*, has left, as architect, several monuments which still to this day serve as models."

NEW CHURCH IN SHOREDITCH. A new church is about to be erected for the district of Haggerstone, in the extensive parish of Shoreditch.

THE LATE DR. ENGLEDEE.

The friends of sanitary reform in Edinburgh and of improvement generally are grieving the loss of Dr. Engledee. In losing him, the poor have lost one of their best friends.

The *Portsmouth Times*, in a feeling sketch of his career, says, there has not been within memory, among all classes of the community, a gap so wide and grievous as that caused by his passing from amongst them. Besides originating the Portsmouth Hospital, in the year 1850, he projected public baths and washhouses and drying-rooms at Landport. He was an active and laborious worker in every sanitary improvement, and even at a time when such things were deemed visionary and useless. He laboured largely for the education of the public mind, and was one of the first commissioners appointed under the Health of Towns Act.

Nothing which could improve the condition or elevate the taste of the operative classes, was beneath his attention. About two years since he established at the Philosophical Institution an exhibition of pictures, to which the gentry, through his personal influence, sent contributions, and to which artisans and their families were admitted at a nominal price. He was an active supporter of the New Water Company, the success of which he always felt to be likely to promote the cleanliness and well-being of the poor. Dr. Engledee had faith in the redemption of criminals by the use of proper means, and stoutly denied that capital punishments are likely to stop crime. In the winter of 1857-58, he undertook, at the request of some literary bodies, to give a course of twelve lectures on "Human Physiology," which were only completed so lately as March last, and in which he expressed his view that the great object of the medical profession was rather to teach men to avoid disease than merely to cure it when contracted.

Within a few weeks after the termination of this course—the opening of a small tumour, that had been unimportant in itself, led to his contracting erysipelas (a dire disease which had invaded the hospital owing to its bad drainage), and which made him a fearful sufferer. For some weeks his life was despaired of, and his frame was shattered. From this attack he recovered; but, to the grief of his numerous friends, all his energy had left him, and his great powers of conversation seemed palsied: subjects in which he had been engaged—visions of the fair and good for the future—had lost their interest and attraction, and like many other earnest labourers for their fellows, Dr. Engledee passed away, not being "of sound mind, memory, and understanding," but lunatic and distracted, at the too early age of forty-five years!

BIRD AND OTHER WINGED SYMBOLS.
THE ANCIENT DOCTRINES INVOLVED IN THEM.*

ONE of the most characteristic and curious of all the unearthed Assyrian symbolical sculptures is that of the man-god or god-man of Khorsabad, with the "egg-shaped cap," as Bonomi terms it, and the double set of wings. This figure has one pair of wings raised and one pair depressed. It is considered by Bonomi to represent "the god Cronus, the Ius of the Phœnicians, and the Allah of the Arabians, all derived from the Hebrew word El, God."†

* Mistaken notions of some imaginary connection of the curious and interesting ancient Egyptian, Druidical, Assyrian or Chaldean, Greek, Roman, Buddhist, Brahminical, and other ancient heathen doctrines, here indicated and explained, with certain quasi-Christian, "spirit," moving, Swedenborgian, mystical, or other ideas of less ancient or more modern times, induce me to request you to allow me here to assure your readers that they have no such connection, dependence, or real "links" (that have been dug directly out of the quarries of speculation by my own exclusive labour and that of the respective translators), directed by no one's guiding ideas or suggestions, mental lights, or master-keys, but mine; and that, as yet, they exist, in a printed form, nowhere (nor anything at all, in reality, like them, so far as I know, except in the *Builder*, and in a scattered and disintegrated form, throughout those ancient sources (original and translated) whence they have now, for the first time, been collated, re-organized as it were, and dragged into light, in the restricted and imperfect form which they have incidentally assumed, in the meantime, as an attempted explanation of one merely out of many kinds of archeological and other symbols, originated and used by the ancient heathen, in connection with those religious doctrines, common to them all, which I am thus attempting, under difficulties, to explain—doctrines which are likely, I should think, when really and properly understood, to startle and surprise as they did myself, even those who are so erroneously imagined to be already familiar with them, as their own.—J. E. D.

† By an old theological writer named Hutchinson, El, which, in the Old Testament throughout, is translated "the Lord," is rendered "the irradiator," a name peculiarly significant of the Lord, "the Sun of Righteousness," and "the true light, which lighteth every man," whether as in the reflected moonlight of "this life," or in the direct sun-light of "another life."

Sanchoniatho thus describes Cronus:—

"The god Taautas, having portrayed Ouranos, represented also the countenances of the gods Cronus and Jagon, [another great Assyrian god], and the sacred characters of the elements. He contrived, also, for Cronus, the ensign of his royal power, having four eyes,—in the parts before and in the parts behind,—two of them closing as in sleep; and upon the shoulders four wings, two in the act of flying, and two reposing, as at rest. And the symbol was, that Cronus, whilst he slept, was watching, and exposed whilst he was awake. And in like manner with respect to the wings, that he was flying whilst he rested, yet he rested whilst he flew."

In one of the Nimrud sculptures the egg-capped and double-winged man-god is throwing thunderbolts, or lightning flashes, at a winged and vulture-clawed and evil-looking Griffin, who is running away from him. One leg of the man-god is covered or clothed, the other uncovered or naked. In the Khorsabad sculpture he is offering a cone.

Before attempting to explain these somewhat complicated and mysterious symbols, which afford a fair basis or text around which may be woven a few further general ideas of those doctrines, as to the soul, the body, and the spirit, death and resurrection, apotheosis and salvation or immortality, which are inextricably involved in the bird and other archeological or sculptured and otherwise recorded symbols of the ancient heathen nations, all so peculiarly connected with their religious beliefs; I may here slightly advert to the obvious analogy between the Cronus of Sanchoniatho and the Roman Janus. True, in the Janus, we have not the wings, either double or single; but we have the clear symbols of a "double watch" in the twofold aspect, that of an old man and that of a youth conjoined; and, that the Romans had the distinct idea of a double state of waking and of sleep connected with the symbolical Janus appears from a curious traditional ejaculation, or saying, which is still preserved in old Latin dictionaries, namely, "Janu! Quae tu dominas?" or, by way of a free translation,—Which of you sleeps, O Janus,—the old man or the young, the soul or the spirit, the natural or the spiritual, the human or the divine?*

I may also here observe, that it is a well-known circumstance, that almost all heathen gods were double in idea, and in general male and female. Thus, in the East, we have the Brahminical books speaking of "the wives of the gods in the form of birds;" and these wives are often depicted in the arms of the gods as "little children," like Zingarel the beautiful "spirit life," and "companion in eternity" of the Titanic Ravana. In these and other instances, as with the Druids, who were first eggs and then birds, or first men and then gods, we have the soul-life, while absorbed in the spirit, as the male principle of the gods, and the spirit life itself as the wife of the god. Thus, too, in the more western myths, there was even a bearded or male Venus, as well as a female one; so that a sort of hermaphrodite idea was widely prevalent among the Gentiles, though not always clearly associated with a double state of waking and of sleep, as in the case of Cronus and of Janus, or a double state of life and of death, alternating by turns one with the other, "daily," or otherwise, as in the myth of Castor and Pollux.

Plato, in "The Banquet," gives, in the words of Aristophanes to Eryximachus (see p. 508, vol. iii. of Burges's translation), a strange account (symbolical also doubtless) of "our nature of old." It was "double," he says, or "man-woman,"—a *tertium quid*, in short, which was neither male nor female exclusively, but both in one. "It had four hands, and legs equal in number to the hands, and two faces upon the circular neck, alike in every way," and so on. "For our iniquity,"

* Speaking of Janus, I may here remark, that on an ancient coin of the island of Tenedos, off the coast of Troas (between Egypt and Constantinople), there was Janus old and young on one side, and a cross on the other, the two arms of which were mainly two bells, beneath one of which was an owl, and beneath the other a bunch of grapes.—and that the Egyptian owl and the cross are said to have symbolized two opposing principles, pursuing one another with deadly intent. The owl destroyed the eggs or deposits of the crow by night, and the cross those of the owl by day. The owl is said to have been the hieroglyphic of death, and the crow of life. The owl, need I here add, was sacred to Minerva,—the divine wisdom, who sprang suddenly from the head of her father Jove, a perfect woman. The owl was clearly denotive of the old or waking of the night—the spirit-life, which is Minerva herself. The crow was probably denotive of its opposite—the day-life—the soul-life or ordinary waking. The owl, with the bell, would denote "the voice of the living voice of the night, or spirit-waking and oracular utterance; and the grapes and bell the life of day or of the sun, yet not a true life. The 'hawk,' so distinguished in an Egyptian symbol, is declared by Hasselquist, and others to be "the screech owl—Strix," and the owl (not, it seems, hawk) headed deity is "Rhe the sun,"—"the midnight sun," in fact. This owl surmounts all else on the obelisk.

he tells us, "we have been cut in twain;" but when we are "reconciled to the god," then the "meeting of counterparts" will take place, and till then "each is in search of his counterpart." This doubling of the body, or its members, curiously reminds one of many of the Hindoo idols, with their double heads, and four hands and arms, four legs and feet (with eyes occasionally in the feet), &c.; and it was even declared of an ancient Buddhist Delai Lama, that, when he visited Tartary, it was observed that he had four arms and hands.

It may be that Plato, or his interlocutor, derived the idea of the double man from the far East, or from Assyrian tradition; but it is at all events an interesting circumstance that the ancient books, ascribed to Hermes Trismegistus, which the sages of the Thebais of Egypt possessed, and which Plato speaks of having seen, treat of just such a twofold nature in man as Plato somewhat coarsely, yet no doubt, as I have said, symbolically describes.*

Thus, in the fragmentary treatise of "Regeneration," Hermes Trismegistus is made to say,—

"Man, above all things that live upon earth, is double; being hermaphrodite—or male and female—and watchful."

This passage might almost be capable of a simpler explanation than Plato's, were it not that other portions of the context, which I shall afterwards have occasion to quote, prevent such a possibility. As it is, we have here what Plato had forgotten,—the allusion to watchfulness—a double or male and female watchfulness—in connection with the double or hermaphrodite man.

I may here also remark, by the way, that a double-winged human-shaped symbol was found sculptured on the portico of Dendera, according to Denon's plates (129). This symbol is likewise somewhat complex. It consists of two human figures, feet to feet, the one "reversed," or upside down, with a winged (night-lit, "noctiluce," or) beetle on its head, and clothed in female attire, while the other is in male attire, and has double wings. The Egyptian Horus (son of Isis and Osiris), too, I may add, is called (on an obelisk at Rome) the "guardian of the double watch."

Let us now reconsider, for a moment, what we have already gleaned, in the previous article (p. 683 of last volume, from various kindred symbols and ideas of the ancients, philosophical and religious, in explication of the winged and other symbols now and before described.

One of the most manifest and leading ideas or conclusions deducible from all the quotations, and their varying combinations, offered, as to ancient heathen doctrines, in my former article, was this;—that, dormant in the heretofore mysterious depths of the dark and desolate, death-like void of oblivious and dreamless sleep,—but beyond, or transcending even these, *restwards*, there lies, unevolved, in the possibilities of human nature, "another life," or habitable land, as it were, of existence, veiled and unseen, yet closely and inseparably associated with "this life," just as beyond the vast Atlantic waste of waters, *westwards*, there exists another hemisphere of solid, life-sustaining, and available territory,—one whole half of the continental globe itself, indeed; although it lay, till the days of Columbus, veiled and hidden from "the old world,"—utterly forgotten, or therefore unknown, and even unsuspected; but, in fact, obscurely and traditionally hinted at by Plato, and alluded to in other dim traditions or the old time.

To cross—to pass over—the wide waste, or the devious and resistive currents, of dreaming and oblivious sleep, and to "arouse" or "wake up," this other and diviner sleeping life or *vigil-power*;—to "re-awaken" this mysterious and ultra-natural "dead" one, and yet "living" though more glorious "double" "image," "counterpart," or archetype rather, of ourselves, who rests in "the sepulchre" of "the body" in "this life,"—"alain from the foundation of the world" that "now is," in fact,—we found, was the grand aim and end of ancient religious mysteries in general; and, were we to fill volumes, as could readily be done, with quotations as to these same mysteries, still and ever would it be found that the burden of the whole, directly or indirectly, was the *awakening of this sleeper*,—the "invocation" of this "god"—this extinct, yet germinative, opening bud or flower of life, or holy "life of the gods" in man,—the "crossing of the

* While alluding to Plato and his symbolical disquisitions, I may here remark, that, on account of the owl's wings, and their sprouting quills, is exceedingly curious, although I have no space in these articles for quotation of his detailed and somewhat lengthy observations on the subject. The reader, however, may be referred to his works, and particularly to "Phædrus."

terrible sea of mortality" to "the opposite shore" of the Buddhist nirvana, "delivered from existence," in "the bark of spiritual knowledge," by "crossing over all *dukkha*" ferried in this "bark;" or "the passing over of the ocean of dark oblivion" to absorption into God, as with the Brahmans,—the rending of the veil of sleep—the shadow of death—and the entrance boldly through it to this holiest place of the human temple;—and that not only was it possible so to transcend "the spirit of slumber," and to "become a god," but also to return thence, as often as desired; and that herein lay the grand road to "human perfection," that man should "often exchange this life for the life of the gods," just as he "often" as yet "exchanges" this life, of ordinary waking or watching, for the short-coming and imperfect rest or repose, and oblivious bliss, of ordinary sleep.

That beyond the wild waste of sleep, reawards, there should exist a possible state of cool, sober waking, just such as exists—though less spiritual or divine—on this side of that wide Babel of misrule and mad confusion in life, one cannot readily conceive; but, however inconceivable (without the philosophical and physiological master-key),—that the divine and oracular life, evolved in "the sacred sleep" of entrancement, was decidedly regarded as a life of cool, collected "waking," watching, or vigilance, and "sight," or "beholding," can easily be proved by a few additional quotations, the sole difficulty here being the question of space and permissibility in the *Builder* for doing so. As it is requisite, however, to a thorough understanding of the symbolical Cronus, and the other double-winged and sleep-waking symbolical personages, as well as to a like understanding of those doctrines of the soul and the spirit, death, resurrection, and immortality, which I am endeavouring to elucidate, that some such proofs should be offered, perhaps the following may be admissible.

Thus, Porphyry says that the ecstatic life of the gods is "not a vision, but another kind of seeing;" and Plotinus says it is a direct beholding.* The quasi Hermes Trismegistus, in speaking of it in the Thebæic treatise on Regeneration, says—"They that are capable and can draw any store of this *spectacle* and *sight*, do many times fall asleep from the body into the most fair and beautiful vision. . . . I would be could, O Son! but for the present we are less intent to the vision, and cannot yet open the eye of our minds."† Again, in allusion to this regenerative process of the second birth, he says—"The sleep of the body was the sober watchfulness of the mind, and the shutting of my eyes the true sight;" and speaking of this "mind," he calls it "my Mind that is Panander the great, Lord of the Word, whereby I became inspired," and again, "This is the mystery that, to this day is hidden and kept secret, life, the soul's light, the mind."‡ In expressing his desire, however, that Tatius, his disciple or "son," should acquire "the true sight," he certainly seems to forget himself slightly, where he says, "I would, O son, that thou, also, wert gone out of thyself, like them that dream in their sleep;" but, not not, ourselves, forget, or "the other hand, that the sober watchfulness, or "the true sight" was only to be reached by rising "out of" himself, through the thick and heavy clouds of that very dreaming sleep itself, like a bird on the wing, up into the pure ethereal heaven beyond and above the clouds. As for "this life," or the ordinary waking life of the soul, he calls it "the living death, the sensible carcass, the sepulchre carried about with us."

* In reference to this new kind of vision, seeing, or beholding, of the waking rest-life of thought, the following scriptural allusions to visions are interesting, whether by comparison or by contrast:—"Night shall be unto you that ye shall not have a vision, and the sun (of seerism—the sun which "rises in the night,"—"the midnight sun") shall go down over the prophets (or not "stand still" over them), and the day (of the Lord, which "cometh like a thief, in the night") shall be dark over them. Then shall the seers be ashamed, and the diviners confounded. . . . It shall be dark unto you that ye shall not divine." (Micah iii. 4, 6.) "The word of the Lord was precious in those days: there was no open vision." (1 Sam. iii. 6.) "When there is no vision the people perish." (Prov. xxix. 18.) "In a trance I saw a vision." (Acts xi. 5.)

† This "Light," or "Mind" and "Lord" of inspiration, accords with the Holy Spirit "which teacheth us all things and bringeth all things to our remembrance"—all things to mind,—and in which, as in the living fountain of memories and of soul-irradiations, "are hid all the treasures of wisdom and knowledge." "It is" the true light, which lighteth every man that cometh into the world, "and is hence a constitutional and essential principle in every man, as much so as the life or the soul, whose dark concentrative irradiations enlighten or illuminate, either in the reflected moonlight of "this life," or in the direct glory and sunlight, or "day," of the "divine life" to come—"in the night of time,"—"the Spirit of Rest," the Comforter and refreshers of mankind, and the *reveler* or *reveler* and *manifestor* of the constrictive and decaying processes of "this life."

In "The Symbolical Interpretation" of "Ravan's Dream," we have a Brahminical "fourfold state" described, in the waking body, the dreaming body, the sleeping body, and the "spirit-waking" or spiritual body; and the Interpreter goes on to say,—*"The three bodies, existing in the waking, dreaming, sleeping states, are all known, witnessed, and watched by the Spirit, which standeth behind and apart from them, in the unwinning vigilance of ecstasy or Spirit-waking."* Were the Interpreter's own initiative idea of the twofold life, and body, natural and reversed,* here adopted, rather than his more developed fourfold state, we should have almost the identical idea of "Isis, the protectress of her brother Osiris [protector of the man, in fact, who has "become" Osiris by being enigmatised and re-collected, and so falling asleep in Isis "the midnight sun" of the "Noctis Societas"], and behind whom she stands, covering him with her wings," and watching over his safety, as the winged "guardian angel" of the west "watches over us while we sleep." In the "watching" of Zingarel, the child-like "spirit bride" of Ravan, while he "sleeps," we find the very same eternal and universal, mythical and protean, truth displayed,—still in almost identical terms,—in the east as in the west.†

The "descent of the soul" from the celestial life of ecstasy to the terrestrial waking-life, by the way, is itself also described by the Interpreter of Ravan's Dream, almost as if he were an Egyptian hierophant. In speaking of the soul's fall out of the paradise of spirit-waking into the earthly state of soul-waking, he says,—*"The first spiritual state was ecstasy: from ecstasy it forgot itself into deep sleep: from deep sleep it awoke out of unconsciousness, but still within itself, into the internal world of dreams: from dreaming it passed finally into the thoroughly waking state and the outer world of sense;"* where *"the spirit is shut up [or imprisoned] in the cell of the soul."* Again he says,—*"That land of silence and shadows, of desolation and ruins, of sorrow and death, is the world, in which thy dead body now walks waking. Renounce and annihilate it, O king! by asceticism and divine gnosis, and thus return to REAL LIFE."*

The Brahminical descent or fall out of Paradise through the "deep sleep" between heaven and earth was something like the "reverse" of Adam's "deep sleep," when Eve, the quickener, the second Adam,§ was created in Paradise. In the descent or fall out of Paradise, just described, the soul is said to have "emerged on the hither side of the Lethæan boundary [of sleep] to a false or reversed knowledge of things"—*"viparita dnyana,"*—"the true and natural, correctly speaking, being the spirit waking, and the soul-waking its reverse. Between these 'lies a gulph of Lethe, or total unconsciousness—a profound and dreamless sleep.'" In the Dream of Ravan itself

"Mysterious and illumined sleep,
The body's trance—the spirit's seeing"
is spoken of as the

"Condition of the free—the doubly blest,
Highest activity in unbroken rest;"
which recalls us forcibly to Sanchoniatho's description of the double-winged and double-waking

* "There is a natural body and there is a spiritual body," and "the flesh lusteth against the Spirit, and the Spirit against the flesh, and these two are contrary one to the other," or reverses of each other. Suidas tells us out of Isidorus that the soul had once a glorious luciferous body, which even now exists in this dark terrestrial body of ours, like light in a dark lantern. On an Egyptian mummy alluded to in the *Athenæum* of the 19th of June last, there is a picture of a "dead" man with two bodies, "one red or earthly, and one blue or heavenly," reminding us of the blue robe of the Druidical bard of the second origin, dead to this life, and alive to the next, or—of the race of the gods. With another mummy, recently imported, by the way, there was found a bird of splendid plumage, as large as the peacock. One feels almost inclined absurdly to ejaculate,—*"Was it not the phoenix?"*

† Between the Egyptian doctrine of the scattering and re-collecting and re-uniting of the members of Osiris, and the Brahminical, which speaks of "the Yogi who emerges himself to re-collect and re-unite his scattered self by internal contemplation," preparative to plunging into the divine abyss, there is a close and obvious affinity. The following, from the Brahminical books, too, reminds us of itself:—"May the goddesses whose wings are unclipped, the protectresses of mankind, favour us with protection and with entire felicity."

‡ The winged figure, on a wheeled cross with rays, which is sculptured above the Assyrian king, with bow in hand, and lightning flashes, or thunderbolts, for arrows, and surrounding the king's own attitude appears to be of the nature of the guardian angel accompanying the king. It resembles the Ferocher of Persia, which has been supposed to have a common origin in name with the Fairy and the Peri, or Houri, of Hur, or Paradise. In the Highlands of Scotland an idea prevails that every one is accompanied through life by a simulacrum or image of himself.

§ Genesis v. 2:—"He blessed them, and called their name Adam."

¶ See *Dublin University Mag.* Oct. 1853, April, 1854, for several of these quotations,—viz. from the translated "Dream of Ravan."

Cronus, who rested as he flew and flew as he rested, sleeping while he woke and awake while he slept.

The old Hindoo sages believed this life—that is in fact ordinary waking, and nothing else—to be but a dream of "the sleeping god." In his waking, "this life" is "absorbed" in "the next." The code of Menu pronounces the waking state to be one of deceptive appearances—a life among mere phantasmata; that of sleep as a little nearer reality; while that of the ecstasy of entrancement presents the reality itself—the truth,—reveals a new world (in the old*) and enables the divine or spiritual eye, which opens when the human closes, to discern the inmost reality of all creation, or to "see into the life of things,"—as Wordsworth has it, while actually thinking, it would seem, of this entranced and strange new state of waking existence itself. In short, it is as if the world were thus WITNESSED in its subjective, interior, and real aspect by the spirit life, while this same world was witnessed only in its relative, exterior, and phenomenal aspect by the soul-life. Milton is Brahminical in his implied doctrine when, in the "Paradise Lost," he asks

"What if earth be but the shadow of heaven?"
"And heaven be turned to earth and earth to heaven."

It was "in the night of time, when all things rest," that the Yogi "waked"—in the "day" of "eternity" [the chain of time unlinked, as it were, being "eternity"—not endless time; for eternity is "beyond or beside all time."] The Yoga, however, or practice of "awakening" the spirit-life, or "plunging into eternity," in the "night of time"—or indeed at any time,—is admitted to be at present "impracticable," although there are still pretenders to it. Nevertheless Christina teaches that "the wisely devout"—the Brahminical spirit-life, in fact—"wakes in the night of time when all things rest, and sleeps in the day of time when all things wake;" and this responds to what is said of "this life,"—ordinary waking, or the waking man, being but "a dream of the sleeping god."

It is full time for us now, however, to revert to Sanchoniatho and his double-winged divinity Cronus, who waked while he slept, and flew while he rested. We can now pretty clearly perceive that if the fully-developed nature of man be "twofold and watchful;" that if it be possible to transcend—to sail or fly across—the wild ocean, or torso through the dark clouds, of dreaming and oblivious sleep, from a waking state on this side of it to a no less waking state on the other, and "thence return"—each watchful or waking state sinking into sleep and rest in the arms, as it were, of its fellow;—the "perfect man" so PENDULATING between these two full "reverses" or extremes, will actually wake while he sleeps, and act (in mental act fly) while he rests; for in the "highest activity" of the spirit there will be "unbroken rest" to the soul; and, vice versa, there must be "unbroken rest" to the spirit in the "highest activity" of the soul.

But another little dip into the philosophy of the ancient religions or mythologies may make this still more clear, our special purpose being in this to discover, as far as possible, the ideas entertained of the respective special and peculiar natures and powers of the soul and the spirit which are thus believed to play, into each other's hands, the game of life, "in and out" of the body, which each is supposed alternately to "possess" or occupy, and "lead" or move, more especially in its own proper state of watchfulness, waking, or "life."

The Rosicrucians taught that there are two kinds of life, "the compound life" and "the elementary life." The compound is the human or soul-life. The elementary is the sylphic or other spirit-life. It was the duty of the sages, by fasting, watching, prayer, and contemplation, to bring about "a Rosicrucian marriage" with the elementary or spirit-life. That life was the companion and bride of man (of the compound life) in Paradise, and the desertion of this his spirit-bride constituted the very fall of man itself. The grand purpose of the brethren of the Rosy Cross was, by help of the spirit-life, to bring about the entire regeneration and the perfection and salvation or immortalization of man, in body and soul and spirit. As in the Eleusinian initiation, "science, genius, and immortality" were to be the fruits of the glorious alliance which the sages,

* "Within the city of Brahma the five Pranas [or "super-natural faculties?"] are watchful and radiant; and the seven *loka*s that he did and saw WHEN AWAKE."—*Edgewood.*

† Relations have subjective terms on which they are based: it is in this sense, and not as in contrast with "objective," that I here use the term subjective: in the sense used the subjective is the true objective, and the relative is based upon it, and is but a shadowy reflex of it.

window, in red brick. The roofs are covered with Ramsey plain tiles: the timbers of the roofs are exposed below the collar-beam, at which level the ceiling is fixed. Trap-doors in the ceiling communicate with the ventilating shaft for the discharge of foul air; and fresh air is admitted through the floor by a simple contrivance. All the buildings are lighted with gas, and an unlimited supply of water is obtained from the pipes of the town waterworks. The architect is Mr. R. R. Rowe; the builders, Messrs. Gray and Son, of Cambridge. The cost of erection will be about 1,500*l*.

PRESERVATION OF STONE IN BUILDINGS.

In reply to Mr. Szerelmey's letter on this subject, I have only to say that, in the specification of his patent, dated July 2, 1857, I find that he proposes two preparations, one of which consists of a mixture of blood, caseous matter produced from milk, ground bricks, slag and clay, while the other is composed of gas or coal tar, linseed oil, resin, or asphalt, with hydraulic lime, grit and calcined flint; and I also find that, "although these cements may be capable of separate use they are preferred to be employed in succession." As the work I alluded to in my communication was in full progress in the month of October last, I was perhaps justified in concluding that so large an experiment on a public building would hardly have been tried by the discovery of a process with a composition essentially different from one so recently patented by him, as applicable to the same case. If I am wrong in assuming that Mr. Szerelmey's patent "for rendering structures waterproof" sealed March 17, 1857, has no reference to the process adopted at Westminster, I shall be happy to be set right by the patentee; and you, sir, I am sure will gladly give publicity to any statement of facts in a matter which is really becoming of extreme public importance. At the same time I think your readers will agree with me, that the old saying, *fiat experimentum in corpore vili*, might have been remembered in the present case with advantage, and that it would have been prudent to expose some less important building than our new Palace at Westminster, to the chances of success or failure, which so very recent a discovery as that of Mr. Szerelmey must be subject to.

D. T. ANSTED.

HOUSE DRAINAGE.

A PROPER system of house drainage has so long been admitted by all professional men to be absolutely necessary for the health of the inhabitants of this vast metropolis, that feeling any hint from a practical man is valuable, and when conveyed by your paper weighty and impressive, I have no hesitation in troubling you or your readers with this letter, which I shall confine to the question of private drainage, and more especially to cesspools, so ably spoken of in an article in your last week's number.

You have for many years pointed out to the public the importance of avoiding ill-drained districts and dwellings having no drainage excepting into cesspools or dumb wells, the exhalations from which pollute the atmosphere they breathe to the serious injury of their health. I have, during twenty years' practical experience, witnessed so much reluctance on the part of owners of house-property to effect any drainage improvements, that until tenants, who are the real sufferers, are fully impressed with the vital importance of the matter, and take up the subject, as I venture to suggest, I fear it will be a long period before you will have the pleasure to report that a cesspool is an unknown thing in London; but if they will assist you, a very brief time will suffice for the completion of that which we are all interested in, viz. that every house in London shall be thoroughly drained. I recommend that every tenant should, if a cesspool is known to exist upon his premises, insist on the landlord's immediately destroying it and properly draining the place into a common sewer; also, that every person, previously to taking a house, should satisfy himself by making inquiries of the surveyor to the vestry, or Board of Works for the district, whether the property is perfectly drained, and until it is so, refuse to occupy it.

If as an excuse it is stated that there is not any sewer sufficiently near, let the owner, with the proprietors of all adjoining buildings, make a proper application to the authorities to afford that accommodation, and I feel convinced that they will not shrink from carrying out a complete system of sewerage for their several districts. If such a plan as was generally adopted, it would not only hasten the completion of the

sewerage of the metropolis, but would soon produce a great decrease in the mortality of London. The owners of houses can put forth no reasonable argument why they should continue to impose unwholesome residences upon an unenlightened public. Shopkeepers who sell blown meat, putrid fish, &c. are amenable to police penalties; why, then, should he who makes his living, or, as it more generally happens in this case his fortune, by dealing in house accommodation, be exempt?

I hope you will continue to impress upon your numerous readers the great importance, to the health of every one, that each dwelling should be efficiently drained, and with the use of tubular stoneware glazed pipes: the expense is not one-half of what brick drains cost some years ago.

HENRY JOHNSON.

THE FOUNDER OF LAMB'S CONDUIT.

THE following notes in connection with a public benefactor, condensed from a paper by Sir John Hawkins, may not prove without interest at this moment:—

On the north side of Holborn was an aqueduct known by the name of Lamb's Conduit, as having been made by a person of the name of Lamb,—of whom, notwithstanding the many evidences of his munificence at this day existing in charitable endowments and works of public benefit,—very little is known, the several particulars that are recorded of him being dispersed in books now grown scarce, and never having been collected, as far as can be learned, or brought into one point of view. From the Survey of Stow, who was his contemporary, printed in 1633 (which edition is that referred to in this account), we learn that his name was William, and that he was some time a gentleman of the chapel to King Henry VII. and in great favour with him.

Among a great number of charitable endowments, and other acts of beneficence for which London is indebted to this public-spirited man, and which are recorded by the above historian, are the building of this conduit, near Holborn, and his gift to the company of clothworkers. Of the former of these, the edifice being destroyed, the remembrance is at this time nearly, and a few years hence (1807), will be totally, effaced; and of the latter, which was a donation in favour of poor persons, and the foundation and endowment of a chapel in a very obscure part of the city, so little is known, that to communicate what information can be obtained concerning it seems to be no more than what gratitude would suggest to every one who has it in his power.

Lamb was born at Sutton Valence, in Kent; and although his profession was that of choral music, was a free brother of the Clothworkers of the City of London. He was thrice married, and dying in the year 1577, was interred in the parish church of St. Faith, under the old cathedral of St. Paul.

The total sum of Lamb's several gifts exceeded 6,000*l*. Sir John Hawkins says that we are to suppose that Lamb had arrived at a state of great affluence, and had quitted the chapel at the end of the King's reign, for his name does not appear in the chapel establishment of his immediate successor, and that his wealth was derived from a source abundantly more plentiful than the emoluments of his profession, a poor one, indeed, which yielded him, in common with others, 7*d*. per diem. However, the money was gained, and Stow mentions that he was in a condition to make purchases, for he expressly says that he purchased of Edward VI. a hermitage, over which he built the chapel called by his name.

The following are the good works of Lamb:—He erected a Free Grammar School in the town of his nativity, and endowed it with a salary of 20*l*. a year for the master, and 10*l*. a year for the usher; and in the same town he founded and endowed six almshouses, with yearly pensions of 10*l*. for poor persons inhabiting the same.

To the Free School at Maulstone, in Kent, he gave 10*l*. yearly for ever.

He also gave to poor clothiers in the county of Suffolk, and the towns of Bridgnorth and Ludlow, 100*l*. severally.

He founded a conduit near Holborn, hereafter described, and caused water to be conveyed thence to, at an expense of 1,500*l*.; and gave to 120 poor women pails, therewith to carry and serve water.

He also founded and endowed with lands and tenements the chapel near Cripplegate.

Besides these, he made a donation of 15*l*. to the parish church of St. Giles, Cripplegate, to the bells and chiming; and other sums to the Company of Stationers, Christ's Hospital, St. Thomas's Hospital, and the Hospital of the Savoy. He also appropriated sums for the relief of poor prisoners

in the two Compters, Newgate, Ludgate, the Marshalsea, King's Bench, and the White Lion.

Further, he gave for the marriage of poor maidens, 20*l*. to be equally divided among forty such. He also bequeathed legacies to his servants, and 188 free gowns to as many poor men and women attendants on his funeral, and directed that the remnant of his goods, after his burial, should be dispersed where need and reason required.

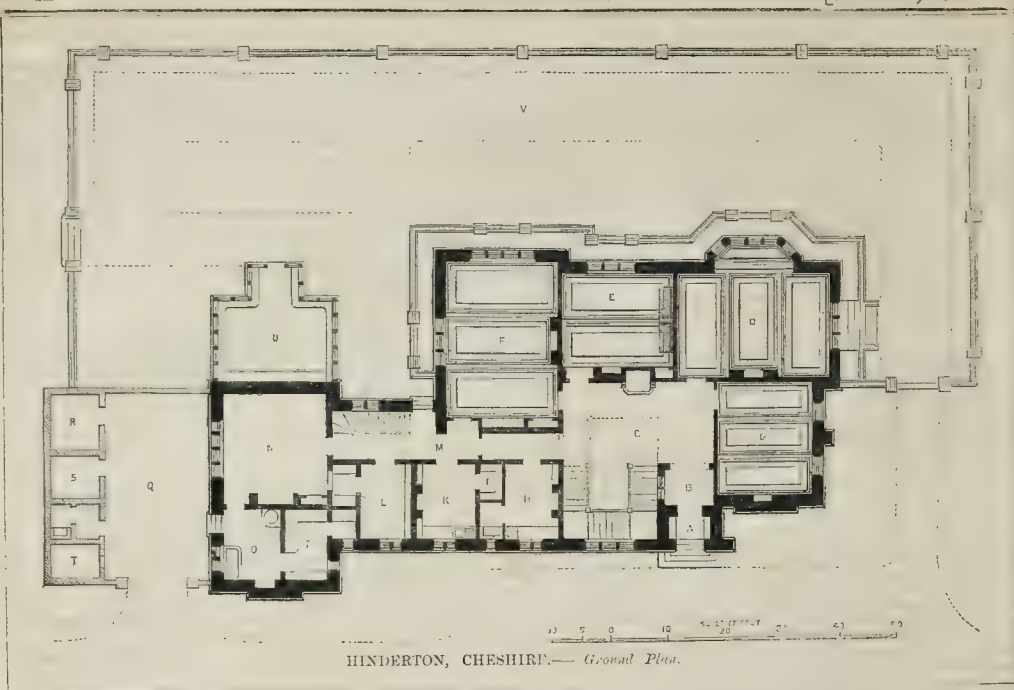
Of these several charities, as various in their nature as laudable in their intentions, there are two which more particularly attract the notice and excite the curiosity of the antiquary; and these are, the conduit north of Holborn, and its adjunct—that at Holborn-bridge; and his gift to the company of clothworkers. Concerning the former, Stow says:—"Neare unto Holborn he founded a faire conduit, and a standard, with a locke at Holborn-bridge, to carry away the waste. These were begun the six-and-twentieth day of March, 1577, and the water carried along in pipes of lead more than two thousand yards, all at his own cost and charges, amounting to the sum of 1,500*l*. and the work fully finished the four-and-twentieth of August in the same year." Elsewhere the same writer states:—"There lyeth a streete from Newgate, west, to the end of Turnagain-lane, and winding north to the Oldbourn conduit. This conduit, by Oldbourn cross, was first builded in 1498. Thomasine, widow to John Percival, maior, gave to the second making thereof, twenty marks; Richard Shore, ten pounds; Thomas Knesworth and others did also give towards it. But of late a new conduit was there builded in place of the old, namely in the year 1577, by William Lambe, a citizen and clothworker of London; and the water thereof he caused to be conveyed in lead from divers springs to one head, and from thence to the said conduit."

Sir John Hawkins remarks that from the second of the passages above recited we learn that the water that supplied this conduit was first covered by divers springs to one head 2,000 yards distant therefrom. The particular spot of ground which concentrated these several springs is not pointed out by Stow, but, computing the distance of yards, "this we find done by the author of the 'New View of London,' published in 1707, who, though anonymous in this work, is well known to be Edward Hatton, surveyor of one of the offices of insurance from fire, who, under the head of 'Fountains, Bridges, Conduits, &c.' has the following article:—'Lamb's Conduit, at the north end of Red Lion-street, near the fields, affords plenty of water clear as crystal, which is chiefly used for drinking. It belongs to St. Sepulchre's parish, the fountain-head being under a stone marked S. S. P. in the vacant ground a little east of Ormond-street; and it runs thence in lead pipes to the conduit on Snow-hill, which has the figure of a lamb upon it, denoting that the water comes from Lamb's Conduit.'"

There is good reason to suppose that the conduit was destroyed by the Great Fire, which, notwithstanding the general belief, extended far north of Pie-corner. About twenty-five years before the publication of the first volume of "The Antiquarian Repertory," in 1807, "a conduit—a dry one, it is true, as all the City conduits had become—was standing in the place now spoken of, but its form plainly showed it to be a building of later erection than 1577," when a kind of mixed Gothic style distinguished the buildings of the era; whereas the latter conduit, for so we assume it to be, was so pure and classical in its style of architecture, that the design might, without injury to his memory, be ascribed to Sir Christopher Wren himself.

To describe this building with as much accuracy as mere memory will enable us. Its plan was an equal-sided quadrangle. A kind of rustic basement, about 10 feet high, formed the first stratum or story, and in this was the pipe from which the water issued: above that, the square form still continuing, four faces were presented to view, resembling not a little that tabernacle in the Rotunda at Rome. From each of the angles sprang the roof in a sloping concave line, resembling the diagonal line of a grained arch inverted, and in the opening thereof stood a lamb, a rebus of the founder's name, with its head towards Holborn-hill.

This goodly fabric, at a meeting of three ways, from each whereof it might be viewed with advantage, was suffered to stand some years after Cheapside, Aldermanbury, and other of the City conduits had been taken down. It is true that, for nearly half a century before the demolition of the former, the flow of water to almost all of them had been either totally interrupted or intercepted;



the reason of which was the plentiful supply of water from the New River.

Although the fountain or spring head in the City ceased to supply the inhabitants in the neighbourhood of Snow-hill, the water proved useful to those dwelling in the new streets, Ormond-street, &c.

This conduit, at the time of building the Foundling Hospital, was taken down, and the water conveyed eastward of Red Lion-street. In an old print of about the time of this alteration, the whole of the ground in front of the Foundling Hospital, which is now covered by Lamb's Conduit-street and the adjacent buildings, was broken-looking ground, similar to those spots which, three miles or so northward, now form the suburbs of the metropolis. When Sir John Hawkins saw this reservoir, the condition of it was filthy and neglected: there was, however, an inscription, to the following effect, upon a stone which formed part of the arched work:—

"On this spot stood the Conduit
Commonly called and known
By the name of Lamb's Conduit,
The property of the City of London.
Which was rebuilt in the year MDCCXXXVI.
By the said City, and at this so lately built,
Wastaken down in the year MDCCXLVI.
At the request of the Governors and Guardians
Of the Hospital for the Maintenance
And Education of exposed and deserted
Young Children,
In order to lay open the way
And make the same more commodious.
The waters thereof are still preserved
And contributed for the public emolument
By building an arch over the way.
And this compartment is erected
To preserve the City rights and interest
In the said Ground, Water, and Spring."

A hostelry, which now presents a modern appearance, the sign of "The Lamb," on the east side, near the top of Lamb's Conduit-street, stands almost on the spot to which the conduit was removed from beside the Foundling Hospital, and in one of the gardens near is some old stone work which is probably the last trace of this relic of past times. William Lamb was a man who strove to do good in his generation, and the inscription above his tomb in St. Paul's was:—

"As I was—so are you:
As I am—you shall be.
That I had—that I gave,
That I gave—that I have.
Thus I end all my cost:
That I left, that I lost."

PUBLIC WORKS IN INDIA.—There is no truth, it appears, in the statement that there will be any rejection, or even postponement, of public works of general utility throughout the Queen's Indian dominions.

"THE BUILDER'S" LAW NOTES.

Bequest for Church Building Purposes.—A testator, by will, executed three months before his death, devised two freehold houses to trustees, upon trust, to sell and invest the purchase-money, and to pay the dividends to his wife for life, and after her death to make over and transfer the principal to the Society for the Enlargement, Building, and Repairing of Churches. This bequest was held to be void under the Mortmain laws. The Act of 1803, which modified the Mortmain Acts, intended that gifts to be protected should be for one church or chapel, and not a vague or general gift, to be applied to the enlargement, building, or repairing of churches or chapels generally.—*Church Building Society v. Coles.*

Landlord and Tenant.—The Courts will restrain a tenant from pulling down a house and building another when the landlord objects.—*Smyth v. Carter.*

Property Tax.—A tenant has a right to deduct the amount of property tax assessed upon and paid by him in respect of his landlord, although the landlord is not, in fact, liable to be assessed, and has, before the payment, claimed exemption, and that exemption has been subsequently allowed.—*Smatman v. Ambler.*

Lands Clauses Consolidation Act.—The throwing of a railway bridge over a yard belonging to a manufactory, and used for the preparation of colours (a process which required air and light), is taking a part of the manufactory under the powers of the Lands Clauses Consolidation Act, although no part of the soil itself is actually taken or touched.—*Pinchin v. London and Blackwall Railway Company.*

Condition of Sale.—Where particulars and conditions of sale, taken together, fully disclosed the nature of the property sold, and the purchaser might, previous to the sale, have inspected deeds referred to in the particulars and conditions, but did not do so, he was held bound to complete his purchase.—*Re Clapperton.*

Public Company.—Directors of a public company are trustees for the shareholders, and their private interests must yield to their public duty whenever they are conflicting.—*Re Coalbrook Railway Company.*

Public Health Act.—Plaintiffs were owners of fields on the banks of a river, with watering-places for cattle, and also had fishery rights in the river. The defendants, a local Board of Health, prepared to carry a sewer through the fields, with an outlet into the river, for the drainage of a neighbouring town. It was held that the plaintiffs were entitled to restrain by injunction the de-

fendants from constructing the sewer without their written consent.—*Oldaker v. Hunt.*

Coast Rights of Crown.—In the absence of all evidence of particular usage, the extent of the right of the Crown to the seashore, landwards, is *prima facie* limited by the line of the medium high tide between the spring and the neap.—*Attorney General v. Chambers.*

HINDERTON, CHESHIRE.

HINDERTON, of which we give a view and ground-plan in our present number, is the residence of Mr. Christopher Bushell, and has lately been erected from the designs of Mr. A. Waterhouse, of Manchester. It is situated on rising ground above the village of Neston, and about two miles from the Hooton Station of the Chester and Birkenhead Railway.

The local red sandstone is the material employed in the house, terraces, offices, stables, and lodge; the house itself being in addition lined with brickwork.

The principal apartments are finished in oak and pitch-pine; and the floor-beams above, instead of being concealed by plaster, are moulded, and supported on corbels of Caen stone.

The hall, paved with Minton's tiles, has gallery on two sides leading to various rooms on the chamber-floor, and is open to the roof. The basement story, which is lofty and surrounded in part by an open area, contains a billiard-room, servants' hall, and other boarded apartments.

From the tower is obtained an extensive prospect, embracing the estuaries of the Mersey and Dee, and the Denbighshire hills.

Messrs. Haigh and Co. of Liverpool, were the contractors of the work. Messrs. Aspinwall and Monkhouse, of Manchester, were employed as internal decorators.

Reference to Plan.

A. Porch.	M. Corridor.
B. Vestibule.	N. Kitchen.
C. Hall and staircase.	O. Scullery.
D. Drawing-room.	P. Larder.
E. Library.	Q. Kitchen-court.
F. Dining-room.	R. Coals.
G. Study.	S. Wood.
H. Lavatory, &c.	T. Ashes.
I. China.	U. Conservatory.
K. Butler's pantry.	V. Terrace.
L. Store-room.	

THE TIMBER DUTIES.—A large and influential meeting of the inhabitants of Sunderland has been held for the purpose of taking steps to obtain a total and immediate repeal of the existing timber duties. A series of appropriate resolutions were adopted to that end by the meeting.



HINDERTON, CHESHIRE.—MR. A. WATKINSON, ARCHITECT.

LONDON CHURCHES.

ST. HELEN'S, BISHOPSGATE.

The noble efforts displayed by the authorities of St. Michael's, Cornhill, first in sacrificing so large a space of ground in the erection of the beautiful porch, which has called forth so much admiration, and further in the entire renovation in so costly a manner of the body of the church, leads us to entertain hopes that the same spirit may be diffused amongst other churchwardens of some of the more venerable relics of antiquity in this our dear old City of London.

And, sir, I would wish to call your attention to that especially venerable structure, St. Helen's, Bishopsgate, apparently fast falling into decay, the Tudor roof of which covers in the remains of some of our noblest citizens: need I bring to your remembrance Sir Thomas Gresham? The Royal Exchange and college which bear his name remind us of his philanthropy, and can we do otherwise but revere the place of his sepulchre and the names of Sir John Crosby, William Hollis, and Sir Andrew Judd, names so well remembered in City annals for deeds of charity, with numbers of others possessing historical and antiquarian interest, some decaying away, and scarcely discernible through the dirty yellow glass which fills the windows.

What can be done to save this time-honoured structure, and to restore it in a measure to somewhat of its pristine grandeur?

With due respect, let us hope the lethargic sleep of its worthy churchwardens may be disturbed, and for a morning walk tread in the footsteps of their brethren of St. Michael.

NINETEENTH-CENTURY CITIZEN.

TITHE COMMUTATION.

MR. WILKIN, the actuary, writes to us to say, that each 100*l.* of tithe rent-charge will, for the year 1859, amount to 108*l.* 19*s.* 6*d.*, which is a little more than 3 per cent. above the last year's value.

The following statement, from his "Annual Tithe Commutation Tables," will show the worth of 100*l.* of tithe rent-charge for each year since the passing of the Tithe Commutation Act, viz.—

For the year 1837	98 13 9
1838	97 7 11
1839	95 7 0
1840	98 15 9
1841	102 12 5
1842	105 8 2
1843	103 12 2
1844	104 3 5
1845	103 17 11
1846	102 17 8
1847	99 18 10
1848	102 1 0
1849	100 3 7
1850	98 16 10
1851	96 11 4
1852	93 16 11
1853	91 13 5
1854	90 19 5
1855	89 15 8
1856	93 18 1
1857	99 13 7
1858	105 16 3
1859	108 19 6

23/2,287 2 04

General average for 23 years 99 8 94

FALL OF A SHOP AT LIVERPOOL.

MISFORTUNES never do come single. The last new accident is the fall of a large draper's shop in Great George-street, Liverpool, extending from 113 to 115 inclusive, and the burial of customers and shopmen in the ruins. The occurrence took place on Tuesday. Three female customers, a shopman, and a workman were dug out quite dead; two workmen, sent to the hospital; and three or four others, together with more women customers, not so seriously injured, were able to go home of themselves. The draper had recently added to the back part of his premises, which have an extensive frontage and two entrances, like two distinct shops, a large bazaar, lighted from the roof, and extending backwards to Rathbone-street. During a portion of the alterations the shop was closed, but had recently been re-opened. Three men were engaged in taking down the party wall in the attic, so that the shop might be joined to the new bazaar behind. In doing this they placed the brick-work, it is said, on the floor of the old premises, though strictly ordered not to do so. In the afternoon the top floor gave way, and the fabric being loosened, it came down with a terrific crash to the floor below. This did not hold the falling mass, but also gave way, adding to the weight, which then fell through into the shop below, and carried all down into the cellar, burying people, stock, and fixtures in the rubbish.

It is stated that on the premises being examined, it was seen that a party-wall, in which the beams of the flooring rested, was only $\frac{1}{4}$ inches thick, without any bonding to the adjacent party-wall of equal thickness. This portion of the premises is about fifty years of age, and it was evident that this party-wall had buckled or collapsed through the great weight above. The new building behind was quite firm and uninjured.

IMPROVEMENTS AT BOSTON, U.S.

In a street called Franklin-street, at Boston, very extensive business improvements have been effected within the last twelve months: in fact, Franklin-place, once the residence of the wealthy and the fashionable of the city, has all of a sudden been converted into a street of commercial palaces, which are extending throughout various thoroughfares in connection with it. Mr. G. J. F. Bryant, architect, has planned no less than about forty-five first-class stores here in a single year! Fortune Mr. Bryant! The increase of valuation in the real estate of Franklin-street has been estimated at no less than 2,500,000 dollars. Both sides of the street are occupied with the new stores, and one block alone, forming a portion of the south side, extends in one uniform facade, 220 feet in length, 108 feet in depth, and five stories in height, in addition to the basement and attics.

THE REVIVAL OF MEDIEVAL ARCHITECTURE.

It is not my intention to be led into a newspaper correspondence with Mr. Street, who appears to have misunderstood the purport of my letter.

I must state, however, that he is mistaken in supposing that my views are at all singular or peculiar to myself, as the article in the *Guardian* to which he refers proves, for it was not written by me. In contradicting my statement respecting "Early Italian Gothic," he gives a list of Italian buildings, but carefully avoids giving a single date, without which his arguments are worth nothing.

I may say that I do not know all the Italian buildings he mentions, but I am well acquainted with many of them, and have careful drawings of numerous details by an experienced artist, made under my own eye, and according to my own personal directions, on the spot.

I never said I wished architects to go to Rome and the East by way of Brittany, Anjou, &c. I only wished to point out, as a matter of history, which there is evidence to prove, that the principles of vaulting came to us by that route from Byzantium. This, too, was introduced in my letter when I was speaking of the different modes of vaulting being prominent distinctions between English and French Gothic, and had nothing whatever to do with a modern architect's travels.

I did not express as my wish the restriction of the studies of architects in any measure; let them study the buildings of the whole world, as far as they have the opportunity, but that is no reason for importing details from Lombardy, and introducing them into English buildings: study and importation are different things. Let them begin their study at home, and when they have mastered English Gothic they will be better able to make use of foreign details. I said that when they did copy, it was better to take from those districts with which our ancient architects were in communication, and not go to those countries with which they had no intercourse, as the results must lead to incongruous mixtures.

It is a mere perversion of my words to suppose that I intended to point out the hospital at Angers as the one type which our English architects followed; I said no such nonsense. I merely said it was the most advanced building of its date that I have met with, and had peculiar historical circumstances connected with it. Let Mr. Street point out an earlier dated example of which lightness and elegance are so marked a characteristic; the pointed arch which he lays such stress upon is no criterion, as St. Front, of Perigueux, itself has this form of arch fully developed.

This, too, reminds me that Mr. Street quietly assumes that the coloupy in Perigord was Venetian, and that St. Front is copied from St. Marc, at Venice; but this is mere assumption, and not so probable as that it was a Greek colony from Byzantium, and that both St. Front and St. Marc are copied from the same type; and it is by no means certain that St. Marc is the earliest of the two.

It is evident that Mr. Street does not understand the distinctive principle of French and

English vaulting to which I have referred; and it is impossible to explain it, without buildings or models to refer to.

Mr. Street may sneer at what he calls "anti-quarianism;" but the copying, both English and foreign examples, without understanding their history, has been one great cause of many recent failures which we have to deplore.

J. H. PARKER.

THE LATE CATASTROPHE AT THE POLYTECHNIC INSTITUTION.

ON Thursday afternoon the adjourned inquest on the body of Emma Pike, aged eight years, who lost her life in consequence of injuries sustained by the falling of the geometrical staircase at the Polytechnic Institution on the night of the 3rd instant, was resumed before Mr. Wakley, coroner for Middlesex.

Mr. Sleigh, the barrister, appeared to watch the proceedings on the part of the directors of the Institution; Mr. Collier, M.P. Q.C. appeared for the architect of the building (Mr. Thomson); Mr. Mathews, solicitor, on behalf of the parents of the deceased child; Mr. Goring, solicitor, for Mr. Bedford, the mason who fixed the iron-castings to the staircase; and Mr. Hughes, jun. represented the interests of Mr. Pepper, the late general manager of the Institution.

The jury having been sworn,—

The Coroner said he felt himself to be in a little difficulty arising out of the course of events which had taken place since the last day on which the jury had met. On that occasion it seemed to be understood that the deceased had lost her life in consequence of the accident to the staircase on the previous Monday. An adjournment was then ordered, to procure some professional assistance, and Mr. Nelson and Mr. Eales had been requested to make an inspection of the scene of the disaster. He found, however, on going home that day at two o'clock, a communication from Mr. Nelson, in which that gentleman inclosed the names of a list of witnesses to be called, including Mr. Bedford, Mr. Thomson, Mr. Pepper, Mr. Hopper, Mr. Pratt, and other persons. It was impossible, however, for him (the Coroner) to summon those witnesses at such short notice; and, therefore, he would be glad to learn from Mr. Nelson whether he was ready to produce his report now, or whether it would be necessary to have another adjournment, before he could be in a position to do so.

Mr. Nelson said he was not as yet prepared with his report. Since he had made his inspection of the place, some facts had come to his knowledge with reference to the state of the staircase before the iron treads were put in; and in consequence of that circumstance he had requested the Coroner to summon the witnesses, whose names he had given him. He believed that all the parties to whom he referred were now present. The course which he ventured to suggest had been tried at the Guildford-street and Tottenham-court-road inquiries, with the most convenient results.

The Coroner.—Why, we were a fortnight sitting on the Tottenham-court-road inquiry.

Mr. Nelson.—I fancy we should have been much longer had we not adopted the course I now suggest.

The Coroner said that, in his opinion, the suggestion of Mr. Nelson was not susceptible of the favourable construction which that gentleman put upon it, and that the result might be to defeat the ends of justice. The question, however, should be left to the jury, and if they wished that the witnesses should be examined before Mr. Nelson gave in his report, he should offer no objection; at the same time, he confessed that, in his opinion, the more convenient course would be to adjourn the inquiry until the morning of some day next week, when they could commence the inquiry at an early hour, and finish on the same day. He would be glad to know from Mr. Nelson, whether, supposing they were able to take the professional evidence at once, he would be prepared to give his evidence and submit his report then?

Mr. Nelson said he could not do that, but that he would be quite prepared on Tuesday next.

Mr. Collier said, as he understood the case, Mr. Nelson did not wish to give in his report until he had heard the evidence of one or two important witnesses.

The Coroner repeated that he would leave the matter in the hands of the jury; at the same time his own opinion was, that Messrs. Nelson and Eales ought to give in their report first, and then give their evidence.

After some discussion, in the course of which

the jury expressed themselves averse to repeated adjournments.

A Juror inquired whether the Coroner had received any report from the surveyor.

The Coroner.—I have not.

Mr. Mathews inquired whether there was any necessity for a written report at all.

Mr. Sleigh said that the directors had no object in view but a desire to facilitate the inquiry as much as possible.

Mr. Eales said he had drawn up the outline of a report, but that he was not prepared to present it at that moment, as he understood that some fresh evidence was likely to be produced.

Mr. Mathews said the surveyors had gone over the premises, and had had time to form their opinion as to the cause of the accident. He could not see what assistance they required to arrive at a conclusion whether the staircase was or was not constructed upon proper architectural principles.

The jury having expressed their desire to hear further evidence before adjourning, several witnesses were called.

Mr. John Langley King examined.—I reside at No. 56, Wells-street, Oxford-street, and am lecturer on science to the Institution. I am neither a shareholder nor a proprietor in the Institution. I witnessed the accident which occurred at half-past ten o'clock on the night of the 3rd of this month. I was on the middle landing at the foot of the stairs that fell. I heard a slight noise, and saw the upper part of the railing yield. The whole staircase descended at once, and fell on the one beneath it, breaking the latter away with a loud crash, and ultimately falling with a very dull sound into the well. I was not thrown down. I should fancy that forty persons were on the upper stairs when they fell. The gas was cut off, and all was dark. I then ran to my room and obtained candles and tapers.

Mr. Nelson suggested whether Mr. King could give any evidence as to the state of the staircase.

The Coroner said he did not think professional gentlemen should act the part of advocates.

Mr. Nelson observed that if the Coroner meant thereby to infer that he (Mr. Nelson) was at all disposed to act as an advocate, he would beg permission to retire from the room. He had been engaged in many inquiries similar to the present, and it had never been urged against him that he had been influenced by any interested motive. From hearsay evidence he had been led to believe that there were defects in the staircase before the accident occurred, and it was his duty to ascertain what grounds existed for those rumours. In the exercise of what he conceived to be his duty, he had ventured to suggest a question to the witness, and he did hope that credit would have been given him for sincerity of motive.

The Coroner said that Mr. Nelson was wholly mistaken in supposing that he intended to impugn his honourable conduct in any respect. His only object in stating that the architects should not be considered as advocates, was to prevent Mr. Nelson or Mr. Eales supposing that they were expected to act in that capacity. It had often been his lot to act with Mr. Nelson, and he was bound to say he had never met a more clear-headed, honourable, or straightforward witness.

Mr. Nelson expressed himself quite satisfied with this explanation.

Mr. King's examination resumed.—I have been here six or seven years, and the only thing I ever saw done to the stairs was putting down the iron treads. I think this alteration was effected about four months ago. I made no complaint about the stairs, and I thought them quite safe, or I should not have gone up and down so many times. Had the audience been going up, instead of coming down, I should have followed them. I do not know who directed the alterations to be done.

Mr. T. Bedford, of 256, Oxford-street, mason and builder, examined.—I was employed by Messrs. Cottam and Hallam, of Oxford-street, in March last, to estimate labour, &c. for letting-in iron-work in the steps of the principal staircase. At that time I was engaged doing work out of town, and I intrusted the matter to William Hopper, my foreman. I did not make any inspection of the staircase. There was no written order or contract between myself and Cottam and Hallam. The labour was found by me, but I made no inspection even after it was done, and did not see the work until after the accident. It was done under the inspection of the architects of the Institution and the foreman of Messrs. Cottam and Hallam. (Letters from Messrs. Cottam and Hallam to witness, containing instructions with reference to letting in the castings were put in.) It was on the 19th June that the men commenced

the work. My contract was merely for labour (in cutting away the steps) and supplying cement.

William Hopper, of 10, John-street, Marlborough-road, Chelsea, mason, examined.—I am foreman to the last witness. In the latter part of March last, I was employed to let in an iron tread into the staircase as a pattern.

Mr. Sleigh stated that the steps to which the witness referred were now standing.

Examination resumed.—I made an engagement with Cottam and Hallam's foreman to let in the castings to the staircase which fell. There were sixty-four steps done in the winding staircases. There was no stipulation as to the length or weight of the treads, or as to the depth of the cuttings, except that the latter were to be level with the steps. The depth was to be about three-eighths of an inch thick. I do not know the weight of the treads. There was no stated time in which the work was to be finished. I did not view the work as it proceeded; that was left to Mr. Ellis. (The iron tread of one of the steps was here produced, and found to weigh a half-hundred weight.) I made an objection to Mr. Thomson, the architect, with reference to the long steps. I had partly let a tread in, and found it was going too far. I considered it would weaken the step very much, and said to Mr. Thomson, "If I go on cutting the step in this way, I will have it fall in two or three pieces." Mr. Thomson said he would have some of the flange work cut away. He then sent for Mr. Ellis, and after they had had a consultation, they agreed to cut away some of the flange, and sent for a man for that purpose. The man came and cut away the flange in the engine-room of the Institution. Mr. Thomson said he did not think there would be any danger then, and he added he would have the pattern altered before the other treads were cast. There was nearly an inch of the flange cut off. The circular steps were six inches deep. I did not see Mr. Thomson afterwards on the subject, or while the short steps were being altered.

By Mr. Collier.—I am positive that the flange was altered by direction of Mr. Thomson, in the manner I suggested. The labourers were employed by the day and not by piece-work. Three men were employed on the short steps.

George Pratt examined.—I am a stonemason, and was in the employ of Mr. Bedford when the steps were altered. I think I was at work for him in the month of August. I was sent by Mr. Bedford to let in the iron steps into the treads.

Before I commenced I went to Mr. Ellis, and asked him at what distance from the wall he would have the irons let in. He directed that six inches space should be left. I saw Mr. Thomson inspecting the work several times a day during its progress. He told me to be as careful as I could, and let them in in a workmanlike manner. I made no complaint to any one, for I considered the alteration would make the steps stronger than they were before. I think I was a fortnight and two or three days at the work. There were, I believe, four flights of steps of seventeen or eighteen steps each. I cut into the steps about three-eighths of an inch. The average of the surface cutting was about half an inch. I had never done such a job before; but I have often put in stone treads an inch or an inch and a half thick. None of the other men employed complained of any danger or weakening of the steps. I was not compelled to have the work done by a given time. My instructions were to take my time and do the work well, and I did it well. The weight of each step is I think about 46 or 48 lbs.

By Mr. Collier.—As the iron-work was buried in cement, my impression was that the stairs would be strengthened by the job.

By a Juror.—The interstices in the iron treads were filled up with Portland cement, which is very strong.

By Mr. Mathews.—In my opinion the shells which I saw in the stone of the landing would weaken it.

Mr. Mathews.—How can you reconcile the fact, that the steps all broke away at the place where the iron was inserted, with your impression that the alteration tended to strengthen the staircase?

Witness.—Well, that I cannot get at exactly.

By Mr. Collier.—The top stone (the landing stone) did not break off where the iron was let in, but at another place. The top stone is very heavy, and if it broke it would tend to pull down the others in succession.

The Foreman.—Have you formed any opinion as to the cause of the accident?

Witness.—No; I have not. All I can see is the defect in the landing; and if it gave way first, my opinion is, it would take the rest with it.

In reply to questions put by the chairman, the

witness stated that the "joggle joint" had never been run in properly by the persons who first fixed it. He also stated that when he first saw the staircase, it was quite sound, with no decay, except that caused by friction.

Mr. Sleigh.—The corresponding spiral staircase was treated in precisely the same manner, was it not, and it is standing at this moment perfect and entire?

Witness.—I suppose it is.

By Mr. Eales.—I saw no crack in the landing, except in a place where it was worn away and filled up with Keene's cement, or something of that sort.

Mr. C. H. Smith, mason and sculptor (one of the gentlemen appointed by the Government to select the stone used in the new Houses of Parliament), was the next witness examined.—I made an inspection of the staircase by request of Mr. Thomson before it was altered. Mr. Thomson applied to me in consequence of having heard that I had acted in a similar capacity with reference to the St. Catherine's Docks. I wrote him a letter after I had made my inspection. Mr. Thomson was not with me, neither were any of the directors; but I paid my shilling on three occasions, and no one knew I was making the examination. I suggested that the staircase should be altered in the same manner as I had done the staircase at St. Catherine's Docks, namely, by cutting away about an inch and a half of the stone, and letting in Yorkshire stone (a harder substance), using plaster of Paris as cement. I do not know what the difference would have been between the cost of my plan and that ultimately carried out in iron, as I do not know the price of the iron. I gave Mr. Thomson an estimate of the cost of my plan for a portion of the steps, but I do not remember what the price was. When the stairs were altered by Mr. Bedford I looked at them just by way of curiosity, but I did not think there was anything to excite apprehension. I was not aware of the flanges and brackets. The steps were worn (in some cases as much as three inches) when I first saw them, and then I thought it was necessary to do something to strengthen them. The stairs I operated upon at St. Catherine's Docks were the principal stairs, and they have lasted, as strengthened, about two and twenty years.

By Mr. Sleigh.—With the exception of the wear and tear, caused by friction, I saw nothing the matter with the stairs.

To the Coroner.—I have made an inspection of the staircase since the accident, and my opinion is, that the origin of the accident commenced at the top landing, and proceeded downwards. I have always observed that in a well-constructed stone staircase every step should bear its own weight, and whatever might be upon it, wholly independent of any other step. In examining the portions that remain in the wall here, I could not observe one instance among the broken steps of their having been originally imperfectly fixed in the wall. Finding no defect in the staircase itself, I proceeded to the upper landing. The first thing that struck me there was the remnant of the broken landing stone, with several large fossil shells in the fracture. This convinced me that the landing was cut out of a block of stone across the grain. The length of the slab or block was about 6 feet wide, its thickness $4\frac{1}{2}$ inches, and its weight 4 or 5 cwt. I searched among the debris of the broken piece, and there I found the imprint of the fossil shells. I perceived that the piece had what is called a "she joggle," and that the upper piece was also a "she joggle" instead of a "he," showing that there was no proper joint. I also saw there was a groove, 10 or 12 inches long, in which there was no cement whatever. The joint being defective, and the traffic on the slab causing a constant vibration, there was quite sufficient to break the landing at the weak point. I do not think the fracture could have been of long standing, as it is tolerably clean. The fracture would have been visible, if it had been looked for, but not by a casual observer. My firm belief is, that the accident originated in the fracture, but that if there had been a proper "joggle joint" it would not have occurred. That imperfection was in the original construction of the building, and is to be traced to the carelessness of the workmen. Portland stone is very variable in its strength, and it is very difficult to get even two pieces from the same block of the same strength. The fossils which I found are a species of extinct oyster.

At this stage of the proceedings (it being then half-past six o'clock), the jury expressed their wish to adjourn, and the inquiry was accordingly further adjourned to two o'clock in the afternoon of Tuesday next, to be held at the Institution.

GIVE US WATER.

"Water, water everywhere, and not a drop to drink."

Sir,—Now that there is so much agitation about drinking-fountains for pedestrians, can you not put in a good word for the benefit of lady travellers by rail?

A few days since at the London terminus of the Brighton railway a glass of water was not to be had in the first class waiting-room, and, on inquiry, it was said that "the glass, having been broken, had not been replaced." Why had it not? Doubtless the lady who broke it left the necessary amount for procuring another. Was it then forgetfulness or carelessness on the part of the attendant? or was it from an understanding with the suppliers of refreshments, in order to oblige persons wishing to allay their thirst to pay for the luxury? At other stations on the Brighton line, if not elsewhere, the same want prevails; and although the company's servants are extremely civil and obliging, and will always fetch a passenger the coveted beverage, people do not like to give avoidable trouble, and, therefore, either endure the discomfort or else go into the refreshment-room and buy what they do not want, for the sake of begging what they do.

All honour to Melly and other worthy men, but even should a public drinking-fountain be erected outside every railway station, the interior accommodation suggested will still be a necessity; for I suppose it would scarcely be considered seemly that a lady, on alighting from her carriage, should stop, whatever her willingness might be, to quench her thirst with a draught of Adam's ale from the iron beaker of the million.

A TRAVELLER.

CHURCH-BUILDING NEWS.

Colchester.—The chancel and north chapel of St. Giles's church, in this town, are about to be re-seated; and the western portion of the nave, hitherto unused, thrown into the body of the church, by removing the present gallery to the west wall, and by entirely removing the lathed and plastered partition. A two-light decorated window will be inserted in the western extremity of the south wall. The architect is Mr. H. W. Hayward, of Colchester, and the contractor, Mr. Start, of the same place.

Chislehurst.—The restoration of the tower, spire, and bells of the parish church is now effected. The fire in 1857, which originated in the belfry (from the supposed carelessness of one of the ringers) entirely destroyed the spire, bells, clock, and everything within the tower, and greatly damaged its windows and walls, which, accordingly, at the restoration, had, to a great extent, to be rebuilt. The new peal of eight bells has been cast by Messrs. Warner, of London. The tenor weighs over 17 cwt., and sounds E natural (third space in the bass staff), the rest completing the octave. The whole work of restoration has been under the direction of Mr. G. B. Wollaston, architect, resident in the village. The builder was Mr. Grammar, of London. The clock was made by Mr. Dent, of London. The organ is placed in the south aisle, under a stained glass window, in which are three musical designs. The builder of the organ was Mr. Rust, of Chelmsford.

Claverton (Bath).—The new church of the village of Claverton has been opened for divine worship. It has been rebuilt, as nearly as circumstances would admit, in the style (principally Early English) of the former building. By an additional bay of building, and re-arrangement of the seats, fifty new sittings have been added to the former insufficient accommodation. The architects were Messrs. Manners and Gill, of Bath.

PROVINCIAL NEWS.

Norwich.—The Norwich papers contain the prospectus of a new corn-exchange company, who propose to raise a capital not exceeding 25,000*l.* in 25*l.* shares and by donations, for the erection of a new corn-exchange upon the site of the old one, which the company propose to extend as far as Little London-street and the passage next the entrance to the artists' room. The area of the new hall will exceed 12,000 square feet, being an extension of 5,000 feet as compared with the present building; and in the interior it is intended to place forty pay-boxes or counting-rooms, for the use of merchants and others. There will be two entrances, one from Exchange-street and the other from Little London-street; the latter being the nearest point of entry from the Cattle-market and the Eastern Counties station. A new feature will be the addition of an auction-mart. About 11,000*l.* have already been subscribed for in shares and dona-

tions, and as soon as this sum is increased to 20,000*l.* the directors will at once proceed to carry out the undertaking.

Cardiff.—At Quarter Sessions, the committee appointed by the last court at Swansea have reported in favour of the plan suggested by the county surveyor, for widening, at a cost of 2,000*l.* the bridge over the river Taff, which separates the town of Cardiff from the extensive western suburb of Canton; also for improving the approaches from a gradient of 1 in 14 to 1 in 30. A few days before, a scheme had been suggested by Mr. Corbett, on behalf of the trustees of the Marquis of Bute, for the construction of a new stone bridge, 50 feet south of the present one. This announcement having been made, a plan of the proposed structure was produced by Mr. Alexander Bassett, C.E. and submitted to the Court. The bridge is to consist of four elliptical arches, each 40 feet span, carrying a flat roadway of 30 feet in width, with approaches almost level on either side. At a recent meeting of the Local Board of Health, the clerk announced that the committee for examining the tenders for the erection of the Custom-house bridge had recommended that Mr. Warne Edwards's for 1,498*l.* be accepted, and that the bridge be formed all of iron. The following persons sent in tenders:—

Webb and Sons, Birmingham ...	£1,700
D. Jones, Cardiff	1,600
D. Harris, Cardiff	1,572
W. V. Edwards, Swindon	1,498

The proposition was carried.

Hereford.—New offices have been erected for the local *Times* newspaper, in Maylord-street. The building, which is in the Italian style, has been erected from the design of Mr. James Williams, of Hereford, architect, and carried out under his supervision. The front of the wall is built with patent brick, and decorated with Bath stone dressings. The basement floor comprises hall, kitchens, cellar, store-room, coal-house, and closets, &c. The ground-floor contains an entrance-hall and entrance-passage, publishing-office, counting-house, and paper-room, the whole of which are lofty and commodious. The first floor contains reporters' room, editor's room, private offices, and library, the communication to which is through a spacious passage well lighted from roof. The second floor comprises sitting-room and three bed-rooms, closets, &c. The flights of stairs ascend from the basement through the entrance-hall to the roof, communicating with the observatory, which is inclosed with balustrades, and has a leaded floor, and flag-staff. Extensive alterations and additions have also been made to the machinery-room, composing-room, and boiler-house. Over the machine-room has been erected a new department for general printing, with octagon roof. Between the publishing-office and the machinery-room is a glass partition in three divisions, with semi-circular heads. Two enriched cast-iron columns are fixed in the partition to support the bressumer over. The openings to the street on the ground-floor comprise doorway, gateway, and three double windows, with semicircular heads of Bath stone, enriched with ornamental carved finish and cut lettering describing the several departments. The window-heads are supported by bronzed cast-iron columns in the depth of the openings. The first-floor offices and principal passages are lighted by five windows, the centre window having two columns. Round the ground-floor and second-floor centre windows runs a moulded label with finished carving of goats' heads. The whole of the front windows are adorned with stained-glass borders, and the lower sashes of each window with star-enamelled glass, describing the several departments. The plinth, brackets, under columns, string courses, ornamental work to door, scrapers, cornices, enrichments, coping and chimney tops, &c. are of dressed Bath stone. An ornamental arched turret erected over the centre windows has a balustrade, and is surmounted with numerous enrichments, finished with ball, gilt shaft, and weather-vane, &c. On each side of the turret, fixed on pedestals, are statues representing the seasons, Spring, Summer, Autumn, and Winter, executed by Messrs. Austin and Seely, of London; three of them from original designs of their own, and that representing "Autumn" from a model by Bien'ami, of Rome. The pavement about to be laid down in front of the building is composed of granite from the Cheesewring Co.'s quarries, at Liskeard, Cornwall. The whole of the building and offices cover an area of 60 feet by 70 feet, and the height from the ground to top of the weather-vane is 65 feet. Messrs. E. Morgan and J. Price were the builders of the edifice.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of the members of this Association was held on Friday evening last, at Lyon's-Inn Hall. The chair was taken by Mr. J. Norton, the president.

The minutes of the last meeting having been read and confirmed, Mr. Robert Walker was elected a member of the Association.

Mr. Herring (honorary secretary) announced that at the last meeting of the committee the following resolutions were agreed to:—

"1. That the committee of the Architectural Association, considering that any project having the advantage of the profession in view is worthy of their support and co-operation, recommends the Association to remove to the new premises in Conduit-street, Bond-street, belonging to the Architectural Union Company.

2. That this committee recommends the Association to agree to the proposition of the Architectural Union Company to remove to their premises in Conduit-street on the following terms, namely, at a rental of 30*l.* per annum for the western gallery and committee-room on every Friday evening throughout the year, to include fire, light, attendance, and furniture, with the use of the larger gallery for three evenings in the session, for the purposes of their *conversazioni*.

3. That the Architectural Association agrees that subscriptions shall be paid, or season tickets taken, by its members, to the number of at least fifty, for the next Architectural Exhibition, in consideration of the Architectural Association having exclusive entrance to the galleries for one evening during the approaching Exhibition for a public meeting."

A long and desultory debate ensued on the consideration of these resolutions, and also of certain queries sent to the honorary secretary. The object of the queries was to elicit information with reference to the present income and expenditure of the Association; also as to the advantages which were likely to accrue by removing from Lyon's-Inn Hall to the new building of the Architectural Union Company in Conduit-street; likewise what would be the probable income of the Association if it removed to Conduit-street; and what would be the probable expenses entailed upon the Association consequent upon such removal.

A letter was then read from Mr. Edmeston, the honorary secretary to the Architectural Union Company, stating that the directors, having received a communication from the Architectural Association, had agreed to let the Association have the western gallery and a committee-room on every Friday evening during the year, with the free use, for one evening, of the gallery in which the exhibition would be held, at a rent of 30*l.* per annum. Mr. Edmeston also expressed his conviction, that if, at the end of the year, it should be found that the Association could not conveniently pay 30*l.* a year, the directors would reduce the rent, so that the expenditure of the Association in that respect should not exceed that now paid for the use of Lyon's-Inn Hall.

Mr. Cates said he wished to know what practical advantage the Association would derive from changing its quarters to Conduit-street. He was of opinion that the expenditure of the Association was at present rather more than it could afford to pay, although (as in the case of the printing) some gratuitous assistance was given it. If, then, they were to remove to so aristocratic a neighbourhood as Conduit-street, they could scarcely be expected to avail themselves of gratuitous assistance. It occurred to him that if they removed from Lyon's-inn-hall, they ought to pay all their bills like the other Associations which might migrate to the new building.

Mr. Rickman also was of opinion, that it would be inexpedient to remove until they saw their way clearly to pay the whole of their expenses without extraneous assistance. It seemed to him that Lyon's-inn-hall was more central for the majority of the members than Conduit-street. Moreover, it should be borne in mind, that if they went to Conduit-street, they must conform to the expenditure of that aristocratic neighbourhood.

Mr. Herring said that he had frequently received communications from persons to whom letters of invitation to attend the *soirées* of the Association had been forwarded, stating that they did not know where Newcastle-street was. This circumstance led him to the conclusion, that the obscurity of the *locale* had occasioned them to lose the presence of a great number of visitors. The communications and applications received by him on the occasion of each *soirée* varied from six to twelve; and if they were to be regarded as indices of the numbers received by other members, and that such applications were multiplied by

120, the meeting would be enabled to appreciate at once the actual loss of visitors arising from this cause alone. If, on the contrary, they were to remove to Conduit-street, there could be no difficulty in finding them, as all the Architectural Associations would be under one roof.

The resolutions, as passed by the committee, were then discussed *seriatim*, and were ultimately approved without a division.

It was afterwards resolved, to postpone the next *soirée* until the Association had obtained possession of its new quarters in Conduit-street.

In consequence of the protracted nature of the discussion, the remaining portion of a paper read at the previous meeting, "On Timber Framing," was postponed until the meeting of Friday, the 21st instant.

EQUALIZATION OF THE POOR-RATES.

THE richer a parish is—the more it is occupied with high-class dwellings, and hence the better able to pay poor-rates, and assist parishes in which the poor are crowded—the less poor-rates does that rich parish pay; till at length, if there happen to be no poor at all within the limits of that particular parish, it gets rid of poor-rates altogether. The first axiom that the poor be helped by the rich is thus completely subverted, and in national practice, as but too much so amongst individuals, it is the poor chiefly who aid the poor. The sooner arrangements are made to give a fair share of this responsibility the better. The Metropolitan and County Association for the Equalization of the Poor-rates has issued a circular explanatory of their position and of what they propose to do. The circular is prefaced by a powerful list of vice-presidents, among whom are many members of Parliament. Their position, it appears, is now a very strong one. As a merely metropolitan association, last session they brought in a Bill to Parliament for the equalization of the metropolitan poor-rates, but they found so strong a feeling amongst the members of Parliament in favour of a general Act applicable to the whole country, that they withdrew the Bill, resolved themselves into a general association, and prepared a scheme applicable to the whole country, where-with they intend to return to Parliament in the coming session. Whether the object be effected in the precise manner indicated, the association do not much care; but they have made a specific, practicable, and simple proposal, in order to show how easily the object can be effected. They propose that a Board be appointed by the ratepayers in each separate county, to whom the dispensation of the poor fund to all the parishes and unions of that county shall be given, the equalization being left to that Board; and although a complete equalization, as extending to the whole country, may not thus be effected, the plan shows what can be readily done towards the object in view without exciting hostility from the fear of centralization: on the contrary, the association argues, the central Poor-law Board itself might even thus be dispensed with. Whether that be desirable or not, however, assuredly, the creation of a Middlesex Board for the equalization and dispensation of the poor-rates would be a great boon to the metropolis, and a step towards common sense in legislating.

STONE STAIRS.

THE late disastrous accident at the Polytechnic reminds me of a similar one which occurred in the Commercial Buildings of this city (Cork) two years since, but happily without loss of life. The staircase leading from the vestibule to the great hall suddenly fell, the Portland-stone steps breaking off within four or five inches of the wall into which their ends had been inserted.

These steps had undergone a similar process to those at the Polytechnic, having had plates of cast-iron inserted in the edges of the treads, about 4½ inches wide. As they had previously been somewhat worn, these plates extended to within 5 inches of the wall bearing, and every step broke at the end of the plate.

Architects should be very careful in the selection of the material for the staircases of public buildings; and people generally should be very careful in meddling with them when once up.

It is a singular fact, that in the latter instance no person was on the staircase when it fell, though some few weeks previously it had been loaded to its utmost capacity.

RICHARD E. BRUSH.

SIR,—The late deplorable event that occurred at the Polytechnic Institution will, it is to be hoped, lead to the construction of geometrical

stone stairs on a more sound and scientific method than the defective one now in general use, where no provision whatever is made against the great lever power exerted on steps and landings, at or near to the wall-hold, particularly when they project a great distance, and a multitude of people are travelling either upwards or downwards on them, but particularly downwards. To make the whole area of steps and landings, composing a stone stair, of equal strength throughout, it is quite requisite that every stone should be at least 1 inch thicker or deeper at the wall-hold for every foot it projects from the face of the wall than what it is at the nosing at the well-hold. This is done by having the rebate of the steps of an extra depth down to the soffit, as no difference will take place so far as the height of the breast of the step is concerned. The wall-hold of both steps and landings should not be less than equal to one-seventh part of the projection from wall to nosing of well-hold.

Stairs constructed on this principle depend very little indeed on any joggle or other support, except the walls they are fixed into, which ought to be good in every respect, and fully competent to bear with safety much more weight than if the whole of the stairs were crowded with a multitude of people.

A. PATENSON.

SIR,—It is but little use regretting after mischief is done, but if past mischief can be made to prevent it in future, some good is the result. There are many stone staircases in London besides the Polytechnic. Have you ever been at the London Tavern, for example, at some crowded meeting, in the large room at the top of the house? I have, and often have I felt not only that the staircase and balusters ought to be well put together to bear the pressing and squeezing, but also that the room had need be sustained by very solid walls to bear the tremendous weight on occasions when the room is crowded, and perhaps stamping with excitement on some special occasion.

ON-SERVER.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

Thinning Walls.—The district surveyor for South Kensington, summoned Mr. Carr, builder, of 24, Montagu-street, Portman-square, before the magistrate at the police office, Hammersmith, for cutting away a half brick in the thickness from the face of the external wall of a new house now completing, for the purpose of widening the kitchen stairs. Mr. Carr did not appear, but the magistrate, upon hearing the case on Thursday, the 1st instant, directed an order to issue for the builder to make good the wall in cement to the satisfaction of the district surveyor.

Exempted Buildings.—At Wandsworth Police Court, Mr. George Blackburn, builder, Limehouse, appeared before Mr. Ingham to answer a summons for not giving to Mr. Hiscocks, the district surveyor of Wandsworth and Tooting, two days' notice of his intention to erect two buildings. Mr. Hiscocks stated that the buildings in question had been erected at Tooting-common. One was a wooden structure placed against some stables, and the other was an addition to the dwelling-house, all in one occupation. No notice had been given of the intended erections, and he now sued the defendant and even the books published for their guidance contained a diagram which was in accordance with their practice. Mr. Ingham said he could not look at the diagram. It was not part of the Act of Parliament, and, therefore, was not an authority. Mr. Hiscocks said the question had been decided by other magistrates, and they coincided with his construction of the Act. Mr. Taylor, senior, said defendant for that irregularity. Mr. Taylor, architect, appeared for the defendant, and claimed exemption from the notice under the 6th section of the Act. He proved that the new buildings were not 30 feet in height, and were also more than "30 feet from the nearest buildings and from the ground of any adjoining owner." Mr. Hiscocks contended that the words "nearest buildings," meant any buildings, and not merely those of an adjoining owner. Mr. Taylor said it had always been held that the Act referred to another owner's building only; and he had his father, who was the district surveyor of Battersea, Lambeth, and Newington, present, to show that he construed the Act in that way. Mr. Ingham said he must be guided by the Act of Parliament, and he inclined to Mr. Hiscocks' opinion. The words were "at least 30 feet from the nearest buildings and from the ground of an adjoining owner." These were two distinct things, and not at all connected. Mr. Taylor said district surveyors did not construe the Act in that sense.

* Is Mr. Taylor right in saying this? Bungleing as the Act is, its intention in the present case coincides with common sense, and seems sufficiently clear.

he had had a great deal of practice, and he had always believed the Act to mean the buildings and grounds of an adjoining owner alone. Mr. Ingham said if it was intended to be construed in that way, the Legislature had not so expressed it. If the word "from" had been omitted, then he should have agreed in that opinion. However, he would adjourn the summons for a fortnight, to allow both sides to get up their arguments, before he gave any decision upon the case.

Books Received.

The Progress of Domestic Architecture. From Philip's *History of Progress in Great Britain*. London: Houlston and Wright.

In this pamphlet, which, complete in itself, forms the architectural section of Mr. Philip's larger work, the writer has brought together so much interesting matter from numerous sources, including our own pages, and illustrated it with so many cuts, that at first sight it has the aspect of an exceedingly good shilling's-worth, on an exceedingly good subject. Looking at it more closely, however, by the light of knowledge, its value is seen to be greatly marred by the want of proper chronological arrangement and the marking of characteristics, so that, we should fear, a lay reader would get from it no precise notion of what changes took place, or of the means, consequently, of identifying the works of different periods. Thus, at the commencement of the first chapter, when describing Anglo-Saxon houses, the external staircase at Canterbury, which every one knows to be Norman, and that of an Early English building, are given as illustrations, and there is a constant running past of the subject, so that we get to houses of Henry VIII.'s time before we have done with those of the earlier period, and have to go back. Nevertheless, it forms an interesting and readable production, and in its proper place, in Mr. Philip's history, would be less amenable to criticism than it is in its present form, and under the title of "The Progress of Domestic Architecture."

Original Unpublished Papers, illustrative of the Life of Sir Peter Paul Rubens, as an Artist and a Diplomatist. Preserved in H.M.'s State Paper Office. With an Appendix of Documents, &c. Collected and edited by W. NOEL SAINSBURY, of H.M.'s State Paper Office. London: Bradbury and Evans. 1859.

THE public are much indebted to Mr. Sainsbury for turning the State Paper Office to such good account as this volume proves him to have done, although not for the first time, as our own columns have occasionally shown.

The great Flemish artist and diplomatist appears upon the scene, in Mr. Sainsbury's goodly volume, about the year 1616, in a hunting-piece, as we might say. This hunting-piece, painted by Rubens, Sir Dudley Carleton, our ambassador at the Hague, a great lover of the arts, and one of the chief means of exciting a love for art-works in England, then extending,—greatly desired to possess. He offered to exchange for it a chain of diamonds belonging to his wife. Rubens, however, having set a price upon his picture, and having ascertained the value of the diamonds to be considerably less than his price, declined the offer, and the picture was ultimately sold to the Prince of Bavaria, and is now in the Royal collection at Munich. It was "18 foot long, and between 11 and 12 foot high" and the unalterable price for it was 100*l.* sterling. Had the transaction been one of the present time, doubtless Rubens, the "prince of painters," would have added a cipher to the right of the sum demanded, and altered the shape of the first figure. Carleton, whose wife's chain had been valued at 44*l.* afterwards got a duplicate of the desired picture for it, but on a smaller scale, namely, 11 feet by 8. Rubens had a high estimation of the importance of size in a picture, and he speaks of having "never wanted courage to undertake any design, however vast in size, or diversified in subject." He had, he thought, "a natural instinct, better fitted to execute works of the largest size rather than little curiosities." Every one, according to his gifts, he adds. These little transactions established an acquaintance which ultimately led, it may be said, at least indirectly, to the sojourn of Rubens in England, and the conversion of the painter into an English diplomatist, and an English knight, with the British lion rampant on his Flemish coat of arms.

The next art-transaction with Englishmen after those with Carleton, which included an exchange of

pictures, "the very flower" of Rubens's stock, as he described them, for marbles and other antiques belonging to Carleton, was the purchase of another hunting-piece (only partially done by Rubens) for the Prince of Wales, afterwards Charles I. The prince, however, refused a place to it in his gallery, and Rubens, though somewhat mortified, agreed to "paint another hunting-piece less terrible than the 'lions,'" and entirely by his own hand.

In 1629 Rubens received the commission to paint the decorations of the new Banqueting-hall at Whitehall; but before that he had been employed at the Luxembourg, in Paris, by the French royal family, and there he had become acquainted with that magnificent "gossip" of old "dad," Jamie L.,—the Duke of Buckingham,—a portrait of whom he had painted, and with whom he had trafficked, as to his collection of antiques, pictures, gems, &c. which he agreed to dispose of to Buckingham for 100,000 florins and casts of the chief of the statues, busts, and bas-reliefs. Most of this collection, if not the whole, Mr. Sainsbury thinks, were actually sent to England, but were returned to Antwerp for sale previous to the Buckingham sequestration in 1649.

It was through these acquaintanceships with Carleton and Buckingham mainly that Rubens became a diplomatist in the Spanish misunderstandings with England; but into these subjects we need not enter. It may be remarked, however, as a curious coincidence, that while Rubens negotiated on the part of Spain, the fitting agent whom Buckingham selected on the part of England was also a painter, namely, Balthazar Gerbier. Artists must have stood pretty high in the esteem of monarchs and their ministers in those days.

It was not as a painter, and to execute the Whitehall commission, that Rubens came to England in 1629, but as a political envoy. His stay in England, strange to say, is precisely that period concerning which the State-Paper Office has least to say. He only remained here for about ten months: nevertheless he painted many pictures while here, and among them the "Peace and War—an Allegory," now in the National Gallery, and which he made a present of to the King. The Whitehall pictures were not amongst those done in England: he executed these on his return to Antwerp. It was on the eve of his return that Charles, who had paid him distinguished attention, conferred on him the honour of knighthood. To the scandal of the English monarch, however, the money was not forthcoming for the Whitehall pictures when they were finished, and Rubens, instead of forwarding them direct, rolled them up and laid them aside till paid for. Thirteen months afterwards they were forwarded, having been partly paid for; but the balance was not paid till 1637, or two years afterwards. The whole sum was only 3,000*l*.

In 1640 Rubens was in treaty with Gerbier, on the part of the Royal family, for the painting of the ceiling of the Queen's cabinet at Greenwich, and some letters addressed to "Mr. Surveyor Inigo Jones, esq. surveyor-general of his Maj. Works," from Gerbier, appear in the correspondence; but the great painter's death, "off a deflection wth ague on his heart, after some dayes indisposition of fell and goutte," put an end to the negotiation.

The person of Rubens is described to have been "of just proportions; his height about five feet nine and a half inches; his face oval, with regular and finely-formed features, dark hazel eyes, a clear and ruddy complexion, contrasted by curling hair of an Auburn colour, with moustache and beard; his carriage was easy and noble; his introduction and manners exceedingly graceful and attractive; his conversation facile and engaging; and when animated in discourse, his eloquence, delivered with full and clear intonation of voice, was at all times powerful and persuasive." He was well versed in Latin, Italian, French, and Dutch, and wrote in all these languages with equal fluency. Mr. Sainsbury gives translations, however, of his letters.

Miscellaneous.

BIRMINGHAM ART-UNION.—The annual meeting and ballot for prizes was held at the Society of Artists' Rooms on Thursday last, the Mayor, Sir John Ratcliff, presiding. The report, read by Mr. B. A. Hallam, one of the honorary secretaries, stated that the receipts were considerably larger than was the case last year, the subscriptions having amounted to 342*l*. of which sum 310*l*. after paying expenses, were available for the ballot.

CARTERS' STRIKE AT PERTH AND GLASGOW.—The carters, says the *Perth Journal*, have issued posters throughout the town, calling upon the brotherhood not to yoke a cart until their employers agree that the working hours shall only be from 6 a.m. to 6 p.m. and on Saturdays to yoke at 4 p.m. The proposal is reasonable. The strike is not confined to Perth. The bills intimate that it extends to Glasgow.

FATAL ACCIDENT BY THE FALL OF A WALL.—An inquest was taken on Saturday morning at the London Hospital, by Mr. W. Baker, on the body of James McCarthy, aged 40, a bricklayer's labourer. The deceased was engaged, a few days before, in filling up a hole in front of a newly-erected wall, near the Triangle, Hackney, when the whole mass of brickwork suddenly gave way and fell upon the deceased, who was severely injured internally. He was removed to the hospital, where he died on Friday. Verdict—Accidental death.

WILLENHALL.—The members of the reading and literary society of this town are making efforts to awaken from that lethargy in which the bulk of the inhabitants have long indulged. With all who have not determined to remain in their blissful state, the late exhibition of fine arts, manufactures, &c. which originated with the members of the Literary Institute, has left a visible impression behind: already the want of a proper building for lectures, &c. is keenly felt; and the surplus which will remain in the hands of the Exhibition Committee, after paying all expenses, will be devoted as the beginning of a fund wherewith to raise a suitable building for the purposes of a library, reading-room, lecture-room, class-rooms, &c. The total sum realized through the exhibition during the four weeks which it remained open is about 370*l*. the expenses about 220*l*. leaving a balance in favour of the proposed building of about 150*l*.

PIGS AND SCARLET FEVER IN BATTERSEA.—At present, in a district of Battersea where multitudes of swine are kept, and the air is offensively contaminated with their ordure, there is an alarming mortality from scarlet fever. The district is over a quarter of a mile in extent, and in little more than a month there have been twenty deaths from fever, and nine from other causes: the total number of deaths in the whole parish in little more than two months has been 247—an alarmingly large mortality. The Wandsworth Board of Works have, therefore, felt it to be full time to abate the abominable pig nuisance, and have been summoning the pig-keepers, and obtaining orders from the magistrate, Mr. Ingham, to remove their swine in the course of the month. The Board, it seems, intend to root out the nuisance, by taking out summonses in every instance of which they can obtain information, and it is a duty in the inhabitants to assist the Board in this respect as far as they can. Dr. Connor, the Medical Officer of Health for Battersea, gave evidence in some of the cases, and appears to have no doubt of the connection of the pig nuisance with the scarlet fever now raging.

THE DRINKING FOUNTAIN MOVEMENT.—At Brighton a meeting has been held at the Town-hall, Mr. Councillor Bridgen in the chair, when resolutions were passed appointing a committee to obtain subscriptions and adopt other means towards securing the erection of one or more fountains in this borough. By another resolution the meeting expressed its desire to secure the co-operation of the Town Council. A member of the Bristol Town Council (Mr. R. Lang) has offered to give 100*l*. towards the erection of a drinking-fountain opposite the Fine Arts Academy, near the Victoria Rooms, Queen's-road, Bristol. The Council received the offer with loud cheers. The surveyor of the Carlit Board of Health has reported on the most eligible sites and situations for public fountains. Seven sites are specified as the most useful for foot-passengers. The example of other towns has not been overlooked at Warrington. The mayor, and his brother, Alderman Peter Rylands, and Alderman Chimes, in addition to an anonymous gentleman, have promised to pay for a fountain each. A meeting of working men is also about to be held to consider the question of public fountains and ragged schools, and it is believed they will erect a couple of fountains by their own exertions. The anonymous gentleman offers to erect either one granite fountain, or two of cast iron, the water of course to be provided.

At Manchester, Mr. R. Barnes offered to erect any reasonable number of fountains, but the Corporation has not yet accepted the offer. There are three in the town, but one is without any drinking-cup, although it has "an old sauceman without a bottom," claimed to it.

THE PROPOSED PAUPER LUNATIC ASYLUM FOR THE CITY.—On Saturday afternoon a meeting of the Committee of Justices was held at the Guildhall for the purpose of considering the basis or standard for a county-rate for erecting a pauper lunatic asylum for the City of London. Mr. Alderman Wilson presided. After some discussion, a basis or standard was agreed to, and later in the day was presented to the Court of Quarter Sessions, and was ordered to be considered on the 25th instant.

CHEDDAR.—A Literary and Scientific Institution, just erected, was opened at Cheddar on the 30th ult. by a *soirée* and public meeting. This project has been principally promoted by Mr. W. P. Budgett, of the firm of Messrs. W. P. and H. Budgett, for the improvement of the young men of Cheddar. The building has on the ground floor an entrance-hall, a reading-room, 14 feet by 20 feet, three rooms for the housekeeper, &c.; and on the upper floor a lecture-hall, to accommodate, with the committee-room adjoining, about 280 persons. The cost has been about 320*l*. The architects are Messrs. Cook and Hancorn, of Bristol; the builder, Mr. Grant, also of Bristol.

THE MAIN DRAINAGE OF THE METROPOLIS.—The Directors of the Bank of England have made an offer to the Metropolitan Board of Works of the loan of the 3,000,000*l*. which will be required for the execution of the works of the main drainage of the metropolis. The terms are not so favourable as were anticipated, from the state of the money-market, and the proposal has been transmitted to the Lords of the Treasury for their consideration. The result of the inquiries respecting the competency of Mr. Moxon, who gave in the lowest tender for executing the works of the Northern High-Level Sewer, being of a favourable nature, and the three gentlemen proposed by him as his sureties having been ascertained to be most responsible persons, his tender has been finally accepted, and he only awaits the order of the engineer to commence the work, which will be given as soon as the financial arrangements of the Board are completed. The Board have engaged the professional services of Messrs. Haslam and Buckland, with reference to the houses and lands requisite for the construction of the pumping station at Deptford Creek, on the south of the Thames.

RAILWAY MATTERS.—The traffic returns of railways in the United Kingdom for the week ending January 1, amounted to 425,710*l*.; and for the corresponding week of 1857-8 to 397,080*l*. showing increase of 28,630*l*. The gross receipts of the eight railways having their termini in the metropolis amounted to 173,483*l*.; and in 1857-8 to 167,438*l*. showing an increase of 6,045*l*. The increase on the Eastern Counties amounted to 367*l*.; on the North-Western to 5,848*l*.; on the Blackwall to 114*l*.; on the Brighton to 9*l*.; on the South-Western to 306*l*.; and on the South-Eastern to 314*l*.; together, 6,958*l*. But from this must be deducted 889*l*. decrease on the Great Northern, and 24*l*. on the Great Western. The receipts on the other lines amounted to 252,227*l*.; and last year to 229,642*l*. showing an increase of 22,585*l*. The railway receipts for the past year show a diminution of 408,700*l*. or a little more than 1*½* per cent. although there was an increased mileage of 326 miles. This is the first time such an event has occurred. The falling off, however, was confined to the first nine months, the concluding quarter having shown an increase of 113,994*l*. but for which the total reduction would have been 522,694*l*. The first stone of a viaduct on the Lume Valley Railway, at Low Gill, to be called the Dillicar Viaduct, has just been laid. The engineer is Mr. J. E. Errington. The viaduct will consist of eleven arches of 45 feet span, more than 100 feet in height, and containing upwards of 400,000 cubic feet of masonry. The contractor is Mr. Baxton. It is proposed to form a railway in the Isle of Wight. The projected line, on the completion of Stokes Bay Ferry, will complete the communication between the metropolis and Ryde, Newport, Cowes, Ventnor, and Bonchurch. The railway, as laid down by Messrs. Birkinshaw and Conybeare, is to commence close to the pier at Ryde, and thence proceed to Rowlands, where it will diverge to the right to Newport, and thence, touching at Parkhurst and Northwood, to Cowes and to the left, proceeding coastward to Sandown by Gattton to Bonchurch and Ventnor. The intersection of Western India by railways is rapidly progressing. About 150 miles are now constructed, and a large portion of the whole 1,128 miles laid down is now in progress. Workpeople abound, and in 1856-7 there were 46,000 employed on the railway works in the Bombay presidency, and in 1857-8 no less than 70,000.

L man of fourteen years' varied experience in the profession competent to prepare specifications, and well acquainted with general routine of office duties, is desirous of a RE-ENGAGEMENT. References unexceptionable. — Address, C. N. No. 3, Bernard-street, Regent's-park North, N.W.

The Builder.

VOL. XVII.—No. 833.

The Homes of the Poor.

OUR earlier volumes brought this subject so constantly before the public that some of our readers, four or five years ago, thought it exhausted, and that sufficient improvements were being effected. What will they say now, when they see leading writers not merely describing similar unhealthy dens and their occupants, but literally the very same (Rose-alley, near Field-lane, Holborn, for example, as ably set forth recently in the *Times*), and showing, as we too have done, the existence of the same frightful state of things at the present time? The articles in question have stirred London, and have produced in reply an extraordinary subscription in aid of those who are in want. Admirable was the intention; noble has been the response. All honour be to those concerned:—

"Not the king's crown, nor the deputed sword,
The marshal's truncheon, nor the judge's robe,
Become them with one-half so good a grace
As mercy does."

From the cradle to the grave mankind need the aid of their fellows: we cannot exist without it,—high or low, rich or poor. It is a condition of our being: all who need aid have a right to ask it: none who is able to give it can refuse without danger.

Peccuniary aid, however, for those of whom we spoke, was not our object, as our readers know. What we had in view was to point out the causes which transform the poor to criminals, which sap alike their morals and their strength; to induce the adoption of sanitary improvements; and to bring to light some of the causes of evil largely in operation. It is to be hoped that they who have been moved to afford immediate aid may be led to examine into these causes.

If homes be looked into where the combined work of the family will barely amount, as is often the case, to fifteen shillings a week,—where the children are forced to labour at an early age, for prices which are decreasing every time some panic produces dulness in trade,—the question occurs, what is to become of those who are in this way reared up to employment which is so unprofitable that it will be out of their power, when they have arrived at years of maturity, to obtain at it, single-handed, a sufficient living?

The condition of the Spitalfields weavers and their families is melancholy in the extreme: not only have the weavers fallen into great poverty, but the winders of the threads and followers of some other subordinate divisions of this once important branch of English manufacture—women—can barely earn 1s. 6d. or 2s. a week. Of course, in such circumstances, these parties must either starve or depend on parish relief, or that from other sources. The sewing-machine will no doubt effect a change in the business of both the needle-women and tailors, who are already so much depressed that one feels inclined to wish that this or some other invention may render the use of human beings at such starving prices unnecessary. The engine applied to watch making will affect many. The employment of children by capitalists in many fancy trades has been the means of depriving many respectable females of half their income. It would, indeed, require more space than can be given to mention the numerous agencies which are at work, adding each month to the mass of wretchedness and destitution in our large population. It is,

however, sufficient for our present purpose simply to glance at the extent of the evil, which must be remedied by the exertions not only of the Legislature, but also of societies and individuals.

While looking at this dark and dreary aspect of London, we have not omitted to think of the sunny side of the picture—the improvement in the social position of the bulk of the people and the great increase of employment which has been brought about in other quarters by those very changes which, during a transition state, have produced so much misery.

The *Times* writer has described scenes such as we have again and again depicted, and has excited strong feeling on the subject. The statement made by the Rev. G. H. McGill, incumbent of St. George's-in-the-East, is equally startling. The Registrar-General shows that from privation, want of breast-milk (resulting from privation), neglect and cold, in 1848, 222 died; in 1849, 235; 1850, 211; 1851, 292; 1852, 304; 1853, 358; 1854, 380; 1855, 460; 1856, 414; 1857, 416—making a total, says the rev. gentleman, of 3,292 persons who had perished in London in ten years from absolute want of the necessities of life; and it should be noticed that the deaths from this cause during the first of the above five years amount to 1,264, while in the more recent five years the number of deaths is 2,028 (very nearly double), and far above any increase which might be accounted for by growth of the population.

During the last twenty years a great change has taken place in public opinion respecting both sanitary and social reforms. The ragged schools are fulfilling their useful mission, and doing an amount of good that can only be estimated by those who have carefully examined the circumstances in which many thousands of the population are placed. The City Mission and other institutions; the exertions of district clergymen and surgeons, who not only do good in the practice of their vocations, but also by spreading a knowledge of matters which require change; the national schools, the savings' banks, and other associations connected with those most valuable establishments—are also most beneficial. The places of refuge for the destitute, and baths and wash-houses, are all instances of progress which it is gratifying to note. Still these different helps are not yet sufficiently developed, and if they were, would fail to reach the bottom of the mass of wretchedness which has accumulated. More, too, is needed in the way of wise help for those who at the present time, notwithstanding difficulties, remain honest, but who have little except begging, or worse, in prospect; and it is a matter demanding inquiry on the part of the Government if the support of industrial schools and encouragement to a more extensive plan of emigration would not be a saving of expense to the country at large.

We require more ample means of affording a chance for the employment of those who have the inclination, but have had no opportunity; and while feeling the difficulty there is in leading youths who have been accustomed to irregular habits to change, it is certain that the most hopeful way is to remove them from the scenes to which they have been accustomed, and where they are beset with temptations on all sides. The sea, the infant colonies, and the army, are means which might be made much more available than at present for the purpose of placing numbers who would be otherwise lost to society in comparative comfort.

Although a change has been made in the system of training the children in some of the metropolitan workhouses, still great improvement is required in those for the most part frightful establishments, in order to fit both boys and girls to undertake with chance of success industrious employment. The masters and mistresses of some of the schools connected with the workhouses may be without fault, but it seems to us that in too many of those establishments in which there are large numbers of children, the latter are left too much in the care of ignorant persons, who have, perhaps, for nearly their whole lives, been accustomed to pauperism. It is not from such custodians that little children will be likely to learn lessons of perseverance and self-

reliance. Anything more frightful than the condition of workhouse society can scarcely be imagined. In other respects some boards of guardians might do much to ameliorate the condition of the very poor. We have seen instances of such treatment as to cause feelings of as much pity for those who could be so harsh and inhuman to suffering humanity, as for the unfortunates themselves. Many a family might have been saved from pauperism by a little kindly consideration on the part of those who have the management of the ratepayers' money. While saying this, we acknowledge that the attempts at imposition are numerous; but we have seen cases in which the good and the bad have all been used as though they were not of the same species as those who crowded them into passages, and pushed and drove them like so many sheep and oxen. Much good might be effected by right feeling on the part of relieving officers towards those who are in need of assistance.

Taking another road for a short distance,—it is noticeable that poverty and the sad results which in so many instances unfortunately follow it in large and dense populations, find a lodging-place in the suburbs; and that, as the capital increases, the hovels there and miserable houses give place to buildings of more substantial character, which are occupied by tenants of a better description. In Agartown, King's-cross, the process of improvement is already beginning, and the substantial church and school there will, as the present leases fall out, be surrounded by rows of better-built houses, instead of those to which we have before directed attention.

It was not, two or three centuries ago, the fashion to build even in the suburbs such small and infamously slight houses as in Agartown, the Kensington Potteries, and many other metropolitan districts; yet the poor managed to get hold of the outskirts. St. Giles's-in-the-fields and several other places might be mentioned; and the huts, in their turn, have given way to a fresh order of things. Other buildings have risen up, and the poorer classes have been driven to find abodes elsewhere. Some of these have gone to streets of decayed gentility, and rookeries as bad as St. Giles's have been formed in places which have the outward show of respectability.

It is curious to trace the decline of streets where, in Queen Anne's days, fashion and rank gladly took shelter. The first step in decline is generally the announcement that some professional gentleman has removed or commenced business; then some public institution is opened. On this the more aristocratic of the inhabitants move away, and in course of time the street is entirely occupied by various establishments. After this a fancy stationer, or silk mercer, and other dealers begin to fill windows with their goods. On this the higher class of professional men look for fresh quarters. The ordinary house windows are made into small and second-rate shop-fronts, some of which are occupied by dairymen and beer-shop keepers; then certain of the houses are let in tenements, and rows of bell-pulls, some of them with small brass plates below, show that the dignity of the street is still kept up by persons who can each afford to rent a set of apartments. The decline still continues: the shops become occupied by small dealers in general stores; from some, perhaps, a barber's pole is ventured forth; the bell-pulls gradually disappear, and a dense population, in most cases families living in single rooms, take possession of the street. This gradual succession of one rank after the other, and the desire as much as possible to imitate those just a step above, are the result of a natural, and in some degree commendable feeling; but it is attended with ill consequences in a sanitary point of view; for, as we have often before observed, those dwellings were not intended to be occupied by a multitude of families, and in the majority of instances the landlords take little care to improve them.

Generally speaking, independent workmen would refuse to wear the cast-off clothes of those above them, and yet they avail themselves in ninety cases out of a hundred of the cast-off houses of the upper classes, rather than choose

houses which are in every respect fit for the necessity of their own families. Workmen say that they cannot find the improved accommodation they require, and builders refer to some of the model structures which have been put up, and mention the smallness of the dividend which is made. It should be borne in mind, however, that extraordinary expenses have been incurred in the formation of the societies for improving the dwellings of the industrious classes, and that the cost of management and other charges are large. With proper management, healthy homes may be built to pay the owner.

Amongst the curiosities of this question may be noticed the various neighbourhoods inhabited by foreign people, who have sought shelter amongst us at different times. There are the French emigrants of Spitalfields, the Italian refugees of more recent date in the district near Gray's-inn-lane, the Germans in close streets about Whitechapel, and the miscellaneous crowd who form a familiar feature of the streets near Leicester-square. All these groups from various nations have peculiar interest, but none of them, to our mind, are more worthy of notice than the Jews, the most ancient of all the London immigrants, who in such large numbers gather together in Houndsditch and the parts surrounding.

We have before now remarked on the sanitary condition of the London Jews in poor districts, and noticed that, while fevers and other diseases have been cutting off numbers of their neighbours, the Jews have, to a remarkable extent, escaped the pestilence. We attributed this to the care taken as to the use of wholesome food, and their attention to cleanliness. Besides this, their practice as regards the interment of the dead is worthy of imitation; for not only do they provide burial-places outside the city (however large) that they inhabit, but on all, except very rare occasions, the corpse is placed in the ground within twenty-four hours after death. It seems remarkable that, with such an example before them, many of other creeds, in not much poorer circumstances, should keep the remains of their friends in their crowded dwellings for a week or ten days, and even a fortnight after death. This is, however, often caused by the difficulty of raising the money necessary for the expenses of the funeral. The Jews proceed, on the death of a poor member of their fraternity, immediately to raise a subscription of the sum needed, and it is not unusual to see a committee of Jews in the bustle of the clothes-market jingling a money-box, announcing the death of one of the trade, and collecting money, which amounts to a larger or smaller sum, according to the degree of respect in which the deceased was held. It is only some very notorious character or renegade who will not meet with this attention in time of need, and no poor Jew of Petticoat-lane can say a more cutting thing to another than "when your father died the box never went round for him." Other funds are provided by letting some of the seats in the synagogue at a high rent for this and similar charitable purposes.

Metropolitan taxation requires immediate revision. We have lately been in several of the more neglected London streets, and, listening to the opinions of persons of various classes, have found a strong feeling of discontent. The shopkeepers, taxed in some instances to nearly 6s. in the pound, must either raise the price of the food of the poor, or, as they say, "go to the workhouse themselves."

It is not our object to discuss the causes which have led to conditions so much to be lamented, but hope that thoughts of the great increase of pauperism in several parts of the metropolis will cause those who have the power to aid in remedying the evil, and to consider that the poorest neighbourhoods require the greatest amount of sanitary care, and that the frightful condition of the dwellings in those moral swamps is a prolific means of filling both workhouses and prisons. The owner of property in a part of the City where several of the tenants were suffering from fever, who was summoned not long ago before the authorities for sanitary neglect, said, so unprofitable was the place,

that he would be glad to hand his rights in it to any responsible person, and give a handsome sum besides. The high rates make parties willing to let houses to a "farmer," at from 2l. 10s. to 5l. 10s. a year. Such circumstances are a means of continuing the use of houses which are unfit for human occupation, and we believe that the equalization of the poor-rates over the whole of London would have the effect of encouraging persons to provide improved dwellings in neighbourhoods where they are most required. At the present time, some of the inns of court, although surrounded by large masses of the poor, are not called upon for parish rates—the Bank of England, that wealthy corporation, is almost exempt—some of the great dock companies have bought up an entire parish, and are relieved from the poor—some rich parishes pay only about tenpence in the pound for poor-rates, and many other instances might be mentioned to show the necessity there is for change.

It has been shown that Rose-alley, already alluded to, is the constant abode of sickness, and that not long ago it was infested with measles, which spread from house to house. This is not to be wondered at when it is found that in many cases the cubic space afforded to the occupants is less than 150 feet per head. It has been proved that each person consumes about 14 cubic feet of air per hour, and by exhausting the vital element, oxygen, and producing carbonic acid to the extent of from four to five per cent. vitiates 100 cubic feet more. But the provision of this quantity would be so near upon the point of danger, that authorities are of opinion that twenty times this should be supplied per hour. The prisoners at Holloway receive from thirty to forty times this quantity, and the supply is not too large. In our public hospitals, from 1,000 to 1,700 cubic feet of space are allowed to each person, and when the area is lessened, injurious effects speedily follow. Dr. Bence Jones found that in the dormitories in St. Pancras workhouse, when only 164 cubic feet per head were allowed, the air contained about thirty times its proper amount of carbonic acid, and the closeness of the atmosphere was most oppressive, so that the inmates sickened of fever. Even in such of the barracks as have 500 cubic feet of space allowed, the air becomes charged with poisonous matter.

These and other statements of the same description are of value, inasmuch as they keep this important question before the public, and at the same time teach the multitude one of the most important means of promoting long life and health; and this is most necessary, for notwithstanding all that has been done, it is, unfortunately, still the case, that amongst a large majority of people sanitary science is but little understood. We therefore again make an effort to aid elementary instruction, by a few illustrations, not for the benefit of those who have studied this subject, but for those who have not given attention to this matter of life and death.

The annexed figure (1), drawn to scale, represents the 14 cubic feet of air which is breathed per hour by each individual. This quantity of air, when returned from the lungs, exhausted of the vital element oxygen, is charged with carbonic acid to such an extent, that it vitiates to a great and poisonous degree 100 cubic feet more of air.

The adjoining sketch, drawn to the same scale as the former, contains 125 cubic feet of space, which is more than is provided for those living in Rose-alley and many other places to which we have from time to time directed attention. The figure A is a man of ordinary size compared with the cubic space provided in the above dwellings; and when we consider that in the St. Pancras dormitory, where 164 cubic feet were allowed to each person, Dr. Jones found that the air contained about thirty times its proper amount of dangerous carbonic acid,—as a matter of course, the air in the dwellings in Rose-alley must be in a dreadful state of adulteration.

The next drawing contains a cubic space of 512 feet, a trifle more than the quantity allowed in the best of the London barracks. Even a cubic space of 500 feet will, according to Dr. Jones's

calculation, have nearly ten times the proper amount of carbonic acid. At Portman-street there will be twenty times too much.



The figure corresponds in scale. How, then, can we wonder at the loss of health?

The last engraving shows the proportion which 1,000 cubic feet bears with the above, and is the amount of space allowed in several hospitals. This would contain nearly five times the proper amount of carbonic acid; and even in a space of 2,000 cubic feet for each person there would be an excess of impurity.

Impurity in air and a miserable home involve ill health, degradation, and an early death. These are not trifles, and the subject may not be slighted.

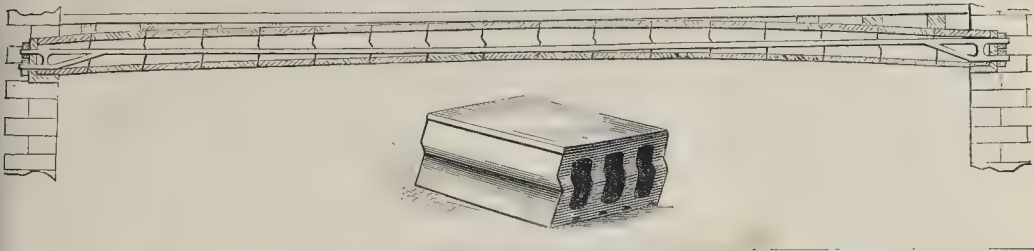
ENGLISH ART AND TASTE.

It is one of the peculiarities of Englishmen that they are generally ready to overpraise the efforts of others without sufficiently appreciating or taking credit for the good qualities and conditions they possess at home. It is said, and the statement is generally believed, that we are an inartistic, unmusical, and untasteful community, and in consequence often look over the water for the purpose of praising these gifts, which are so valuable in a civilized country, thinking we are sadly deficient in this respect ourselves. If, however, we look at home, and compare our architecture, metal work, ecclesiastical and domestic furniture, made and used by us, from the time of the Saxons to the beginning of the eighteenth century, it will be found that our productions may be contrasted, without damage to us, with the similar works of various parts of the Continent.

The architecture of Westminster Abbey, York Minster, Lincoln, and some other English cathedrals, both for the general beauty of their proportions and for details, are sufficient to put us in a good position in this department of artistic and constructive skill: and the fine works in gold, silver, and other metals, and the richly decorated tissues, &c. of the Middle Ages, may be mentioned as honourable instances of the true spirit of art which existed in this country.

As regards music, the sweet and charming madrigals of Shakespeare's days, and other English compositions, may be well contrasted with other national music of similar date; and, during the darkest age of British art, the appreciation of the famous works of Handel shows that musical feeling was not extinct amongst us. Since that time the increase of the taste for and knowledge of music has been remarkable. Nor has this been confined to the patrons of the operas and the higher classes, but it has spread amongst the middle ranks of our population; and now, in many of our manufacturing districts, numerous bands for the performance of instrumental and other music have been formed by workmen; and lately, at Darlington, between twenty and thirty of these

BUNNETT'S FIRE-PROOF FLOORS AND ROOFS.



bands, consisting of upwards of 250 performers, assembled for the purpose of competition.

In poetry, Shakspeare and Milton,—in philosophy, Lord Bacon and Sir Isaac Newton,—in general literature, Oliver Goldsmith, Dr. Johnson, Daniel De Foe, and Sir Walter Scott,—and in medicine, Jenner, Harvey, John Hunter, &c. are all men who would be a credit to any nation; and, in connection with mathematics and the sciences, names might be mentioned which have a world-wide celebrity. As regards navigation and discovery, if the Spaniards and the Dutch have in a few instances been before us, it is owing to the energies of Englishmen that substantial colonies, strong with all the instincts of civilization and liberal principles, have been founded in distant parts of the earth.

In order to account for the decline of the practice of art in England, it should be considered that, about the time Michelangelo and the other great masters of the Italian schools produced such glorious results, this country was undergoing a troubled ordeal, which, notwithstanding that it has proved a national benefit, was not favourable to the cultivation of the fine arts; and, after that time, continued changes and the rapid increase of commerce and manufactures led the attention of the public to these matters rather than to others of a more refined description. The long war was also a means of checking the improvement of our taste. It was, however, about this time that the English school of painting was commenced by Sir Joshua Reynolds and other worthies, and it is but just to remark that some of the pictures by Reynolds were not equalled by those of any foreign contemporary; and, amongst the English painters who have flourished since the time of Turner and others may be mentioned as evidence that the climate of this country is not unfavourable to the production of paintings of the highest class.

The genius of Flaxman and the ability of the painters and sculptors of the present day should not be overlooked; and, as a further instance of a national love of art, we would refer to the large and valuable collections of treasured efforts of genius in the castles and halls of our nobility, gentry, and merchants.

In landscape engraving on copper and steel plates and engraving on wood we are at the present day unrivalled; and, while admitting that much improvement in the general knowledge of art is necessary, and that vigorous exertions are required to produce with skill and elegance many art manufactures, so far as painting, both in oils and water-colours, is concerned, the present English school is not surpassed in valuable qualities by those of France or Germany; and, when we compare the fine productions of our potteries and glass-works, our calicoes and other ornamental textures with those of a quarter of a century ago, we look with hope for the future, when, as a nation, we may be as distinguished for refined taste as we are now for skilled handiwork and matters of utility.

Besides our marked progress in art, there have been other great objects achieved of which we may be nationally proud.

By means of the steam-engine we have multiplied a thousandfold the strength of man. By the application of this power to our marine the journey from London to New York can be made in as short a time as a journey from the Tweed to the Thames could be managed 150 years ago, and by the same power applied to our iron roads passengers and goods can be passed between these two rivers in less than twelve hours. It was in England that gas (although it is said to be a French invention) was made to supersede candles and oil lamps; while the electric telegraph, which is destined to produce great changes amongst the nations of the

earth, has been carried to its present state of perfection in this country.

Did Benjamin Franklin dream of the uses to which the subtle fluid might be put when he succeeded in drawing it by means of the kite string from the thunder-cloud?

BUNNETT'S FIRE-PROOF FLOORS AND ARCHES.

MR. BUNNETT, of Deptford, has patented an arrangement of hollow bricks and tie-rods to form floors and roofs. To speak according to the specification, earthenware or clay blocks, made by expressing clay through moulding orifices or dies, are used in combination with tie-rods and wall-plates, so constructed and arranged that the thrust is brought in each case to act on the tie-rods and the wall-plates, the several blocks being so formed as to overlap and underlap each other, and mutually to give and receive support from neighbouring blocks. The wall-plates are by preference made of angle iron, and they are tied together by the tie-rods at suitable intervals; and it is preferred that the tie-rods should pass through the blocks of clay or earthenware, such blocks being made hollow with that view, as well as to obtain lightness. We give a diagram of one of the arches. Although the form of blocks used may, to some extent, be varied, it is preferred to form them in the following manner: the interior is made hollow from end to end by the aid of a suitable core or centre die. The two sides are each composed of two parallel inclines, each about half the depth of the block, connected by a horizontal, or nearly horizontal plane, and the two inclines on the one side are parallel with those on the opposite side. The annexed engraving will better explain it. In cutting off the clay at the ends of the blocks, the cutter produces the ends of a form corresponding with the two sides, though this is not essential, so long as the ends of the blocks are made to fit into each other, and give to, as well as receive, support from the next blocks.

Mr. Bunnett has erected on his premises an experimental arch, 21 feet span, with a rise of about 2½ inches (the thickness of the bricks 6 inches), about 13 feet wide; and has also constructed other arches, for the purpose of testing its bearing powers. One of the latter, 15 feet between the bearing-walls, and 2 feet 3 inches wide, has been loaded with 4 tons 10 lbs. (or 267 lbs. to the square foot), and is quite elastic. The deflection is about 9-16ths of an inch. The bricks are put together with Portland cement and sand. Each brick is 10½ in. long, by 9½ in. wide, and 6 inches thick; and weighs 21 lbs. 100 square feet comprise—

	Ten.	Cent.	Gr.	Line.
145 bricks, weighing	1	7	0	21
Cement and sand	0	2	3	19
Angle iron and tension bars (bars being 4 feet apart)	0	2	2	5

So that the total weight per Square is 1 2 6 17

THE WELLINGTON COLLEGE.

THE buildings forming the Wellington College, of which, as designed, we gave some particulars and illustrations in our volume for 1856, have now been completed, with the exception of the infirmary, chapel, bath, laundry, and some other and minor accessories on the ground level, external to the principal group; and it has been announced that the ceremony of opening by the Queen, when a large number of troops will be present, will take place on Saturday, the 29th inst. The masters' rooms, class-rooms, and offices are already occupied or furnished; and the first batch of 80 students were to arrive on Thursday last. No exertion or expense, whether as to the suitableness

of the edifice and fittings, or decorative character, appears to have been spared, to render the whole an efficient institution, and a monument of the illustrious individual commemorated; and considering the public interest, and we may add the importance architecturally of the subject, our readers will be glad to have a particular account of the work, derived from an inspection made within the present week.

It may be well to premise, by way of reminder, that the college is the result of voluntary subscriptions by the British public in all parts of the world, towards the object of a fitting monument of the late Duke of Wellington. Subscriptions, and interest on the sums invested, together with 25,000*l.* from the Patriotic Fund, and 3,000*l.* from Sir J. Bailey, M.P. amounted to nearly 159,000*l.* In the application of this sum, 105,000*l.* were invested on mortgage at 4*l.* per cent. giving the college towards maintenance, 4,200*l.* per annum. The twelve acres of ground on which the buildings stand, having been presented by Mr. Milner Gibson, the cost of a further quantity, amounting to 120 acres, was 1,200*l.* Therefore, the amount available for the building appears to have been 52,800*l.* The tenders received in the middle of 1855, ranged from 45,710*l.* to 36,175*l.* for which last amount the contract was completed, including the laundry about to be commenced, and the iron bedsteads for 100 boys, and other furniture; but exclusive of the greater number of the bricks supplied by the Governors, and made on the ground, which would have raised the amount to about 40,000*l.* still, however, exclusive of the warming and ventilating arrangements, the water-supply, and the gas works, and formation of the roads and grounds. The outlay eventually, including the chapel and infirmary, and land, may amount to 55,000*l.*

The college is designed for the education of 246 boys, orphans, sons of officers of the army and navy, the Indian army included. Those on the foundation will be divided into three classes, paying from 10*l.* to 20*l.* a year, each boy. A fourth class of boys not on the foundation, will admit sons of living officers, who will pay 40*l.* a year each. The amounts will cover expenses of board and washing, education and books, medical attendance, and two suits of clothes a-year, for each boy. The fourth class is merely temporarily constituted, or pending increase in the funds—in the event of which all boys will be placed on the foundation. The instruction, besides the classics and the modern languages, is to include "those branches of scientific knowledge which have a special application to the arts, commerce, and industry of the country." In the religious teaching, regard will be shown to those who have conscientious objections to the doctrine of the Church of England. The college will start with an entire income, or, including the payments by the first hundred boys, of 6,070*l.*

The site of the college is in the south-east angle of Berkshire, where the county joins Hampshire and Surrey, near to Sandhurst, and two to three miles in direct line north of the Sandhurst Military College, and the station at Blackwater, on the Reading and Reigate line of railway. It is about half a mile to the east of the railway, with which a tramway for conveyance of materials was connected. The land is elevated heath-ground, with extensive views towards Bagshot-heath on one side, and over the Hartford-bridge Flats on the other. Wokingham is some four miles north, and beyond it Windsor is seen. The view over Hampshire, it is said, extends to Strathfieldsaye, the seat of the late Duke. The building is flanked by two lofty towers, or one to each of the two principal blocks of building, which have themselves a considerable effect of mass and altitude as seen from the

country round, except on the side of the Military College where hills intervene.

The style and character of the building may be easily described to those who are familiar with that manner of Sir Christopher Wren, best exemplified in Chelsea Hospital, which Mr. Shaw has had in his mind in several of his recent works, as the Naval School at Deptford, and who also are familiar with the work at the corner of Threadneedle-street,* belonging to the same school—of French-Italian design, and red brick and stone-work, with traces of the Jacobean manner (to which Mr. Shaw gave attention perhaps earlier in his executed works), and which building is remarkable also for picturesqueness of its window-dressings where the materials are used, as also in the coins, in alternate courses; for its curb-roof with dormers; and for its chimneys rising from the eaves. The arched gateways (we might add even the wooden gates) of the Wren school, of which inferior examples may be found about the halls of the City Companies; the effective grouping of one-story with loftier buildings; and having the characteristic very prominent roofs with dormers, as at Chelsea; the mezzanine story as a feature in the exterior; the Italian loggias to roofs of halls and porticos, founded on the model of such as are at Chelsea and Lambeth Palace; the circular or oval openings introduced, sometimes with richly-carved festoons in stone, or scroll-buttress work in the case of the dormers, in wood; the stone or gilt-balls, and pine-cones, surmounting piers, or points of roofs; and the elaborate iron-work in balconies and fan-lights, and as cresting to the roofs, may be observed in both cases. The result, therefore, is an appearance of imitation of manner, at the same time that there is development and continuance of the idea in many of the details, as well as richness in comparison with buildings like Chelsea Hospital, not to mention invention in a certain portion of the details, and so much technical skill throughout, that we hesitate in classing the Wellington College with imitations of the character to which we have been lately accustomed,—though it may be convenient to us to refer to the works of Wren for present purposes of description,—and even though, as we have sometimes said, architectural art of the highest class must be such as has its excellence compounded with the fact that it does not so easily fall within the scope of mere verbal description.

The manner of Wren, though we have chosen to call it French-Italian, differs somewhat from the analogous French style, as it does from the more markedly English, as well with it, and used by the architects of the two countries in their more important, or entirely stone-constructed buildings. The red-brick-and-stone architecture of Wren's school has a very Dutch appearance,—manifest in Hampton Court, even without reference to the Dutch style of gardening,—a character which it is reasonable to suppose may have arisen from the intimate connection with Holland, during the reign of William III. and from the tastes of that monarch and his court. A certain impress of the Jacobean style, itself originally owing much to the same continental locality, lends itself therefore not inharmoniously to the various other elements.

The William III. style may be said to have prevailed to a period within our recollection. The best of the houses of London, of the last century, are distinctly marked with it, in the piers or "coins" at the angles, and in the prominent curb-roof. Sometimes at the outskirts of London, the flat-topped roof, with railing as cresting; a symmetrical arrangement of the windows; a defined centre, and a bold flight of steps to the door, make up a whole of which the effect with the surrounding features of garden, trees, or landscape, is satisfactory in spite of clumsiness in some details,—and an effect which is certainly, as effect ought to be, largely in the inverse direction to the quantity of the ornament, or as contrasted with effect given by the elaborate shams satisfactory to, and even desired by, the public, in still the majority of works of our day. The claims, therefore, of the style, are respectable; and Mr. Shaw has, it is to be admitted, shown of what it is capable as well in town-architecture as in the country, and in distant effect. The advantage, however, as in the case of mezzanines, of very small windows adopted from considerations of mere effect, and of rooms in the roof for dormitories, we cannot approve of. The architect of the Wellington College has doubtless well considered the point; as to the latter matter finds some advantages in the arrangement; and will

have constructed the roof-covering with a view to limit any results from changes of temperature. On the question of the relations of convenience and architectural effect, the public are subject to some hot and cold fits. One day you may read that the whole class of architects will sacrifice uses of a building to notions of effect; another day, that there is no architect in Britain capable of achieving an effect. The architect of the work now under our notice seems to have secured the *vox populi*, or the approval of some of those who anticipate or claim to express the voice; and we may be glad of it. There are, however, curious questions, many more than we can now enter upon involved in the merits of this recent building, and the opinions it is calling forth. One question is, how far, in the best living architecture, convenience or mere effect should either of them interfere with the other? or, on the opposite hand, whether, were the real feelings of men tested or brought to conclusions, it might be found that some sacrifice even of convenience would be, and is always, readily accepted for the sake of that—the beautiful—which is equally a necessary in man's existence?

But we are interrupting the particular account of the Wellington College architecturally and structurally in its plan and details, which the buildings claim. The view in our volume for 1856, though representing correctly details which have been adhered to in the executed work, showed only one front—the north, or rather north-east—of the building as designed, and omitted the present towers; whilst the ground plan, though still equally accurate—with exception before mentioned, of parts not yet commenced—being only the ground-story, might give, without description, an erroneous idea of the general arrangements and executed design. Therefore, it should be understood that the group consists of two parallel main buildings, the intervening space occupied by three transverse blocks, and two cloistered courts or quadrangles, the whole filling an area of 257 feet 4 inches by 154 feet 3 inches clear of the thickness of the walls, besides which there are one-story buildings, and yards and gardens enclosed by walls, extending from the sides of the main group, and increasing the dimension, as last named, or transversely to the principal portion of the plan, to about 338 feet. The hall-quadrangle—south-west—measures in the covered space 69 feet, by 88 feet transversely to the general buildings; and the school-quadrangle, similarly and in the corresponding position, measures 77 feet by 88 feet. The transverse blocks bounding the courts, are considerably less in height than the main blocks, to which, moreover, they do not join in actual effect, a small space at each end of them being of only one story—an arrangement also not unworthy of notice as regards circulation of air. It is clearly indicated in our view before mentioned, where the ends of the main buildings are shown, as well as the north-eastern filling-in block, which last, being appropriated to the masters' residences, has two stories with similar windows, or much resembling those of the building in Threadneedle-street, besides the dormers in the roof. The other transverse buildings—the dining-hall, south-west, 74 feet by 28 feet, and the large school-room in the middle, 88 feet with the recesses, by 28 feet, have no floor above the ground-floor, and are consequently lower than the building of the residences, though they have a range of upper windows, oval, as well as dormers in the roof. The school-quadrangle is cloistered on its four sides; and the hall-quadrangle on three of its sides. The cloisters are 6 feet in the clear width, and 9 feet to the springing of the arches. Each cloister running lengthwise with the main buildings, like that transversely, attached to the residence, is part of those buildings, and has a mezzanine over it. The cloister on the school-quadrangle side of the school-building, and that along the dining-hall, project, or have no story over. The quadrangles are highly effective, as will shortly be described. The cloister and mezzanine taken together, of course correspond in height (20 feet to the floor-line above) with the rooms of the principal ground story; but those rooms, or which are on the outer sides of the main blocks mentioned, have an upper range of square windows like those of the mezzanine proper. The one-pair story in each of the blocks is a range of dormitories (14 feet from floor-line to floor-line), divided only by staircases, and the rooms of the chamber-men, immediately in the length. A similar range (12 feet in the clear height) is within the roof; a portion of the space, however, in one case, is being fitted as a temporary chapel.

The ground story arrangement is almost identical with that shown in our plan: that is to say,

in the main buildings there are four class-rooms (29 feet by 21 feet, and 19 feet in height), a boys' play-room and a library next the school quadrangle; whilst next the hall-quadrangle are under-masters' library, common room, stores, and nurses' apartments, and opposite them the kitchen and scullery, servants' hall, larder, and kitchen stores. The mezzanines are appropriated to various rooms for the masters, officers, and servants of the college. The dormitories are formed into compartments of 10 feet 6 inches by 7 feet, by framed partition reaching to a height some distance below the ceiling, the remaining space being filled in with galvanized iron wire-work, so that there is passage-way of 10 feet down the centre from end to end. The infirmary and chapel intended, are shown in our plan as wings advancing from the south-west front. They will be joined to the main building by corridors. The opposite front (shown in our view) is now somewhat extended by the low buildings for the kitchens and offices of the secretary's and head-master's house. An archway in the centre of each flank of this north-east front leads into a garden attached to the residence; the spaces south-west corresponding with the secretary's and head-master's gardens, and, like them external to the main blocks and enclosed by walls, will be appropriated as under-masters' garden, and kitchen-garden, excepting that within the area of the quadrangle last referred to, space will be allotted for the laundry. Separating the gardens, or on the transverse axis of the plan, and therefore in line with the large school-room and with the staircases to the dormitories, there will be, on the north-west side, a low building for a large bath, whilst there are on the opposite side coal-sheds, and other buildings planned as a boiler and engine house. Close to the staircases on each side, in the same line, are the several conveniences. These are arranged—at least the more important of them—and very questionably, not as closets, or with the appliances thereof, but with the trough below the seats, for periodical flushing, as adopted in many industrial schools and workhouses. There are closets nearer the dormitories for night-use. The outfall of the drainage is into large cesspools, two in number, at a short distance from the building, of brickwork in cement, and measuring perhaps 12 feet in diameter and 10 feet in the clear height. These latter arrangements we are disposed to regard as only temporary, or preliminary to the best system for utilization—for which the situation of the buildings should offer advantages.

The towers, somewhat varied from the original design, project 8 feet from the sides, or longer fronts—being carried up over the space occupied by the staircases, and by the heating and ventilating apparatus at present in the basement, and containing water-tanks, and angle-flues in which gas is kept burning, to induce the extracting current of the system of ventilation. The ventilating arrangements were entrusted to Messrs. Haden, of Trowbridge, and involve the extraction as well as the admission of the air in the lower part of each dormitory and room. The water-supply has been carried into effect by Messrs. Easton and Anson, and the supply is derived from wells sunk near the site of the building; and the water is pumped into the tanks in the towers. We may add that gas-works also have been provided at a short distance from the main buildings. They occupy an area 56 feet square, and were entrusted to Mr. G. Walcott.

The towers are 96 feet in height to the top of the gilt pine-cone—the conductor, however, being some feet in addition. They are covered with bold domical roofs, square on plan, having the curves of contrary flexure (the apron-roll, and angles boldly marked), and having dormers or lucarne windows at the sides,—the termination to each roof being a small arched and dome-capped finial, carrying the pine-cone. The angles of the square part of the tower are terminated by tall shafts for the ventilating flues. From the ground to the top of the cornice is 70 feet. The towers correspond in the lower part with the general flank elevations; and the same character as to forms and details of the windows is observed in the space above the level of the cornice of the main buildings.

The flank elevations themselves are very plain as to the windows of the ground story, and the square windows corresponding with the mezzanine, since the lower part of those flanks is nearly concealed by the walls of the gardens, or outer quadrangles, and buildings connected with them; though the square windows have architraves of moulded brickwork; but the upper windows lighting the principal floor of dormitories are of the decorated and peculiar character before adverted to. An ornamental string-course and a

* See the view in our volume for 1855, p. 102.

modillion cornice, the latter in Atkinson's cement—as are some of the ornaments under the window sills; and circular panels in the brickwork with medallions in stone carved with the letter W, are the other features of the front. The lofty chimney shafts, with alternating brick-and-stone joined angles and stone cornices, carried up from the eaves at nearly every one of the dormers; the prominent roof already spoken of with apron-rolls and mouldings, and gilt balls at the hipped ends, the large dormer windows with pediments, and the weatherings of the cornice with imitative lead-rolls, combine to produce a certain richness, and which reaches to greater elaborateness in the south-west front. The hip-rolls of the roofs are in all cases terminated by scroll-work, or other ornament executed in the lead; and we may observe that throughout the exterior, as in the design and execution of the ornament in stone and wood, the effect at least is well calculated for in regard to distance from the eye. It is observation of such points no less than the structural details, which has induced us to speak favourably of the technical skill noticeable throughout this work. The construction of the chimneys is believed to have been attended with unusual success, as regards the absence of smokiness. The general roofing is slate; the dormers being of wood, are covered with lead. The windows are all filled with sashes, in which the character of the style is still preserved. An ornamental bracket is carved on to the centre of the bottom of rail of the top sash.

We should, for the realization of the effect of the building in the reader's mind, have stated earlier that the bricks are of two kinds and different colours. The general brickwork is executed with the bricks made on the ground, which are of a purplish-red colour; whilst, for many of the features of decorative effect, the Reading bricks are used—these of an orange red.

The brickwork is set with blue-ash mortar, and is executed with remarkable precision, and there is no crack or settlement observable. The horizontal joints were “drawn” differently to the usual practice—or with a view to prevent lodgement of wet. The walls generally are two and a half bricks thick. The stone is Bath, we believe from the Corsham Down quarries.

The chromatic character of the building is, in truth, one of its chief sources of effect. Such character is marked, as it is pleasing, in the two principal quadrangles. The cloisters here are formed by piers, 14 inches in the face and 1 foot 10½ inches in the thickness, carrying segmental arches, and built, as well as the arches, in brick and stone, alternating in the dimension of 1 foot, or four courses. On the middle of the centre vousoir, or “key-stone,” a console is carved: it is finished by volutes at the top, forming part of a continuous label to the range of arches. The treatment otherwise of the dormitory buildings is the same as described for the external fronts. The principal windows of the hall and school are similar to those of the dormitories; but variety results from the introduction over them (or over the corridors, on one side, which project in each case) of the oval windows, and by the small dormers, with their carved scroll buttresses and curved pediment of each dormer with shell in the tympanum. In the school-quadrangle, also, the entrance to the school is marked, as is the principal gateway opposite to it, by an arch under a frontispiece of columns with an entablature and pediment, similar in general character to that in our view, but differing in ornamental accessories. The frieze over the school entrance bears the motto, “Virtutis Fortuna Comes,” between lions' heads; and in the tympanum in a coronetted shield, or wreath, is the monogram A. W. Underneath, over the school door, will be placed the bust of the duke. The piers of the corridor in this side have stone balls as finials. Along the sides of the corridors or cloisters throughout, are circular recesses, with brackets, ready for busts of military heroes. The royal arms appear in other cases, and various shields and like ornamental features are introduced in the towers, as in other parts of the building.

The south, or south-west front, differs from the other, the north or north-east, chiefly as regards the intermediate transverse building, which as we have said is the dining-hall. The ends of the dormitory buildings differ slightly from one another,—that is the south-west from the north-east. They have windows like those to the dormitories, of the flanks, in the ground story, and square panels, corresponding with the mezzanine windows, to be filled with inscriptions; but the ends south-west, have each a central doorway

with pilasters, entablature, and a scroll pediment, and the window openings are filled in with ornamental iron-work. In the one-pair story, in either case, there are shell-headed niches with architraves and cornices, medallions over them, and an elliptical arch-headed window in the centre, filled in for the glass with ornamental iron-work, and having a balcony with a very elaborate railing. The iron-work, including that to fan-lights, was cast by Barrett, of Tottenham Court-road, to whom it does credit. The hipped ends of the roofs have oval lucarnes as well as dormers.

In the transverse building (south-west front) the upper range of oval windows, but with rich carving, is again found, as well as the dormers; but much of the character is comprised in the centre portion, the roof of which, with the pediment, rises higher than the main roof, and is surmounted by the louvre turret, which is made an excellent feature here as well as internally, and is very different to the turret at the opposite end of the building—suitable in design to its own purpose of a clock-turret. Below the pediment and entablature of the centre is an arch, enclosing a circular window above one of the lower range the whole well grouped, and richly ornamented.

The hall and school derive their decorative character internally, chiefly from the open roofs, where the trusses are somewhat of Jacobean style, with ball-pendants. The rafters are boarded over; and the woodwork is all grained a light tint. The walls show the brickwork, but are painted or coloured—painted, at least, on the lower part, and of a warm and rich tone of colour. The tables and benches in the dining-hall, designed to accord in character with the building, and of oak, are worthy of notice. The dinner is passed into the hall, through apertures at the end, from a lobby, where the beer-engine is fixed. The recesses at the ends of the school-room, which make up its greater length, are arched over, and the principal masters will have here their desks. In the kitchen, as we should say, the grate for roasting is small as compared with the provision for boiling and stewing. Have we here another of the effects of military “routine?”

Had not this notice already extended to considerable length, we should add some further particulars of interest connected with the structure, gathered from the building and from the carefully drawn specification. We can at present only single out for remark the Portland cement flooring used in the quadrangles, and generally throughout the building, as a superior specimen of work: but, indeed, the whole of the works reflect high credit upon the general contractors, Messrs. Hollands and Hanuon, and those associated with them, and also upon the architect's clerk of the works, Mr. William Lyne, acting under Mr. Shaw's directions. The works of the Wellington College were commenced in January, 1856, and the foundation stone was laid by the Queen in June following. Much has still to be done in laying out the grounds, and in the formation of the lake of twenty acres, and these accessories will add much even to the architecture.

ON THE PAINTING OF THE ANCIENTS.*

I FEEL, as an architect, that, in bringing before an architectural society the subject of colour, which, however graceful, must be considered the least important branch of architecture, rather than the graver considerations of form, proportion, composition, &c. I owe some apology; but, as a lover of the picturesque, and having in my travels given some attention to painting in its various branches, I venture to offer you some remarks upon this highly attractive branch of our art.

Though colour is not in all cases indispensable to architectural effect, yet its value cannot be doubted as affecting architecture in general, and the true understanding of its application is hardly less difficult than that of the more serious branches of the art.

Yet it must be remembered that the great masters of architecture whose works are our text-books,—Alberti, Vignola, Palladio, Philibert de l'Orme, &c.—have treated it as a comparatively secondary art, in a measure separated from the more grave consideration, and leaving it to the painter and the decorator.

Vitruvius speaks of it at considerable length (7th book, cap. v. to xiii.), but it is in reference to interior and not at all to exterior decoration. This distinction is of the greatest importance to mark in considering the application of colour, for

* Read by Mr. Frederick P. Cockerell, at the Architectural Museum, on Wednesday evening, the 19th instant. Mr. Bercsford Hope, M.P. presided.

upon it the chief merit of the question may be said to turn.

The use of colour in interiors has been adopted in all times and countries, and the reasonableness of the practice cannot be doubted; but, in the best times of art in northern countries, its use in exteriors has been rejected in a great measure.

The consideration of the subject of polychromy is of comparatively recent date: it is now the fashion of the day, and let us beware how we abuse it, or attempt to hide by ornament the want of art, subverting the practice of our forefathers, and attempting pedantically to introduce into our own practice that of countries whose conditions are entirely different from our own.

Therefore, in treating the subject of ancient polychromy, I do not mean to advocate its adoption in this country, but rather by considering the works of the ancients, those great masters of common sense, to endeavour to follow their reasoning, which is so admirably adapted to their conditions and climate, to draw some conclusions with reference to our own.

All good art may be said to be a translation more or less direct of the book of nature, and there is no chapter in that book so largely treated, or so imperatively forced upon our consideration, as that of colour. Nature is lavish of colour in all her works, and delights the eye with her harmonies in all her operations: from the golden glories of the rising or setting sun to the pencillings upon the back of the tiniest beetle, all is harmonious and all variety.

The whole face of nature speaks to the lover of the beautiful by colour in the earth, in vegetation, in animal creation, and in the endless variation of accidental colour, in sunlight or in clouds.

Even the unseen depths of the ocean are full of objects exquisite in colour—sea-weeds, shells, and the glorious rainbow hues of fishes.

And the various objects of creation have further varieties in their own species. In man how various are the combinations of colour: the dark hair and olive complexion, the blonde hair, blue eye, and ruddy skin, the rich auburn and the golden red; and the true artist will surely set aside the conventional contempt of dark skin, and will find in the negro and the Indian, subtleties of colour hardly inferior to our own.

So lavish is Nature in her distribution of colour, that she does not confine it to her own works, but even to the conventional works of man, she imparts by a few years of exposure to her influences of atmosphere and climate, a complexion whose harmony no art can approach.

From the poles to the tropics all is colour, but as Nature has varied the conditions of climate and situation, so she has graduated her distribution of colour.

In the poles, amid eternal snow, and under a pale sky, Nature has made all her objects pale or white: there is no brilliant vegetation: birds and animals are all grey and white, and offer but little contrast to the surrounding scene. As we advance towards temperate climates, we find bright vegetation, and a greater variety, and deeper colour in animal creation. In those countries where the sky is always blue, there is a further increase of colour, until finally in the tropics we find gorgeous flowers and brilliant birds, and great jewelled butterflies, dazzling to the northern eye. But however opposite are the combinations of colour in the poles, or in the tropics, the result is the same—harmony.

And this harmony, established by Nature in each latitude, affects the eye of the inhabitants, and the result shows itself in their habits, and in their choice of colour in dress, and in all objects of every-day life.

When an untravelling person sees a case of South American birds, or hears a description of the gorgeous colouring of the jungle swamps, he imagines that such contrasts of colour cannot be otherwise than discordant; but the sober greens and greys of the north, his model of harmony, would appear tame and colourless under a southern sun.

Every one who sees with a painter's eye will have observed that the relative value of contrasting colours under a grey or neutral light, and under a brilliant sun, are absolutely changed; and that contrast which, upon a cloudy day, would appear harsh and discordant, is subdued and harmonized by the rays of the sun.

Besides, sunlight introduces a new element into colour, namely, light and shade, with its endless variety, from the cold-ast shadow lighted by the blue sky, to the warm reflection from a lighted surface; so that local colour loses a portion of its importance, and contrasts become less violent.

This is a consideration of the greatest importance in judging of the system of colour adopted in those countries where polychromy took its rise and reached its maturity, and which are now more particularly under our consideration.

Besides, in those countries the blue sky, the varied hues of the mountains, the sea, &c. form a background so brilliant that, unrelieved with harmonious colour, white in architecture would be ghostlike and crude.

Having, then, prefaced with these considerations, and recognised Nature as our mistress and the source and fountain of all our inspirations, following her by analogy and not by direct imitation, let us proceed to consider the works of the ancients, and compare them as best we can with Nature.

It is not our province here to attempt to deduce from her countless varieties any system, or to establish any rules, to reduce the infinite within the compass of the finite. This has been frequently and most ingeniously attempted by different authors, but the result has been necessarily insufficient, and such, that the first natural object that came to hand would furnish an exception to the rules laid down.

The prism is a measure that lays open to us Nature's system of colour; but it is in itself a disquisition so profound that we can add nothing to it, nor can we vary it so as to suit our various requirements. Without stultifying its harmony, we must therefore humbly accept it as it is, acknowledging that we are incapable of appreciating all that it teaches, and that to imitate what we do appreciate is infinitely beyond our limited means of execution. A satisfactory theory, therefore, is a thing unattainable; let us not, therefore, attempt to lay one down, but let us reverentially turn to the works of the great fathers of art, and endeavour, by following their progress from the earliest times, to discover, first, whether their works do agree with our hypothesis; and if so, what may have been their interpretation of Nature's teaching.

We cannot pretend positively to follow the reasonings of the ancients, or to look with their eyes into the book of nature. It is possible that we may imagine analogies with nature, where none were intended; but if such analogies can reasonably be instituted, it is some proof of the correctness of the principle contained in the work of art (and if the work be good, *vice versa*). I would, therefore, only suggest in following the development of art, such points as appear to agree with our hypothesis.

The earliest style of pictorial decoration known to us is that of the Egyptians. We shall, no doubt, find in their works a certain following of nature; but the analogy with her goes no further than that first principle which dictates that there shall be colour in everything. The mode of producing this colour is for the most part by copying of natural objects, as birds, beasts, serpents, &c.; or heroic or domestic subjects. No doubt these early paintings (to the repetition of which tradition bound the Egyptians of even the latest times) were the nearest approach within their limited means to a direct imitation of those objects. And though we must not lose sight of the fact, that these objects were naturally chosen as entering into their religion, the comparative scarcity of conventional ornament, or the absence of a regular system of lines adapted to architectural forms, seems to show a rudimentary state of art.

Those ornaments which are conventionalized are still closely imitated from nature, as the lotus cap, the papyrus, the palm, &c. And though this cannot be considered otherwise than a merit, I point to it only in contradistinction to the refined conventionality of the Greeks.

The colours used are glaring, and in crude contrast, without gradation or harmony. The modesty of nature is lost sight of, and her principle of universal colour interpreted by the use of universal point.

I pass over thus briefly the Egyptian period, because, although the art of the great times had its origin in the teaching of Egypt, there is very little in itself that shows a high artistic cultivation, or that can serve as an example for us. The striking quality of the monuments of Egypt, of another, and indeed of a higher order, namely, simplicity and greatness of material and of execution, which convey such a sense of the mechanical power of the people who produced them.

The next period of art, namely, the Greek, may be said to embrace, if not the birth, at least the first forward step, the progress and perfection, the decline and extinction, of classical taste.

It is in the Greek works that we find the first

germs of that taste which reached its culminating point in the age of Pericles; and the art of the Romans, however debased, is still formed upon the Greek traditions, which were handed down till the deluge of barbarism swept away what little of good remained, and sowed the seeds of another style, which, faithfully following nature, as the Greeks had done before, ran a course not less glorious than them.

We have mention in history of periods of whose art no vestiges remain. Traditions, repeated by Diodorus and other authors, speak of the works of the first Dædalus (for three are mentioned at various times). Some antiquaries have endeavoured to give a reality to this mythic father of Greek art, and have supposed him to be a contemporary of Theseus, and placed his existence in the fourteenth century before our era. Probably he is simply an ideal impersonation of art, as Theseus no doubt may be of the heroic character. But this is mere curious antiquarian speculation, and has no bearing upon the history of art.

Of the earliest Greek works known to us, perhaps the most important are the temples of Selinuntum, in the south of Sicily. This great and flourishing Greek colony was founded about the year 650 before our era, and was destroyed in 409 B.C. There are seven temples remaining, and the best authorities consider that the first and the last of them are about parallel with the commencement and end of its existence.

I cannot speak positively of any remains of colour in the architecture of the earliest of them, but there can be no doubt that there was colour, from the fact that the metopes are painted.

There are very distinct remains of colour in the other temples. The Duke of Serradifalco, in his work upon the temples of Selinuntum, says—

"The excavations carried out in the temple E, and the edicule B of the Acropolis [see his work, plate 2] gave new and more evident testimony of this sort of ornament. There remain of the first many trunks of columns coated with the finest white plaster, and one of them still retains three horizontal zones, each of which is successively painted with red, white, and blue. The listel of the architrave is red, that of the gutta blue. The triglyphs painted blue upon the face, with black channels. The astragal (?) of the capitals red; and to the posticum of this temple belong certain mouldings in terra cotta of a yellowish colour, with frets and other ornaments painted in red and dark grey. From various fragments we learn that, as in the Parthenon, the ground of the metopes is blue; and upon the arm of the female figure [plate 32 of the work] one discovers some traces of red, which colour, as well as blue, is much more clearly discoverable in a fragment of drapery found in the posticum of this temple. Nor should we here omit to mention the very singular circumstance that we find the cap of one of the triglyphs first painted red upon the stone, afterwards coated with stucco, and at last repainted with the same colour. We have more important remains of the edicule B, namely, the trabecation of the south-west angle, one of the lions' heads of the cymatium, in which there remains still the sinking prepared to receive it; one angle and various fragments of the pediment; the whole cap of the ante; the lower portion of the shaft of a fluted column, with part of its Doric cap, and several fragments of minor importance. From the observations made upon these remains, we find that the whole fabric was coated with a very fine stucco, of a pale yellowish colour, the listels of the architrave, of the bed mold, of the corona, and of the mutules; these last blue with white gutta, blue also are the triglyphs and their fascia, which is divided into two by a very fine line. The capital and what remains of the ante are of a yellowish tint, and all the sunk lines are marked with a fine black line, so as to give more effect to the other mouldings."

M. Hittorff, a received authority upon the antiquities of Sicily, and author of the ingenious work "*L'Architecture Polychrome chez les Grecs*," goes much further, and launches very far into the ideal. Indeed, he does not pretend to confine himself to the facts found in the ruins of this temple, but unites fragments and authorities from other temples in Sicily and elsewhere, to produce his ideal of the Greek system of Polychromy. Perhaps his enthusiasm may have carried him somewhat beyond the bounds of probability in his opinions. A reference to his work, and to that of Serradifalco, will enable those who are interested to judge how far his opinions are borne out by reason and by facts.

The Temple of Jupiter, in the island of Egina, supposed to be about forty years earlier than the last of the temples of Selinus, which in archite-

tural proportion and refinement, is a step in advance of those of Selinuntum, still shows very clear traces of colour.

The best authorities have established that the triglyphs were painted blue, the tœnia red, the mutules blue; their fillet and the rest of the soffit of corona red; the cymatium enriched with a honeysuckle in gold; several mouldings, and the soffit of portico painted, &c. There is no evidence, nor do the best authorities conjecture that the broad surface, the shaft and caps of columns, or the wall of cella were painted.

The large patches of blue presented by the triglyphs, appear crude and unhappy, and little in accordance with the refined taste of the artists of Egina, but we find an explanation of this in Vitruvius, where he tells us that in the early wooden constructions, the ends of the beams (the triglyphs), were covered with a board, painted with blue wax, to preserve it from the action of the weather; and as we find in other temples where there are traces of colour, that the triglyphs were likewise blue, it is clear that this ancient practice was carried into later times, as a tradition which popular prejudice and a religious reverence for antiquity insisted upon preserving. In the sculptured parts there are undoubted evidences of colour. The shields and crests of the warriors were painted red, parts of their arms and armour gilt, while the tympanum of the pediment was blue.

The frieze of the mausoleum of Halicarnassus, though of a date about 180 years later, is treated in the same way; and the last discoveries show that the lions' mouths were picked out with red.

No one can doubt the value, and, indeed, the necessity, of such a distribution of brilliant colour to give relief and interest to the otherwise monotonous blue of white, standing out in strong relief against the deep blue sky, and having no interest of colour to bring into harmony with the brilliant scenery.

But at this period in the progress of art, the refinement of study being directed to the perfecting of form, we may fairly suppose that where so much love and study as were required to produce the Egina marbles had been expended, the result would be considered of higher importance than colour, which, from being so constantly repeated, could scarcely have ranked with the other branches of architecture, and must have been treated as a matter of mere traditional practice, as was, no doubt, the case in the painting and sculpture of Egypt.

It is important to observe that in the cases of Egina and Halicarnassus the colours are made entirely subservient to the sculpture, and so distributed as to assist materially in giving relief to its forms. There is no painted detail (in the sculpture), no ornament or variety of colour to arrest and give occupation to the eye. It is the inferior and less interesting portions which are coloured, and that with uniform tints, producing that sparkle which is so essential to pictorial effect, and leaving the nobler portions—the human form divine, untouched, and, indeed, assisting and giving expression to them by contrast.

And here it is desirable to observe that some picking out is more an optical necessity under a southern sun than we can imagine in our tame light. Those who have studied in those countries will have found over and over again a difficulty in distinguishing forms upon a background of the same colour, from the violent contrast of intense blazing light and black sparkling shadows, which dazzles the eye, and causes the half tints to disappear.

In the tangled intricacy of the frieze of Halicarnassus, being, as it was, at a considerable distance from the eye, this would be particularly the case.

In this principle of aiding form by colour, we may find an analogy with Nature in most of her works. For instance, in flowers the sinking of the calix is marked by getting darker or lighter, and the forms of shells are constantly marked in the same way. The eye-brow seems to have no other purpose than to give expression to the form of the brow, &c.

But in our own conventional works of architecture, Nature's working in this respect teaches a lesson in the plainest terms, and in no parable. Softs take a rich warm tint, and upper surfaces of salient parts a cold and pale grey, which comes out in strong relief against the varied tints of the vertical surfaces.

This assumption, that as art progressed colour became considered second in importance to form, and so was less used, is in a measure born out by the experience of other schools; and though it would be a bold theory to advance that perfection

of form and perfection of colour cannot coexist in a work, still we find, practically, that they do not, except in rare instances. This is exemplified in many instances in painting, and particularly in the works of the Venetian school. There can be no doubt that in sculpture strong colour detracts from the value of form in the portions so coloured.

Who can walk through a sculpture gallery without being struck with the apparent want of modelling in works executed in coloured marbles or in porphyry?

Many instances of this fact will be familiar to those who are acquainted with our own and foreign galleries.

We always find in well-ordered museums that by the side of a gem, whether intaglio or cameo, there is a cast in plaster, without which it is extremely difficult to distinguish the beauty of execution.

This subject may be further illustrated by the converse as exhibited in the works of the school of the seventeenth century. Bernini often expressed in marble minute forms, such as the veins, &c. which in nature are scarcely noticeable, except when marked by a difference of colour. In white scents from the life, of a woman's hand for instance, none is shocked by the coarseness of the skin, which appears so smooth and delicate in nature.

In architecture the disposition of lines and forms in colour, of course materially affect the moulded forms, and may be in direct contradiction to them. The bird's-mouth moulding as it is usually painted, becomes a leaf moulding. Many antiquaries insist upon painting an egg-and-tongue ornament upon the echinus of the Doric cap. One of its chief charms seems to be the beautiful combination of the circle in perspective with the sectional curve of the echinus, and this is entirely disguised by the painting of painted lines (in direction of the sectional curve) upon the horizontal circle; and a quarter round, or any other clumsy curve, would answer the purpose almost as well.*

THE BEAUTIFUL IN ART.

MUCH has been written on the subject of beauty in art. Criticism, which ought to love with a sincere love the study of the fine arts, and fill its soul with its noble impressions, is easy compared to art, which is difficult, and has been regarded as a necessary good to the progress of the arts, but has often been useless to artists in constant commissions, whose approved works have contained far better precepts from the examples they afforded than criticism could: and innumerable canons have approved vain and ineffectual, and actually tended to bring on the corruption and decline of art. This has not hindered some good writers from expressing their ideas and sentiments on the subject of beauty. The English have written a great deal on it, and the different theories of the principal writers have been collected and reviewed in more than one work. The authors have been too metaphysical, and had they been less so, they would have been more understood, and more appreciated by the public, distinguished as it is for its practical genius. Of all the people of Europe, it seems there is not any who better announce the sentiment of beauty than the Italians and the French. As to the sentiment of the sublime and energetic, we think it is claimed in a most decided manner by the Germans, the English, and the Spanish. The pure and delicate by which both are manifested is almost unknown in Holland. The English language, as well as its architecture, is characterized by its energy. The sentiment of the sublime, to which the French nation is far from being a stranger, keeps, among them, subordinate to that of beauty. Beauty is the national characteristic of their language, their sculpture, and their architecture.

Kant, D'Alembert, and others have attempted to establish that every one possesses in himself an innate aptitude to conceive the beautiful and the sublime; that there is in the human being a faculty appointed to pronounce judgments upon objects which affect in a most lively manner our existence. The property of beauty is to operate in whatever work with ease, and to be agreeable and easy to comprehend at a glance: the trace of labour ought to escape in its free actions, disengaged and free from constraint: another law rules the sublime, it is by great efforts and difficulties conquered that it claims the right of our admiration. If the depth of meditation and an attention a long time sustained are noble, they are equally painful, and little suit any one, with whom the senses ought only to reveal the presence of a beau-

tiful nature. Liberty of mind, and the union of innate ideas, which constitute genius, are not less necessary to feel all the beauty of a work, than to compose it. To be a good spectator, you must have tranquillity of soul and serenity of imagination. The mind must be correspondent to the art or the science which we wish to know; and our knowledge ought to be greater than that found in the works we study and judge. The beautiful is ravishing, and touches us, or it is lovely, and seduces us: in the first case, it holds with the sublime, and the soul that feels this sentiment enjoys it with a satisfied and thoughtful reflection: in the second, it is moved by a more expansive joy. Of these two modes of sensation, one is peculiar to the Italians, and the other to the French. Beauty is a sort of shrine for the affections of the soul. A poet said that every new work of Raffaele made a painter. Quintillian said that the Olympian Jove and every new statue of a deity by the hand of Phidias, added to the religion of the people. The expression of the sublime has three manners of producing itself in national characters: impressed with a certain horror, it will incline towards the gigantic, or it will belong to the noble kind, or it will enter into the domain of the magnificent. The sublime ought always to be great: the beautiful may also be small. The sublime ought to be beautiful: the beautiful may suffer from being over-ornamented: arsenals ought to be noble and simple; palaces of residence, magnificent; villas beautiful and nobly decorated.* Such is the force of greatness of manner, that a small building will give more noble ideas to the mind than another twenty times more extensive with regard to its mass, where the manner is common or neglected.† The compositions of architecture are more susceptible of the grandiose than those of any other art. By it the colossal differs from the gigantic. The grandiose, in all works of art, is one of the qualities that most contributes to beauty.‡ In painting, largeness of treatment is not at all dependent on the size of the panel or the canvas. The "Vision of Ezekiel," by Raffaele, in the Pitti Palace, Florence, in largeness of treatment perhaps excels any of his other works, and it is painted in a panel of about sixteen by eighteen or twenty inches; and many of the works of the old masters, specially celebrated for largeness in treatment, are small in dimensions.§

D'Alembert says, that in effect, the source of our pleasure and dislike is only and entirely in us: we find them within ourselves, in looking there attentively, general and invariable rules of taste, which are like the touchstone on the test of which all the productions of talent can be submitted. There are in the arts of taste, beauties of expression of which all men are born judges; and these beauties are not always those to which the pure artist is the most sensible. The beauties of expression are, some the works of nature, others the fruit of labour; and the artist, like other men, esteems things according to what they cost him. It is not that in general artists are the natural judges of arts, if they are either blinded by partially or led away by subtlety and chicanery. Philosophy has a similar analysis in the truths of sentiment which have connection with matters of taste. Enlightened by a subtle and profound metaphysics, it distinguishes the principles of the general and common taste of the people from those which are modified by the character, the genius, the degree of sensibility of nations, or of individuals: it separates by this means the essential beauty from the conventional beauty: equally distant from a mechanical decision without principles, and too subtle a discussion, it carries the analysis of sentiment as far as it ought to go: it studies the impression, without giving an account to itself or others, and when it has made its pleasures agree with its reason, it grieves without pride, and without seeking to convince them, those who have received, whether from nature or from habit, another mode of feeling.||

It is not to produce beauties, but to hide faults, that the great masters have designed the rules. Nature forms men of genius, as she forms in the bosom of the earth the precious metals, ugly, deformed, full of alloy and foreign matter. Art can only do for genius what it can do for these metals: it can add nothing to their substances, it disengages them from all that is foreign to them, and discovers the work of nature.

Taste, although little common, is not arbitrary: this truth is equally acknowledged by those who reduce the taste to feeling, and by these who would limit it to reason. But it does not extend to all the beauties of which a work of art is susceptible. The striking and sublime in it, which alike seize all minds, which nature produces without effort in all ages and among all people, and of which in consequence all minds, all ages, and all people are judges. There is that which touches only sensible souls, and which escapes others. The beauties of this kind are truly of a secondary order; for that which is great is preferable to that which is fine: they are, nevertheless, those which demand the most sagacity to be produced, and delicacy to be felt; so they are more frequent in the nations, among whom the refinements and pleasures of society have heightened the art of living and enjoying. This kind of beauties made for the few, is properly the object of taste, which may be defined the talent of discerning in the works of art what ought to please sensible souls, and what will disgust them. If taste is not arbitrary, it is then founded on incontestable principles, and that which is a necessary consequence, there ought to be no work of art of which we cannot judge, in applying to it these principles.*

The advantages that the liberal arts have over the mechanical arts by the labour which the first demand from the mind, and by the difficulty of excelling in them, is sufficiently compensated by the very superior utility which the latter for the greater part procure to us. It is even this utility which has forced men to reduce them to operations purely mechanical, to facilitate the practice of them to a greater number of men. But society, in justly respecting the great geniuses who enlighten it, ought not to look with disdain on the hands who serve it. A painter may be, from the low view he takes of art, from his inability to render his sensations and his thoughts, only an artisan more or less skilful, but not an artist; whilst the artisan, though employed in a lower department, may make his talents and his invention superior to it; may show his capabilities of excelling in the higher walks of art, and show what perfection he may reach in the workmanship of his genius. Obscurity of destiny may for a time shroud the works which reflect the image of a noble mind; and humble labours may conceal performances which exceed their promise. Well-directed routine and habitual experiences, may give to artisans, even in their rudest operations, a presentment of genius which has the character of inspiration. There can be no doubt, that the thought and the skill of precision in manual works, that is to say, of the rigorous execution of the faithful reproduction of geometric and artistic forms, have exercised a useful influence upon the recent progress of our mechanical sciences. There are some works, it is true, purely mechanical, and whose monotonous repetition rarely puts the faculties of the mind into exercise; as, for example, the textile arts, which are immense and fertile branches of industry, and are the foundation of the fortune and the power of western nations. These beautiful industries, an imitation or a pure emanation of similar ancient and splendid industries of the East, are, in reality, very ingenious; and their happy mechanical and geometrical combinations are still to-day an object of our admiration. These rich weavings are unequalled for their fineness and beauty, for the solidity of the colours, and the intelligent art with which the finest threads of textile materials are elaborated and woven to constitute the chain and the body of stuffs, by their network and reticulation, according to mathematical and artistic laws. These admirable productions, principal and primitive sources of the riches of the civilization of India, Persia, are the result of many ages of accumulated force, the slow, painful, and incessant manual collaboration of an exuberant population of slaves and of pariahs.

It would not be difficult to prove that the theory of the mechanical arts is the same as that of the fine arts; that they rest equally upon the ideas of the beautiful, which resolve themselves always into those of the good. We with difficulty equal the ancients in the productions which appeal to the mind and to the judgment, to the taste and to the imagination; but we much surpass them in every thing which affects the multiplication, the vulgarising, and the rapid economical reproduction of objects of perfection, or of material, artistic, and intellectual enjoyments.† It is, indeed, in the perfecting the slow, gradual, but incessant and indefinite increase of discoveries

* Kant, "Sur le Beau et le Sublime," translated by Kératry.

† Addison, on the "Pleasures of the Imagination."

‡ Boudart.

§ North British Review, August, 1858. No. LVII.

|| D'Alembert, "Œuvres Philosophiques."

* D'Alembert.

† "Travaux des Commissions Françaises sur l'Industrie des Nations." Imperial press. Paris.

* To be continued.

and ideas of chemistry, physics, mechanics, geometry, or mathematics, applied to the satisfaction of our wants, where lies the perfectibility of the human race, still more than in the pretended progress of moral, philosophical, and artistic ideas, of which antiquity has left us models or examples not yet surpassed in our times; and yet the fictile and the Faenza arts do not seem to be wanting in a claim to the fine arts. Their productions, turned and fashioned into the graceful forms given them by a potter as skilful as Bernard Palissy, are evidences of what that instrument of instruments, the human hand, can perform. Of these Paris makes a great *spécialité*: exhibiting useful and ornamental articles of furniture for the toilet and the service of the table; and the shops in the peristyles and arcades of the Palais Royal which are magazines for these arts and for carved and engraved porcelain, and fine stones and cameos richly set in gold, flower vases, goblets, chalices, and fans of crystal, are most dazzling, glittering in their sheen, and they give to the place quite the aspect of an Oriental bazaar. For these articles of art and luxury there are large *ateliers*. No one, we think, will dispute the beauty there is in machines to saw, to dress, to carve, and to polish different stones, crystals, and other hard bodies; the machines used to elevate the materials which enter into the construction of edifices; the means of ventilation and drainage; the objects serving decoration and models of public edifices: they are objects which created a great interest in the Universal Exhibition of 1851. Among the liberal arts which have been reduced to principles, those which propose the imitation of nature have been called fine arts, because they have principally pleasure for their object; but this is not the only thing which distinguishes them from the liberal arts more necessary or more useful, as grammar, logic, and morals. These last have fixed and determined rules, which every man can transmit to another, whereas the practice of the fine arts consists chiefly in invention which is not derived so much from its laws as from genius; the rules which have been written upon these arts are properly but the mechanical part,—they produce a similar effect as the telescope, they only aid those who can see. It results from what we have said, that the different manner in which our mind operates upon objects, and the different uses and impressions which it draws from these objects, are the first means presented to us to discern in general our knowledge of both. All have connection with our wants, either of absolute necessity or of convenience and pleasure, or even of custom and caprice. The more that these wants are foreign or difficult to satisfy, the more slow in appearance is the knowledge destined to that end.* In art in general, and in painting in particular, the signs of representation that one employs are often conventional in a high degree, so that when they ought not to vary but with the natural objects of which they are the representation, they vary, on the contrary, perpetually with epochs, with nations, with schools, with individuals. The beautiful in art proceeds absolutely and only from the human thought set free from every other servitude than that of manifesting itself by the representation of natural objects.

The greater part of the remarks of Cicognara, in his work, "Del Bello,"† apply to the arts of design. Reasoning of absolute and essential beauty, and of its force upon us, he shows the why and the wherefore they are distinguished from relative beauty. Grace, sublimity, ideal beauty, are distinctly treated as consequences of principles which he had already established, and as being of greater or less perfection of the same thing. Sometimes we see these existing separately and undivided in one work: sometimes we see them conjoined. One formula in art is that the essence of the beautiful is unity in variety: there are works, however, that are exceptions to this; and we see beauty existing above and beyond the conditions of unity and of variety, linked together. A work unites often these two qualities without being beautiful. The Apollo of the Belvedere, in the Vatican, is not varied: the "Transfiguration" is not one, and they are both admirable pieces.‡ As in human characters, so in sculpture, there are minute differences between qualities which seem the same and those we discover with difficulty. It is easy to know the qualities when they are rendered single, perfect, and entire; but if requires much penetration and delicacy to separate or sift what is confounded. Everything which makes unity by the union and blending together of many attributes,

produces agreeable and beautiful things. In the fine arts, the ideal is said particularly of that abstract assemblage or union of perfections of which the genius forms the idea, but which is above every sensible beauty. Simplicity is the natural companion of beauty: the first follows the second, as the shadow follows the body. Hogarth, by whom the English school of art was founded in 1734, in his "Analysis of Beauty," gave the world what he called the *line of beauty*—the true, and the simple, and the ideal line. Michelangelo's advice to his pupils was always to make a figure or a group of objects pyramidal, one of the most simple of figures, and one of the most pleasing: for example, take the tripod, the five and seven-sided polygon, and the triangle—the indentations that nature gives generally to leaves, flowers, and stems of plants. The simplicity of the oval is preferred to that of the circle, as the triangle is to the square, the pyramid to the cube; and we see that the Great Artist of every creative beauty selected the oval form as a vault to the temple of the earth. Elegance and nobility may be combined: it is a great thing to know and observe the limits of every kind of style in the arts and composition.

Style imports grandeur to the simplest and most common things: style, taken as the just expression of what is beautiful in the ideal, is the most important part of art, and indeed is the art itself. Hence, Cicognara lays down three states of imitation of the artist;—1. When he proposes to imitate objects such as they are presented to him, servilely and indistinctly. 2. When he chooses none, and does not refuse certain others, adding to them his own ideas, or altering the disposition. 3. When finally he unites the parts the most perfect of different objects, and forms one only chosen by himself. The first of these imitations is the beginning of art; the second, the progress; the third, the perfection. He adds, political and extraordinary circumstances, and natural and local, have much contributed to make the arts pass more or less rapidly from one or the other of these three states; and it is beyond all doubt that we owe the excellence of their progress to the imitation of that which nature has produced most excellent and most perfect. The fine arts have most flourished in a beautiful climate, where the productions of its imitation are always the most perfect. But the imitation of nature alone ought not to be the aim of the artist: his work must bear the stamp and the forms of his own imagination. Quantity is the cause of beauty and grandeur. To know how to give to the features of architecture an expression of majesty from mere bulk, is one of the secrets and difficulties of the art.

Some have thought that architecture was an art in which none but a geometer could excel. Geometry is an inexhaustible study to the practical man and to the philosopher. In the sphere of its utility it is infinitely more extended than that of any abstract science, and it is, without contradiction, the base of our true knowledge. Our mind, with all its diversified faculties, has a certain original unity, sovereign, eternal, perfect, which is the essential rule of beauty, and which is to be sought to be expressed in the practice of the art. Variety, regularity, order, proportion, are necessary. We have only to witness the scenes and external forms of nature, to see how these admirable qualities prevail in them; one reason being that everything concurs to the same end; every work is a whole; that an equal consideration is given to all: *amor omnibus idem*; and that nature executes them on an eternal plan from which she never departs. Everything in the universe is conformable to good order: everything concurs to the general good, and is made for the best,—is such that it cannot be better, and is perfectly good. Law and order then being her necessities, it is certain that out of the unbridled license of individual taste no good can come. Foundations, and results of order in the elevations of a building, are necessary to escape confusion and ruin. There should be in the decoration no obtrusive parts, no interruptions of that regular order of styles, that *surveillance* which is congenial and co-natural to the well-regulated mind that contemplates and enjoys it: there should be no rarities or eccentricities of creative genius, no pieces broken or detached from that principle of order and proportion which should harmonise, unite, and league together into one whole all the parts which compose it. The useful, too, must circumscribe everything; which will not exclude the beautiful, the agreeable, or the fascinating; for there is no standard of grace in such an art but what is directly or indirectly dependent on

utility. What the poet, in his "Essay on Man," says of order in society, may here be applied:—

"Order is heaven's first law, and this contest,
Some are and must be greater than the rest."
Pope.

The lowest must be knit to the highest. Order and harmony in everything are the foundation of beauty, and it is the assemblage of those parts or principles which we have mentioned only that have a power of forming a beautiful whole in architecture, but are more or less needed in all the arts, are all established, and pursue their career and their destiny on much the same principles.

On this subject a celebrated French philosopher* writes, "A constant fact is that, by a kind of sympathy, the sentiment and the love of harmony, of proportion, and of order, adjusts the temperament, strengthens the social affections, and supports virtue, which is, in itself, a love of order, of proportion, and of harmony, in manners and in conduct. In the most frivolous subjects, order strikes and is approved; but if the order and the beauty of the universe be once the objects of our admiration and of our love, our affections will participate in the grandeur and in the magnificence of the subject; and the elegant sensibility for beauty conducts us to ecstasy. Indeed, whilst but a little of harmony and some proportions remarked in the productions of the sciences or the arts transport with admiration masters and connoisseurs, can it be possible to contemplate a divine work without experiencing the sublime delights? In every grateful and sensible heart, admiration for the real beauty of the universe is just, natural, and necessary; nor can man attain to moral perfection, or arrive at a supreme degree of virtue, without the knowledge of God." On this account the attractions of beautiful objects and the pure elements of design should be made a part of the education of all youths, and by that means cherish the better feelings and tendencies in them, and cultivate that disposition after beauty which is natural to them. Such national institutions would be an invaluable advantage to the individuals, and a source of prosperity and splendour to states. But for all these useful things the intervention of the legislation is the more necessary, and the most enlightened governors and heads of schools and academies ought to lend their hands to render generally-known principles conformable to such an important object. The same writer as that last quoted uttered the following excellent words:—"What good would come to men, if all the arts of imitation were proposed as a common object, and concurred one day with the laws to make us love virtue and to hate vice!" It is to the philosopher to invite them: it is to him to address himself to the poet, to the painter, to the musician, and to cry aloud to them, "Men of genius, for what has Heaven gifted you?" If this were well understood, the productions of sensuality would be no longer visible on the walls of our palaces; the human voice would no longer be the organ of crimes; the taste and the manners would soon be on their undisturbed progress.

F. LITTE.

THE REVIVAL OF MEDIEVAL ARCHITECTURE.

I QUITE sympathise with Mr. Parker in his wish to avoid a lengthened controversy, but some reply to him is absolutely necessary. He complains that I "carefully" avoided giving a single date to prove that the Italian examples which I adduced were in an "Early Italian Gothic style," and that without dates my "arguments are worth nothing." To this I answer that I used no "arguments" which required the support of Mr. Parker's favourite dates, and that Mr. Parker himself gave none; I simply stated a fact which it would be insane to advance if it were not true, for in these days an acquaintance with Genoa, Assisi, Verucchi, or Ferrara, is no uncommon thing, and though Mr. Parker's courtesy allows him to say that my statements are "worth nothing," I cannot help thinking that your readers (most of whom probably know something of the buildings I mentioned), will agree with me in not thinking much of the assertions of such a disputant.

Mr. Parker's next statement scarcely requires an answer. He denies that he ever said that it was desirable for architects to go to the East by way of Anjou, &c. Yet, if your readers will refer to his original letter and my answer, they will see that I quoted his own words. If there is any mistake, therefore, it is Mr. Parker's, and not mine. He said, "whatever the cause, this was the

* Denis Diderot. "Œuvres Philosophiques." Tome 1. Essai sur le Mérite et le Vertu.

* D'Alembert. "Œuvres Philosophiques."

† Edition, Firenze, 1805.

‡ Théophile Gautier, editor of *L'Artiste*, a weekly journal.

ine which English architects in the thirteenth century were most likely to take, and this seems the most natural line for us now to follow." "But with Lombardy they had no intercourse at all, and it is the last place we should go to for authorities." Your readers will see that in no respect whatever have I misrepresented this quaintly antiquarian view. Indeed, I might almost have been justified in supposing that Mr. Parker's own wishes would tend towards some scheme for dredging out the silted up port of Aigues Mortes, in order that modern architectural students might have the advantage of embarking from Rome (in mediæval vessels of course) from the port which their thirteenth-century predecessors were likely to have "started from before them!" Then, in the next place, Mr. Parker denies that he intended to point out the hospital at Angers, as the type which our English architects followed. "He said no such nonsense." Nevertheless, he did say, "I believe it to be the earliest Gothic building in existence, and the origin of the Early English style." There it is in legible type, of Mr. Parker's own printing, and I am not prepared to dispute his present statement, that it is very like nonsense.

Then Mr. Parker talks of my "mere assumption that the colony in Perigord was Venetian, and that S. Front was copied from S. Mark, at Venice." Permit me, then, as my adversary has written a book, to quote his own words on this point. In the thirty-fifth volume of the *Archæologia*, p. 36, Mr. Parker says:—

"M. Felix de Verneilh, in his valuable work on the Byzantine Architecture of France, has shown to remarkable a resemblance of plan, dimensions, and details, between the Cathedral of S. Front and the Church of S. Mark, at Venice, that it seems difficult to avoid the conclusion at which he arrives that they were either the work of the same architect, or that S. Front was built by workmen from Venice, in exact imitation of S. Mark's. Almost the only difference is that the arches of S. Front are pointed." "The recorded dates of the two buildings also agree remarkably with the hypothesis that they were in some degree the work of the same hands. The first stone of S. Mark was laid in 977." "The Church of S. Front was commenced in 984, by Bishop Frotaire, and finished about 1047, in which year it was dedicated by Archbishop tymon."

Again, in vol. xxiv. at page 273, Mr. Parker tells us:—"According to some well-informed French antiquaries, the original type of these peculiar churches, was the Cathedral of Saint Front, at Perigueux, and this is said to have been built by a Venetian colony, very soon after S. Mark's, at Venice, or between 976 and 1047. The very massive character and extreme plainness of that building agrees very well with the early date assigned to it, and the use of the pointed arches to carry the cupola, may be accounted for by its Eastern origin."

I will be seen that Mr. Parker's right to talk of my "assumption" in this matter is rather worse than doubtful; and after quoting what I find M. Viollet le Duc saying on this point, I think I may safely leave it for the judgment of your readers. He says:—"At Perigueux, from about the end of the tenth century, the cathedral of S. Front was erected under the influence of the domed church of S. Mark, at Venice. The plan reproduced not only the form, but even the dimensions of S. Mark, with very slight differences." (*Dict.* vol. i. p. 170.)

Finally, Mr. Parker says it is evident, I "do not understand the distinctive principle of French and English vaulting" to which he referred; but I think I need hardly stop to discuss this question with him; I can only say, as I said before, that the Angevine systems of vaulting were very peculiar, and at the same time exceedingly unlike the English; and that if our thirteenth-century architects had borrowed any of their ideas from Anjou, it is utterly impossible that it should not have been at once evident in their work. Until Mr. Parker will show us an English example of an Angevine vault, with its edge-roll moulding in place of ribs, its excessively domical sections, and its cells filled in with stones, exactly parallel with the centre or ridge of each cell, I think I may be well content to leave my statement for what it is worth against his mistaken conception or recollection of the facts.

It would be easy to quote a succession of passages from Mr. Parker's papers in the *Archæologia*, to show, as M. de Verneilh has also shown, how these Angevine domical vaults were derived from S. Front, at Perigueux, through Angoulême, Fontevault, and other examples, in a

most unmistakable succession. But as your space is valuable, I will not do this at present. I may, however, call attention to the very curious piece of groining over the sacristy of the church of S. Radigonde, at Poitiers, in which we find exactly the same construction of the vaults as in the chapel of S. John's Hospital at Angers, but without a single pointed arch. It is a square room, vaulted in the form of a regular dome, the cells being also domical, and all their masonry arranged in vertical lines parallel with the centre of each cell. In the groining of the "crossing" of S. Pierre, at Saumur, we have a still more complete dome, with eight useless ribs under it; but in this case the masonry of the cells is built in regular horizontal courses. It would be impossible to find two examples more utterly unlike any in England, yet they are fair illustrations of the Angevine typical systems of vaulting. I think Mr. Parker would find in the nave of the little church of S. Laurent, at Beaulieu, near Loches (not to be confounded with the curious Abbey church described by Mr. Petit), an example of every more interest than any in Angers. The vaulting is exactly similar to that in the Hospital of S. John, whilst the shafts are almost as light in proportion to their height, and the character of the sculpture is so purely Byzantine that I can hardly doubt that it is of earlier date. The arrangement of the masonry in these vaults ought always to be carefully noted, and it is worth observation that in the only cases in which Mr. Petit has shown it in his "Architectural Studies in France" his engraver has drawn it quite wrongly: he has drawn the lines of masonry parallel with the wall-ribs, or "formerets," instead of with the centre of the cell, as it almost invariably is in execution in these French examples.

There are, however, one or two other points on which I should like Mr. Parker to speak a few words. It will be remembered that the whole gist of his advice is that we should go to these English provinces if we wish to revive the architecture of the thirteenth century: remembering this, your readers will be amused to read the following statement made by him in the *Archæologia*, vol. xxiv. p. 274:—

In these provinces "scarcely any churches appear to have been built between the twelfth and the end of the fifteenth century. The interval exactly agrees with the period of the English dominion, which seems to have been a continual struggle." Again, in vol. xxvi. p. 321, he says: "I entered on the examination of the English provinces of France in the expectation of finding the effect of English influence in the architecture of those provinces. In this expectation I was entirely mistaken—there is none whatever." And again, "The different provinces differ much more from each other in their architectural character than the northern provinces do from England."

I may be well content to leave this matter where it now stands but I may as well say that Mr. Parker's boasted example at Angers is not, in any real sense, thoroughly Gothic. It is Romanesque in all its detail, and the fact that it is covered with a pointed vault does not, any more than the lightness of the shafts, make it an example to be quoted as "the origin of the Early English style." In the barn close by, where there is not a single pointed arch visible, the columns are even lighter in proportion than in the hospital, whilst no one who knows much about the real character of Gothic work, as evidenced in sculpture and moulding, would hesitate in saying that the coeval church of Notre Dame, Paris, is in these respects much more advanced in style than is this original of the Early English style.

Your readers will see, I think, that I have made good my ground. They have seen that Mr. Parker recommends architectural students to take a very peculiar and out-of-the-way road to the East, in order to study thirteenth-century architecture, in a district in which, according to his own statements elsewhere, scarcely any churches were built in the thirteenth century. He objects to their studying the architecture of Lombardy, though on his own showing the whole architecture of his favourite country was directly derived from Venice; and he leaves his unhappy friends at the silted-up port of Aigues Mortes, with no hint as to how they are to get over the slight difficulty about sailing thence in its present condition to Civita Vecchia.

I may, indeed, well protest against the advice of such a teacher. Mr. Scott hardly needs to be told by him where to go for "authorities," and will, I am sure, agree with me that, whilst in the course of architectural education, it is well that we should go even to Italy, yet, in place of "authorities," what we require is a knowledge of our wants, and a resolute determination to meet

them naturally and really, with the best art that we can severally command; and, though not in a merely antiquarian spirit, with reverence and respect for the teaching of old art wherever it was best, purest, and most suggestive.

GEORGE EDMUND STREET.

NATIONAL PORTRAIT GALLERY.

THE trustees have opened the collection which has been commenced at No. 29, Great George-street, Westminster. It consists of fifty-seven portraits, of varied degrees of value and interest, disposed in three rooms on the first-floor, and on the staircase. The rooms are ill-lighted: some of the pictures, indeed, 39 and 40, for example, cannot possibly be seen. The arrangement may, we suppose, be considered merely temporary; nevertheless, we must think that Government would have done more wisely had they enabled the trustees to open the collection in a fitting building. The Chandos Shakespeare (21), Reynolds's own portrait of himself (4), General Wolfe (32), Stothard (30), are amongst those which will attract attention.

The second portrait in the list, is that of an architect, James Stuart. It is a miniature on ivory, painter unknown, and was presented by Stuart's son, now a lieutenant in the Royal navy. This is what Mr. Schari, the secretary of the trustees, says of the subject of it:—

"James Stuart, born in London 1713, died 1788. An architect, author of the 'Antiquities of Athens,' and the first, of modern times, to introduce a knowledge of the true Greek architecture to the west of Europe. Hence his frequent designation of 'Athenian Stuart.'"

The death of his father, a mariner, left him at a very early age the sole support of a mother and large family, whom he maintained principally by painting ladies' fans. In 1743, however, he was enabled to visit Rome, where he resided for seven years. During that time he painted industriously, and studied languages and antiquities at the Propaganda; and in 1750, under the patronage of the reigning Pontiff, Benedict XIV. he published an essay at Rome, 'De Obelisco Casarini,' &c. Being encouraged by numerous friends and subscribers, Stuart and his friend Revett determined to explore the almost forgotten ruins of Athens. They reached their destination in 1751, and remained in Greece till the close of 1753, returning to England in 1755. Only the first volume of the 'Antiquities' was published (1762), during Stuart's lifetime. The subsequent volumes, edited by Newton and Revett, appeared in 1790 and 1791."

There is a good portrait, too, of the architect of Somerset House, by Reynolds. The gallery is now open to the public on Wednesdays and Saturdays, by tickets, obtainable on application to Messrs. Colnaghi, Pall-mall East; Messrs. Graves, Pall-mall; and Mr. John Smith, New Bond-street. Why there should be any necessity for tickets we do not see, and hope this obstacle to walking in at once, without previous arrangement, will soon be removed. The nature of the exhibition at present is not such as to render likely the presence of larger numbers than the house could accommodate.

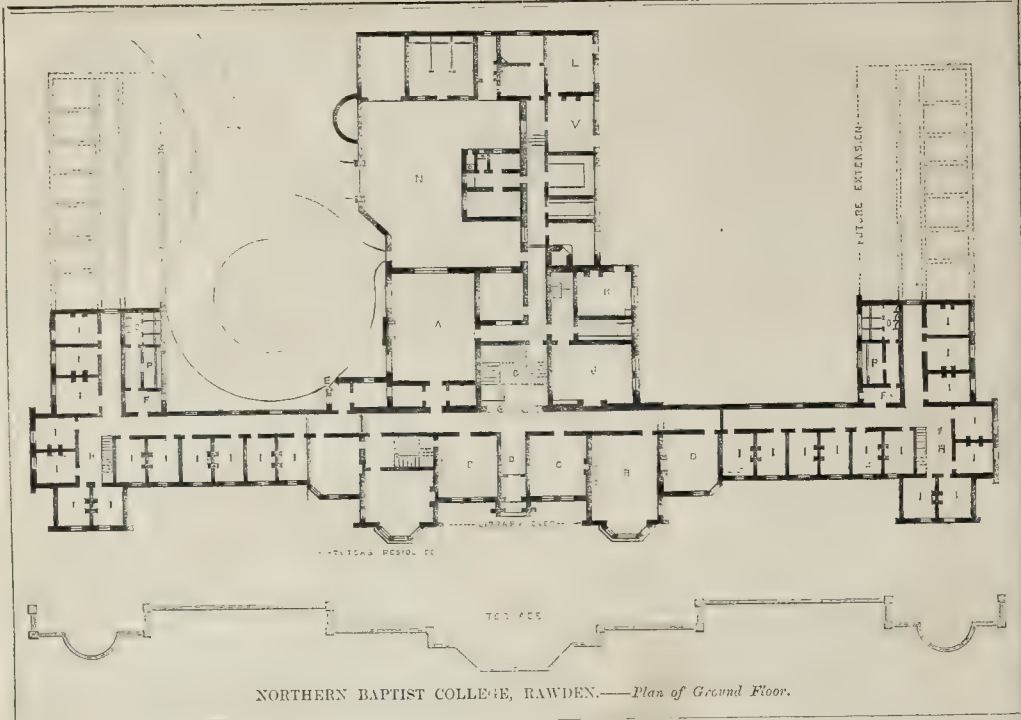
MORAL EFFECTS OF A TASTE FOR FLOWERS.

A CORRESPONDENT of the *Labourer's Friend* sends the following extract from an address delivered before the British Association, "On some Practical Results derivable from the Study of Botany":—

"Mr. Ward proceeded to urge the importance of cultivating a taste for legitimate horticultural pursuits among the members of the labouring population, as it was a well-established fact, that, whenever a pink, or a carnation, or a rose was seen outside a cottage, there was a potato or a cabbage for the pot within; that if there were not happiness, there was the nearest approach to it in this world, content."

"Yes, in a poor man's garden grow,
Far more than herbs or flowers,
Kind thoughts, contentment, peace of mind,
And joy for weary hours."

And an anecdote is added, in reference to a clergyman who had converted "a wild and lawless tenantry" into "the most contented and happy set of villagers in all Yorkshire," by cultivating a taste for flowers amongst them. Some may doubt whether the good clergyman did not help the process by means of a few of the white and yellow lilies that bloomed in his flower-pots; but there is no doubt that a taste for flowers—and perhaps we might add for singing-birds—is a sure indication of at least the existence of something like contentment, or even happiness, in a workman's dwelling; and why should not a concomitant of such circumstances be an occasional stimulant towards its realization, as well as towards the engentlement—if we might coin a word for the occasion—of those whose attention is turned towards such delicate and gentle "things of beauty" as a favourite flower, or a singing-bird?



NORTHERN BAPTIST COLLEGE, RAWDEN.—Plan of Ground Floor.

ASSOCIATION FOR PUBLIC SAFETY. FALL OF BUILDINGS.

THE recent sad calamity in Great George-street, Liverpool, the fall of houses some short time back in Tottenham-court-road, and many similar occurrences, which each of your readers, no doubt, recollects, induce me to put forward a suggestion, which, if effectively carried out, might probably obviate, in a great measure, the recurrence of such frightful accidents. Most people are probably aware that there exists at present in Manchester an Association of Engineers, which has been formed with a view of inquiring into the cause of, and indicating remedies for, the explosion of steam boilers, until recently a lamentably frequent occurrence in that city, and in fact throughout the large manufacturing districts of the north generally. The owners and proprietors of mills and factories—themselves, in many instances, altogether ignorant of the scientific principles of the steam power which they employed,—found themselves under the necessity of placing the management of their machinery under the control of mechanics who understood little more than the simple practical working of the engines placed under their charge. It became evident to the masters that occasional professional inspection of their machinery was required, and this want led to the establishment of the above-named association, which consists of a committee of eminent engineers, an inspector appointed by them, and the requisite staff of assistants. Any one employing steam power and being desirous of ascertaining its condition, can, on payment of a certain fee, not very large in amount, have his machinery examined by the inspector appointed by the association, to whom a report is made, and the result of the inquiries furnished to the applicant. Such inspections are of daily occurrence: the value of the advantage afforded is becoming more and more highly estimated, and the working of the association has been altogether most successful. Now it occurs to me, and this is the suggestion I venture to offer,—that a committee of architects, or a joint committee of architects and master builders, might be very advantageously formed for the purpose of exercising functions similar, as respects buildings of all kinds, to those performed by the Association of Engineers in regard to steam machinery; and local associations might be formed throughout the country, either as independent bodies, or acting under a central metropolitan committee. The details are, of course, matter for consideration. My present object is simply to sug-

gest the scheme. That individual interests may lead to great opposition to it I do not venture to doubt; and still less can I doubt that such a plan would be open to some real objections; but these, when weighed against all the advantages it would afford and all the benefits it would confer, are, I am ready to believe, trivial and unimportant.

W. M. BUCKNALL.

NORTHERN BAPTIST COLLEGE, RAWDEN, NEAR BRADFORD.

THE committee appointed for the erection of this building advertised for plans twelve months since, and received upwards of forty designs in competition, when that furnished by Mr. H. J. Paull, of Cardiff, was selected for execution, and he was entrusted with the superintendence of the work.

Tenders were obtained, and the following accepted, viz.:—1. Excavator, bricklayer, and mason, Israel Thornton; 3,390*l.* 10*s.* 2. Carpenter and joiner, Booth Illingworth; 1,468*l.* 3. Plasterers and slaters, Duckworth and Howroyd; 669*l.* 10*s.* 4. Ironwork, Lawrence and Robinson; 452*l.* 5. Plumber, glazier, and painter, John Stead, 810*l.* Total, 6,790*l.* All the contractors are Bradford tradesmen.

The foundation-stone of the building was laid by Mr. Thomas Aked, of Shipley Grange, on the 4th of August, 1857, and the works have made considerable progress. The lower portions of the building are now reared in, and the whole will be under cover in about three or four weeks.

The walls are built of the local "delf" stone, common hammer-dressed on the face, and pointed with dark mortar. The dressings and quoins are of Rawden-hill stone, and sand-stone raised on the site. The roofs are slated, Portlandoc and Bangor slates being laid in alternate lines, which produce contrast of colour.

The terrace wall in front is built "dry" with stone from the site. This terrace was not included in the original contract, and will cost about 500*l.*

"The front of the building will be devoted to the president's residence, the educational apartments, and the students' rooms, the latter ranging on either side of the former departments, which last appropriately occupy the central division. In the rear, and branching at right angles from the centre of the front building, will be the refectory and the domestic offices, which will thus be easily accessible from all parts of the college. A spacious front door-way opens into an entrance-

hall of good proportions, which leads to a corridor of communication, running right and left of the whole building. Facing the hall is the principal staircase, which leads to the library and other apartments above. Glass screens will be placed in the long corridor, in order to check currents of air, and also to separate the students' apartments from the more public parts of the college. This arrangement will secure privacy to the rooms of the students. Thirteen studies are provided on the ground-floor, on the west side of the centre building, and thirteen on the east side, each room being 11 feet by 9 feet, and 9 feet 6 inches high. Over each is placed a corresponding dormitory, approached by staircases in the wings. The proposed building will, therefore, accommodate at once twenty-six students; but the plans will admit of a ready enlargement of the building, without even a temporary interference with a single room, so as to afford accommodation to fifteen or twenty in addition. The lecture and class rooms (called "educational apartments") are in the centre of the buildings. They are entered from the corridor, and are equally accessible by all. The lecture-room is 18 feet by 24 feet, and the class-rooms are each 18 feet by 15 feet. All these have a uniform height of 13 feet. The library is on the one-pair floor, and is approached by the central staircase, which has a spacious landing in front of the library door. The dimensions are 39 feet by 26 feet, and 20 feet high. There is room for 10,000 volumes, 'octavo' being taken as the average size."

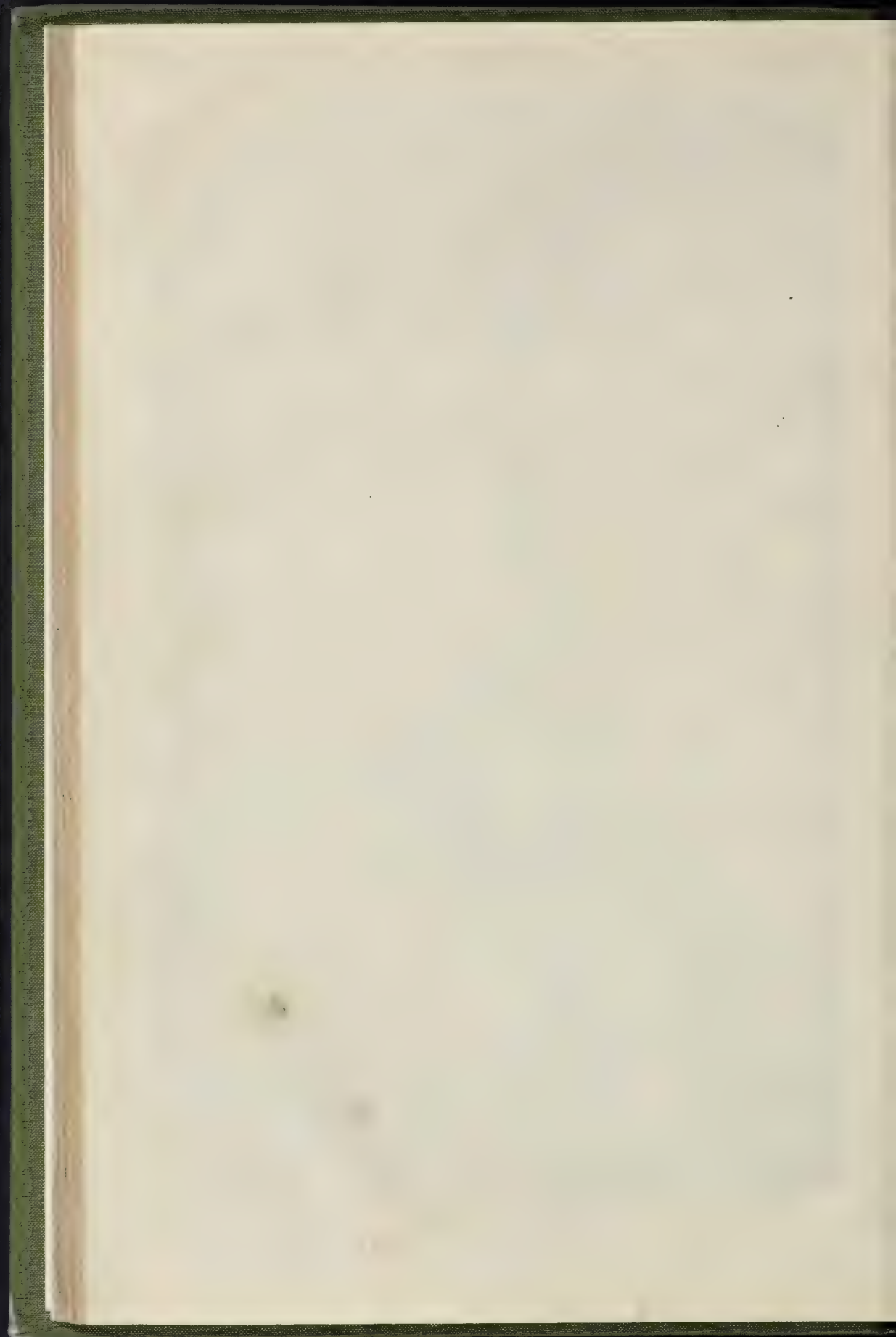
It is intended that the college shall be occupied in August next, and the contractors are bound to complete the building by that date.

References.

- A. Dining-hall.
- B. Lecture-room.
- C. Class-rooms.
- D. Professors' room.
- 2D. Entrance-hall.
- E. Tutors' and carriage-entrance.
- F. Students' entrance.
- G. Principal staircase.
- H. Students' staircase.
- I. Studies.
- J. Kitchen.
- K. Scullery.
- L. Wash-house.
- M. Laundry.
- N. Stable-yard and Kitchen-court.
- O. W. C.
- P. Lavatory.



NORTHERN BAPTIST COLLEGE, WARDEN. — SEE H. J. LEWIS, ARCHT.



RISE AND PROGRESS OF MECHANICAL SCIENCE.

At the Derby Working Men's Association, Mr. Fairbairn, F.R.S. has been delivering two lectures on this subject. In the first, after briefly sketching the progress of industrial art from the earliest periods down to a new era, Mr. Fairbairn directed attention to what had been accomplished during the last century in this country, dividing his subject into two parts, the first from 1750 (when the title of engineer was unknown in the vocabulary of science) to 1800, the second from 1800 to the present time; and in doing so noticed the building of Blackfriars and Westminster bridges, and the Eddystone Lighthouse. Two men especially had left behind them lasting monuments of progress—Smeaton and Brindley; the greatest work of the latter (a Derbyshire man) being the Bridgewater Canal, which was begun in 1759, and the first boat entered Manchester in 1762. Then followed the Union, or Great Trunk Canal; and after this time the country became penetrated in every direction by canals. Brindley was the first man who commenced the system of tunnelling hills and carrying aqueducts over valleys and rivers. And here, said Mr. Fairbairn, I would observe, to the young students in science and art before me, that I am of the same opinion as Brindley, who said nothing was to be obtained without labour—hard labour; and that if any young man fixes his aim on one object, he cannot fail of success. Every man's fortune is in his own hands, if he chooses to persevere and work hard. In proceeding, the lecturer remarked that to Watt and Arkwright they owed a debt of gratitude which they could never repay. During the reign of Elizabeth the country was so much cut up for wood for the purpose of smelting iron, that a prohibition was considered necessary; and on a recent visit to Sweden he had found a law in force which only allowed the use of a certain quantity of timber per annum. The introduction of coal for smelting purposes entirely changed the aspect of affairs. Mr. Fairbairn quoted from returns showing the gradual development of the iron trade from the year 1740 to 1854, and mentioned that at the present time the production could not be less than 3,200,000 tons of iron. This trade had been more advantageous to the country than a thousand Californias.

At the commencement of the second, Mr. Fairbairn said he came up to London forty-seven years ago. At that time, continued he, young men from the country found it very difficult to find employment in consequence of trades' unions. Mr. Rennie took me by the hand, so that I was better off than some, but having to go before a trade's union, I was declared illegitimate, and was turned adrift. These were times when men were masters, every man having 7s. wages a day, whether he was good or bad, and his drink. I am sorry to say that injurious system is still in operation amongst particular trades. Hear what the *Times* says upon the Letterpress Printers' Union in reference to a recent dispute at Sheffield. [Mr. Fairbairn gave extracts from the article.] This is no new case, as I have found by experience both as journeyman and master. I leave it to your good sense to determine whether it is for the benefit of the operatives or the public, that the energies of individuals should be thus crippled, and the exercise of their professions illegally denied them. There were then three societies in London, one called the Old Society, the other the New Society, and the third the Independent Society. I went to the Old Society and was refused, and thus, after dancing attendance upon them for six weeks, with very little money in my pocket, and having to "box Harry" all the time, I was turned adrift. I then went into the country, and having obtained a little money, came back to London, and, meeting with a friend of mine, told him my case: he said I had gone to the wrong society, and that, if I had gone to the Independent Society instead of the old one, I should have been all right. Now, by the rules of these societies no man was allowed to work unless he had been apprenticed for seven years, or was the eldest son of a journeyman. Whether a man had talent or no talent was not the question at all. I am quite sure you will agree with me that a wide field, fair play, and no favour, is the best for all. The jealousies and exclusiveness of these trade unions had their origin, with other guilds, in the time of Elizabeth. At the peace of 1815, many of these evils were removed by Mr. Hume bringing a bill into Parliament for that purpose. Whether as a journeyman or master, I have always thought that a man ought to have the power to choose for himself, and I believe that the free trade principle, which we advocated in Manchester, is applicable to all

trades and conditions of men. Mr. Fairbairn then alluded to the water-wheels constructed and the bridges built by Rennie. Southwark-bridge was one of the most perfect, as well as the largest and best specimen of an iron bridge, independent of the tubular bridge. No bridge in Europe was more remarkable for architectural beauty and harmony of curvature than Waterloo-bridge. Other bridges also proved that Rennie was without a rival, with the exception of Telford, during his useful career. After furnishing further proof of the skill of Rennie as civil engineer, Mr. Fairbairn spoke of Thomas Telford, who, besides being eminent in his profession, wrote a poem called "Eskdale," which he published at Shrewsbury, and an address to Robert Burns, whose centenary was to take place on the 25th of this month, and which all men, but particularly Scotchmen, were preparing to give due celebrity to.

He then referred to the works of Mr. James Walker and others, the growth of steam navigation, and the progress of the railway system, and closed an interesting address with some remarks on the electric cable, and the value of Mechanics' Institutions.

THE LABOUR MARKET IN VICTORIA.

SOME account of a misunderstanding between Messrs. Cornish and Bruce, railway contractors, and the Masons' Society of Victoria, appears in the *Melbourne Herald* in the shape of an advertisement. Messrs. Cornish and Bruce, the successful tenderers for certain railway works in the colony, had written to Mr. Bright, M.P. offering to find employment for 1,000 masons, at 14s. a day, and for 1,000 or 2,000 navvies, at 8s. a day, if that number were sent out from England. The publication of this letter, says the *Herald*, has excited the ire of the Masons' Society of Victoria, who have published an elaborate rejoinder to it. "The masons," they remark, "insist upon receiving 16s. per day for eight hours' labour; and any attempt made by the contractors to reduce that rate of wages, they declare to be injurious to them, and the act of 'mere money-seeking men, who are ready to gain their ends by sacrificing the welfare and happiness of the industrious classes.' There is an immense amount of building to be done here before this country is made really habitable for even its present population. There is no lack of capital for investment in building, and no disposition to invest in it that way; and yet houses are not put up half as rapidly as they ought to be. Why is this? Ask any capitalist, and he will tell you that, although rents are high, building is not a lucrative (hardly a paying) investment, solely because workmen's wages are too high. The cost eats up the profit. Were wages reduced a little, the trade would get an impetus, and employment for workmen would be less 'precarious' than they complain it is at present."

THE FALL OF THE STAIRCASE AT THE POLYTECHNIC INSTITUTION.

The inquiry before Mr. Wakley, coroner, was resumed on Tuesday last at two o'clock, at the house in Cavendish-square, appertaining to the Institution. Mr. C. H. Smith, being recalled for further examination, reiterated his opinion, under many cross questions, that the accident commenced with the breaking away of the landing of the upper staircase; that though the letting in of the iron tended certainly to weaken the steps, they would have come down from the breaking away of the upper step, whether the iron had been let in or not, even if they had been quite new. Daniel Stroud, a young painter and glazier, J. P. Acton (in the house of Messrs. Bult and Co.), and Augustus Denman, who were present and fell, gave evidence to the effect that the bottom steps of the upper staircase gave way first.

Mr. Henry Jarvis, architect, on behalf of the father of the deceased child, differed from Mr. Smith as to the point of breakage:—"I am firmly of opinion that the fracture commenced at the edge of the top landing, where the iron was let into the stone. I cannot believe that, if the landing had been suspended by the rail, the steps would have given way, if they had not been cut to let in the iron treads. I judge this from experiments I have made. I consider that the cuttings weakened the steps. I do not believe that the fossil shells, &c. spoken of as having been found in the stone of the landing had anything to do with the accident."

Mr. T. Marsh Nelson, architect, appointed by the coroner, then read a report made after an inspection of the premises and materials. First describ-

ing the staircase and the alteration, the report proceeded:—

"From experiments I have made, I consider that the alteration of the staircase was not the cause of the accident, but that the fall was caused by the giving way of the bottom landing (or the steps immediately resting upon it) of the first flight.

The landing was supported by one end being pinned into the wall, and on one side by a joggle joint of perfect construction, instead of having a solid bearing upon the iron girder, as is usual. The landing was cut to a feather edge, and nearly on the point of this edge rested the line of a flight of eighteen steps each six feet long, and although the steps were pinned into the wall, I consider the landing was insufficiently supported for such a staircase. A flaw or defect is also visible in the stone itself where it has broken.

The centre landing, I have already stated, was supported upon iron bearers. It was, like the staircase and other landings, much worn and vibrated considerably: this vibration would of course be communicated to the landing into which it was jogged.

The bottom step of the staircase, therefore, which rested upon this landing, never had the solid foundation so necessary for the construction of spiral staircases.

One of the steps near the landing had been broken, and mended with cramps. On the corresponding staircase, cracks are visible not only in the first step, but in the landing upon which it rests. These cracks appear to be anterior to the date of the accident. Had the other landing and steps been carefully examined before the accident, I have no doubt they would also have shown symptoms of insecurity.

A large portion of the surfaces of both landings was cut to make a key for cement, to fill up the cavities that had been worn away, and there was a settlement in the wall over the right-hand landing.

A staircase of the construction I have described ought never to be permitted in a public building; and I consider that, sooner or later, this one would have given way under such a heavy traffic, even if the iron treads had not been let into it.

Too much importance should not be attached to the steps breaking off about 5 inches from the wall at the places where the iron treads was let into the stone. They broke at that part on the principle of what masons called "coping a stone." Nothing, in my opinion, could have prevented the staircase coming down, if the landing had broken.

The experiments I have tried show that a step, with a piece of stone let into the top on the usual plan, would have broken with the same weight upon it as broke a step with the treads let in. If the steps had not been cut at that particular place they would have broken off close to the wall, instead of 5 inches from it. The effect of the cutting would be to accelerate the fall after the landing had broken. The experiments prove that the steps, as altered, would have borne a weight equal to four times what they were required to carry, provided the bottom had remained firm.

In 1847 Mr. Nurse erected the building, and shortly afterwards disposed of it to the Polytechnic Institution. The structure then consisted of the hall, staircase, and large room in the rear, with a small theatre over the Regent-street front.

In 1847 Mr. Nurse built the great theatre, and in the following year the official referees, under the Building Act (then in force), objected to the 'stairs and access' as insufficient. Subsequently, Mr. Nurse made a new staircase and entrance from Regent-street, but instead of uniting them with the Polytechnic, attached them to the building facing Regent-street, now in the occupation of the Cavendish Club. The whole traffic, therefore, of the building has been borne by the present staircases out of which has now given way.

The object of the referees with regard to public safety was in this manner entirely defeated. The then district surveyor committed a great oversight in not objecting to such an arrangement; but as he and Mr. Nurse are since dead, it is useless to comment upon their conduct. The Building Act then in force has since been repealed.

The entrances as now existing are not fireproof, as they are required to be both by the old and the present Building Act; for instance, the paving of the hall is supported on a wood flooring, and under it exists a perfect volcano of danger, comprising two steam-boilers and furnaces, a smith's forge, a laboratory with about seven feet of retort for making hydrogen gas, and two gasometers. It would be perfectly fearful to contemplate an explosion or fire in this part of the building, and consequent alarm with the Polytechnic full of people. The only way of escape would be by a small door (usually kept locked) leading into the back of a house in Cavendish-square.

The directors will act wisely in remedying, as early as possible, this defect, by rendering the entrance-hall fireproof, or providing other means of exit.

This is not a singular instance in my knowledge of cutting off or otherwise appropriating means for exit from places of public resort, and within the last six months I have known instances of the exits being closed merely to avoid the expense of checktakers.

This shows the great necessity of periodical inspections of all places of public amusement.

The only inspection now exercised is that of the Lord Chamberlain, and this applies solely to theatres licensed for 'stage plays.' There is no provision made in the Act of Parliament for a professional surveyor, but, nevertheless, even by this imperfect supervision, many improvements in theatres have been effected, and probably many accidents prevented.

The buildings not licensed by the Lord Chamberlain are under the control of the county magistrates; but although the magistrates have a county surveyor, they do not insist upon an inspection by a surveyor at the granting of a license or at its renewal.

Buildings such as the Polytechnic not being intended for stage plays, music, or dancing, are under no supervision whatever, although they frequently contain as large a number of persons as many theatres.

All public places of amusement should be under a periodical inspection; and, during the hours the places are open to the public, the police should have access, in order to regulate the mode of entry or exit, as abroad, where accidents are of much less frequent occurrence. Had this been the case, for instance, at the Victoria Theatre, the late catastrophe might have been avoided, and many lives saved.

The accident at the Polytechnic would have probably been prevented had the clause in the Building Act required notice to be given of all alterations in public buildings, without any exception whatever. This would doubtless

have led to a reconstruction of the staircases and landings, instead of attempting to repair what could never have been made good.

I am afraid I have but imperfectly, though conscientiously, fulfilled your directions, and I have only to express a hope that the jury will avail themselves of the opportunity by making such a presentation to the Government, as will induce Parliament, early in the ensuing session, to consider and re-construct the present inefficient building clause, and the laws for the supervision of places for public amusement, so as to prevent, as far as practicable, a recurrence of those lamentable accidents which have been so frequent of late."

Mr. Christopher Eales, architect, appointed by the jury, afterwards read his report. After describing very minutely the construction of the staircase:—

"Each staircase is semi-circular on plan, and of geometrical construction. It is formed of Portland stone: each step is about 5 feet in length out of the wall, and is cut feather-edge, namely, being in the front 7 inches in depth, and at the back 1½ inch, one end being let into and secured to the wall. The landings were 4½ inches thick—the centre landings and steps being carried in each of the upper stories upon two cast-iron bearers secured to the walls, the whole being surrounded by a strong oak hand-rail, screwed upon a wrought-iron core, which is riveted upon stout cast-iron balustrades let into the steps, and secured with lead."

Mr. Eales went on to say:—

"Following out the theory of the principle of the construction of the staircases, I was led to carefully examine the landing, A, at the commencement of the second flight, which has been broken off at its greatest thickness, although a part of the front edge where it had been thinned down to meet the first step, is also broken off, and shows a small horizontal vent in the fracture. It appears the third step above it had been broken some time, and was held together by two cramps. And I have also examined the piece of the upper landing, B, which has also been broken off (and from which it is stated the first indication of the handrail falling was observed), and in that portion remaining in the wall, I found it contained defects in the vertical section of the stone, two of them so placed as nearly to touch at one extremity and embrace the whole depth of the stone. This landing, as I have already mentioned, had been cased with one of the iron trellis plates within 2 inches of its insertion into the wall, and also notched to the depth of 1 to 2½ inches, for the reception of the iron brackets beneath the ceiling, so that this landing might fail at any moment may be readily conceived, having these concealed defects, and being without any assistance from the adjoining landing, by reason of the imperfect joint, and also without its proper bearing upon the step beneath, as well as being further weakened by having its surface sunk down and notched out so near to its bearing in the wall.

But assuming for the moment this piece of landing did fall first, it is difficult to account for the steps failing in consequence, because each step, when secured into the wall, is complete in itself, and as the landing would fall vertically, the action upon the steps could be only by the handrail dragging, and each step would be assisted by that beneath it, so that in that case the tendency would be for their ends to be fluted off at the insertion of the iron balusters, and so to relieve them of the burden of the building.

Upon the other hand, if we look to the state of the lower landing A, we find that where the first step fitted upon it, it had been reduced to about 1½ inch in substance, and that for 16 inches of its width it had also been reduced from 4 to 1½ inch in depth at its junction with the wall; that at this corner, near the first step, had a small horizontal defect; and further, the third step upward had been broken upon some previous occasion, and crumpled together. And the steps generally had been sunk down to receive the iron trellis plates, and also notched for the brackets beneath, some within 4 inches, others 8 inches, of their bearing in the wall, all which had been done in an exceedingly careless manner, reducing their strength by one-half at the least.

Reverting, therefore, to the design and original construction of the staircases, those which are geometrical are always subject to vibration, and particularly so when cylindrical: in this case they are not only so, but they have not the advantage of being constructed, each in its entirety, within a surrounding wall, or being secured each flight from a solid base, but each is separated by a landing and steps carried upon iron bearers, fixed at the ends into the walls, so that the vibration is greatly increased; in addition to which they were, in my opinion, much too slight in their scantling for a building subject to so large a congregation of persons as this has been. Moreover, the pieces of landing forming the starting and finishing points of the upper flights were almost in that of the one B entirely dependant upon their fixing in the wall, so that when they became worn, and were cut as I have described, and considering the amount of vibration they were constantly subject to, any incipient injury that may have been done in the cutting, or defect in the stone, would be constantly developing itself by the traffic over it. I am therefore of opinion that the lower landing, A, failed by reason of its incapability to sustain the accumulated shock caused by the concussion of the persons descending the stairs, by which means each step, losing the support of that beneath it, readily broke off at the nothing, and so brought about the catastrophe.

It appears these staircases have been loaded to a much greater extent since this casing operation was completed than was the case immediately preceding the accident at the time of the accident, hence that a seeming contradiction would arise as to the operation having had any undue effect; but it may have happened that the stone may have been overstrained upon some one of these occasions, and the fracture only awaited some leverage or concussion easily conveyed, even by an individual passing rapidly over it at the extremity next the handrail.

And that this is not hypothetical reasoning, it is only necessary to refer to the north staircase, where the first step above the landing ascending to the second story has very recently been broken through its whole thickness at the line of the notching for the reception of the iron trellis plate, the fracture being so minute that it is only to be found upon a very careful inspection, and the landing itself being also broken, and really held in its position by its falling into the wall by one foot out of its length, so that, supposing it to have remained unnoticed, an accident might have happened as unforeseen as that upon the south side, although large numbers of persons may have passed safely over it up to the time.

And further, a general question arises out of this and other unfortunate accidents, as to the safety of the public in attending places of resort where large numbers may congregate upon the stairs. I think, as a rule, cylindrical staircases, having open well-holes, together with a great width of step, supported only at one end by insertion into the wall, are greatly to be condemned, as highly dangerous; but where such are constructed, a support at the ends of the steps should be imperatively required, having its bearing upon columns raised from the ground, by which means, if properly connected to the wall, the hand-rail may also be efficiently secured, and stone landings should in no case be employed without having direct support at both ends."

The Coroner expressed his approbation of the reports, and adjourned the inquiry until Monday next, when he will go over the evidence, and the jury will give their verdict. We must be permitted to say that, surely two o'clock, and on the previous occasion, three o'clock in the afternoon is too late in the day to commence proceedings, the result being the necessity for adjournments, great inconvenience to those who are attending against their will, cost to those who are forced to have representatives present, and in such a case as this great injury to the Institution, already sufficiently damaged.

THE ACCIDENTS AT LIVERPOOL.

THE dust from the accident in Great George-street, Liverpool, had hardly cleared away, when another accident of an almost similar character occurred in Tithebarn-street, of the same town. It is of the evidence given at the inquests on the dead in these two instances that we have here to speak. The accident in Tithebarn-street, however, was not so fatal as that in Great George-street. We last week gave some account of the latter. The inquest in that case took place on Thursday in last week. The chief evidence was that of Mr. James Newlands, the borough engineer, and Mr. William Rishton, the building surveyor to the corporation. The shop proprietor, Mr. Lewis, and Wm. Roberts, a labourer, as well as others, were examined.

Mr. Newlands said:—On examining the condition of the central partition, I found that, although 9 inches thick, it in reality consisted of two 4½-inch brick walls, not at all connected, and each having a chimney-breast. I found on the upper floor—on the floor adjoining that which gave way—a great quantity of bricks and rubbish, threatening the same accident to the south side of the shop as had happened at the north side. I recommended that they should be immediately cleared away. Mr. Rishton came, and I resigned the matter into his hands, as being the competent authority. Since the occurrence I have made a careful examination of the premises. The proximate cause was the loading the floor with bricks. The thin wall had evidently buckled by the yielding of the joists; and the swaying of the chimney-breast hastened its fall. Unless precautions were taken, the taking down of this wall would be a very dangerous work. I have heard the evidence given as to what men were employed: they certainly were not the proper sort of men to be employed in such work. If all were of the same character as the two described, they were wholly unfit. Work of this kind would require the attention of men accustomed to it—a regular contractor, in fact, or one possessing the same knowledge as a contractor.

Mr. Rishton said:—I have made a careful survey of the ruins. I have heard the evidence of Mr. Newlands. I agree with his opinion, generally, as to the proximate cause of the accident. I have heard the evidence of Mr. Lewis, and the orders given by him in reference to the taking down of the wall. Looking at the nature of the work and the order given, I think he used reasonable care and precaution; for, if the order had been attended to, this accident probably would not have occurred. The only objection I should have to his orders is, that the bricks were to be placed on another floor. A practical man would have used greater precaution in taking down the wall: the weight of the bricks on the floor must have been enormous. There is no question of the imprudence of the manner in which the work was done. A gentleman from my office visited the place from time to time officially; and I never had any complaint: I must do Mr. Lewis the justice to say, that he often came to me for advice, and seemed most anxious.

Mr. Nicholl examined.—I am a builder. I have heard the evidence given by Mr. Newlands and Mr. Rishton. I agree with Mr. Newlands as to the proximate cause of accident; and I agree with Mr. Rishton, that, if Mr. Lewis gave the orders represented, he took due care and precaution.

The jury having retired and consulted together,

the foreman announced the verdict of twelve out of sixteen to be "Death by misadventure; with great blame to Mr. Lewis for not having engaged competent workmen." The four jurors were of opinion that Mr. Lewis was not blameable.

It was on the day following this inquest that the Tithebarn-street accident occurred.

The public-house of Mr. Lumb, opposite the railway station, had been undergoing repairs, with a view of forming the premises into an hotel. While labourers were engaged in taking down the roof, the joists supporting the ceiling of the top story gave way, and this falling, carried with it the second and first floors to the cellar. One poor man was carried down with the ruins and killed on the spot; and another, who fell with him, was so severely injured that little hopes are entertained of his recovery. Several other men were engaged on the premises at the time, and their escape was marvellous.

At the inquest, James Eyre, the first witness, said:—I am a joiner and builder. On the 22nd of September last I entered into a contract with Mr. Lumb, to pull down a house and shop in Tithebarn-street, according to plans prepared by Mr. Ellison, architect. Mr. Hughes contracted with me to take down the brickwork: he is a bricklayer by trade. He employed his own men in that department; and I had a foreman and one other man there to take down the timbers and do other things which might be required. On Wednesday evening, having heard of the accident in Great George-street, I went to Tithebarn-street, and told the men to be very careful: I had no occasion to find fault with them, and they seemed to pay attention to what I said. About a quarter past ten yesterday morning, on getting to Tithebarn-street, I saw a lot of timbers in the street, and I found the flooring had given way and fallen down into the cellar of the building. Four of the men had come down. I inquired whether the men had been overloading the floors with bricks, and was informed that they had not. I think the cause of the falling was that the joists had never gone a proper distance into the wall; but the fact could not have been discovered before we commenced operations. Some of the joists had nothing but the plaster underneath, and the others were only put about an inch into the wall. I think the joists must have broken in the falling down. I was told the man stepped off the wall he was pulling down: he went on the edge of a brick, and it threw him down on the floor. I think that forced the ceiling through. I am sure that would be the cause, considering the rotten state of the timber. The only wonder was, that a person could walk across the floor without bringing it all down.

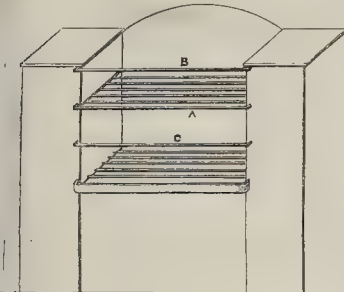
Mr. Rishton said:—I heard yesterday morning of this accident, and went immediately to this spot. I have made a careful examination of the ruins. In examining the joists, and balks, and planks, I found them to be very much decayed indeed; and I am very much surprised that so much of the building above this floor should have been taken down and removed without an accident. From the continual swagging of the floors, the joists, at first not deep, seem to have been pressed almost entirely out, and lost all hold of the walls, or nearly so; and the wall next Stephen's-lane had receded from the inside. The floors should have been propped from the basement upwards in this case. It appears to be the custom not to prop floors; but I think the floors should be examined before the work is commenced. I have nothing to do with pulling down buildings: we have no power in that respect. In this instance the state of the joists could have been ascertained before the work commenced, and should have been, as it was a very old building.

The jury returned the following verdict:—"We find the cause of death to be accidental, but arising from negligence on the part of the contractor." In a previous form of the verdict they had given it as their opinion that "the building surveyor had not sufficient powers in the superintendence of the taking down of old houses."

THE NEW PUBLIC OFFICES, WILLENHALL, ON FIRE.—During the sitting of the Police-court a jet of flame burst out from the edge of the skirting, near the fireplace. The prompt application of a few buckets of water, however, extinguished it. An examination of the place afterwards showed that the fire had been occasioned by the kindling of a beam, which the carelessness of the builder had allowed to project into the flue. It is well that it broke out at the time it did, for had the room been locked up, the mischief might have spread, and the lives of the prisoners in the cells underneath been sacrificed.

PATENT FOR ECONOMISING FUEL AND CONSUMING SMOKE.

An invention, with these ends in view, has been recently patented by Dr. Bartlett, of King's-road, Bedford-row. The principle of its action will be seen on referring to the following diagram of a



grate, to which the patent has been applied. It shows that a horizontal grating, A, divides the fireplace into two compartments, B and C; and the fire-bars of the lower compartment, C, are made to move, so that coals may be readily introduced into that part of the fireplace. The fire is lighted in the upper compartment, B, and after it has burnt up, the lower compartment, C, is opened by moving its fire-bars, and fuel is readily introduced by an ordinary fire-shovel into the lower compartment. When the fire needs to be replenished the lower compartment, C, is opened, the well ignited fuel is removed by the aid of a shovel, from the lower to the upper compartment; and the lower compartment is then again supplied with fresh coal. By making a side hopper, or fuel chamber, the fuel is readily introduced from the top, and in that case the fire-bars need no alteration. Dr. Bartlett asserts that his invention saves 50 per cent. of coals, because the smoke is burnt instead of being wasted; that it can be fitted to any stove, fireplace, or furnace, at a trifling expense without altering its appearance; and that, by reason of the economy of fuel, fires made in the patent grates last much longer than any other, and therefore require attention much less frequently.

HANTS COTTAGE IMPROVEMENT SOCIETY.

It is proposed to establish a society in Hants for the purpose of assisting owners of cottages in which the tenant has a family of children and only two sleeping-rooms, to add a third. For this purpose each member is to subscribe annually 1*l.*; and a subscriber of 5*l.* is to be allowed to select a cottage in his district, and also to be allowed to offer the owner 5*l.* on condition that he agrees to supply the additional means required for the improvement of his property by erecting a third sleeping-room attached to the cottage, it having been ascertained that the total expense need not exceed 10*l.* It is stipulated that such cottage be not the property of the subscriber, nor one built after the formation of this society. Further, a subscriber of and above 1*l.* is to be allowed to give that sum for the purpose of dividing any room which may be large enough, occupied by children, either in towns or villages, the expense of which, as estimated by a Hampshire architect, need not exceed that sum.

The mode adopted is wrong in principle; but the evil sought to be remedied is so large and crying that we must accept any attempt to lessen it.

IMPROVEMENT OF ST. PAUL'S CATHEDRAL.

The Bishop of London has made a second appeal for funds for adapting St. Paul's for public service and attempting its decoration: 5,200*l.* have been subscribed, but 4,000*l.* of it have been already expended. The committee state—

1. That thirteen of Gurney's patent stoves have been placed in the crypt and underlying the nave and choir, and that for the supply of these a vast quantity of coke is required day and night during the week days, with a larger consumption on Saturday and Sunday.

2. In order to maintain an equal temperature at a diminished permanent cost throughout the year, it will be necessary to double-glaze all the windows of the cathedral, which will answer the purpose of at once excluding both external noise

and external cold, and may facilitate the introduction of painted glass of an appropriate character.

3. The lighting of the corona of the dome with jets of gas cannot be continued at less expense than 1*l.* per hour.

4. It is calculated that in order to adapt the organ to the twofold use of the daily worship in the choir, and the special services under the dome, an additional outlay of at least 1,000*l.* is needed, for which a separate subscription has been commenced.

5. Other particulars which deserve attention are the erection of a more suitable lectern and reading-desk, the supply of thick heavy curtains at north, south, and west doors, to keep out draughts of wind from these quarters, and the completion of the screens, which at present are in only a temporary and unfinished state.

When some time ago we noted the preparations for the services, we said the pulpit was at the east end of the nave. It was then only in course of construction; and it may be well now to say that it is set up on the south side of the area covered by the dome. Let us add that all the arrangements have been made under the able direction of Mr. Penrose, architect, and have given great satisfaction.

THE "BUILDER'S" LAW NOTES.

Turnpike-road.—The appointment by Act of Parliament of trustees to manage a turnpike-road which previously existed as a highway, does not take away the right to the soil of the turnpike-road from the owner of the land on the side of the road.—*The Marquis of Salisbury v. Great Northern Railway Company.*

Railway Company.—A company having compulsory powers to take land necessary for the purposes of the railway, agreed with a person for the purchase of a right to take the surface-soil. Subsequently they preferred the fee-simple, and served notice that they would take it; but they were restrained by injunction from doing so, as the fee-simple was not necessary to the making and maintaining of the railway.—*Eversfield v. Mid-Sussex Railway Company.*

Policy of Assurance.—The Court of Appeal has held (reversing the judgment of the Queen's Bench) that a policy the annual premium on which was made payable quarterly, is, in fact, an annual assurance, but with time given to pay the premium by four instalments instead of in one sum, and that the payment of this quarterly portion in advance is not a condition precedent.—*Sheridan v. The Phoenix Life Assurance Company.*

Poor-rates.—The Court of Error has held that the Poor Law Commissioners have no power to make any rules or orders authorising the making of a poor-rate (in its nature retrospective) for the payment of past debts.—*Waddington v. City of London Union.*

VENTILATION OF HOUSE DRAINS AND TRAPPING OF GULLIES.

A REPORT to the Hackney District Board of Works, by Mr. James Lovegrove, surveyor of sewers, has been printed, from which we make the following extract:—

"With proper appliances the gaseous currents in drains may be controlled and turned either into the sewer or above the houses, by means of the water discharged into the drain, and the variable temperature of its gaseous contents, as opposed to that of the atmosphere. To effect the object in view, I first fix at any point in the line of drain between the outlet and the first branch drain a double valved syphon trap, consisting of a nicely fitted valve which shall shut off the foul air from the sewer during all states of the atmosphere, and behind this a syphon dip, for the purpose of preventing the escape of foul air through the upper part of the valve during the period of flow. Over this valve, and also forming a passage over the dip, is placed a tube and light air valve, which, on the slightest pressure from within the drains, shall open and discharge air only into the sewer; then, at the several inlets, are fixed valves to work freely, with syphons behind them, so as to act entirely independent of water, the syphon being required only during the period of flow: lastly, near to the extremity of the drain, is placed a light air valve, which opens on the slightest pressure from without, and supplies fresh air into the drain. The action of a drain thus constructed would be as follows:—Every time water is discharged into the drain a bulk of air, nearly equal to the quantity of water so discharged, would be expelled through the light air valve at

the outlet into the sewer, and, as the water flows into the sewer, it would be followed by an equal bulk of fresh air passing through the light air valve at the extremity of the drain: a similar action would also be obtained by the variation of temperature. Now, by comparing the action of the two modes herein described, we see the one is directly the reverse of the other: the effect of the first is the nearly constant discharge of foul air into the houses, and the second the constant supply of fresh air through the drain into the sewer. By applying the same principles proposed for house drains to gullies, it is not possible for the foul air to escape, and they are made to supply fresh air into the sewers."

Mr. Lovegrove's report is accompanied by diagrams of his mode of ventilation and of trapping. He recommends that the foul air should be allowed to escape only at the top of ventilating shafts, removed as far as possible from breathing point.

PRIZES AWARDED BY THE COMMITTEE OF ARCHITECTURAL MUSEUM.

At the meeting on Wednesday, Mr. A. B. Hope stated that the premium of 5*l.* offered by the Ecological Society for a coloured panel had been awarded to Mr. A. O. P. Harrison. One of the panels showing considerable ability (mentioned by us as the most harmonious, though less clever than one,—the specimen rewarded), had been tampered with, Mr. Hope said, by being cut away to give greater relief, which would have prevented the committee from awarding a prize to it, even if it had been the best. The specimens submitted in competition for the prizes offered for wood-carving, and for drawings from casts in the Museum, were not considered up to the mark; but a modified premium of three guineas was awarded to Mr. John Chapman, for panels, and Mr. Edmund Edgar Kirby, for drawings. The prize for modelling was awarded to Mr. Doel.

BOARDS OF HEALTH.—LAYING OUT LAND.

A FEW weeks since, a tabular statement of the "resident engineers" salaries was half promised: add, if you please, "capabilities." You can a tale unfold,—so can I, having had twenty-five years' continued practice. An adventure amongst drainage errors occurred at Fleetwood, where a linen-draper was engaged at two guineas per week to conduct the laying down and the completion of the town's drainage. Two-thirds in length of the work were laid, when it was discovered that the pipes were all laid at a parallel distance from the surface by means of a 4-feet staff, in one instance having a reverse fall of 10 inches in 18 yards. The whole was taken up at no trifling cost, and relaid.

By comparing Messrs. C. Knight and Co.'s Board of Health Almanacks for 1858 and 1859, it will be seen that 13 per cent. of the "resident engineers" are changed: how filled up, goodness knows (Mr. A. L. Dickens can vouch for strange proceedings, and more strange condition of some public works). Rugby and Accrington have appointed their collectors "resident engineers," and, may be, others likewise. When a vacancy lately occurred at Rochdale, six were selected from thirty-six to go to ballot. Four of the six were from a surveyor's office in one of the principal seaports in Lancashire. The higher the douceur from assistant to a certain officer, the higher the testimonial with the borough arms upon the face of it! So one of them informed me. Strange doings, Mr. Builder!—no doubt you know enough.

We want correct formulae for the flow of sewage, not water.

I have used Etelevain's and Leslie's of late. As to a sewer I am at present running according to said formulae, a 15-inch cir. 1 in 17 fall, will drain 16·37 acres, the area to be drained being 10·30 acres. Mr. Roe's table shows that a 15-inch cir. falling 1 in 60, will drain 10 acres—capacity varying direct as the quantity and inversely as the fall.

An article probably would not be out of place upon the necessity of laying out building plots in such manner that sanitary works might be effected in a proper way, and at a cheap cost. In my district I have to contend with building plots on lease, 30, 40, and even 50 yards back, for common cottages, bounded on two sides with say 12 and 14 yard streets, which plots are built up on the two fronts, leaving a 4-feet opening in one corner, through which all filth, ashes, &c. have to be conveyed for some 40 yards, placed on the surface of the street till carried off; whereas a building plot of 36 or 44 yards wide, having a

five yards' accommodation street through from cross street to cross street along the centre, containing the sewer and dust-hole openings, is what ought to be. I presume estate agents or other surveyors ought to see the necessity of changing such totally absurd and almost cruel methods of laying out land, thereby preventing close courts, heaps of filth, and offensive buildings, improved drying-ground, large yards in every conceivable shape, the house drains having to be collected and brought through the 4-feet passage, or under a dwelling.

A TOWN SURVEYOR.

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

ONE of the usual monthly meetings of this institution occurred on last Tuesday evening, Mr. M. B. Mullins, President, taking the chair.

The secretary, in the absence of the author, Mr. John W. Kelly, of Ennis, read the paper for the evening, the subject being, "The Causes of Failure of Bridges on Mountain Rivers," commencing with an allusion to the importance of the subject, arising from the frequency with which such failures are heard of, and the inconvenience and expenditure they occasion; and after a reference to the wide-spread damage in this respect which had been caused in the mountainous parts of the counties of Kerry, Mayo, &c. by the floods which occurred in September last, the paper proceeded to set forth a principle in connection with bridge structures, which, simple though it was, in the opinion of the author, was sufficient in many cases to prevent such casualties—this principle being, that the channel, or waterway, for some short distance above, through, and below the bridge, should be of equal discharging capacity, and that the channel below should on no account be of greater waterway or discharging capacity than the arch or arches of the bridge. To the great head of water above, and sudden fall through or at the down-stream face of the bridge the damage was attributable; and the object to be attained should be to convey the floods through and for some distance below the bridge in a comparatively moderate incline and velocity, which Mr. Kelly submitted would be done by regulating the discharging power of the channel, &c. in the manner he recommended.

NOTES FROM IRELAND.

THE Dundalk and Enniskillen Railway is so far completed as to admit of its being opened for public traffic on the 1st of February, after the Government inspector shall have gone over it.

The Council Chamber in the City-hall, Dublin, is to be acoustically improved at a cost of 200*l.*, and a premium of 20*l.* (at a rate of 10 per cent. on the outlay) is proposed to be given for the best plan. The adjudicators are to be the ex-Lord Mayors of Dublin since 1850. This arrangement was proposed as an amendment to the original intention of leaving it to the decision of No. 1 committee, on which are some practical and experienced men, and its prudence appears somewhat questionable, as the attainment of the object in view may not now prove an easy matter.

Turkish baths are being introduced into Ireland, at Bray, county Wicklow, after a plan originally suggested by Mr. Barter, of Cork.

A monument is about to be erected in St. Nicholas Church, Dundalk, in honour of Burn's eldest sister, Mrs. Gall.

The gas companies in Dublin have reduced their price to 4*s.* 8*d.* per 1,000 cubic feet. An opposition company, entitled "The Independent Gas Consumers' Company," has been started, and the requisite buildings are being commenced. It professes to supply better gas at 3*s.* 6*d.* per 1,000 cubic feet, free from meter rent, and thereby save the consumers 50,000*l.* per annum. Mr. Flintoff is the promoter and secretary.

In addition to the improvements recently made in Belfast, we have to record the erection of a block of buildings in Donegal-street, for Messrs. Philip Johnson and Son, an eminent mercantile firm.

A new station for the Ulster Railway Company has been erected at Killylen, in county Armagh. It is of brickwork, with some novel architectural features, and in length about 50 feet.

It is proposed to erect a new Roman Catholic Church at Crossmolloy, according to plans furnished by Mr. Canning, of Balima. The design displays a cruciform plan, with nave, transepts, chancel, sacristy, and tower and spire at west gable; an open timber roof, stained and varnished; and the total dimensions are about 110 feet by 30 feet. The style is Gothic, but of plain

character; material, rubble limestone, with chiselled dressings. Expenditure, including tower and spire, about 2,000*l.*

Some works are being executed at St. Patrick's Cathedral, Dublin, a portion of which is in a very tottering condition.

The new and small church recently erected at Attea, county Limerick, by the Venerable Archdeacon Gould, has been opened. It has nave, vestry, porch, belfry on west gable, traceried windows, open-stained roof and benches, and a triple stained-glass window in the east gable. The interior (we believe) does not exceed 30 feet in length; and the cost of erection was about 600*l.* Mr. W. Fogarty, architect.

The church of St. James, at Dublin, is to be rebuilt according to designs by the Ecclesiastical Commissioners' architect; and the interior of Rathconnell Church, county Westmeath, is to be newly fitted and furnished.

A branch line from Shantonnagh to Cootehill, is about to be constructed; and contracts are invited by the Dundalk and Enniskillen Railway Company. The Limerick and Castleconnell Railway Company propose to proceed with the formation of the line from Castleconnell to Killoe.

A new chapel school is to be built at Killoe Barracks, county Kildare, stated to be one of the finest and best arranged barracks in the United Kingdom.

The Moore testimonial, at Dublin, is now being removed *in toto*; the pedestal is to be erected after a more appropriate and ornamental design, and the statue remodelled (as the local journals have it) "not being in accordance with the views of the sculptor."

CHURCH-BUILDING NEWS.

Poplar.—The new Baptist Chapel and Sunday Schools, erected in Manor-street, have been opened. The chapel will accommodate 400 persons, without galleries. It is in the Pointed style, with open timber hammer-beam roof, 45 feet span, stained and varnished. The schools are under the chapel, and will accommodate about 200 children. The vestries are in the rear of the schools. The cost is about 1,200*l.* Messrs. Morris and Son were the architects, and Mr. J. Salt, the builder.

Deptford.—A new Baptist Chapel and schools are proposed to be erected at the junction of the Old and New roads, opposite the bill-gate. The style to be Pointed, of white Suffolk brick, with malin-brick buttresses, and coloured-brick arches and string courses. Messrs. Morris and Son, of Poplar, are the architects.

Winston.—The church here, which for years has been in a most dilapidated state, has undergone a substantial restoration, internally and externally, and was reopened for Divine service on the 17th December last. For the attainment of this desirable object, it is gratifying to report that the landed proprietors and ratepayers readily and liberally responded. The builder employed was Mr. Francis Betts, of Stourmarket.

Dis.—On the 6th inst. the parish church of Mellis was opened for Divine service, after having been closed for more than twelve months, in consequence of the dangerous state of the roof, and the repairs which had become necessary. The church consists of a south porch, a nave, chancel, and vestry; the tower has long fallen, and the east end is unsightly from having been rebuilt by a former incumbent with red brick. The nave windows have been thoroughly cleaned, the stonework made good, the glass renewed, the walls scaled and stuccoed, and the floor repaved. In the interior the font has been reworked; the screen, which some former churchwardens had removed and mutilated, restored and replaced under the chancel arch; the door arches cleaned and repaired, and new oak doors, with appropriate hinges, handles, and locks, fitted to them. The whole interior fittings have been removed, the old oak benches reworked, and the area fitted up with oak benches, having carved poppy-heads corresponding with the old ones; and a new oak pulpit and reading-desk. The roof of the nave has been restored with English oak, according to its original design, and covered externally with Westmorland slate. The chancel and its appendant vestry also have been restored, an east window being inserted in the place of the old nondescript brick mullioned one, the walls restuccoed, the unsightly pews cleared out, and the space filled up with oak benches. The porch has been partially restored. All the works have been carried out in accordance with the plans and under the superintendence of Mr. Johnson, of Bury St. Edmund's, architect, by Messrs. Golbolt, of Brockdish, builders; the stonework being

executed by Mr. William Vine, of Diss, stonemason. The cost already incurred is considerable: the ratepayers have been at the expense of restoring the roof; and a fund has been raised by the rector to defray the remainder of the outlay.

Buckingham.—Addington church has been restored and reopened. All but the ancient tower has been rebuilt, by Mr. Tibbits, of Buckingham. The body of the building is of freestone, surmounted with crosses; Ancaster stone being used for all the dressings; all the seats are open, and, which have been gathered from various parts of the Continent by Mr. Hubbard; but the chancel window remains to be completed, the present being but a temporary substitute.

ARCHITECTS' CHARGES.

QUANTITIES AND TENDERS.

SIR,—I beg to enclose you instructions to competitors, received for Codnor Schools, Derbyshire, by which you will see that, besides endeavouring to obtain 2*½* per cent. as a builder's surveyor, in making out tenders (for the whole of them, no doubt, if required),* a charge of 2*½* per cent. is made for quantities, and 10*l.* for a copy of the drawings. Supposing an outlay of 1,000*l.* for example, the per-centage will be rather high, according to the above scale of professional charges. We will suppose six competitors, when we shall have it thus:—

Usual charge for drawing, specifications, and superintendence, at 5 per cent.	250 0 0
Quantities, at 2 <i>½</i> per cent.	25 0 0
Furnishing drawings	10 0 0
Making up tender for successful competitor, at 2 <i>½</i> per cent.	25 0 0
Do. for say five unsuccessful do. at 1 <i>½</i> s.	3 15 0
Six forms of tender, at 5 <i>s.</i>	1 10 0
	£315 5 0

being nearly 12 per cent. upon the outlay, the whole of which must, in any form or another, be drawn from the pockets of the proprietor. Do pray, Mr. Editor, justify the honour of our profession by speaking out plainly against such ways of money getting.

AN ARCHITECT.

* We insert this letter because the papers sent up seem to justify the writer's statement, but we are disposed to hope that what would appear to be set forth in the "Specification," and in the "Instructions to Competitors," is not what is really intended.—ED.

COMPETITIONS.

Hanley Cemetery.—The first premium for buildings, has been awarded to Messrs. Ward and Son, architects, Hanley; the second, to Messrs. Bellamy and Hardy, architects, Lincoln. The first for laying out grounds, to Messrs. Bellamy and Hardy; the second, to "Hortus," Coventry.

Middlewich Cemetery.—The premium for buildings has been awarded to Messrs. Bellamy and Hardy.

PROPOSED COMPLETION OF THE CENTRAL TOWER OF BAYEUX CATHEDRAL.

We have received from Normandy an announcement, which may be seen at our office, that the French Society of Archaeology desire to obtain designs in competition for the termination of the central tower of Bayeux Cathedral. The designs are to be sent to M. Gausgoin, 3, Rue de la Marine, Caen, before the 15th of March next. Medals of gold, silver, and bronze, are offered for selected designs, but nothing is said as to carrying out the design. A wood-cut on the programme, repre-

* "Every information required upon any one query will be given, upon application to the architect, who also is willing to prepare your tender for these works, at the following charges, viz. 1*½* per cent. if successful, and 2*½* per cent. upon the amount of your tender if it be accepted."

† We see that the tenders for the schools with teachers' residence, were opened on the 3rd instant, and were found to be as follow:—Lilly and Smith, Newham, 1,087*l.* 2*s.* 3*d.*; Gun, London, 940*l.* 10*s.*; Pickard, 910*l.* 9*s.*; Morris, Long Eaton, 897*l.* 10*s.*; Thompson, Derby, 882*l.*; Wright, Looe, 865*l.* 17*s.* 6*d.*; Palmer, Lowham, 865*l.* 18*s.*; Moore, Derby, 859*l.*; W. Bridgari, Derby accepted, 850*l.*

sending the tower as "primitively" terminated (?), shows an Italian cupola and lantern on top of the now existing octagon Gothic lantern. The instructions include the following announcement:—"The Society leave competitors entire liberty in the choice of style!"

THE GOVERNMENT SCHOOL OF MINES.

SIR,—In the few lines with which you preface the notice of my lecture in your Journal for last week, there is an error for which I am responsible, as I observe that you have merely copied a phrase in my private note to yourself.

When I wrote that note I was fully under the impression that the nominal "registration fee" of sixpence for each course of lectures, which each working man pays, went directly to the Government. I find, however, that this is not, and never has been the case.

Originally, the sum in question, which amounts to about 15l. for each course, was wholly consumed in paying the attendants, who were of course detained beyond their regular hours on the evenings of their lectures, and in advertising the courses.

More recently, however, the Government has undertaken to meet both these expenses, and consequently the registration fees are paid in to the general account of the professors, and are only subject to the deduction which the Government makes from all fees.

The result is, that at present each of us receives about 6l. 10s. per annum as his share of the profits upon the working men's lectures.

I may, perhaps, be excused for having forgotten this point of my income, and for saying that we derived no profit, direct or indirect, from the lectures.

My motive in mentioning the matter at all was simply that you, as editor of the *Builder*, might understand that I could not possibly have any unworthy motive in asking you to spread more widely a knowledge of the existence of these lectures. It really did not occur to me that you would publish the information.

I have troubled you with this long explanation about a small matter, because it is desirable to set all mistakes right, but more particularly because some of the working men, struck by the statement to which I have referred, have proposed to meet and present with an animal, in compensation of what seems to them an injustice.

Although the circumstance that such a design has been in contemplation is necessarily very gratifying to my colleagues and myself, I trust I need hardly say that we earnestly deprecate the carrying out of the execution. The delivery of the lectures is simply a part of our duty, and we neither seek nor could possibly accept any reward beyond that good will and respect of our audiences with which we have hitherto always met.

THOMAS H. HUXLEY, F.R.S.
Professor of Natural History.

Books Received.

VARIORUM.

"HAND-SHADOWS to be thrown upon the Wall."

By Henry Bursill (published by Griffith and Farran, St. Paul's-churchyard), is the title of an amusing little book, the intention of which it explains. We all know the rabbit on the wall, formed with the fingers before a light, and Mr. Bursill now shows how a goose, a deer, a black man's head, a tortoise, a pig, and half a dozen other individuals, may be produced in like manner. The position of the fingers is drawn with care, and the result, irrespective of the fun to be got out of the transference to the wall, is a series of amusing and artistic prints.—The *Edinburgh* contains a well-written eulogy of the present condition of the library of the British Museum, which is fast becoming, even if not so now, the first in the world; and an elaborate paper on those marvellous storehouses of antiquity, not yet properly examined, the Roman catacombs. It has been asserted that there are sixty different catacombs on different sides of Rome. Part of one has been measured, and if this be a fair specimen of the rest (it is smaller than some), there are in the whole together 900 miles of streets of the dead, and, according to one calculation, 7,000,000 of graves. Decays practised by men belonging to the Romish Church have thrown doubt upon whatever has been found here. It is much to be desired that the early Christian memorials in these catacombs should be brought back to a true standard of accurate research. The cost of a joint commission of proper persons, selected and paid by the Christian nations of the world, would be money well spent.—

"The Topography and Climate of Apsley Guise, in reference to their Influence upon Health and Disease, as compared with celebrated English and Foreign Localities. By James Williams, M.D. with Remarks on the Hygienic Treatment of Consumption," &c. (Richards, Great Queen-street) gives an account of what must be a very healthy locality, if that which is said as to the average mortality (17 per 1,000) be correct; but the pamphlet bears too much the aspect of a medical man seeking to attract patients to the district in which he practises. Nevertheless the purpose appears to be a fair enough one, to draw the attention of consumptive and other invalids to a locality (in Bedfordshire) from a residence in which they may gain much benefit as well as the doctor. The want of

houses here is said to offer a good opportunity to builders.

Miscellaneous.

ART UNION OF LONDON.—We would draw attention to the advertisement of this important institution in our present number, and will find an early opportunity to speak of the fine print, worth double the subscription, which each member will receive, irrespective of prizes.

CHURCH ARCHITECTURE: LECTURE AT HAREWOOD.—The Hon. and Rev. James Lascelles, rector of Goldsbro', has given a lecture to the members of the Harewood Literary and Scientific Institution, "On Architecture as exemplified in our Parish Churches." The lecturer traced the gradual rise of architecture in this country, explaining the Roman, Saxon, Norman, and successive grades of the Gothic style, and pointed out the distinctive features of each. Certain simple rules were laid down respecting the pillar, capital, arch, and window, which would enable most persons to arrive at something like a correct idea of any old church. It was a very instructive lecture, says the *Leeds Intelligence*, and was listened to and appreciated by a numerous audience.

BARRACKS AND CAMPS.—General improvements are to be effected at St. Mary's Barracks, Chatham, in order to promote the comfort of the invalid troops by whom these barracks are almost exclusively occupied.—It is evident to all who visit Aldershot at this season of the year, says the *Hampshire Independent*, that it is high time the Board of Health had commenced operations. Drainage there is none. The streets, if they may be so called, are one vast "midden hole." Pedestrians have, in some places, to flounder through 6, 8, and 10 inches deep of a composition which would defy description; in addition to which, in dark nights, unless you keep the middle of the mud (we cannot call it road), you are in danger of life or limb by falling into some of the numerous pitfalls. People it seems have received injuries, and in one case a soldier was killed near this spot.—

Tenders for the erection, at the Winchester garrison, of barracks for married soldiers, as well as a laundry, will be received at Pall-mall, on the 24th. The new buildings will be placed partly on a piece of land abutting on St. James's-lane. They will be commenced in the spring.—From a paper on the sanitary statistics of India, in the *Times*, it appears that the annual rate of mortality in hospital, from all causes, among the men of her Majesty's and the Company's European forces, amounts to 63 to 1,000. This is a dark picture, for in Liverpool, England's most unhealthy city, the mortality is only 38 in 1,000. From statements adduced by Sir A. Tulloch, it further appears that the annual rates of mortality in and out of hospital to the effective strength of Queen's troops in India were 59 per 1,000 for Madras, 61 for Bombay, and 75 for Bengal, or a mean mortality of 65 per 1,000 for the three Presidencies. The mortality of the officers contrasts singularly and favourably with the above, for the average deaths of officers serving with European corps in Bengal, for the eight years ending 1854, were at the rate of only 21 per 1,000. Comparing the military and civil services, we find that the present mortality of Bengal civilians is only 18 per 1,000.

AUTHORS OF THE AGE.—Our readers will thank us for drawing their special attention to the fact that Mr. S. C. Hall, F.S.A. will give his two lectures on "Great Men and Women of the Epoch," of which we have already spoken, at Willis's Rooms, King-street, St. James's, the first on Friday, the 28th instant, and the last on Friday, the 4th proximo, at eight o'clock, p.m. The first will refer to Hannah More, Scott, Rogers, Crabbe, Moore, Miss Landon (L. E. L.), Sydney Smith, Wordsworth, Coleridge, and others. Surely, if the Londoners flock in thousands to a self-designated humbug, to hear him tell how he takes in the public, they will not fail to go to an honest literary man of note, and hear his discriminating and interesting account of kindred spirits with whom he has associated.

PROPOSED EXTENSION OF THE LIVERPOOL DOCKS.—The new Liverpool Dock Board resolved, at a special meeting on Saturday, to apply to Parliament for powers to borrow 300,000l. for the purpose of improving and extending the Liverpool Docks. There was a lengthy discussion, and the proposition was carried by 15 to 6. The chairman stated, as an evidence of the satisfactory condition of the estate, that the receipts of the Board for 1858 had exceeded those of 1857 by 500l. though the returns in 1857 were greater than had previously been experienced.

WATER SUPPLY TO LANCASTER LUNATIC ASYLUM.—An instructive report on the past and present water supply of Lancaster Lunatic Asylum, by the architect, Mr. Edmund Sharpe, has been made to the visiting justices, and printed. Works have been lately done at a cost of 106l. odds, for the complete supply of the inmates. The quantity of water pumped by the engine daily is 30,000 gallons, at 3½d. per 1,000 gallons. The water has been analyzed by Dr. Angus Smith, and declared to be satisfactory. In the former supply, the pipes (2½ inch) delivered thirty-two gallons a minute; but in a few years only delivered twenty gallons, and it was found that this arose from oxidation. The pipes were taken up, exposed to heat, and brushed interiorly with a metallic brush, when the corrosion was removed, and the pipes were found to be little the worse. Mr. Sharpe advises that when new pipes are laid, as from the purity of the water and the consequent corrosion they must eventually be, the interior should be lined or lacquered with asphalt.

THE WORCESTER SCHOOL OF ART.—At the seventh annual meeting of the Worcester School of Art, it was stated that 283 students had received instruction during the past year, being less by thirteen than the previous year. This decrease had taken place in the morning classes, and not in the artisan classes, a greater number of whom now attend the school than at any former period; the average monthly evening attendance during the past year being 142. In addition to the instruction given in the school, elementary drawing is taught by a master from this school in four of the public schools in the town. The Railway School, in which drawing is now taught by its master, is also in connection with the central school, so that 560 children have now instruction in drawing.

CHELMSFORD WATER-SUPPLY.—The surveyor to the Chelmsford Board of Health (Mr. Chancellor), in a report to the Board, says—"The town of Chelmsford, with the suburbs included in the water district, includes at the present time above 1,600 houses, with probably an average population of five persons per house, giving a total of 8,000 inhabitants: of these about 1,200 houses, representing a population of 6,000 persons, are connected with the water mains of the Board of Health. From a series of experiments and calculations I have made, I find that at six o'clock in the morning, the time we commence pumping at the water-works, there are about 44,000 gallons of water in the deep well and the tunnels connected therewith, which quantity has accumulated in the eleven previous hours. With our new pumps, we empty the well and tunnels in five hours; but, as during that time the water is still flowing from the bore pipes at the rate of 60 gallons per minute, the total quantity pumped out in the five hours is about 62,000 gallons. During the remaining eight hours of the day we slacken the speed of the engine, or stop altogether for a short period, to allow the water to accumulate, and assuming that the bore pipes yield during this period at the average rate of 70 gallons per minute, a further quantity of about 33,000 gallons is forced into the town, making a total quantity of 95,000 gallons pumped up during the thirteen hours, from six o'clock in the morning till seven in the evening. From this statement it will be seen that 6,000 persons are at present consuming 95,000 gallons per day, or about 15 gallons per head: if all the houses were attached to the mains, the average for each person would be reduced to about 12 gallons per head." The surveyor recommends an increase of the supply, and points attention to various sources, and particularly to an artificial lake or reservoir, with springs, called the Railway Lake. One object in view is to give a constant supply at high pressure. At present an interval occurs every day, between 4 and 10 p.m. when there would actually be no water wherewith to extinguish any fire that might occur,—at least till a messenger was sent to Long Stumps, a distance of a mile and a half. An electric telegraph would be desirable under such circumstances; but a constant water supply would be infinitely better.

GRACECHURCH-STREET.—Being a weekly reader of your valuable journal, allow me to claim a short space to advocate some alteration to improve the thoroughfare of Gracechurch-street, which is still very much crowded by a very heavy traffic: my suggestion is simply to pull down and set back several of the fronts of the houses on each side, to form a stand for the omnibuses: the expense to be defrayed by an annual charge upon each of the proprietors, equal in the whole to the yearly value of the outlay made by the City in the extension.

J. G. S.

SPONTANEOUS COMBUSTION.—A remarkable instance of spontaneous combustion has taken place at the works of the Chartered Gas Company, Brick-lane, St. Luke's, by which several hundred tons of coals will be greatly depreciated in value, if not rendered comparatively worthless.

It appears that the company have always an enormous stock of coals on hand, and to preclude any accident these are kept under cover, in fireproof sheds. It is, however, supposed that a quantity of wet coal had been stowed unobserved amongst the dry, which has caused the latter to heat, resulting in the ignition of the enormous mass, which, although it has not burst into flame, is smouldering away internally. It is stated that the loss occasioned by the combustion will exceed 1,000l.

PROGRESS OF THE VICTORIA STATION AND PIMLICO RAILWAY WORKS.—At the first ordinary meeting of the shareholders of the Company for establishing the Victoria line through Pimlico, the engineer's report was read, of which the following is an abstract: The contractor, Mr. Kelk, lost no time in building offices, ordering and procuring timber, erecting staging, travellers, crabs, cranes, pile engines, &c. From the magnitude of the bridge across the Thames, all exertions have hitherto been principally directed to that structure, and already considerable progress has been made. The coffer dams for the abutments and piers are being rapidly erected, and nearly 40,000 cubic feet of timber have already been driven for that purpose by two steam pile engines and eight smaller ones. The sites of all the piers have been dredged down to the clay by steam dredgers. The delivery of stone has become a regular work, and nearly 10,000 cubic feet are now on the ground, being dressed in sheds erected for the purpose. The foundations have been put in for the abutment on the north side of the embankment-road leading to Chelsea Suspension Bridge, and in a short time they will be brought up to the surface of the ground. I see no reason whatever to doubt that the time named in Mr. Kelk's contract (June 1860) will be observed. The hotel which the Company were to erect is in abeyance on account of the probability that all available space will be required for the station, and it is even contemplated that in consequence of the junction through the west of London with the Great Western and other north-side lines and other requirements, the bridge itself may require to be widened.

THE POWERS OF VESTRIES: THREATENING TO DEMOLISH.—A case came on in the Vice-Chancellor's Court last week *Clarke v. Paddington Vestry*—in which the plaintiff presented a bill praying that the defendants might be restrained by injunction from demolishing, destroying, altering, or injuring twelve houses erected by plaintiff in Spencer-street, Paddington, or any of the drains connected therewith, or from preventing the completion of said houses, &c. The plaintiff had formed three streets—Delamere-terrace, Cirencester-street, and Spencer-street,—and imagining that he was bound to form a sewer, he did so, but afterwards called upon the defendants to construct a continuation of the same to Spencer-street, which the defendants, by their vestry-clerk, refused to do, ordering him to complete the sewer, threatening their power to demolish the plaintiff's buildings, and forbidding him to go on with them. The defendants, however, had now discovered that they had no such powers to compel plaintiff to form the connection between the sewers. The Vice-Chancellor, in giving his decision, said it was a serious mistake for a vestry, armed with enormous powers to demolish buildings, that they should proceed in such a way, without being sure of the grounds on which they acted. As the plaintiff is successful, added the judge, I must direct that the defendants do pay his costs; but I cannot help adverting to the circumstance that the plaintiff is himself a parishioner of the parish of Paddington, and that the costs of this litigation, which has been improperly caused by the unjustifiable act of the defendants, who seem not to know what their powers are, except that they are determined to exercise to the utmost, whenever they see an opportunity, the powers which the Legislature has conferred upon them, will be discharged by a rate to be levied on the parish to which the plaintiff himself must contribute his proportion. That is a great injustice, and one which I hope the Legislature will provide the means of remedying. It cannot be consistent with justice that persons exercising public functions recklessly and by mistake should make the injured person bear his proportion of the costs in obtaining that very justice and seeking that remedy to which they compel him to resort in order to have his rights protected.

LEAMINGTON SURVEYORSHIP.—There were forty-three candidates for the above, from whom, at the meeting of the local Board of Health, held on the 18th instant, Mr. Anthony Morgan, C.E. was elected.

REPEAL OF THE PAPER DUTY.—One hundred members of Parliament have now identified themselves with the Newspaper and Periodical Press Association for obtaining the repeal of the paper duties. This amount of strength, organised without fuss or noise, and in the course of a few weeks, speaks well for the cause. Nothing succeeds like success, says the French proverb. Now, an agitation that starts with 100 vice-presidents, each writing M.P. behind his name, must be held to have commenced its career with a very remarkable success. The rest will follow. Arrangements are in progress for a deputation to the Government,—and it will include leading men connected with the press of Scotland and Ireland, as well as of England.—*Athenæum*.

LOCOMOTIVES IN STREETS.—A correspondent of one of the morning journals calls attention to the fact that a railway traverses the whole length of the city of Genoa, through one of its finest streets. He says:—"The portion of the public way devoted to the railway is simply divided off by a plain iron railing, coming to the height of a middle-sized person's waist. The trains pass to and fro at short intervals, not only by day, but also after dark, without causing any alarm to the horses or danger to foot passengers, although the whistle of the locomotive is as loud and shrill, the steam clouds as abundant, and by night the sparks and flames from the furnace as formidable as elsewhere. At the endless crossings a chain is quickly hooked on as the train passes, and as quickly allowed to fall again, without, apparently, taxing in any degree the patience of the crowd; and certainly the stoppage is neither so long, nor so vexatious, nor so dangerous as at the two crossings at the extremities of St. Paul's-churchyard, or at the bottom of Ludgate-hill. The Genoa Railway does not take passengers: it is reserved for the conveyance of heavy merchandise from one part of the port to the other."

THE DISPUTES IN THE GLASS TRADE.—It is to be regretted that these unfortunate disputes still continue in the Midland districts. The original cause of the differences has not been removed, although the operatives, at a recent meeting, made certain alterations in the rules by which their trade society is governed. The employers have not accepted the modified rules, because they consider that, in reality, no concession has been made by the workmen, and that, in fact, the particular rules are as arbitrary as they were previously. The employers are to hold another meeting, at which a final decision will probably be arrived at. Though at the present time the cutters have not ceased working, they will shortly be compelled to do so for want of material. Thus, a large body of men, who really are not involved in the disagreement, will be deprived of the means of earning their daily bread, and the result will be deplorable. There are now upwards of twenty manufactories in Birmingham and the district at a stand-still, and it is not unlikely that this number will now be considerably augmented. A new feature has arisen in the lock-out which will render it probably of long duration. The glass bottle-makers, who have a powerful society, have volunteered to assist the flint glass hands, and are commencing a regular contribution for this purpose. It seems that the cost to the society of the lock-out of the flint glass hands will be from 300l. to 400l. a week, as there will be about 600 men out of work.

THE LATE MR. BELSHAW.—We are sorry to find that the widow and children of the late Mr. Belshaw are in want. Mr. White, of Richmond-street, St. George's-road, who is exerting himself in their behalf, reminds the public that it was Thomas Belshaw who first originated and practically carried out exhibitions of arts and manufactures, first at Manchester, then at Liverpool, Derby, Sheffield, Macclesfield, Devonport, Hull, and other places; who successfully organised the First Great Industrial Exhibition at Bingley House, Birmingham; and was largely instrumental to the success of the Great Exhibition of 1851. "Then followed the Exhibitions of Cork and Dublin, where his energy and talent so greatly contributed to their success. Lastly, the Crystal Palace at Sydenham;—whence he was appointed deputy storekeeper to the Army Works Corps; and it was whilst going out to the Crimea in charge of the 3rd division, with which he sailed in the *Berwick* transport, December 2nd, 1855, that he met with the fearful injury which, combined with anxiety, disappointments, and neglect, has caused his untimely death."

COLOURED GLASS.—Allow me to suggest a very cheap and effective substitute for painted glass. It is gelatine, of which little lamps are now made for illumination, with capital effect.—W. H.

MONUMENTAL BRASSES.—On Tuesday evening the Rev. G. B. Miller, of Grimsby, delivered a lecture in the City Assembly-rooms, Lincoln, on "Monumental Brasses." Mr. Sheriff Smith occupied the chair. The walls of the room were hung with drawings, or rubbings from various monuments.

IRON AND HARDWARE TRADES' PENSION SOCIETY.—In the hope of aiding, we mention that the third ball in aid of the funds of the Iron, Hardware, and Metal Trades' Pension Society, will take place at Willis's Rooms, King-street, St. James's, on Thursday, the 27th inst.

CONVERSAZIONE AT WOLVERHAMPTON SCHOOL OF AET.—A meeting of the donors and annual subscribers to this school has just been held. Mr. Wallis delivered an address, in which he called attention to the drawings on the walls, and explained some proceedings in the Schools of art; urged the necessity of a cultivation of the public taste as well as of that of the students, and expressed a regret that the subscriptions to the Wolverhampton School had fallen off. Mr. Wallis concluded his address with some practical remarks on designs of articles in common use. The mayor and other gentlemen also addressed the meeting; urging the necessity of giving better support to the school; but it unfortunately happens in such cases that it is precisely those who do not need much urging who are within earshot, while it is precisely those who do require it that stay away. Some better mode of reaching the delinquents is much wanted.

A NEW SITE FOR THE LAW COURTS.—The site of the Founding Hospital, at the head of Guildford-street, is suggested by our correspondent, "M. T. W." as a suitable one for a magnificent edifice, and he suggests that the new law courts could not be better placed than there, in the vicinity of those squares and streets where gentlemen connected with the law reside, as well as in the Inns of Court themselves, which also are at hand. The Founding Hospital, in such a case, had better be removed out of town altogether. The site is certainly a noble one, but not the best as we think for the Law Courts.

SUBMARINE WAR-ENGINE.—An American has visited England with the model of an extraordinary sub-marine boat, which, say the morning papers, possesses advantages far greater than those of the best diving-bell, and combines with these the agencies of the most terrible floating batteries. Sir Baldwin Walker has had interviews with the patentee's agent, and if the invention should be found to answer, it is said that it will completely revolutionise naval and coast warfare, and that the defences of Cherbourg and Portsmouth would avail nothing against this submarine monster. It reminds us of the famous smuggler, Capt. Johnson, who proposed, by means of a submarine boat or vessel, to convey the first Napoleon from Elba back to France. Nothing great, however, was ever done with Capt. Johnson's invention.

BIRMINGHAM AND MIDLAND COUNTIES ART-UNION.—The ballot of the Royal Birmingham and Midland Counties Art-Union took place last week at the rooms of the Society of Artists, New-street, Birmingham, the Mayor (Sir John Ratcliff) presiding. The report, which was read by Mr. Hallam, one of the honorary secretaries, stated that the committee had the satisfaction of informing the subscribers that the receipts on the present occasion were considerably larger than those of last year. The removal of the Society of Artists to the building which they now occupied would admit of the commencement of operations in future at an earlier period of the year. The total amount of subscriptions was 342l. 18s. From this sum 32l. 18s. had to be deducted for expenses, and 310l. were consequently available for the ballot. The committee appropriated this in the following manner:—One prize of 50l.; one of 30l.; two of 25l.; three of 20l.; three of 15l.; six of 10l.; and three of 5l. The prizes were distributed accordingly by ballot after the report had been adopted.

TENDERS.

For forms and benches, Exchange-hall, Stamford. Mr. Edward Browning, architect:—

Oliver, London	.....	£270	0	0
Sands, ditto	.....	135	0	0
Warne, ditto	.....	135	0	0
Cogswell and Day, Peterborough	.....	115	5	0
Branton, Kibworth	.....	100	10	0
Littleclike, Stamford	.....	98	0	0
Hammer, London	.....	85	10	0
Cave, Oakham (accepted)	.....	83	0	0

N.B. Gentlemen waited upon with an Album of Photographs from their stock.

The Builder.

VOL. XVII.—No. 834.

Fall of Houses: Kentish-town, &c.—Close of the Inquiry at the Polytechnic Institution.



FRESH accidents in connection with building and construction arrangements follow each other with such rapidity that the public may well feel alarmed, and ask who is to blame. The frightful occurrences in the Victoria Theatre, London, and the theatre at Glasgow, and the fall of houses in two places in Liverpool, killing six persons, are recent events; while the inquiry into the fatal and costly disaster at the London Polytechnic Institution had not terminated when four men

were seriously injured by the fall of a parapet at Wandsworth, and three masons were killed at Kinder, near Hayfield, in Derbyshire, by the falling of part of a gable-wall

of a new building, at the print-works belonging to Mr. Aspinall Turner, M.P. It appears, according to a Stockport paper, that the men were at their work when the gable fell

with a tremendous crash, "like an avalanche," and it is noted, as "somewhat remarkable that, only a short time previously to this sad catastrophe, the architect, and another official, had been inspecting the works, and expressed themselves satisfied, both with the progress and security of the building; and yet, in such a short time, three workmen had their lives sacrificed without any warning of the impending danger." Even with this, however, the list of disasters is not complete, for on the 20th inst. a party-wall, of buildings in progress in Kentish-town, fell, injuring three workmen, and knocking down another party-wall in its descent; and a day or two afterwards a flank wall of the same block of houses, separated from the wall that had already fallen by a party-wall still standing, came down, fortunately without injuring any person. Of these last accidents we must give a few particulars. The houses in question form one side of what is to be called Gaisford-street, and are on the right-hand side, going from London, of the Kentish-town-road. They are eight-roomed houses, with rooms in the roof besides, and are in course of erection by Mr. John Stevens, builder, of Castle-terrace, close by. The party-wall that first fell contained the chimneys of the third house from the Kentish-town road: these were gathered over from back to front in the centre, and the men were fixing the pots on the lofty stack when the wall toppled over, in the direction of the chimney breasts, at the level of the two-pair floor, and knocked down in its fall the party-wall of the fourth house from front to back, to the level of the one-pair floor. The brickwork is of much better character than is that of hundreds of similar houses. The mortar, though probably made partly of stuff dug on the spot, is tolerably hard at the bottom; and we were told on the ground, that the work had not been unduly hurried. Looking at it as brickwork alone (and supposing there was no error in proceeding of which we are uninformed), if this wall buttressed with chimney-breasts could not stand, there are scores and scores of houses that should tumble down this afternoon. How many of them stand at all, indeed, is a puzzle! It has been stated that the immediate cause of the accident in question was the vibration of the scaffolding erected around the stack, but we should be disposed to look lower. The foundation has evidently yielded, and that, too,

more on the side where the chimney-breasts are than the other. Without having made more than a cursory examination, here we are disposed to think may be found the germ of the disaster. Some workmen on the spot informed us that there was concrete under the wall, and with justness had confidence in the material; but when asked how thick it was, said ten or eleven inches. Such a thickness as this, however useful it may be on a perfectly good bottom to keep down damp, would have no effect in making a weak foundation sound, and may even, by squeezing out, if improperly made or put in, be instrumental in producing failure.

It is very desirable that a careful inquiry should be made into the cause of this accident, and even more desirable that builders should take warning, and in many cases amend their ways, before it be too late. The manner in which many houses to be sold are carried up in the suburbs of London is, as we have often said, perfectly frightful. The risks which are run would seem to render the successful erection of the buildings impossible, and yet they, somehow, are made to stand, to be perpetual sources of expense to those who are heedless and unfortunate enough to buy them. The mortar is formed with mould instead of sand: the bricks are but rotten bats: the turf is scarcely removed for a foundation; and, to make failure more likely, in some neighbourhoods deep holes have first been dug to get out sand for sale and filled in, so as often not to be obvious when building operations are commenced. The district surveyor, often blamed, is for the most part powerless in this respect. The first schedule of the Act says:—"The foundations shall rest on the solid ground, or upon concrete, or upon other solid substructure;" and that every wall "shall be properly bonded and solidly put together with mortar or cement." This is all that the Act says on the point; and unfortunately some of the police magistrates have shown so little willingness to aid the district surveyors to carry out the intention of the Act, that in nine cases out of ten the latter would fail if they took proceedings against a builder in respect of what they considered an insufficient foundation or the use of unsatisfactory materials. The district surveyor objects, requests alteration, begs, prays, threatens: amendment is promised, but nothing is done. Builders of this character—we are speaking only of a particular class—prefer to run the risk of the surveyor halting in his purpose or failing if he proceed, rather than increase their expenditure. The harassment and pain caused to a district surveyor who dislikes to show want of confidence, who fears to injure and oppress, and yet feels the necessity of doing his duty, are greater than can be imagined by those who have not had the experience.

To return now to the current disasters. On Monday last, the inquest on the death of the girl killed by the falling of the staircase at the Polytechnic Institution, was resumed; and, after a discussion as to the propriety of taking further evidence including that of the architect of the building and alterations, the coroner summed up, and the jury found a verdict of "accidental death," also expressing belief that

the fall "was occasioned by the cutting for the insertion of the iron trellis-work and brackets, and by the incautious manner of doing the work." They further added, that they could not allow the opportunity to pass "without expressing in the strongest manner their opinion that all public buildings should be subject to a periodical inspection." A competent person, appointed by the Government, should certify to some office, prior to the granting of a license for a building intended for public assemblage, that such building had been erected and finished in all its parts in a manner suitable to the purpose; and the like inspection, certificate, and license, should be necessary upon occasion of all alterations or repairs of importance. The jury also strongly objected "to the almost irresponsible power now vested in the hands of companies and individuals in the erection and maintenance of our public places of resort," and wished "to impress upon the Government the absolute necessity of not allowing the ensuing session of Parliament to pass without some enactment to enforce these suggestions." Such a course they "deemed imperative to allay the fears of the public, in consequence of the accidents that have so frequently taken place," and hoped the coroner would forward the suggestions to the Secretary of State.

It is quite plain that the period has arrived, when without regard to the proprietors of the places of public resort, and the alternative to which they may be driven, of abandoning present sites for others completely isolated, some more stringent control must be exercised than is within the scope of the present Buildings Act, or the office of the Lord Chamberlain. It will have been noticed that the manager of the Victoria Theatre boasts that on the last of the visits (which, it seems, are repeated annually) he was "highly complimented" by the Chamberlain's deputies upon, amongst other things, "the very efficient modes of entry and exit," though, as we have made sufficiently clear, the width of the stairs where the accident in the case of the Victoria happened, which seems to have been the subject of praise and self-satisfaction, is really no exemplification of what is needed for the public safety, and may rather be viewed as opposed thereto. Subdivision of the crowds, by number of staircases and exit-ways as widely apart as may be possible—has been dwelt upon by us as the real requirement for facility of egress with better planning of staircases and steps themselves, after further study of that part of the subject. The inefficiency of the present inspection of theatres has been pointed out by us, as with reference to the Pavilion Theatre; and we find that we have brought forward other evils, as the interference with exit-ways provided,—exists which, as Mr. Nelson tells us, have been closed merely that expense of checktakers might be saved.

But the matter of the staircase at the Polytechnic Institution is not particularly connected with that question of planning which we showed needed consideration. The point in the recent case is concerning structural design and security of steps, rather than iconographic arrangement of a staircase, and the proportioning of risers and treads,—though either question may be important in regard to public safety and requirement of inspection. Distinguishing, however, one subject from another, and merely remarking the absence at the Polytechnic of the very requisites which an act might be expected to enforce—the complete fire-proof accesses (now, however, to be provided), we have to draw attention to the assigned causes of the accident as affecting future practice regarding the construction of geometrical stairs.

It will have been observed, that whilst the verdict assigns as the cause, the cutting for the insertion of the trellis-work and its brackets, the professional advisers appear to raise the question whether staircases on the like plan, though of the best construction, should be adopted in any future case. Our opinion as to advantage of substituting a wall or complete enclosure for the ordinary low balustrade and the open well-hole, in all staircases for theatres or such buildings as the Polytechnic,

* Since this article was in type, we have seen a report on the accident addressed by the district surveyor, Mr. Henry Baker, to the Metropolitan Board of Works, at their request. Mr. Baker shows that the walls were carried up by a sub-contractor, without waiting for the joists and quarter partitions of the upper floors. "The walls having chimneys, and a badly-constructed scaffold only on one side, had no support or stay on that side for a height of 30 feet or more; the wall, thus built in the winter, and without bond of any kind, broke off at the level of the second floor, and knocked down the upper portion of the next party-wall. The concussion caused the west flank wall to buckle, and the top portion to fall outwards about thirty-six hours afterwards. It was perfectly upright before, but built for two stories and upwards, without timber. I attribute the accident entirely to the carelessness of the workmen, and the want of proper management in the builder. Four houses, precisely similar, have been just covered in, on the opposite side of the same street, but were built with care, and the result may be seen. I am inclined to think, from many instances in old and in new houses, that the old practice of putting return wood-bond into party-walls, faulty as it was, is better than the present practice of putting no bond at all; and I recommend that in any future amended Act, a discretionary power be given to the district surveyor, to allow such bond as may, in his opinion, be an advantage to the structure, without being a detriment in case fire. Certain cases in Creek-street, now repairing under my superintendence, would, I think, have fallen in spite of every care, but for the quantity of wood-bond I found in them."

is too well known to require further expression of it; though as to *winders*, we may add that those of the staircases in question called by the name, do not appear to have had the disadvantages which we referred to only as in those winders where portions of the treads are too narrow for the length of the foot; whilst with so large a curve, or portion of a cylinder, they might even be considered to offer advantages as compared with straight flights—in which last it is not always easy to avoid defects which there are alike in very long or very short flights. But regarding the structural question,—where geometrical stairs, more especially those winding in a cylinder, are pointed to, as having certain defects of principle, we are reminded of an example of their use, by one who would hardly have adopted them, were they so defective,—we refer to no less an architect than Sir Christopher Wren, who at St. Paul's Cathedral has left a remarkable cylindrical staircase, in which no sign of failure would be likely to be found. Truly, that staircase may not have been used, as it certainly is not adapted, for crowds; but the fact of its existence, added to the statement by Mr. C. H. Smith, that "*winders*" such as those at the Polytechnic are *stronger* than steps of straight flights, seems opposed to the assertion of Mr. Marsh Nelson, to the effect that a solid foundation is *particularly* necessary for cylindrical staircases; and that of Mr. Eales, who says that geometrical staircases, always "subject to vibration," are "*particularly* so where cylindrical." These gentlemen must have been thinking of isolated staircases, in joiners' or iron-fitters' work,—these, of course, are shaky. The real conclusion from the accident at the Polytechnic Institution, does not seem to us this, any more than one adverse to use of geometrical stairs in many cases: the lesson is simply that which should never have been needed, namely, that the integrity of the whole construction of such a staircase depends upon the stability of foundation, whether afforded by one step to another above it (or at the lowest point), and upon the secure pinning-in to the wall—whereby the step can neither fall downwards, nor get shifted at the bird's-mouth joint so as to destroy its office of an abutment to the step below. Given the proper foundation, the proper scantling of stone, the solidity of the wall, and proper execution of the pinning-in and bird's-mouthing (the latter even omitted in small staircases), and there could be no argument against such stairs for any sort of traffic. But, when, on the other hand, landings are introduced, at intervals, not as quarter-paces or half-paces, but supported only along one side and for a considerable length, it is clear that vibration is likely to be great, and must tend to destroy the conditions of security. The joggling of pieces—especially one made in which joggling is most erroneously performed,—is only an indifferent substitute for the single stone of the required area of the landing; and under any circumstances it is obvious, that by the leverage at the end of the bottom step of a second flight, the strain, vibration, and the consequent strength of the whole of such second flight, must be materially different to the case of a single and lower flight—properly founded. It is the landings, therefore, which may require extraneous contrivance for support. In the Treasury Buildings and Board of Trade, Whitehall, however defective the proportioning of risers and treads, the landings are carefully arranged with iron columns of support; and it appears that at the Polytechnic Institution also, the principal landings are yet carried on iron girders,—though the landings, or stones beside them, which it may be concluded ought to have been similarly borne up, were not so supported, but were in one case only joggled, or in the other, as it turned out, not connected in any way (except with the wall), and thus most likely were the reason of the failure.

It appears there were several sources of weakness in the staircase beside the scantling lessened by wear, and lessened strength by cutting out for insertion of the brackets of the iron-work. All the witnesses seem to have agreed in viewing this iron-work insertion as, though an injudicious proceeding, one operating only to complete the disruption of the stairs, and

not the primary cause of the accident. It should, however, never be imitated.

It is only just to Mr. Thomson, the architect, to point out that Mr. Marsh Nelson distinctly says, "From experiments I have made, I consider that the alteration of the staircase was not the cause of the accident;" and again, "The experiments prove that the steps, as altered, would have borne a weight equal to four times what they were required to carry." Mr. Thomson, in a report drawn up immediately after the accident, but not produced at the inquest, attributes the accident to a defect in the top landing, and points to a staircase in Somerset House where the stone has been cut for repair in like manner, and which has stood for more than twenty years.

The evidence as to where the accident began was against Mr. C. H. Smith's opinion, that it was caused by defect in the material of the top landing and the neglect of workmen in the joggling; whilst Mr. Eales, who found also that the landing had not the support from the step below it which had been intended, was constrained to look elsewhere for the origin of the occurrence, that is, to the lower landing,—that from which the flight sprang,—and which was worked off to a feather-edge as well as worn down on the surface, so as to weaken the strength very seriously at the most critical point. Mr. Smith, it did not appear, would have objected to piecing of the treads with stone or iron, though we should say he would have objected to the further cutting of the stone for the brackets required; and it seems that vibration of the whole piece of construction, owing to the springing of the flight from an instable landing, and its termination on one of similar kind, inducing fracture of some step, or that of the lower of the two landings, was the primary cause of the accident. It will have been understood that, whilst each middle landing of the *plan* was perhaps properly supported, the landing we speak of, besides the pinning into the wall, was only attached to the edge of the other, or by the ordinary toothed joggle, being originally weakened by the feather edging, and subsequently worn and injured in the supporting edge.

There is little doubt, as pointed out by some of our correspondents, that there may be reason for apprehension as to some geometrical staircases which have been planned with wide flights, and scantling of steps neither increased at the wall-hold, as suggested by one correspondent, nor calculated in any way with reference to load to be carried and possible concussions. We incline also to the opinion that geometrical stairs may require to be used less frequently in many buildings, if at all in theatres and places of public amusement. This, however, may not be from inherent defects so much as from the different arrangement of *plan* seen to be required, especially as to disuse of well-holes.

An important question is as to any mode of repairing steps. Portland steps, it is found by this case, are worn away 2 to 3 inches at the front, and landings $\frac{1}{2}$ inch to 1½ inch, in twenty years, by great traffic; and it is difficult to get rid of the slipperiness of granite even by working grooves into it. The iron-work addition, unless *added* to the step and pinned into the wall, can hardly be made without risk of cutting into the step and weakening it more than it was in the worn state. The subject of original material must receive attention, particularly since it is shown that the variable nature of Portland stone itself may occasion unlooked-for disasters.

We ought to add that the coroner, in summing up, said that "with regard to internal alterations, it appeared anything might be done without giving notice to the district surveyor, unless there was an interference with the external walls. Such a state of the law was preposterous. Had there been a clause rendering it compulsory to have given notice with respect to these staircases, the probability was that this accident would not have happened." Now, while admitting the necessity for more complete legislation, it is incumbent on us, for the sake of the future, to point out that this statement is not altogether correct. The floors of the lobbies,

corridors, passages, and landings, also the flights of stairs and the roofs and galleries of every public building, to be constructed, are placed by the Building Act, specially within the control of the district surveyor,—a very great responsibility, by the way, without corresponding remuneration. Then, by clause IX. "any alteration, addition, or other work made or done for any purpose, except that of necessary repair not affecting the construction of any external or party wall, in, to, or upon any old building," shall "be subject to the regulations of this Act." And as the introduction of the iron treads was unquestionably "an alteration," the builder was called on by the Act to give notice to the district surveyor, and was liable to a penalty for not having done so.

GATHERINGS AT MANCHESTER—ARCHITECTURAL AND SANITARY.

A RECENT visit to Manchester has been the means of affording us some particulars of what has been lately done in the town and district, to add to the series of notices which appeared in these pages at the close of 1857, and in the beginning of last year, when the architecture and sanitary arrangements were reported on at some length. The new market-hall, in connection with the market in Smithfield, has been already mentioned,* and the principal warehouse, in Fountain-street, would claim little further comment than that we made on the design in the Architectural Exhibition of last year. It is a mountain in labour, yet produces no art-effect, but rather deformity, as result. If it be true that some of its originality involved defective construction; that will testify to the importance of remarks on the general subject, which were made in the course of our notices of the Exhibition. The architect of this warehouse has done much better, even in works showing on the face of them by the details, that they are from the same hand. There is much that is commendable in his Jews' Synagogue, now completed, on the Cheetham-hill-road (which we have before named), as for instance in the coloured brickwork, and by the variety and effect in the forms of the windows, and the general grouping of the whole; though so exact an imitation of the Sarsenic style we much marvel should have been thought appropriate by the particular sect. The other synagogue, in the same road, not far off, by a different hand, by no means faultless in details (whilst its principal feature, the recessed centre with steps, would be considered common-place), is yet, in some respects, on a better principle of design. In the building, in Pall-mall, occupied principally by the offices of the *Examiner* and *Times*, Mr. Salomons has got rid of the defect which we noticed as pertaining to his window-arches where coupled. In lieu of the merely mitred formation of the arches, moulded or otherwise, at the springing, a regular corbelling in stone projecting as a series of mouldings from a small square shaft between the windows is introduced. This manner of treating the windows, the use of brickwork decoratively with much novelty by the combination of the black with the general dark red bricks, and the range of arches which forms the cornice, give the character to the design. It is, however, inferior to earlier works in the town, which have obviously afforded hints, so far as regards use of recesses for windows of two or more stories arch-headed, and coupling of those recesses—the springing of the two arches in the centre, being from a small column carried on a corbel.

The use of bricks of different colours in patterns,—sometimes along with ornamented tiles, and also with elaborately carved ornament in stone, is observable as a recent characteristic in the architecture of Manchester, not less than in other parts of the country. In Deansgate, near St. Mary's Gate, a long frontage has been occupied by a building containing four or five shops, and three stories above, where considerable effect is sought by the use merely of three-light, or as we might call them, Venetian, windows, having brick piers of 9 inches on the face, and reveals of 18 inches in depth. The piers, in the case of the windows of the second and third stories, have Corinthian capitals and bases, in stone, or cement. The spaces between the stories have red, white, and black bricks in patterns, and the lintels are formed with a continuous band of stone,—the windows of the top story, which are somewhat lower than the others, having the capitals omitted. The front finishes with a cornice of plain mouldings, and

a parapet, and with chimneys which correspond with the main piers. These piers are of white bricks, with black bricks towards the top, and red bricks in the middle, in patterns.

The best use of colour, combined with brick-work, however, is made in the exterior of the New Assembly Rooms, by Messrs. Mills and Murgatroyd, in the Cheetham-hill-road, in all respects the most noticeable work of the year in Manchester. The plan provides a large ball-room, a refreshment-room, a card-room, and a reception-room; ladies' and gentlemen's dressing-rooms; a kitchen, and a supper-room, in the basement; entrance-hall, vestibule and ante-room, and a very wide *porte-cochère*, or enclosed porch for carriages, which forms the main feature of the design externally. The building consists of a single story, in red brick, with the mouldings and carved ornament in stone, and coloured tile-work in panels in the frieze. The pilasters or piers of the porch are of brick, with richly carved capitals, and with other ornament on the middle of the shafts, in stone, which material is also employed in archivolts to the arches above the entrances to the carriage-way, and in windows to the front of the porch, in triglyphs introduced over the piers, and in the margins of the tile-work which in circular and oblong panels decorates the frieze, as well as in the mouldings of the cornice and pediment. There is no architrave division to the entablature. The patterns of the tiles were designed for the special purpose: in the oblong panels the colours appear to be buff and brown; but more lively colouring is introduced in the centre of each division of the frieze, in the *pateras* or circular panels. The elements of the design are simple, but the result altogether produced is one of suitability to the purpose, if not of novelty combined with requisites which are of more importance to proper architectural effect. The decorative plaster-work of the interior is somewhat elaborate, and has evidently been the subject of praiseworthy attention. There may be a slight want of unity about it, as in one of the rooms where naturalistic ornament is found along with ornament modified from the Greek character which appears to have been taken as the general basis; and the ornament in the cornices of the doors, though superior to what is now usual, is inferior to what may be seen in the works of the time of Sir Wm. Chambers and others, when ornamental plaster-work was executed in a manner from which we fear it must be held to have since much degenerated. However, in many respects the design and execution of the work have great merit. In the ball-room, over the main entablature cornice, a series of *lustres* are introduced, and these are filled with *alto-rilievo*s by Mr. John Thomas. The ceiling is divided into three compartments by beams, corresponding with the divisions of the walls which are formed by elaborately enriched pilasters; and each of these compartments contains a circular space, slightly domical, which is covered with figures and ornaments in low relief. There are no windows in the ball-room, and we might say there are none generally in the main portion of the building. Ventilation is provided for. The orchestra in the ball-room is at the side, in a gallery. The flooring is carried by girders, trussed,—as being suitable to a ball-room floor, rather than sleepers and walls.

Amongst the buildings noticeable for colour and eccentricity, as well as for elaboration of carving in some details, is one near the Fish-market, in Victoria-street, by Messrs. Speakman and Charlesworth. Peculiar as are its details, however, there is evidence in them of artistic feeling. We should mention the front of the Clarence Dining-saloon, in Brown-street, as belonging, on account of the details of its door-head and windows, to the productions of the better class. And we should not omit to name some offices in Cross-street, stone-fronted, by Mr. Thomas Worthington, having excellent details—though a little minute in character, perhaps. The building is arched as to the door and windows of the ground-story, and has a triple window above, with balcony, ironwork filling in between the pedestals, and a bold cornice with consoles. The Halifax stone, here used, is now considered in the locality better than the Huddersfield. The same architect is altering, to order, his work, the Overseers' Offices in Fountain-street. Mr. Ormerod, solicitor, assisted by Mr. James Holden, architect, is completing a building in Princess-street, for offices. It is Elizabethan in style, but calls for no remark except that it is not advancing in its character and tendency. Mr. Holden has now in hand, works of repair and reinstatement to the clerestory of the cathedral north side; and some kind of decorative work is, we believe, contemplated in the interior. Is the

batlemented parapet a reproduction of the old one, which, as we recollect, was horizontal, and perforated in the "perpendicular" manner? It is true that the church had undergone, years ago, some inferior work of restoration. The tower above the level of the roof was taken down some time since; but there is no appearance at present of rebuilding, or yet of removing the lower portion. We believe nothing is conclusively settled; but there is one improvement which should certainly be thought of, namely, the formation of a terrace and steps along the whole of the west end next the road; and it has been suggested, also, that the river should be arched over, and a grand level *place* formed in front, giving space which will be needed by increased traffic to the railway station, and assize courts about to be built. A project has more than once been mooted to arch over the distance from Victoria Bridge to Albert Bridge, and form a central market. The state of the Irwell must not be forgotten, if concealed from view,—a result which seems to have arisen in the case of the Irk and the Medlock from various circumstances.

The present effect of the *rilievs* in the panels of the Wellington monument at Manchester, justifies views on the subject of such works, and the material for sculpture, which we put forth some time since. It would be scarcely possible for labour, whether of sculptor's art, or of mere bronze casting, to fail more completely than in the case of these four panels, of any intended effect. Whatever be concluded as to the admissibility of perspective, there is a total lack of fire and spirit in the compositions—at least, in three of them. Figures of men and horses, and legs of chairs, seem to be standing on nothing. As to the material, it has all the appearance of being in a rapid state of decay.

As to the architecture in the streets of Manchester, there are few towns we imagine, where the realization of effect bears so trifling a proportion to the endeavour, and, indeed, to the merit of the art. The nearly-constant rain; and the general smokiness, produced, perhaps, in some measure, by the kind of coal, and great waste in ordinary house-fires, combine to produce an effectual screen during any such weather as was experienced in Christmas week. As regards the atmosphere, we believe it has been computed that 2,000,000 tons of coal are consumed within Manchester and Salford during twelve months, and that, as one result, a quantity of the strongest sulphuric acid, amounting to 36,000 tons, is formed in the air in the same period. As to the larger contributors to the unsightly and health-destroying nuisance, it may be remarked that often a single chimney gives forth smoke from 120 to 150 tons of coal each week. The increase of boiler-space for requisite supply of steam, which seems to be the only certain means of attaining the different objects, is necessarily in many cases difficult, so that the nuisance either is endured by the town, in place of interference with those operations which provide subsistence for the people, or the employer thinks it better to run risk, and incur fines, than to acquire more ground, and erect more boilers—an alternative that might not be within his power. Copious supply of steam is wanted within short time, and is to be produced even at great sacrifice of fuel. Whether improvements in the production of steam, increasing its power in the same space, will remove the difficulty, we cannot say; but the result seems not unlikely from attention given to that particular subject. Moreover, in time of rain, there is at the outskirts of the town, an appearance of discomfort, from the state of many patches of ground that are neither properly drained, nor covered with buildings rapidly as around similarly situated would be near London,—whilst the second-rate streets even in the town, are far too frequently left unpaved for long periods. In London, except in Agar-town, or the outskirts of Notting-hill, we do not know where streets—such as we have lately seen in Manchester—could be found. In our suburbs, a good gravel road, with sufficient drainage, is not unusual, even before houses are built: in Manchester, judging from appearances, very commonly nothing is done for years, unless cinders are at hand. It was in the town of Manchester that the effect of good paving on the health of the inhabitants of streets, was at the outset of the sanitary movement conclusively shown; yet we say, in parts of the town itself, the want continues. The authorities should look also to the unguarded state of cellar steps. Strangers risk their lives in passing along some of the principal streets.

The unsatisfactory state of the town and district as regards sewerage, or the disposal of refuse, still

prevails. The town-council, afraid of the responsibilities of their position, have always discouraged any other system as to the refuse, than that of storage for a certain time, and removal.* The proceedings in parliamentary committee last year may be recollected, in consequence of which the corporation were prevented from imposing such limitations on the supply of water as would have practically stopped the extension of the closet-system. Their only real argument was from the present state of the streams used as outfall—to which we drew attention in connection with the subject of London drainage. The effect of that present state of affairs may be to force upon the corporation the consideration of the great outfall-question, and possibly the settlement of it for the rest of the kingdom. The peculiar difficulty of Manchester is one, similar to what occurs in the case of nearly every stream in the manufacturing districts, arising from the acquisition of certain water-rights. The chief use of the water to the manufacturers is for condensing in the steam-engines. The water of the Medlock, filth as it is, is valuable for this purpose to certain establishments, and is for these only just sufficient in quantity. The corporation, however, are accused by sanitary reformers, of indifference to these questions: but if it be correct, that with their enormous water-supply they are still in difficulty; they may have temporarily some reasons for hesitation, though not for any trifling with the subject. The reformers boldly assert that the Medlock could not be rendered worse than it is at present. We are assured that the peculiar case of the manufacturing districts was not made at all too important in former articles in these columns; and, though the self-purifying process of rivers may go on in the Irwell or the Mersey in the course towards the sea, the sewage deposits at the mouth of the latter river, near Liverpool, in a way which has attracted very serious attention, and has prevented greater use of New Brighton as a place of summer resort.

Without knowing what means it may be necessary to adopt, it is obvious that there are chemical means at present, by which disinfection as well as utilization of sewage-matter can be accomplished. The only point on which proof is needed is that of the cost of the application, including that of the material. It is asserted at Manchester, that some of the figures in Dr. Letheby's report are erroneous, and must have been obtained at second-hand. We shall have another opportunity of considering the merits of disinfecting powders which we have lately spoken of; but we may say we believe the experiments on the large scale at Glasgow are suspended only temporarily, and that Mr. Bateman still looks forward hopefully to one material to afford the means of solving the difficulty in the case in which he and Dr. Anderson were consulted. The success of the application of Smith and McDougall's powder in the stables of Mr. Murray, in Broughton-lane, Manchester, is evident. A considerable number of horses of the highest value are on sale, and certainly animals of greater beauty, or kept in better condition than those in these stables, can scarcely be found. In the stables themselves there is not the slightest smell of manure, or anything else, unless something just perceptible due to the ordinary respiration and perspiration of horses. The liquid drainage from the stables, which is received in a pit, has no stench whatever, even when a large ladleful of the liquid is held close to the nose. The litter from the stables formed a heap perhaps 50 feet by 25 feet, and 4 or 5 feet deep. This, we are told, in its former state was covered with myriads of flies, and was so great a nuisance that certain houses near to it would not let. There was no stench when we saw the heap, and there were no flies; and a pole, driven 3 or 4 feet into it, allowed to remain a few minutes, and brought out again in a moist state, had not the slightest disagreeable smell. These results are obtained at a cost of about 1d. per horse per week. The manure is saleable, and may fetch 10s. a ton. The rationale of the chemical agency can be easily demonstrated. It may be sufficient at present to say, that the invention aims at complete disinfection, as well as at preservation of the valuable constituents of sewage and manure for their application to agriculture. Dilution of the sewage, such as there is in the case of London, will occasion no chemical difficulties as to disinfection; though the dilution necessarily lessens the commercial value, and interposes difficulties as to the management of so large a volume of water.

* The injurious consequences to health of the night-soll men are, we believe, admitted, whilst the men are not generally hard drinkers.

ROYAL ACADEMY LECTURES ON
ARCHITECTURE.MR. G. G. SCOTT ON THE ARCHITECTURE OF THE
THIRTEENTH CENTURY.*

In the two lectures I delivered during the last session, my object was to trace out the development of Pointed architecture from the Romanesque nucleus of the preceding age,—to show how far this was the result of constructional necessities and the natural progression of art, and how far it was aided and furthered by external influences; and to illustrate the unity and grandeur of the artistic movement, which in so short a time generated an art at once so original and so truly noble. My object on the present occasion will be to give a general sketch of that art when it had arrived at its culminating point, or rather during that wonderful century through which it reigned triumphant, rejoicing in the full attainment of the object of its strivings, and proceeding from strength to strength, and from beauty to beauty, filled the countries of Western Europe with creations at once new to art, and in many respects nobler than anything the world had previously seen.

Though it is convenient to classify our Mediæval architecture under the heads of centuries, its points of change do not in reality coincide with such a division. It would, perhaps, be nearer to the fact if we classed the last quarter in each century with that which follows: thus, in this country the Norman style would be supposed, roughly speaking, to occupy the interval between 1075 and 1175;—the Early Pointed style from thence to 1275;—the Middle or Decorated periods from 1275 to 1375; and so on.

On this view of the case a great deal of what I treated of in my last lecture belongs artistically to the present one, and a portion of what I am embracing under the head of the thirteenth century would better go with the fourteenth century. As, however, I should wish to be as comprehensive as possible in defining the period of the unimpaired integrity of the style, I gladly extend it to the very end of the century, and will not quarrel with those who would dip a little into the succeeding one; for though I prefer the strength and boldness of the works of the earlier part of the century, the style can hardly be regarded as complete if deprived of the more delicate productions which characterise its close.

In my last lecture I showed how, both in France and England, the last quarter of the thirteenth century was occupied in bringing the earlier phase of Pointed architecture from a state of mere transition to one of full development and consistency, and how that the works of this period of especial earnestness in onward striding are characterised by a masculine vigour scarcely equalled at any other stage. We have now to view the Early Pointed style at the period of the full attainment of its aims, and when its endeavours were rather to amplify and to extend its means than to construct a style.

The thirteenth century commenced under the most favourable auspices for the development of the newly-created architecture. In France, both the secular and the ecclesiastical powers were in the highest state of prosperity; and if in England such was not the case with the Crown, and we were checked by a bad and mean-spirited king, it is clear that both the barons and the Church were in a state of high prosperity; for, from the very opening of the century, we find works on the grandest scale to have been everywhere undertaken. Whether in the castle, the palace, the cathedral, the monastery, or the parish church, we find the newly-developed style to have been put largely into practice; so that scarcely a building of note fails to show the impress of the youthful art. Every great church must have its share of it: thus at Canterbury, though they had just completed the eastern half in the style of the transition, the cloisters were added in the perfected manner. At York, again, the choir had been rebuilt in the last half of the preceding century; but the perfected style must have its sway, so the Norman transepts were rebuilt in it. At Lincoln, the transformation of style had commenced, under St. Hugh, before the close of the twelfth century, and before 1280 but small vestiges of the Norman structure remained. At Ely, the century commenced with the building of the western porch, which was followed up by the magnificent eastern arm of the cathedral. At St. Alban's, the gigantic Norman church had not been completed much more than half a century before its western façade was demolished, and recommenced in the new style, in which one-half of the nave partook; and before the thir-

teenth century was finished the choir had also been rebuilt. At Durham, the Norman church received the magnificent addition of the Chapel of the Nine Altars. At Fontenay, a similar addition was made with an entirely new choir and many noble appendages. Wells cathedral was almost rebuilt in the new style. Indeed, it is scarcely possible to single out any great church which does not, more or less, evince the influence of the great architectural movement which ushered in the thirteenth century. Its most complete work is the cathedral at Salisbury, and among its later creations we may enumerate the eastern portion of Westminster Abbey, the whole of Tintern Abbey, and nearly the whole of the once sumptuous church of St. Mary's Abbey at York; while its last decade produced some of the most exquisite gems of art, such as the tombs of Cruchbach, of De Luda, and of Archbishop Peckham; the chapel of Ely-palace, Holborn; and the Eleanor Crosses: so that, taken as a whole, the century can claim most of the noblest, as well as of the most elegant, productions of English art.

In France its pre-eminence is, if possible, yet more manifest. The century opened there under the fully-established power of Philip Augustus, the most powerful monarch who had ruled France since the days of Charlemagne. In the days of his predecessor, the English king had governed more French provinces than the King of France himself; but now the English were almost entirely expelled, and this mighty monarch reigned without a rival. In his days commenced an almost general rebuilding (wholly or in part) of the cathedrals, excepting such as were of very recent date. The west façade of Notre Dame at Paris, the greater part of Rouen, of Rheims, of Amiens, of Coutance, of Bourges, of Le Mans, and a list far too long to be enumerated, owe their grandeur to his reign, or immediately followed it.

Towards the middle of the century the same work progressed gloriously under the auspices of St. Louis, and though slackened from actual satiety towards the close of the century, it was not really checked till the commencement of the English war.

As in England, the works thus produced evince masculine grandeur of the highest order at the commencement, and the most delicate beauty at the close of the century; while, during its middle portion, the two are united in the works of St. Louis. In Germany, the works of this century evince great artistic disturbance. The change from the round to the pointed arch style had been there resisted, while both in France and England it had been worked out to maturity. At the opening of the century, German architecture consisted of a highly-refined variety of Romanesque, with the partial use of the pointed arch, chiefly where suggested by constructional necessities. This, during the first quarter or more of the century, developed itself into an early pointed style, strictly German, and holding out promises of great force and originality,—promises which were frustrated by the sudden inroad of French (Gothic about 1250), after which, though Germany took a course still very much her own, it was one in a great degree severed from her noble early tradition, and emanating from the French graft rather than from the original stem.

Italy received her Pointed architecture from France and Germany, and mingled it freely with her Classic-Lombardic traditions. The union produced many noble and many incongruous developments. The lessons they offer must be used with caution; but, Italy being the land of ancient art, the land of sculpture, of painting, of rich marbles, of mosaic work, and of municipal and other civic edifices, the graft of northern art upon so prolific a stock has, as may readily be imagined, produced varieties which the circumstances of northern nations would have rendered impracticable in its native lands, and the suggestions they offer, if judiciously used, are well calculated to add copiousness to the style in the hands of modern revivers. Of this I may have occasion to say more hereafter.

The thirteenth century was to Mediæval art what the Periclean and Augustan ages were to the Greek and Roman; and in each case, though war and bloodshed are in themselves hostile to art, there can be no doubt that the excitement of the human mind, resulting from great national struggles, has tended to produce that advance in art which followed in one case the glorious assertion of national independence, in another the conquest of the world, and in a third the romantic and unselfish efforts of the Crusaders.

It was a period of deep-seated mental excitement, of a prodigious upstirring of the human intellect. Our learned men at the present day may smile at the quaint and imperfect erudition

of these early periods of our civilization, but they should remember that they were our days of youth, of warmth, and of rising vigour, while the more perfected literature of our own age may possibly be found to superadd to its maturity a few symptoms of old age.

This youthful energy pervaded every branch of art: every thing seemed to experience a new, a generous, and vigorous impulse. All Europe became filled with the productions of the newly generated art: every city became a repository of noble and sublime architecture, and every town and village became possessed of productions equally beautiful, if more modest in their pretensions; while the intervening country was studded over with castles and monastic establishments, in which the same majestic art displayed itself in ever-varying forms, each suited to meet their different requirements.

Nothing is more difficult than to describe a perfected art. My last two lectures traced out the gradual construction of Pointed architecture, and its transition from the preceding style. This was comparatively easy, but to describe it when it had attained perfection is far less so.

The fact is that there is neither in France nor in England any marked difference between the styles, during the later period of its transition and when perfected beyond that unity and consistency of parts which indicate maturity. In France particularly this is the case, for neither had the style there continued long to evince its transitional state by the retention of strictly Romanesque features (unless the square abacus can be so designated), nor did it when perfected throw off, as in England, that one detail which to our eye seems a relic of transition. The later transition and the earlier perfected specimens seem, in France, to be the same art a little more developed and more homogeneous, rather than to have many describable points of difference. In England, the change of the abacus from the square to the round form, makes the distinction more marked, so that English examples at the opening of the thirteenth century, always appear later and more advanced than contemporary French ones. I instance in my last lecture four examples of perfected Early English.—The eastern transept of Lincoln, completed about 1200; the eastern chapels at Winchester, about 1204; the western portals at St. Alban's, finished about 1205; and the western porch, or galilee, at Ely, finished about 1214. None of them show any remains of transitional character, and all having the English round capital in full development, appear to the English eye more advanced than such works as the western portals of Notre Dame, at Paris, which are, if anything, somewhat later in date. In this country, in fact, the form of the abacus, is the distinguishing feature between the transition to the perfected style, while in France there is no such distinction to be found. The difference is more one of feeling, which the practical eye perceives at once without being able to define.

Though I speak of the Early Pointed as a newly generated art (as it in effect was), it must never be forgotten that it is a distinct and natural growth from the pre-existing Romanesque. The more I study old examples the more obvious does this appear. Take either France or England alone, and you may from either construct, *ad libitum*, unbroken catene of examples, showing step by step the natural and logical growth of the new style out of the old; and that without any essential imported element (for the Byzantine capital, which was the parent of the Gothic one, was accidental though a happy importation).

This progressive growth was but the practical realization of three great aims towards which the Romanesque architects were ever striving. The perfecting of their arcuated and vaulted construction, the increase of the altitude of their proportions, and the general adding of refinement and elegance to their details: thus, if you take the internal bay of a Norman cathedral, and simply set yourself the task of increasing its height in a given proportion, the result will be a Gothic bay, for the arches cannot participate in the increased elevation without becoming pointed. If the details are further refined, it becomes an ordinary transitional design; and if the process is carried on a little further, it becomes a perfected Early Pointed work; the distinction between transition and perfected Early Pointed, being merely the carrying on of the process by which the former was generated out of Romanesque. This fact, which all who look closely into it must see, was what led a talented writer to say, that Early Pointed was only Romanesque improved. He meant this as an argument against it as compared with the still

* Delivered on Thursday, the 20th inst.

succeeding styles; but I confess, for my own part, while feeling strongly the truth of the observation, and highly appreciating the importance of some of the subsequent developments, I do not the less admire the glorious productions of the early style, from seeing in them the evidences of the vigorous stock from which they have sprung.

It will be seen by enumerating the leading characteristics of Pointed architecture, that the great majority of them were already perfected, or, at least, brought to that reasonable and consistent state of development which stops short of excess and exaggeration, at the commencement of the thirteenth century.

The Pointed arch had obtained universal predominance, though without involving the rejection of the semicircular or the plain segment, where circumstances called for them. The general predominance of the vertical line was acknowledged, without running into the excess of underraising the horizontal: lofty and aspiring proportions prevailed, though not to the extent of exaggeration, and without unreasonably asserting their claims in works of a humbler class: subdivision of arches into orders, and the clustering of the pillars, as was to satisfy the eye that each member of the arch was severally supported, had arisen during the Romanesque period, and was now carried out still more systematically, and with greater elegance; and the system of making the bases and capitals face in the direction of the insistent arch-rib, which had also arisen early, was (in France at least) very generally adhered to. The distinction between constructional and decorative pillars, one of the great characteristics of the Gothic style, both round and pointed, was carried to its fullest extent. The vaulting system was perfected, though retaining its Normal simplicity, and the corresponding system of buttress (solid or arched) and pinnacle, which are the necessary accompaniments of a perfect arched vault, had been brought to perfection. The continuity of line was acknowledged sufficiently to suggest a feeling of natural growth of the parts one from another, from the bases of the shafts to the bosses of the vaulting, but without that sacrifice of force and of all salient points which became the vice of later styles.

The principle of rendering the useful features ornamental was fully developed: as an instance of it the doorways, the only parts of the exterior which *must* of necessity be seen from close at hand, were rendered magnificent, beyond all former precedent, and became the vehicles of noble sculpture and the great exponents of the objects of the building, whether religious or secular. The windows now became great characteristic objects, not only from their richly-painted glass within, but as leading architectural features, both within and without. The bell-towers became glorious structures, rendering the cities conspicuous throughout the whole surrounding district, and making every village a distinct and beautiful point in the landscape. The same principle obtained in all secular structures. The castles of the nobility became truly noble structures, glorious for the stern grandeur of their external aspect, and for the massive beauty of their internal architecture: the gates and defences of cities partook of the same severe grandeur, while the street fronts, the townhalls, and other civic buildings, displayed architectural characteristics, modest or grand, as suited their several purposes. In Italy, where municipal institutions were more developed, noble street palaces were erected, and everywhere the architecture, whether viewed in the mass or in its details, was suited, as by an unerring instinct, to the objects on which it was exercised.

The decorative system of the architecture had also been brought to great perfection. The mouldings were refined without losing boldness or strength,—in fact, were strong or delicate as suited their position: the foliated carving had arrived at very high perfection, and was of a kind perfectly new: the magnificent creation of the artistic mind, sculpture, was often profusely used in connection with architecture; and if not of that perfectly studied symmetry which satisfies the academic critic, it evinces a boldness of conception, a quickness of invention, and an unaffected grandeur of sentiment, which our modern sculptors would do well to emulate, while it is eminently suited, by its rigid lines and severe force, to architectural purposes.

It would be absurd to attempt, in a single lecture, to give any detailed description of the architecture of this great period; nor is it necessary, as no style is so familiar to those whose attention has been at all turned to such subjects. I will, however, take a few of its leading points, and call attention to some of their characteristics.

I will begin with the *column*. In no feature is the difference between Classic and Gothic architecture so strongly marked as in the column. In the former one general ideal alone prevailed—the round shaft with a capital, and with or without a base. In the latter this normal type is equally admissible and equally honoured; but in addition to it an almost endless list of forms is introduced. In the first place, the round column is converted at pleasure into the octagonal or other polygonal form: this is a mere variety of the normal type. Then either the round or the polygon is flanked by four smaller shafts, attached or detached; and these subsidiary shafts may be increased in number, subordinated one to another, both in size and salience, and may be all attached, or all detached; or the attached and detached shafts may be used alternately or in any other order, in the same pillar.

Then, again, instead of the cylindrical pillar, we may have four cylinders united in one; and these may, in their turn, be made the nucleus round which detached or attached shafts may be grouped; or we may have two or more separate cylindrical main shafts carrying the load, and may group subordinate ones round them; and again we may take other forms of nucleus, as the square, the canted square, or a pier with receding orders, and place our shafts round them; and finally we may form groups in which no specific form of nucleus is to be traced, but which consist of shafts arranged with reference to the superincumbent arch alone.

The number of changes which may be rung on these varieties of pillar is absolutely endless; though it is not desirable to indulge too much in the more intricate forms of grouping, but, as a general rule, to keep to the forms which are naturally suggested by the duties the pillar is designed to perform. When detached subsidiary shafts are used it is somewhat unnatural to joint them in their length without introducing some visible means of tying them to the main pillar within. This necessity gave rise to the use of the moulded band, which forms so beautiful a feature in the pillars of this period. It is sometimes made of brass, but more usually in stone or marble.*

ENGLISH ART BY A FRENCH CRITIC.

SOCIETY OF ARTS.

At the meeting held on Wednesday, the 19th, Sir Charles Eastlake, P.R.A. in the chair, a paper was read in the French language, entitled "Les Arts, les Artistes, et l'Industrie en Angleterre depuis la dernière Moitié du Dix-huitième Siècle jusqu'à ce Jour," by M. Théophile Silvestre. The author began by explaining that he had come to England in obedience to the order of the French Government, to study the English School of Fine Art, and he expressed especial gratitude to the Society of Arts for having for the first time allowed a paper to be read before them in a foreign language; as, had not this been permitted, he would not have been able to do anything like justice to the subject which he had undertaken to treat. He then passed in rapid review some of the more important services rendered by the society to the arts, as well as to manufactures and commerce; and expressed a hope, that as it was the originator of the Great Exhibition of 1851, which had been so brilliant a triumph; so it would be able to carry out with similar success its present proposal of holding another Great Exhibition in 1861. Passing on to the more immediate subject of his paper, M. Silvestre proceeded to speak of some of the earlier masters of the English school, criticising at considerable length the works of Hogarth, whom he regarded as the true founder of that school which now commands the admiration of Europe. The works of Reynolds, Gainsborough, Wilkie, and other masters, were then reviewed.

Parts of the paper were exceedingly felicitous and eloquent. What M. Théophile Gautier, and other French critics who have pronounced the English, *quod art*, but "varnished barbarians," will say to M. Silvestre's rose-coloured view of our school of painting, remains to be seen. As Mr. Digby Wyatt remarked, very justly, on this point,—To all that M. Silvestre had said there was nothing to object. All that he had said of Hogarth, Gainsborough, and other English painters, they must agree with; but he had not told them that there still existed in art realms which we had not conquered. It was impossible to examine the beautiful photographs of the works of Raffaele exhibiting on the walls of the room, and then to look at the works of Barry, without seeing that there

was a sublime in art which we had not yet attained. With regard to the present day, he thought they must admit that pictures were regarded too much in the light of upholstery and furniture. If we were really to advance the art of painting, it must be placed more in the same category with sculpture and architecture. The subjects would then be treated with a more becoming dignity, and we could then hope to rival the great men of past ages.

Mr. W. Hawes, Mr. John Bell, Sir Thomas Phillips, Mr. Lavanchy, Mr. Fahey, Mr. C. W. Dilke, and the chairman, also spoke, and some of them expressed the thanks of the meeting to M. Silvestre in his own language.

The paper, read as we have said in French, was listened to for more than an hour with the greatest interest by a crowded room, and the nature of the applause showed that it was carefully followed by all present. Printed copies were in the hands of the members, but the success of the experiment was mainly due to the clear pronunciation and admirable elocution of the lecturer, the importance of which is often lost sight of by gentlemen who read papers. If, for example, two or three of the gentlemen who have at one time or another lectured at the Architectural Museum had thought it worth while to recollect that an audience desires to *hear*, their excellent matter would have been better appreciated than it was.

BURNS AT THE CRYSTAL PALACE.

MESSRS. MONGKTON MILES, Tom Taylor, and Theodore Martin, the judges invited by the directors of the Crystal Palace to award the prize of 50 guineas to one of the 621 poems sent in, having made their selection, the envelop accompanying it was opened at the festival, on Tuesday, and contained the name of Isa Craig, of Ranelagh-street, Pimlico. Miss Craig is a young Scotchwoman, who has been connected from the foundation with the Social Science Association. Those who attended the late meeting of that body, at Liverpool, will not fail to remember her as the most efficient of the officials. The poem was read to 25,000 persons by Mr. Phelps, of Sadler's Wells, somewhat monotonously, but so as to be appreciated by the majority of those present. The greatest enthusiasm as to the authorship prevailed,—much greater than could have been anticipated,—and the day passed off altogether satisfactorily. The poem, as the work of a lady, must be considered a very remarkable production, although with all our admiration of Burns we can scarcely subscribe to the opening verse, which says,—

"We hail, this morn,
A century's noblest birth;
A Poet peasant-born,
Who more of Fame's immortal dower
Unto his country brings
Than all her kings!"

The beauty of the closing lines few will deny,—

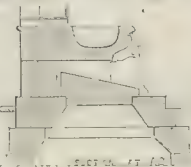
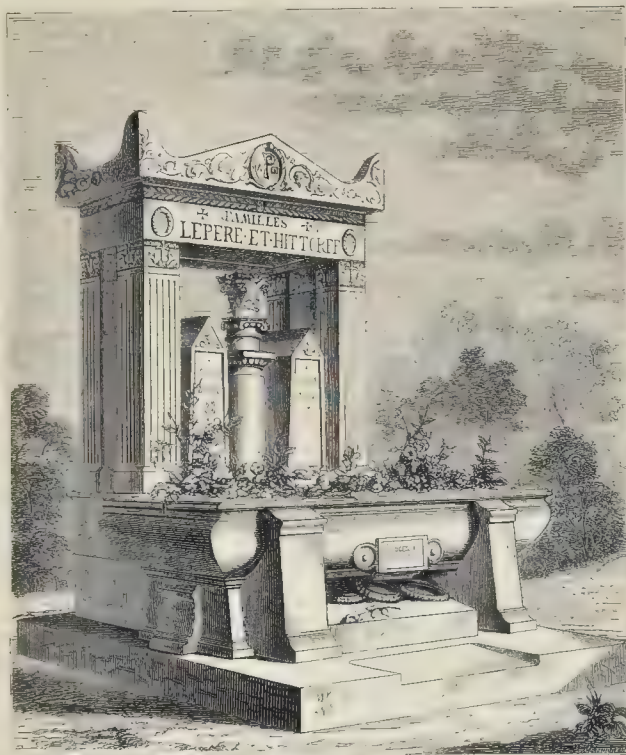
"The arch blue eyes,—
Arch but for love's disguise,—
Of Scotland's daughters, soften at his strain;
Her hardy sons, sent forth across the main
To drive the ploughshare through earth's virgin soils,
Lighten with it their toils;
And sister-lands have learn'd to love the tongue
In which such songs are sung.

For doth not Song,
To the whole world belong!
Is it not given wherever tears can fall,
Wherever hearts can melt, or blushes glow,
Or mirth and sadness mingle as they flow,
A heritage to all?"

A number of memorials of the poet, exposed in cases, were looked at by throngs with great interest, and the recital of "Tam O'Shanter," illustrated by dissolving views after Faed, was very well done, and gave evident pleasure to succeeding audiences. A concert, comprising songs selected from the works of Burns, formed part of the proceedings.

SUBWAYS.—The Metropolitan Board of Works have had under discussion a report from the committee of works, stating that they had considered the memorial of Mr. Henry Carr, relative to a plan for the construction of an omnibus subway from St. Margaret's Church, Westminster, to the Royal Exchange, to be carried out under Parliamentary powers, by means of a subscribed capital, and recommending that the projectors be informed that the Board did not feel justified in expressing any opinion upon the scheme in question at this stage of the proceedings; and further apprising them that, in case the measure should be brought before Parliament, it would become the duty of the Board to take proper steps for guarding the sewers, and other subjects of their jurisdiction, against injurious interference.

* To be continued.



TOMB OF THE LEPÈRE AND HITTORFF FAMILIES, IN THE NORTHERN CEMETERY, PARIS.—*M. Hittorff, Architect.*

TOMB OF THE LEPÈRE AND HITTORFF FAMILIES, PARIS.

PLACED on one of the most elevated spots in the Cemetery "Du Nord," at Paris, this tomb is distinguished by simplicity in its composition, and that feeling of repose which befits a burial-place. Such ornaments as there are, of a symbolic character, are employed only in the upper part: these consist of sculptures of small projection and incised forms. Beneath the pediment, on the base of a column, the architect has placed a model of the capital of the column of the "Grande Armée," of that of the church of St. Vincent de Paul, and of the Champs Elysées. At the sides rise two pyramids, serving to receive inscriptions. The tomb is erected on a site 6 feet square, and is wholly of a fine stone called "Chateau London." The height is 9 feet. We give with the plan a section drawn on the same scale (1 inch to 6 feet), which shows the entrance for the coffin into the vault beneath. The detail of the capital is on the scale of 1 inch to 2 feet.

THE SPACE ON THE SOUTH SIDE OF ST. PAUL'S CATHEDRAL.—Is it possible that after all that has been said on the desirability of keeping open the area on the south side of St. Paul's, the deputations, the discussions, and the promises, that it is about to be covered with buildings? It can scarcely be credited, and yet appearances seem to lead to the belief. If persisted in, this blocking up of the cathedral will be a matter for long continued regret.

SOMERSETSHIRE ARCHEOLOGICAL SOCIETY.

VILLARD'S SKETCH-BOOK.

THE third *conversazione* meeting of this society was held on the 19th of January, at the Museum, Parade, Taunton. The meeting was hardly so numerously attended as usual. The President, in announcing the programme of papers for the evening, said the first paper was by Mr. Giles, entitled "Notes of an Architect's Sketch-Book of the Thirteenth Century," to be followed by Mr. Jones, "On the Classification of Shells, and Incidents in the Life of a Mollusc," after that by a lecture by Mr. Sanford, "On Painted Glass." Mr. Giles, in his paper, said the sketches of Villard showed a thorough knowledge of the conventionality of art. In all the illustrations there was evidence that they were directly studied from nature. At the present time, continued the reader, there is a great conflict going on between the advocates of what is called the naturalists' school on the one hand, and the conventional school on the other;—these insisting on merely imitating natural forms, or composing with natural forms an imitation of natural compositions;—those insisting that both the individual feature and the whole composition should be subject to stern governing laws, to be sought only, perhaps, in the leading or typical form of nature. Probably the true partly lies between these extremes; and this seems to have been the road travelled by artists of the time in which Villard studied; and yet, with such manifest power, how are we to

account for the shortcomings of some of the drawings for feeble or even distorted expression in the faces, with exaggeration in limbs, and in the architectural drawings utter absence of pictorial effect and failure in perspective? It seems to me that pictorial art was at this time chiefly confined to illumination, and that architectural drawing was used merely to set out or describe work to the workmen in the shortest way, without any attempt at pictorial effect; and we have pretty good evidence that the great buildings of the middle ages were designed and built by the aid of only a few meagre sketches on parchment, the utmost care, however, being taken in drawing the lines of work on the stone itself, as may be seen by examining old work which often he found. The original sketches were, therefore, merely diagrams on which little time was wasted, all the skill of the artist being reserved for the actual work in the building itself, and if we take note of the failing of these sketches as well as their merit, let us remember that they were drawn by the men who built the cathedrals, which are yet our wonder and admiration. The last point which I would notice is the variety of subject in these drawings. All the useful sciences are illustrated here; and, if we smile at the extravagance of the scheme for perpetual motion, we may admire the simplicity and ingenuity of some of the contrivances, showing as they do, that the screw, pulley, and inclined plane, and other mechanical appliances (based on them), were nearly as well known to Villard as to Brunel. And if the illustrations of science are various, those of nature are not less so—foliage, draperies, and animal life; the latter from the lion to the grasshopper.

GIANT TIMBER.

OUR attention has been called to an importation of three cargoes of mast-pieces of timber, now discharging in the Commercial Docks, Rotherhithe. The sizes, both in length and square, are so unexampled as to be worthy of record. One vessel, indeed, the *Bostonian*, of 1,000 tons, has spars of a magnitude that we believe were never before made timber of commerce; they run from 90 to 140 feet in length, and from 26 to 40 inches square. One mast contains twenty-eight loads, weighing about thirty-three tons, and is (as are most of them) nearly as straight as a ruler, and without a knot; being 139½ feet long and 39½ inches square. When felled, it measured 316 feet to the branching top, and for 150 feet was without any branch at all. It was squared to 41 inches; but was of necessity reduced to 39½ inches to admit of its entering the ship's bow-port.

The quantity of timber in this enormous tree is worthy of notice: call it 300 feet by 41 inches square, it would contain 3,502 cubic feet, or 70 loads 2 feet as squared, or 116 loads as round timber. It would saw into 2,050 boards 41 inches wide, 1 inch thick, and 12 feet long; or, allowing about twelve per cent. for waste in sawing, 1,800 boards 36 inches wide by 1 inch thick, and 12 feet long.

If laid out quite close it would cover 72,000 square yards, or 1 acre, 1 rood, 2 chains, 6 poles, 10 yards; or, allowing for unavoidable interstices, about two acres and a quarter.

It is difficult to imagine a tree half as high again as the monument before it branches out.

These masts are considered worth from 12l. to 14l. per load, and we understand are secured for the British navy; and it is said that the longest may perhaps be raised as a flag-staff at Windsor.

The quality of the timber is not precisely white pine, red pine, pitch pine, hackmatac, or cedar, having, in some respects, the qualities of each; and inclining perhaps to red pine. It swims lighter than pitch pine, has beautiful figure, and in taste has a small degree of acidity. It however appears not to have the peculiar character of the "Wellingtonia Gigantea" as the specimen of the wood is exhibited at the Crystal Palace. The discharging of these enormous sticks from the vessel has been attended with great difficulty and expense, and was not altogether without danger.

In the *Times* of the 21st is the description of "a wonderful valley" in California, by C. D. F. called the "Yosemite," or Bear Valley. The writer says: "I wish to mention that near the road to this valley I visited a grove of the far-famed *Wellingtonias*, or mammoth cypresses, of which there are about 500 interspersed among numerous others less remarkable, though still very large. The largest I measured was 39 feet in diameter 6 feet from the ground, and was at

the least more than 400 feet high. Another, which had fallen, and of which the bark alone remained, formed a tunnel through which three horsemen could ride abreast."

We are indebted for these particulars to Mr. N. Gould, F.S.A. by whom we are also enabled to append an interesting account of the voyage of the *Bostonian*, given him by the mate of the vessel, a very intelligent man. It will be seen that this is among the first imports from New Columbia; but we do not yet know what may hereafter be added to our commerce by the colonization of Vancouver's Island.

The *Bostonian*, of Boston, 1,000 tons American and about 1,000 tons British measurement, left New York on the 21st of October, 1857, for San Francisco, with cargo and passengers, and was there chartered to load masts, &c. for London at Tekelet, Puget's Sound, in Washington territory, United States, at a freight of \$1.35. 90. per ton, or load.

The ship remained at Tekelet 103 days, was actually at work receiving cargo about 50 days (as will be seen by the account of her day's work, which I copied from her cargo-book and attached). On completing her lading, she sailed again to San Francisco to make up her complement of hands, several of the crew having deserted the ship at Tekelet for the gold-digging in British Columbia. The vessel entered the Commercial Docks on the 27th of December last; the voyage, therefore, occupied 433 days.

According to statement, there are only twenty-one white settlers in Tekelet. The trees, when felled, are drawn to the bank of Puget's Sound by oxen, and are then rolled into the water. In regulating the length of the timber for masting purposes, the scale is about 3 feet length for 1 inch square. The tree numbered 7 is the largest that has been shipped at Puget's Sound. At a standard of average cost, the trees 80 feet in length by 32 inches square cost in the country 167. each, or about 30s. per load.

PROPOSED MEMORIAL TOWER IN HONOUR OF WATT.

THE accompanying engraving represents the monumental tower which it has been proposed to raise in memory of Watt, in the cemetery occupying the heights to the west of the town of Greenock, the birth-place of the great mechanician. Some of the Italian Campanuli have been used as types.

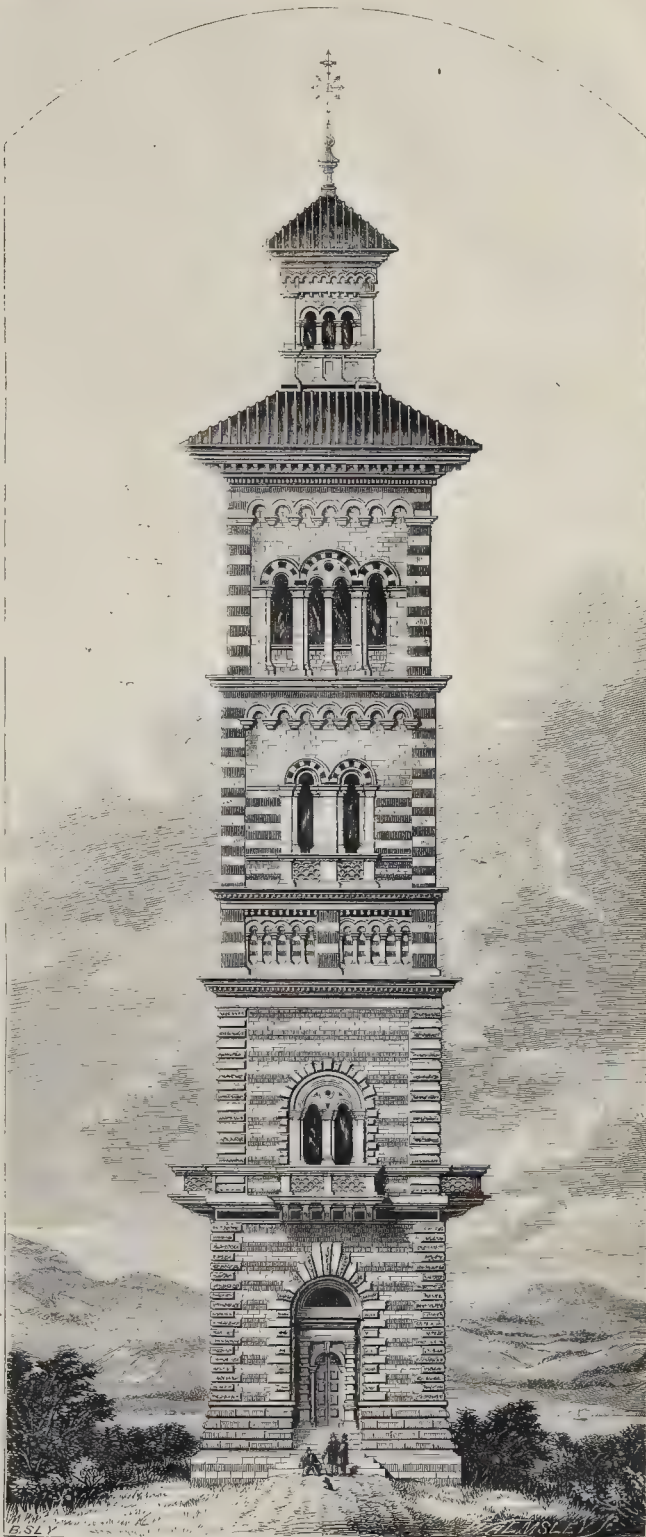
The proposed tower is upwards of 40 feet square at the base, rising at the level of the main cornice to a height of 163 feet, and is surmounted by a turret or observatory of the further height of 62 feet, making the total height 225 feet above the base line. The noble eminence on which the testimonial is to be placed is likewise at an elevation of 289 feet above high-water mark, making the height of the tower altogether 514 feet above the level of the sea, so that it will be seen for miles around in every direction.* The upper turret is adapted for the reception of an electric time-ball, and for nautical and astronomical observations. Thus it is sought to make the structure useful to all engaged in the navigation of the noble estuary of the Clyde. The views from the balconies and several floor levels will be fine, and internally the structure will comprise rooms of about 30 feet square, connected by means of a circular staircase and open gallery, and having on their sides a series of niches and recesses suitable for the reception of statues, busts, or other memorials commemorative of men eminent in science or philosophy.

In the erection of this testimonial, it is intended to incorporate gifts of materials from every quarter of the globe, inasmuch as there is no portion of the civilised world which is not indebted to the genius of Watt.

The present position of the monument, as we understand, is this. A commanding and valuable site has been obtained: the ground has been levelled and cleared for the foundations: contributions of materials of the most interesting and varied character have been received from Bombay, Malta, and many places on the shores of the Mediterranean; from various parts of England, Scotland, and Ireland; from Sebastopol, Maryland, Italy, Isle of Man, and many other parts too numerous now to mention. These contributions are on the ground, and a mass of other material is promised; lime and stone sufficient to build the first 14 feet. An object of this vast character is of necessity slow in progress, but it is hoped that twelve or fourteen years may possibly complete it.

The ground is being prepared for the reception of the foundations, under the direction of Mr. David McIntosh, architect, who erected the hospital founded in the immediate neighbourhood by Sir Gabriel Wood.

* The engraving scarcely gives the right idea of the great elevation at which the memorial is to be placed. The river Clyde seen in the distance is far below it.



PROPOSED MEMORIAL TOWER, IN HONOUR OF WATT, AT GREENOCK.

Designed by Mr. David McIntosh.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixth ordinary meeting was held on Monday evening last, at the rooms of the Institute, 16, Lower Grosvenor-street, Mr. J. J. Scoles, V.P. in the chair.

The minutes of the last meeting having been confirmed, and the receipt of some donations announced, the following gentlemen were elected members of the Institute:—Mr. Hyman Henry Collins, of 61, Torrington-square, fellow; Mr. Henry Simpson Legg, of 6, South-square, Gray's-inn, associate.

Mr. Digby Wyatt then introduced to the meeting M. Théophile Silvestre (of whom we have elsewhere spoken), who was at present engaged in making an investigation into the knowledge and history of the Fine Arts in England. He had come over to greet this country in the name of the French Minister of State.

M. Théophile Silvestre delivered a very animated address in French to the assembly. He thanked the meeting for their generous reception, and likewise returned his acknowledgments to Mr. Wyatt for the manner in which he had recommended him to their esteem. That gentleman was perfectly aware that his sole ambition in visiting this country was to enter into a communion of ideas and sentiments with men of honour and elevated instinct. He had come to study works of art in England, to enlighten his mind, and to profit by the advice of gentlemen such as he had now the privilege of addressing; and the warmth of feeling with which he had been received was an ample reward for the step which he had taken. As they had been informed by Mr. Wyatt, he had the honour of being nominated by his Excellency the Minister of State, who also belonged to the household of his Majesty the Emperor of the French, to study the museums and other institutions of the Fine Arts in Europe. His Excellency had directed his attention to the various European schools, and notwithstanding his decided taste for traditional art, he was perfectly sensible of the new artistic tendencies; and English artists might confidently depend on the sympathies of this enlightened minister. His Excellency had assured him that he would be at all times ready to give them proofs of that sympathy, and to assist them in obtaining a just appreciation of their merit in France; and his Excellency had, moreover, authorised him, in his name, to invite English artists to forward their works to the next Exhibition, which would take place in Paris in the course of next April. That Exhibition would, undoubtedly, furnish some remarkable specimens of British art. His Excellency, the Minister of State, was anxious that these should receive the greatest possible attention, and he would do his utmost to induce the Emperor to make choice of some of them. In the paper which he had read at the late meeting of the Society of Arts, presided over by Sir Charles Eastlake, the president of the Royal Academy, if he had failed to exhibit a profound knowledge of the subject, he had at least given candid utterance to his sentiments with regard to English artists dead and living; and in writing their history he felt deeply interested. The applause of the Society of Arts, to which that Association had now added theirs, was to him a great encouragement to study and perseverance; and he would be but too well recompensed for his humble efforts if he were to see at Paris in the present year the English and French schools fraternally united. He should always feel happy in assisting to connect the glory of England with that of France; and his profound love and ardent devotedness to his own country would not make him lose sight of the honour which in his record he ought to attach to British genius. England was the friend and ally of France, both by the triumphs of conquest and of art. M. Silvestre concluded by a reference to the works, of so much importance in an artistic point of view, which had been accomplished by his Majesty Napoleon III. without weakening the private or public resources of France.

Professor Donaldson said it was the duty of the members of the Institute to second the efforts of M. Silvestre, for it was a compliment paid to the country whenever a foreigner, but more especially a native of France, came over to England to study the fine arts. In this respect England was 200 years behind France. (Cries of No, no!) He was speaking of the Renaissance; and probably they would never have had the fine works of Michelangelo, if it had not been that France had sent to Italy to establish schools for the promotion of art. France was successful in the establishment of these schools, but our Government had not done so. Therefore

he maintained that France was 200 years in advance of this country. We had never been able to keep pace with France in this respect; and the French excelled the English in the colonies, and in all other parts of the world. It was consequently all the more agreeable to see a French gentleman coming over to mark the steps that we were making; and if we desired to achieve any further progress, we must listen to our defects, and turn a deaf ear to praise of our excellencies. In return for the visit of kindness and approval with which this foreigner had favoured them, they ought to do every thing in their power to assist the object which he had in view, by giving him all the information in their power and by aiding him in his present mission. Allusion had been made to the wonderful results accomplished by the present emperor in the way of architectural ornament in Paris, but every thing in the way of description must fall far short of the reality, which could only be appreciated by a personal visit. London had not done anything like what she ought to have done, but there was a gradual improvement visible, which was very gratifying, and would doubtless be attended with the best results. In conclusion, he again exhorted the members of the Institute to show their gratitude for the interest taken in them by foreigners, by proving that they themselves were desirous to aid by every means in their power the promotion of the fine arts in all the countries of the world.

Mr. G. L. Taylor then read a paper on "Ancient Roman and Etruscan Architecture and Remains, illustrated by Drawings on a large Scale, the Result of recent Studies on the Spot." The reading of the paper had not concluded until after ten o'clock. In the course of it Mr. Taylor referred feelingly to his colleague the late Mr. Cresy, and pointed to the notice of him which appeared in the *Builder*.

Professor Donaldson proposed a vote of thanks to Mr. Taylor for the tour which he had taken them through Rome.

The Chairman had very great pleasure in seeing his old friend Mr. Taylor once more amongst them, and especially hearing him mention the name of another old friend and former school-fellow, Mr. Cresy. They were all very much indebted to Mr. Taylor for his excellent paper.

Mr. Wyatt referred in complimentary terms to the beautiful drawings by which the lecture had been illustrated, and inquired whether Mr. Taylor would be willing to have them photographed, in which case he should be anxious to obtain copies of them.

Mr. Taylor said he had a great admiration for photography; and although he entertained no very strong personal feeling on the matter, he should be glad to aid the Institute if the object proposed could be accomplished. He himself had assisted in getting M. Therson's photographs from Rome.

The vote of thanks was then put from the chair, and passed unanimously, after which the meeting separated.

ENGLAND versus FRANCE IN ART.

SIR.—I cannot help asking you to allow me to protest publicly against a custom which has grown up in the Institute, springing, no doubt, from the best intentions, but apt at times to run a little into what may be called excess of good taste, to the discouragement of simple minds. Politeness, like all else, has its limits; and accordingly, when our Secretary of Foreign Correspondence makes it a rule, in complimenting stray "distinguished foreigners," who appear at our meetings from time to time, to inveigh against English art, English Government, and everything that is English, as being utterly depraved, and to magnify and laud as the *acmé* of perfection everything that is not English, his politeness, even if it be confessedly mere politeness and no more, is calculated to make the patriotic wince.

On Monday evening there made his appearance at the Institute a Parisian artist of some sort, said to possess the incomprehensible character of a commissioner sent by the French Government to inquire into "the English School of Art," and write a book upon it. This gentleman comported himself in every way creditably and modestly; and if his somewhat youthful appearance, his ignorance of our language, and other external signs, seemed at variance with the usual idea of an envoy to this country on an important intellectual mission, yet we might satisfy ourselves with the reflection that French envoys at the present day must not always be too critically looked at. However, it fell of course to the Foreign Secretary of the Institute to "speak pretty" to the stranger; and the way in

which this duty was performed,—the pre-eminently graceful and overflowing way in which it was done,—is what, in the interest of barbaric truth and fair play, I venture to object to.

"Two centuries and a half," most emphatically reiterated, was the exact period set down, by which "France is in advance of England" in art. The proper parallel between the two countries was to contrast the formation of the Boulevard de Sebastopol with the building of an edifice "dedicated to Mammon" on the piece of ground beside St. Paul's, and the erection of shops on the vacant site behind the statue of Sir Robert Peel. As for our contemptible "kings," all of them put together had not done so much for art as Napoleon *Troisième* alone had effected in Paris. And when, in such a state of things, we found an artist actually coming "from Paris itself" to visit this *Ultima Thule* of civilization, "taking the trouble to study our art," and even condescendingly to express a favourable impression of it, "we ought to consider ourselves very highly honoured!" *Vive la France! A bas Jean Bull!*

When all this is translated to Mr. Commissioner Silvestre, it is to be hoped that it will not be so solemnly recorded as compliments to France too often are, but due allowance made for Britannic courtesy; otherwise his Excellency Monsieur le Ministre d'Etat, his august patron, may be misled by his report, as regards at least the true opinion of "the English school," respecting its own merits. Painters and sculptors may be left to speak to this commissioner for themselves; but if he desires to know the truth with regard to architects, it is this,—that although a few individuals are still to be found whose traditional views lead them to sap the merit of the brotherhood at home by dogmatically preferring whatever is foreign, yet the great mass of our profession are well and proudly aware who won the day at Hamburg and Lille, and what place France, Germany, and Italy held beside old England at the Paris Exposition and in Westminster Hall. One or two of us may think it very complimentary in its way to tell a M. Silvestre that he is an angel of light from the one sole bright particular star of Europe, who, in a spirit of generosity for which we cannot be too grateful, affects to discern faint gleams of the beautiful in our poor Erebus; but a hundred to one will consider it more complimentary to him if we own our full appreciation of the well-known fact that, although French *esprit* and elasticity make the best art-*workmen* in the world, yet the sterling, solid, manly, and free thoughtfulness of England produces at this day the best *artists* as a whole that have ever been known, and under the patronage, not of kings, but of the people; and therefore, that his Excellency the Minister of State, whoever he may be, who has come to the conclusion, at length, that it is time for French self-complacency to compare itself seriously and critically with the strong, unassuming intellect of the Englishman, deserves credit for sagacity.

Meanwhile, I will venture to advise the council either to determine beforehand the limits to which official politeness to foreign visitors shall go, or to declare efforts of that kind to be admissible as contributions to the "comic portfolio," in the formation of which that grave cabinet appears to take so deep an interest just now.

ROBERT KERR.

ON THE PAINTING OF THE ANCIENTS.*

THE opinions of learned authorities upon the colouring of the Parthenon, the Temple of Theseus, and other works of the best times, are so opposite, and there has been so much learned argument in support of each view, that it is impossible to lay down with certainty whether they were or were not highly coloured, as many of the Sicilian temples undoubtedly were. But the opinions of some excellent authorities and certain obvious arguments, which, in these learned discussions are, perhaps, not sufficiently weighed, seem to point to a very sparing use of colour in exteriors.

For the many elaborate arguments of learned antiquaries, I refer you to M. Hittorf's book which very candidly gives both views of the question, as we have not space here to go into them. There are one or two simple arguments, however, which go a long way to prove the sparing use of colour.

First, that one so constantly advanced, that the material being white marble, very difficult to work, and obtained at great expense, is highly improbable that its beauty should be obscured by the general coat of paint sought to be proved by M. Semper and others. Mr. Penrose, a recent and most conscientious investigator, finds no other traces of colour than those given in his book, and he uses the apparently conclusive argument, that if it were intended to colour the Parthenon all over, the marble of Hymettus would have been used instead of that of Pentelicon, the former being much easier of access, the quarry sounder, no difficulty in obtaining large blocks; but the objection being apparently that the marble is of a grey colour. Another instance of the pains taken to procure a fine white marble is the Temple of Delphi, which,

* See p. 57, ante.

being built of stone, was faced with Parian marble,* brought from a great distance.

It is very possible, and indeed probable, that the blazing white of the fresh marble was toned by means of a light warm dye. Plutarch mentions a temple of Diana Orientem, in the island of Eubœa, round which "columns or styles of marble were erected, which had the smell of saffron, and assumed its colour on being rubbed with the hand."

Pliny says, "at Elis there is a temple of Minerva, in which Panoëus, brother of Phidias, covered the coating of the walls with milk and saffron, of which one perceives the smell even now when one rubs it with the wetted thumb."

Mr. Penrose, in his book, states that there are remains in some portions of the Parthenon of Mediæval painting, and it is not perfectly possible that the embellishments of churchwards, in this and other monuments subsequent to the age of Pericles, may have misled those who take the extreme view of ancient polychromy?

Those ornaments of which there is no reason to doubt the authenticity are generally very small and delicate, and are sparingly used. The soffits, in particular, seem to have been coloured, and especially the coffers inside the portico. It is highly interesting to observe, and this is a point of vital importance in practice, that while the architectural parts and features are marked and distinct, the ornaments painted upon them are so small and delicate that the eye has some difficulty at first in deciphering it. It is a common error to suppose that boldness and character are to be obtained by those which are subordinate as well as the leading features—distinct and clear, so that the whole comes down upon the eye.

But these considerations are not necessarily anti-polychromy. They do not form a part of the evidence to deny the advantage of colour under certain circumstances, and let us endeavour to discover what may be these circumstances.

Many are the happy results of Mr. Gibson's efforts in the application of colour to sculpture. He founds upon his persuasion of the practice of the Greeks his system of a pale warm tint (not paint) upon the flesh, and a deeper tint upon the lips and blue in the eyes: the hair is lightly gilt, and the drapery edged or dotted over with delicate stars in colour. But we as architects, in admiring Mr. Gibson's works, must not forget that the same principles of colouring applied to architecture, and sculpture *per se*, or to furniture, we must venture so to call statues which have no distinct destination, but stand upon a pedestal or fill a niche as an ornamental part of the architecture. In the former conventional nature of architecture, the colouring of the figures of living beings entering into its combinations. How disagreeable and absurd would be the impression of living beings perched on a pediment or built into a frieze!

With statues, which form a part of the architecture, and, being close to the eye, are, as it were, of ourselves, the case is different. Such statues would be infinitely more interesting, if instead of cold and uniform marble, they presented glorified images of the creature, not so near an imitation as to be a reality, though cold and lifeless, but so much of a suggestion as, speaking to the imagination rather than the senses, shall present an elevated image, as one might wish to see in a dream of a beloved person.

The next step trenches upon the domain of Madame Tussaud.

With regard to architecture, all the learned research to which I have referred you, though of the highest antiquarian interest, is not the most important subject for our consideration. Let us see whether it teaches us any lesson, and what respect they affect our requirements and conditions of climate.

If we accept the lesson which Nature teaches us (as we find the Greeks did), in her geographical distribution of colour, we shall find that the exterior decoration of the ancient edifices was very different from that of the Middle Ages.

As has been before remarked, the brilliant colours which produce so good an effect in a southern climate would be staring and repulsive to our grey and covered skies. Any colouring of the exterior of a building, which we may necessarily be of a very subdued kind, a combination of half tones, and how can we hope to produce such harmonious as nature will establish for us by a few years of exposure.

There is another very important consideration in comparing the works of the Greeks with our own, namely, the difference of scale. The Greek temples were the merest trifles, compared with the great edifices of the Middle Ages, and does not prevent our using colour in some small objects, and in parts close to the eye, as in shop-fronts, &c. But the taste for exterior polychromy has been in a great measure rejected in the best times of northern art; indeed, so far that a large use of variegated colours is comparatively exceptional.

The combinations of brick and stone, and the occasional introduction in stone buildings of coloured marbles in small quantities, have been canonized by the approbation of centuries, and the good effect cannot be denied.

The beautiful manufacture of Minton's tiles offers us a facility for enrichment which we should not neglect, but where they are used in exterior decoration, it should be in small quantities, so as to be considered as detail, and not as a mass of colour affecting the general aspect and character of the building. They may, indeed, be of such colour as to give value to the greys established by nature, while they are themselves sparkling and interesting in detail. Other combinations may be effected by the use of different stones of slightly varied tones; but of this the ingenuity of architects of the present day has furnished too many examples to render it necessary to dwell upon it here.

The inefficiency of paint in our northern climate is sufficiently shown in some of the buildings in the Champs Elysées, Paris, as the greys established by nature, and the restaurants, which, with all the pomp of classical orders, &c. are reduced by their tawdry painting to the appearance of buildings in a fair. Our climate is not bright enough to give value to the greys established by nature, and, therefore, it must be of such material as having an intrinsic value shall supply to the mind that interest which the eye does not feel.

There is a beautiful method of exterior decoration employed in Italy, and more particularly in Florence, to which, perhaps, too little attention has been given, namely, Sgraffito. The mode of execution is this:—Upon a coat of white plaster, a very thin setting of white is passed, and this is scratched with a sharp point, so as to reveal the patterns, figures, arabesques, &c. There are no doubt

difficulties in carrying into execution such a system of decoration in this country. First, the nature of the climate, which is so trying to plaster; then the difficulty that we feel so much (and in which the French have such an advantage over us) of finding artists who, having the power of free and bold drawing, have not the pretension to "high art" and corresponding pay. But no doubt the first difficulty may be overcome by the various excellent cements which we possess, and this noble institution, upon which Government spends so much, ought to and will provide for the latter difficulty.

Finally, if the foregoing observations should seem to be directed exclusively to buildings in the country, and which are to harmonize with the horizon, and are to be objects of nature, it will be found by carrying out the principle which I have endeavoured to establish, that if strong colour cannot be brought to harmonize with our landscape, sky, &c.—"a plus forte raison" it will appear crude and inharmonious amidst the greys of London.

Having thus far considered the external colouring of the ancients and its bearing upon our own requirements, let us survey briefly the interior decoration, which is of so much more constant application. The foregoing observations, based as they are upon the analogy with nature, and the combination of architecture with the surrounding scenery, scarcely apply to the conditions of interiors. In an interior, with the horizon bounded by four walls, with the sky as a background to objects (the windows being, as it were, only pictures), without that most important element of the picturesque, sun-light, we have to create a panoply of the best of colours, by the conventional bleating the absence of those of nature. In an interior all climates are more nearly the same, and in this country, where we take pains to shut out the outer world, we may imagine any climate, and we may supply by conventional elements the absence of those of nature. In an interior all climates are more nearly the same, and in this country, where we take pains to shut out the outer world, we may imagine any climate, and we may supply by conventional elements the absence of those of nature. In an interior all climates are more nearly the same, and in this country, where we take pains to shut out the outer world, we may imagine any climate, and we may supply by conventional elements the absence of those of nature.

Colour in interiors has been a thing accepted in all times and countries, and I am not aware of any school having rejected or put a limit to it. All Oriental nations have used colour and do use it in their interiors. The Middle Ages, the Renaissance, and our own times, all agree in this practice. It is therefore unnecessary to bring forward any arguments in its support, but only to point to a few examples of the period more immediately under consideration, with a view to the advocacy of a more systematic, but to see whether the practice of the ancients can introduce any improvement into our own system. By the bye, there are abundant examples in Etruscan tombs, but as the practice of the best times was of course a great improvement upon this style of art, and as Pompeii and Herculaneum no doubt nearly imitated from those best times, it is hardly worth while to dwell upon these earlier examples.

Of the Greek interior decoration we have no example extant; but we have in history allusions to many examples, and there can be little doubt that the interiors of their temples and monuments were abundantly coloured. We have record of the works of Panoëus, brother of Phidias, in the *Pædie*, at Athens, where he painted the subject of the battle of Marathon. He also painted the Temple of Minerva at Elis. We have the paintings of Micon and Polygnotus, in the Temple of Theseus, the Propylæa, the Pinacotheca, the Temple of Rhamnus, the green and red tribunes mentioned by Pausanias, and many other instances might be quoted. It is probable that the subjects formed an important part of the decoration, and occupied a large space. Of the decorative parts we know nothing: it is therefore scarcely worth while to dwell upon antiquarian speculations founded upon the dark passages from ancient authors, which are susceptible of such various interpretations.

The decorations of Herculaneum and Pompeii, of which we have such abundant examples, no doubt follow closely the Greek practice, and are so to be considered as a *motus*, that we cannot do better than consider a few examples, and try to mark the principles which they contain.

There is much said about polychromy in the present day, but what is new in the application of it seems to be directed chiefly to exteriors, while our interiors are still left to the traditions of the paperhanger.

Some few there are who have observed in this important field of interior colour, and we owe much to Mr. Owen Jones for the steps that he has caused us to take in the right direction. Without his assistance the Crystal Palace would have been but an overgrown greenhouse. Since that we have had other and more complete examples of colour by the same hand, such as St. James's Hall, &c.

One of the most important considerations in interior decoration is perspective, something to give extension to our generally too small areas.

Those who know Pompeii will bear witness to the extension given to the merest sentry-box by the judicious application of colour to ornament.

Perspective does not necessarily imply objects represented in perspective upon the walls or ceiling, what the French call a "trompe l'œil." A sense of extension may be produced by receding colours, thrown back by the juxtaposition of darker or more advancing colours, by the judicious disposition of pictures, looking-glasses, &c.

Actual perspective representations, such as those in the church of Gesù in Rome, and many others familiar to travellers, are no doubt beautiful, and are to be considered in opposition to reason, that they can hardly be defended. In Pompeii and Herculaneum perspectives are frequently used, but they are so fantastic that they can hardly be accused of art, and are to be considered as a somewhat overstepping the limits of reason, those who have seen them *in situ* will generally acknowledge their charm.

Stern virtue no doubt says, let a wall be a wall, and do not attempt by any means to give false escapes for the eye at the apparent expense of continuity of construction, &c. But the realities of life are sad and dull, and if we can by art feed ourselves with pleasant illusions without deceit, are we the worse for it?

Surely the man who, living in an attic, persuades himself that it is a palace, is happier than he if he obstinately recognized the neighbourhood of the chimney-pots, and refused to forget the wretchedness of his walls. All art is an illusion more or less, and the more the better, so long as it stops short of deception.

* ποικίλος many-coloured, adorned, of various colours.

But is there no middle course such as may satisfy both reason and folly—the stolid and the epicurean? May we not, as before hinted, obtain extension by the use of receding colours, &c.? No doubt in a small room it is impossible to dissimulate the proximity of the wall, but by leading the eye to pictures which convey in themselves the idea of distance, a certain freedom is given to the imagination. The heavy picture-frames which are so universal are great destroyers of this illusion. In Herculaneum and Pompeii, the pictures were generally painted upon the wall, but we know that in the Roman times, and more particularly in the Greek, a large use was made of paintings upon panel; but we must suppose that they were either let into the wall, or were made to appear as much as possible a part of the wall. No doubt there are considerable difficulties in carrying out this practice in our own times, but where practicable there can be little doubt of the advantage of it.

We may also help extension by the use of receding colours. But no colour near the eye will of itself recede, or give extension, without the help of a foil (in French, "repoussoir"). This is admirably understood in Pompeii. In rooms where light colours are used, certain ornamental styles, dividing the panels, are painted either in darker colours; or, being made out with much detail, engage the eye, and the expanse of flat tint is made secondary, so as to recede from the eye. In a large space, at a distance from the eye, as in a church or great public hall, certain colours have in themselves receding qualities.

The late professor of architecture, and architect of St. Peter's, relates that some years ago, when the choir was repaired, it was thought advisable to substitute for the blue pilasters, in imitation of lapis lazuli, a more reasonable colour, namely, yellow Siena marble, the effect of which was to bring it upon the eye, and materially to shorten the church, and the blue was substituted accordingly.

Another leading requisite in interior decoration is variety and multiplicity of parts, by which to obtain interest. The Pompeian decoration is full of fantastic architectural features. There is a room in a house of the Emperor Sallust, in Pompeii, which being at the most 12 feet square, has a tiny order, not 2 feet high, reigning round the upper part of the room, the panels below being dark, and the spaces between these little columns divided into rustics of various colours. In another case there is a small lararium in an entrance, of the same kind of fine architecture. In the painting such things are constantly repeated.

In a small room where one can recede but little, each wall occupies an angle of 90, 100, or 120 degrees of the visual rays, and should, therefore, be so subdivided, that the 90 or 120 degrees which the eye can embrace, should be full of matter of interest, and more or less complete in itself. The small objects occupying that surface would be petty in an exterior; but, being close to the eye, and in conjunction with small pictures, and small objects, the dimension is forgotten, and they stand upon their merit of delicacy and not of scale and force. It is the imagination which gives them importance; as, in a picture, a figure, a tree, &c., conveys the idea of a man. The ceiling of the Sistine chapel is a remarkable instance of the infinity produced by multiplicity of objects. In architecture it is a constant practice to place small columns in a room upon the ground, so that half their height is constantly hidden by the people, and their proportion destroyed; but, if placed upon a pedestal, and so lessened in magnitude, they may still have scale given to them by contrast.

St. Peter's fails in producing upon the imagination the full effect of its vastness, from the want of subordinate architectural features to give scale to the leading ones.

Panelling is a means of giving scale, and at the same time proportion; but mere subdivision, without any attempt to give value to the broader surfaces, is insufficient.

Lovers of antique decoration must regret the timidity of our decorators in use of string colour, and deplore the constant repetition of white, and the absence of strong, and indurated fog (called neutral tint), dining-rooms. Nothing but considerations of expense can excuse our whitewashed ceilings unrelieved by a particle of colour. The eye must be weary of acquiring its own small hardness be lessened by the introduction of some ornament. In the last century there was a splendid system of putty ornaments modelled by hand, but this has disappeared. Why should we have the use of the best of fully printed flowers, which are so cheap in bands, borders, &c. upon ceilings, care being taken that strong colours shall not be so isolated as to come down upon the eye, and that the eye may be given interest, height, proportion, and colour, to a room with the materials found in a paperhanger's shop.

Having then laid before you some examples of the practice of the ancients in colouring their exteriors as well as interiors, I would conclude by reminding you that though this is the last and accessory branch of architecture instead of the first, still the vast interest and delight that it communicates, both to monumental and domestic buildings, claims our attention as architects; and, though we cannot pretend to follow all its practical details, we should be judges of it. The names of B. Peruzzi, Giulio Romano, &c. &c. have come down to us as combining this with the higher functions of art; but, in these times, when the distinction between architects and painters is more marked, let us hope that painters of talent will give their attention to this subject, and this school no doubt has produced and will produce many.

FREDERICK P. COCKERELL.

MONUMENTS AND MEMORIALS.

Brass to late Bishop of Gloucester and Bristol.—A monumental brass, in memory of the late Dr. Monk, has recently been placed in the north aisle of Westminster Abbey. It was executed by Messrs. Hardman and Co. of Birmingham, from a design by Mr. Scott, and consists of an effigy of the late bishop, under a canopy. Springing from the canopy, on each side, are pedestals with angels standing on them, bearing inscriptions. The whole is set into a slab of black Galloway marble, 8 feet long by 3 feet 6 inches wide.

Wedgwood Memorials.—A sort of controversy has been going on as to the proper site for a Wedgwood memorial. Burslem, however, was not only Wedgwood's native town, but the Burslemites were the first in the field. Nevertheless, they

* λίθος λυγνιστός quarried by torchlight, and therefore very luxuriant.

have been asked to give up their idea and unite with others who have subsequently projected an obelisk in another locality. The Earl of Carlisle is to head a public meeting of the Burslem people in support of a memorial building in Wedgwood's native town, to be called the Wedgwood Institute.

Tablet at Carlisle to Missgrave Watson, Sculptor.—A monumental tablet is about to be erected in Carlisle Cathedral in memory of a local sculptor. The tablet is of marble, with a medallion likeness surmounted by a sculptor's implements, and an inscription in gilt letters explains its object. Mr. George Nelson, a local sculptor, and for many years the deceased's assistant, sculptured the memorial.

Glasgow Monument to Sir Robert Peel.—The committee of subscribers who were authorised to select a site for this monument, which is now being cast in bronze, after a model by Mr. John Mossman, have decided, subject to the approval of the proprietors, to erect the monument at the north-west angle of George-square, corresponding with the statue of James Watt. It is said the erection is delayed for want of marble for the pedestal, but with what truth we cannot say.

The Forglun Monument, Banffshire.—A monument was recently erected in the grounds of Forglun House, to the memory of the late Sir Robert Abercromby, Bart. of Birkenbog, &c. and his two soldier sons. The work has been executed by order of the Dowager Lady Abercromby. It is of white marble, in the Gothic style, standing on an octagonal base of grey granite, and about 25 feet in height. It consists of an octagonal tower or shaft, surmounted by a crown of light tracery, and a spire with carved finial. The inscriptions which occupy the lower part of the shaft are in a great measure protected from the weather by a projecting arcade, supported on slender columns; and in the spandrels above are different sculptured devices, amongst which the Scotch thistle and the winged heart, the crest of the Douglas family, are the most prominent. On the front are the arms of the Birkenbog family, and underneath the inscription. The monument is surrounded with wrought-iron work. The entire work is from the house of Mr. M. W. Johnson, sculptor, London. Mr. M. Hawkins Johnson designed and superintended the whole.

The Hardinge Statue at Calcutta.—The statue of Lord Hardinge is now on its pedestal, and is the first equestrian statue ever erected in Calcutta. It was not opened to the public as statues are at home, for no boarding enclosed it, nor did even a rope offer the semblance of a barrier to spectators.

SCHOOL-BUILDING NEWS.

Northam (Southampton).—Christ Church National Schools, Northam, Southampton, have been opened. The schools are arranged upon the plan of the letter L, and will accommodate about 200 children, boys and girls, with class-rooms, &c. for each sex. The large rooms, each 51 feet 3 inches by 18 feet, are capable of being thrown into one should occasion require, and are separated by sliding doors. Attention has been paid to ventilation. The elevation of the schools and residences is of the plainest character, common bricks for the walls being the only material at the disposal of the architect, varied colours of which have been sparingly used: this circumstance, with setting the windows in double reveals, and the introduction of a simple bell-cote on the north gable, are the only architectural features the buildings can claim. The works have been carried out by Mr. Bull, contractor, from the designs and under the superintendence of Mr. James L. Pedley, of Southampton, architect.

Madley Wood.—The Fletcher Memorial Schools, at Madley Wood, have been opened. This memorial building, the foundation stone of which was laid a few months since by the Mayor of Birmingham, has been completed by the contractors, the Messrs. Nevett, of Ironbridge, after plans furnished by Mr. J. Wilson, F.S.A. of Bath, architect. The building comprises a school and class-room, with offices, and a master's residence. It is in the Early English style, of bricks of a light coloured ground, interspersed with bands and patterns in red, white, and blue, and has an open-worked bell turret at the north-west angle. The main roof is high pitched, and covered with ornamental bands of coloured tiles, and with ventilators, of a trefoil pattern, inserted. The building presents three principal aspects—north, north-west, and south: the latter embraces the gable forming the master's residence, in which is an oriel window, and two others of an ornamental character. The interior of the building consists of an infant schoolroom, 40 feet by 20 feet; and

a class-room, 18 feet by 24 feet, both rooms having galleries at each end. The roof is ceiled; leaving visible, however, the chief timbers, which are stained oak, and varnished. The cost of the building is about 400l., part of which sum is obtained by Government grant, and the rest by subscription, &c. The school is intended solely for the use of infants, and will be supplementary to the adjacent day-schools.

Sheffield.—Hathersage schools, which have been built from designs by Messrs. Weightman, Hadfield, and Goldie, of Sheffield, at a cost of between 500l. and 600l. have been opened. There are a boys' and girls' school, and a class-room, and the Elizabethan style of architecture has been adopted.

STAINED GLASS.

Lyliard Tregeze Church.—A memorial window has lately been erected in this church, representing the ascension of our Saviour, executed by Mr. A. Gibbs, of London. It is the gift of the Misses King, in memory of their brother, the late Mr. John King, of Blagrove.

Church of Hinton St. George.—A window in the private pew of Earl Poulett, in Hinton parish church, has just been filled with stained glass, as a memorial to his lordship's four deceased children. The window is in the Perpendicular style of Gothic architecture, and the design and colouring are in conformity with that style. The window is divided by mullions into four lights, and the tracery in the head is thrown into twenty-four openings. The arrangement of the design is as follows:—The upper portions are filled with foliated work, and the lower with angels and ornaments. The four principal compartments are subjects from the life of David, all surrounded with canopies and columns on pedestals. The subjects are as follow, beginning from the left hand:—Samuel anointing David; David before Saul; David returning with the Head of the Philistine Giant; David crowned King. The work was designed and executed by Mr. Charles Gibbs, of London.

Leigh Parish Church.—The lower window of this fine old church has just been restored and filled with stained glass. It is a four-light window, and contains the effigies of the four Evangelists, with their symbols, &c. In the centre of the tracery appears our Saviour, and on either side angels, with scrolls bearing texts.

Leeds Parish Church.—On 24th ult. another of the windows in the south ante-chapel of this church was filled in with a stained glass window, executed by Mr. Warrington, of London. The window, which has been presented by Mr. John Hartley, as a family memorial, consists of tracery, with six openings beneath it, each containing a subject, and subdivided by a transom. On the middle of the centre opening is inscribed "Jesus wept," on the right of this "The Master is come, and calleth for thee," on the left, "Father, I thank Thee that Thou hast heard me." The lower tier contains three other subjects:—"Occupy till I come;" "He also gained other two;" and "Well done, thou good and faithful servant." These are all enclosed by columns, which support tabernacle work, which, in the upper one, resolves itself into niches, the centre containing "St. Anne teaching the Virgin," right and left, "St. John the Baptist," and "St. John the Evangelist." The tracery is filled with angels bearing scrolls, inscribed "Lord Thou hast been our refuge from one generation to another." Pedestals occur beneath each subject, on which appear mortuary records.

Outwood Church.—A stained-glass window has been presented to the Church of St. Mary Magdalene, Outwood, near Wakefield, by Robert Hudson, esq. of Roundhay, one of the principal coal masters in that district. The work has been executed by Messrs. Hardman and Co. of Birmingham. In the head of the window is a medallion of Christ on the cross, and in the four lights are representations of the temptation of Eve, the expulsion from Paradise, the baptism of Christ, and the temptation of Jesus in the Wilderness, the whole window being intended to represent the Fall and Restoration of Man.

Madras Cathedral.—The windows of this edifice are being filled with painted glass. Twenty-three windows have already been sent, and sixteen more are now on hand. The whole commission has been entrusted to Messrs. Lavers and Barrard, of London.

THE NINE HOURS MOVEMENT.—A very numerous attended meeting of members of the building trades was held in Exeter-hall on Wednesday evening last, when various resolutions were passed, which we will give next week.

PROCEEDINGS UNDER BUILDING ACT. EXEMPTED BUILDINGS.

HISCOCKS, D.S. & BLACKBURN.

Sir,—I beg to state that the opinion of Mr. Ingham, P.M. (see p. 48, ante) has been acquiesced in: the case was left adjourned till yesterday. There is a type error in the report of the case in your Journal of the 15th instant, which renders it rather difficult to read.*

The wooden building will have to be built in accordance with the rules of the Act. I did not oppose another district surveyor being present in court as a witness, not wishing to excite the slightest appearance of any feeling in the matter, or I should have requested that witnesses should be ordered to withdraw; in fact, I looked upon the district surveyor as *in loco parentis*; but I most strongly protest against his freedom of speech in alleging that district surveyors construe the Act after his sense. This is very far from being the fact, and I could have brought a host of district surveyors and legal men who adopt the decision given by Mr. Ingham, and who have expressed themselves very strongly on the unseemly appearance of one officer opposing another, which certainly should be avoided as much as possible.

A. J. HISCOCKS.

Books Received.

Who Invented the Locomotive Engine? with a Review of Smiles's "Life of Stephenson." By OSWALD DODD HEDLEY. London: Ward and Lock, 158, Fleet-street. 1858.

No one man invented the locomotive. George Stephenson, we have always said, was the maturer of the locomotive; but not its sole inventor. The purpose of this volume is to disclaim Stephenson's title to be regarded as the inventor of the locomotive, and especially as the discoverer of the fact that friction of the smooth wheel on the smooth rail sufficed, and that hence toothed wheels and rails were not needed; and while so disclaiming Stephenson's title, to substantiate the claims of Mr. William Hedley, the father of the author, and who was a viewer and manager of Wylam Colliery at the time when Stephenson was engaged with his locomotive experiments at Killingworth.

It does appear that Mr. Smiles, Stephenson's able biographer, is wrong in claiming for Stephenson the original discovery of the fact that friction sufficed for the movement of the engine wheels on the rails and the traction of trains thereby; for this discovery was made about a year before by William Hedley; and as Stephenson had an acquaintance at Wylam Colliery whom he occasionally visited about that time, he had an obvious opportunity of knowing this to be the fact. Hedley himself, however, can no more be justly called the inventor or originator of the locomotive than Stephenson; and in 1836 he admitted the merits of the latter as one who had done much for the locomotive,—that is, as its maturer. Hedley's employer, Mr. Blackett, had first of all applied for a locomotive to Trevithick (who had a better title than either Hedley or Stephenson to be called the originator or inventor of the locomotive, and yet he had abandoned it in despair, or rather from a slightly disposition to rest aside inventions after exhausting their novelty), and Trevithick actually sent one north to Mr. Blackett; so that in all probability Hedley only improved upon Trevithick as Stephenson upon Hedley. Blenkinsop, also, is a name claiming some merit in the matter of the locomotive, for he actually set it a-going, though with toothed wheel and rail, and Stephenson had also the advantage of seeing and improving upon Blenkinsop's as well as Hedley's, and perhaps Trevithick's. But all that does not detract from Stephenson's claims as the maturer of the locomotive. It is a pity, however, that Mr. Smiles should have done injustice to Hedley in attempting to claim for Stephenson more than suffices either for his immortalization in connection with railway locomotion, or for an impartial exposition of the actual facts of the case.

Miscellaneous.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—At a meeting of the Architectural Institute of Scotland, held in George-street Hall, Edinburgh, on Monday, the 17th instant, a paper "On Cottages for Rural Labourers," by Mr. William Chambers, of Glenormiston, was read, and elicited considerable discussion.

PRESERVATION OF STONE.—We have received a letter from M. Szerelmeij in reply to Professor Ansted, asserting that the composition he is now using "has been invented more than a quarter of a century," and "has never been patented." In justice, however, to other inventors, we are forced to decline inserting it except as an advertisement.

* Through an accident after going to press, the eight bottom lines of the column are placed in the middle of the notice, commencing at the thirteenth line from beginning.

SECURING CEILINGS.—A patent has been taken out for securing the plastering of ceilings and walls. The object is to cause the first layer of plaster to adhere as firmly to the laths as the second layer does to the first, and for that purpose it consists in applying to the joists or grooves, or to a ceiling of boards, laths having inclined edges forming an angle with the horizontal plane of the floor, to which the mortar is to be applied, and spread on in the usual manner, so that the tongues of the laths form an angle with the horizontal plane of the floor, and overlap the tops, and are clinched thereto, whereby the mortar is held and prevented from falling.

ANCIENT BRICKMAKERS.—The walls of Babylon were built of large bricks cemented together with a kind of "glutinous slime" found in the country, which was superior to any lime, and grew much harder than the bricks themselves. The earth which was dug from their ditches served to make the bricks for their walls. The slime was a species of bitumen. Another very durable brick, in these days, was made as follows:—Clay, two parts; chopped straw, one part; thoroughly dried in the open air, then heated red hot, and quenched in hot water containing flour (or gluten) boiled down to a thin starch.—J. B. N.

THE ROMAN WALL.—Mr. Macaulayan has completed his surveys of the Roman wall and of the Watling-street north of Pierce-bridge, in Yorkshire, undertaken by order of the Duke of Northumberland, who has also had the plans of the surveys, the castra upon the line of the wall, and along the Watling-street, engraved in the first style of art. A few years since his Grace proposed to the president of the Society of Antiquaries (Lord Mahon) to pay the entire expenses of a complete investigation, not only of the great wall, but also of the stations along the course, which have yielded some hundreds of inscriptions, but which have never yet been fully excavated. At the head of these proposed and costly researches the Society of Antiquaries was to stand. This munificent offer was declined by the president!

MEANS OF ESCAPE FROM A BURNING HOUSE. Sir.—When a fire does take place in a dwelling, in general the staircase, being of wood, goes early; means of escape are thus cut off; the inmates can neither get down to the street, nor up to the trap-door, so as to get on to the roof of the next house. Allow me to suggest to builders and others the having not only iron joists and flooring, but also stairs made of cast iron. The one end of the steps may be inserted into the wall when the house is being built; the other end of the steps may be made fast in an upright square, or round iron pillar, going from the ground to the top of the house. Stairs so made might have carpeting on them, and the steps may be made light or ornamental, as beautiful patterns can be now produced from cast iron. Eyes for the stair carpet-rods may be made in the steps when cast.—P. W.

NURSERY BUILDING FOR SOLDIERS' CHILDREN AT CHATHAM.—A large building erected at Chatham, on ground given by the Government, has just been opened as a nursery and school for the infant children of the troops belonging to the Chatham garrison. The establishment has been built at Brompton, adjoining the Royal engineer barracks and the barracks occupied by the troops of the line, and has been raised by subscription, collected chiefly by the Rev. D. Cooke, the incumbent of the district. The building will accommodate about 200 children.

MR. SPURGEON'S NEW CHAPEL.—The London correspondent of a provincial journal says:—It has just been decided that it will be advisable to lay the first stone of the new chapel here early in March. The money for the purchase of the ground (5,000*l.*) was paid some time ago. The trustees have now 4,000*l.* in hand, and a rich friend in a town in the west of England has promised the sum of 3,000*l.* The whole sum altogether required is not less than 21,000*l.*; that is, 5,000*l.* for the ground, and 16,000*l.* for the chapel and schools; so that 12,000*l.* remain to be collected, of which, as mentioned above, 3,000*l.* are promised.

PRESERVING TIMBER FROM DECAY.—The following plan is said to be common in Burgundy for preserving timber from decay and from insects:—The wood having been steeped for forty-eight hours in a solution of copper—in the proportion of one kilogramme (about 2*lb.* 3*oz.* and 4 drachms) of sulphate of copper to 20 litres (about one quart) of water—must be allowed to dry in the shade, after which wash lightly with lime. If it does not acquire a bluish green colour, the operation must be repeated. This plan, it is said, is economical, and has been tried with success on fifteen different kinds of wood.

NEW RAILWAY STATION FOR DUDLEY.—The inconvenience of the present badly-constructed railway station has induced the Oxford, Worcester, and Wolverhampton Railway Company to resolve on having a new and commodious station. The South Staffordshire Railway Company have a joint interest in the station, and negotiations have been pending for the erection of a joint station; but failing any satisfactory arrangement, the Oxford company have determined to erect a building for their own exclusive use, at a cost of upwards of 4,000*l.* The foundations have been taken out.

FALL OF MORE BUILDINGS.—A warehouse and iron foundry, at Southwark, fell on Saturday last. At the extreme end of Bankside, in the narrowest part, is a thoroughfare leading to St. Mary Overy's Dock; and, nearly facing Barclay and Perkins's Brewery, is a range of buildings used as wharfs and warehouses, amongst which were the extensive premises known as the Bank-end Wharf, the property of Messrs. Archer and Sons, millers and wharfingers, and the premises known as the landing wharf and iron foundry, belonging to Messrs. Stephen Carey and Co. The first-named building was erected as long since as the time of Queen Elizabeth, and rested against the eastern wall of the foundry of Messrs. Carey. It contained many hundred quarters of corn in sacks. All of a sudden the persons employed in Messrs. Carey's works noticed the wall that separated the two wharfs bulging, and then the whole length of the western wall, shot out, causing the roof to part in three places, carrying with it about one-third of Messrs. Carey's foundry. No life was lost.—On the same day in Harpur-street, Kent-road, another building fell. This was an extremely old building. Two men and two horses were buried in the ruins. The men were got out seriously injured.

THE GLASGOW BRICK AND BUILDING TRADE IN 1858.—The trade during the past year was very brisk, owing to the great and increasing number of buildings going forward in every quarter of the city and suburbs. In consequence of the facility and despatch with which bricks are now manufactured by machinery, and the duty besides being taken off, their price is much lower than formerly. At present the current price is from 20*s.* to 22*s.* 6*d.* per 1,000 at the works. The pottery and drain-pipe trade and works are kept in constant operation, having good demands both for home consumption and exportation. No building is erected, of any description whatever, without pipe-drains being put around the foundation, for preventing wet and damp. There appears to have been quite a mania for building here for some time past, which it is now seen was quite uncalled for, and not required by the public. The system, which is now being carried on by speculators in building, of borrowing money and granting bonds over the same, is a very easy way of trading, and encouraging to those mushroom contractors who have so much glutted the market with property and overdone the trade beyond the demand for it. Indeed, to such an unreasonable extent has building been carried on in every quarter and locality, that numberless houses and shops can be seen any day now tenantless and empty.

THE DRINKING FOUNTAIN MOVEMENT.—The *Bristol Times* says.—Should Mr. R. Lang's liberal offer to erect a drinking-fountain opposite the Fine Arts' Academy be accepted and imitated, it is suggested that they be so arranged that the overflow will feed a trough for cattle, and below that again a small dog-trough. This has been so done at Southport, where a gentleman of that place has given the public three marble basins, of good size and design, for that purpose, the commissioners having agreed to supply the water.—One of the series of drinking fountains recently promised to Stockport by Mr. R. H. Greg, of Norcliffe, near Styal, has been erected in the gable-wall of the Weighing Machine, Wellington-road North, opposite the George Inn. The basin and masonry are, we believe, of polished Aberdeen granite, resembling marble. Over the basin is a bronze moulding representing the head of a lioness, from the mouth of which depends the water-pipe. On each side the basin hangs a strong iron ladle, secured to the wall by a chain of sufficient length to reach to the water-pipe. The fountain is not yet in actual operation. Workmen are employed in the erection of another at the top of Cheapside, conducting from Hillgate to Waterloo, which will be similar in design and workmanship to that described.—Mr. Bryant, a gentleman of Plymouth, has offered to provide six drinking fountains of Devonshire marble, and three cattle-troughs of iron, or other suitable material, if the corporation will give the sites and lay on the proper supply of water free to the public. Such liberality is commendable, and worthy of the cause.

INTENDED NEW HOTEL.—It has been decided to establish a new hotel in Leeds, at a cost of 50,000*l.* This amount will be raised in shares, of which the Midland Railway Company take one half.

HEATING CHURCHES.—An apparatus has just been erected at St. Peter's Church, Clifton-wood, for heating it. The apparatus consists of a large descending stove lined with Stourbridge burs, placed in the school-room under the church. From this stove the heat is conveyed to five ventilators in the floor of the church through as many pipes, these pipes being covered with hair-felt, to prevent the cold atmospheric air counteracting the hot air contained in them, so that the whole volume of hot air may proceed uninterruptedly into the body of the church, and diffuse itself throughout the entire building. The apparatus was constructed by Mr. A. A. Harris, of the Marsh-street Iron Works.

RAILWAY DIVIDENDS.—London and North Western.—We hear that the dividend for the past half-year will be at the rate of 4½ per cent. per annum, with a balance of about 20,000*l.* over. Great Western.—It is stated, but we know not how far correctly, that the dividend will be at the rate of 2 per cent. per annum. South Eastern.—The dividend, it is believed, will be 15*s.* per share, or 5 per cent. per annum. For the corresponding half-year of 1857, the dividend was 14*s.* per share. Brighton.—Very little doubt is entertained about the dividend of this company being at the rate of 7 per cent. though very large charges are made against revenue, which, by the practice of other companies, would be placed to capital.—*Herapath.*

PARISH RATING OF WATER, GAS, AND TELEGRAPH COMPANIES.—The Board of Governors and Directors of the united parishes of St. Andrew, Holborn, and St. George the Martyr, have increased the assessment on the pipes of the New River Company laid in the parish from 650*l.* to 3,000*l.* and are instituting inquiries preparatory to making a similar increase in the assessment of the pipes of the gas company laid in the parish. They have also resolved to assess the wires of the Electric Telegraph Company laid along Holborn—from Holborn-bars to Fenwick-court—at the sum of 100*l.*; the wires not having hitherto been assessed.

SOME OF THE REQUISITES FOR CEMETERIES.—At a recent meeting of the Liverpool Architectural Society, Mr. T. D. Barry pointed out the leading features required in the laying out of cemeteries, which were—that they should be at such a distance from towns as that no great expense would be incurred in reaching them, but not so near as to allow the possibility of any effluvia arising that would be injurious to the inhabitants,—not nearer than a quarter of a mile, nor further than two miles, would be about the distance; that a dry sandy soil was the most desirable, and that a cemetery should occupy a high site, with a view to keep it dry and to favour the drainage; and, as a general rule, the size might be about half an acre to every 1,000 of the population. Mr. Barry illustrated his views by a reference to various cemeteries in different parts of the country, in the carrying out of several of which he had himself been concerned. A variety of details were given as to the cost of cemeteries, and suggestions as to the best mode of their construction.

JOB AND TASK WORK; OR, HOW THE DOCK-YARD JOINERS ARE FLEECED.—Under this title a correspondent of the *Devonport Independent* makes a statement of rather a strange description, which merits the attention of the authorities. He says.—The joiners in the dockyard have for some time been working on what is technically called "job and task work," and for several days past have continued to work until six o'clock p.m. On Saturday night last the workmen were in high glee on the supposed good week's wages they had earned, when on being paid, to their utter consternation they were mulcted in 3*s.* 3*d.* each man, being simply told by the measurer in a cool official-like manner that they had not done a sufficient quantity of work. This amount at one stroke well nigh swept off the whole of the overtime, and was but another form of saying, "You must work overtime for nothing." If they earn 2*l.* a week they receive only their 1*l.* 3*s.*; but if their work should be the least particle short it is immediately checked, even down to a fourpenny-piece. It was only the previous week the same men earned 15*s.* 6*d.* more than their wages, but they have not as yet received a fraction of it. Another very just complaint is, that the men have no opportunity of knowing whether they have earned their wages or not, as they do not know the scale of prices paid. The prices are carefully preserved in official obscurity.

"BOLO."—Bole, mentioned in your notice of Mr. Waring's book, as one of the materials used by the old Italian artificers for inlaying with (p. 21, ante), is an earth for thickening, solidifying, and colouring the mastics or resinous matters for filling the incisions.—J. B.

LECTURE BY MR. LAYARD AT READING.—Mr. Layard having long since promised a lecture to the people of Reading, and having been sedulously reminded of his promise, at length arranged a time, and left the subject to the Reading Literary and Scientific Institution, who named the Assyrian discoveries. Mr. Layard, therefore, addressed a meeting on this subject last week, remarking, however, that he feared the topic was now rather stale, having himself already published all about these discoveries. The lecturer, nevertheless, produced a very interesting discourse on the subject. Every seat was occupied by an attentive audience.

"LONDON WALL."—As I was lately passing down Hart-street, Cripple-gate, for the purpose of viewing the fragment of the old City wall there, laid open by the clearing away of some houses, I was much horrified to see that a large piece had been broken down in the middle, the stones of which lay scattered about the place. Through the opening there was a large hole visible in the adjoining house, apparently part of a cellar. I think that the inhabitants of our City ought to be made acquainted with this circumstance, and I trust that the City will not allow these interesting fragments of a structure of so much importance in its history to be destroyed at random. At all events, I feel sure that the lovers of antiquity will not look in vain for the active and powerful intervention of the *Builder*.—S. B. B.

THE "GREAT EASTERN."—The preparations necessary for fitting this vessel for sea have at last been decided on, and it is stated that in the course of another fortnight or so an army of workmen will be busily engaged in all parts of the ship, inside and out. For various economical reasons, it is considered better that the work of finishing her should be divided between three separate contractors. The contracts have not yet been finally entered into. To one person will be entrusted the ironwork still requisite in the hull and in the construction of the poop and masts, while separate contracts will provide for the rigging and sails and the cabin fittings and joiners' work. It is stated that the long-expected first trial trip will take place about the middle of July. The way, however, in which the affair has been mismanaged up to this time will make all cautious in indulging expectations.

NEW ADELPHI THEATRE.—Mr. Webster has produced a melo-drama, called "The Borgia Ring, a legend of Stonehenge," by Mr. Angiolo Slous, the accomplished author of several well-known plays, wherein the manager plays the villain of the piece, Piers Wenlock, with his accustomed force and discrimination. The comic element, Mr. Toole being the exponent, rather overrode the serious on the first night, less from the author's will, we venture to say, than the opinion of others, but this has probably been remedied. Mr. Slous has chiefly shown himself, as we know him from his previous works, in the delineation of the character of Mabel Davenport, a high-minded maiden, preferring to sacrifice her own happiness rather than bring loss to the object of her love,—a part well played by Miss Woolgar. The principal business of the piece takes place amidst the masses of Stonehenge, seen in the first act by moonlight, and in the second after a snowstorm enwreathed with drifts.

HOUSE DRAINAGE UNDER COMPELSION.—You have recently inserted some communications in reference to house drainage that must entirely settle the question of the necessity of the abolition of cesspools—as far as health is concerned—to the occupiers of house property; but in doing a great good, or even advocating the same, it should be borne in mind to do as little hardship as possible. In my experience I have found several widow and maiden ladies who for years had received from their agents a regular income, and on which they depended to make their payments, but which has been of late not only withheld, but from the heavy expenses from notices to repair, to cleanse, and to drain, have been compelled to mortgage property and reduce their domestic expenses to comply with the law, and in many instances it would have been to their advantage to make a present of their interest in the house to the complaining tenant. In making these observations, I deny not the importance of the question of improved house drainage, but argue that the work is one of progress only, not to be done by the fairy wand.

HENRY SWEETMAN.

REPEAL OF THE PAPER DUTY.—The eighth annual public meeting of the Association for Promoting the Repeal of the Taxes on Knowledge will take place at Exeter Hall, on Wednesday, 2nd February, to petition for the repeal of the paper duty. The Right Hon. T. Milner Gibson, M.P. in the chair. An effort must now be made in earnest to get rid of this most injurious impost and absurd anomaly. We profess to desire to extend knowledge, and we interpose a heavy tax to prevent it.

KEYWOOD AND DIXON'S KNOTS AND HANDLES.—These knots and fastenings (of wood), for which a patent was obtained in 1856, are so much superior to those of ordinary form, that they only require to be known to be largely adopted. To point out the principle broadly,—a hole is drilled through the door or drawer front, and the knob is secured by a wooden screw, the head of which is inside the door.

APPLICATION OF SEWAGE.—The Royal Sewage Commissioners have re-commenced their labours in Manchester this week. It is their intention to examine thoroughly the tributaries to the river Mersey, embracing the Irwell, Medlock, Rock Lk. &c. and to take samples of the waters above and below each town and group of towns. The members of the commission now at work are Messrs. Laws, Way, Austin, and Robert Rawlinson, C.E.

PHOTOGRAPHIC PROGRESS: THE DISCOVERIES BY A HOUSE-PAINTER.—Mr. John Pouncy, of Dorchester, having discovered a carbonic process whereby permanent photographs, it is said, are produced, has given an account of his discovery in person before the Photographic Society of London, when a long discussion followed, leading, it seems, to a much more favourable idea of Mr. Pouncy's process than had previously been entertained. The *Dorset Chronicle*, in giving an account of these proceedings, informs its readers that Mr. Pouncy is a house painter and decorator in Dorchester, and hints that it would be only right in the Dorset people to encourage in his business so enterprising and original an investigator, especially as he is considered to be a first-rate tradesman, which one can readily believe.

DRAINAGE AND SCARLATINA.—Four deaths from scarlatina occurred within eighteen days in a family in Round-tree Cottage, Bow. The Registrar-general, in his last report, states that "the disease is attributed by the father to a black ditch flowing at the back of the house. He called the attention of the Poplar District Board of Works to the nuisance last summer, but the only answer that he received was, that probably the Metropolitan Board of Works would at some future period bring a sewer near the premises. It may well be doubted whether this intimation of good intentions and of their probable fulfilment will supply balm to the wounds of the afflicted family."

SEWERAGE OF READING.—The surveyor of the Reading Board of Health, Mr. J. G. B. Marshall, C.E. has, at the request of the board, made a report on the best plan for carrying out a more perfect sewerage of the borough. The report, which has been printed, states that the cost of the plan recommended would be considerably under 10,000*l.*, and require a rate of only 2*d.* in the pound to repay it in thirty years. The surveyor states that he has received a written offer from responsible persons in the town, who are prepared to take or lease for fourteen or twenty-one years, the whole of the sewerage when collected at the two outfalls, and to deodorize the same, paying the board a rent after the rate of ten per cent. per annum on any sum not exceeding 1,000*l.*, which may be expended in works for collecting the sewage, such as tanks, sheds, &c. with lifting apparatus. The sewerage scheme, however, is worked out without reference to any such offers, although it is stated to be easy on that scheme to construct deodorizing works at the outfalls, and with advantage to the inhabitants.

TENDERS.

For the Lion-walk Chapel, Colchester. Mr. Charles Forster Hayward, architect.	
	Net amount, exclusive of old materials.
Simpson, London	£3,970 15 6
Gibbons, Ipswich	3,895 0 0
Evans, Brothers, London	3,214 0 0
Saunders, Dedham	3,170 0 0
Lee and Baker, and Shepherd, Colchester	3,164 0 0
Grimes, Colchester	3,100 0 0

For alterations to 17, Change-alley, Cornhill, for Messrs. Harper, Burne, and Co. Mr. A. W. Blomfield, architect. Quantities supplied by Mr. J. A. Bunker.

Hardiman and Sandon	£248 0 0
Turner and Sons	648 0 0
Fowler	494 0 0
Child, Son, and Martin	485 0 0

For schools and master's house, at Marden, Kent. Quantities furnished by Mr. B. A. C. Herring:—	
Stevens	£1,452 0 0
Sutton and Walters	1,447 0 0
Barrett	1,410 0 0
Walls	1,375 0 0
Peeries and Hartridge	1,365 0 0
Constable	1,350 0 0
Eden and Warren	1,346 0 0
Sutton and Vaughan	1,317 0 0
Pannett	1,275 0 0
Hooper and Sons	1,225 0 0

For building small chapel vestry offices at Fishponds. Quantities not supplied. Mr. Henry Masters, architect:—	
C. King	£390 0 0
J. Williams	355 0 0
W. Smith	281 0 0
J. Eastbrook	248 0 0
J. Lambart	237 0 0

For house, stabling, and offices for Mr. E. Frith, Wandsworth. Mr. H. Currey, architect. Quantities by Messrs. Welch and Atkinson:—	
Haward	£3,046 10 8
Lucas, Brothers	2,570 0 0
Atkins and Sons	2,350 0 0
W. Higgs	2,500 0 0
Downs	2,240 0 0
Nicholson and Sons	2,400 0 0

For building dwelling-house and shop, No. 120, Leadenhall-street, City, for Mr. Langlois. Mr. G. Marsh, Architect:—	
Thompson	£945 0 0
Marshall	890 0 0
Woodward	885 0 0
Downs (accepted)	859 0 0

For rebuilding party-wall, and sundry repairs to the Hercules Tavern, Leadenhall-street. Messrs. Young and Son, architects:—	
Piper and Son	£187 0 0
King	147 0 0
Turner and Son	139 0 0
Axford and Co.	131 0 0

For chapel, at Plaistow:—		
	Main building.	Totals.
Brass and Son	£2,953 0 0	£3,971 0 0
Hack and Son	2,731 0 0	3,754 0 0
J. and W. Sanders	2,670 0 0	3,712 0 0
Asby and Son	2,450 0 0	3,477 0 0
Piper and Son	2,380 0 0	3,302 0 0
Corder	2,375 0 0	3,298 0 0

For the Grammar-school, Bedford. Mr. J. Horsford, architect. Quantities supplied by Mr. Hovenden:—		
	Ancient stone.	Additional for Ketton stone.
Heath	£3,775 0 0	£2,575 0 0
Doune	3,560 0 0	2,190 0 0
M'Lennan and Bird	3,650 0 0	75 0 0
Webster	3,548 0 0	— 0 0
Maull	3,310 0 0	241 0 0
Lawson and Joy	3,192 0 0	234 0 0
Myers	3,101 0 0	130 0 0
Spencer	2,919 0 0	190 0 0
Harvey	2,903 0 0	165 0 0
Reynolds	2,780 0 0	123 0 0
Fredk. and T. Wood	2,573 0 0	60 0 0
Conquest	2,488 0 0	234 0 0
Freshwaters	2,527 0 0	234 0 0
Cooper	2,628 0 0	76 0 0
Masters	2,548 0 0	294 0 0
Lindley, Firm, and Co.	2,524 0 0	321 0 0
Thompson	2,450 0 0	225 0 0

TO CORRESPONDENTS.

Editorial Disputations (the new incumbent is not bound to wait till the representatives of a late incumbent accept a surveyor to act for them, but may proceed to recover the amount of such a claim as he can substantiate).—J. G. an advertisement.—A. B. E. (bush).—Sir C. B. T.—W. M.—R. B. E.—Waterloo-bridge.—W. G.—J. N.—J. T. (we have assented to so many similar applications, that we must decline).—J. and B.—W. A. there is no specified distance. The neighbour would have to prove "injury."—A. Keadar (there is such an arrangement of telescope lamp tubes as renders chains and weights unnecessary, but we cannot refer to it).—Vina.—Alpha.—H. M. R. A.—J. K.—T. H. H.—R. P. G. (last week). G. W. (mentioned last week).

"Books and Articles."—We are forced to decline pointing out books or finding addresses.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

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It is necessary to state whether the Advertisements are or are not to be included in the bound volume.

The Publisher will feel obliged by Subscribers forwarding the amount of their Accounts up to the end of 1858.

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

The Builder.

VOL. XVII.—No. 835.

Sewerage, Cesspools, and Ventilation.
Windsor.

PUBLIC sewerage progresses very slowly, and some of the work will, we fear, prove inefficient. Large sewers have been put down where smaller sewers would have answered better, and sewers are projected of dimensions considerably beyond the requirements of the districts. The cost of sewers increases about as the squares of their diameters; for instance, if a sewer of 2 feet diameter cost 10s. per yard lineal, a sewer of 4 feet diameter will cost about 40s. per yard lineal; or, in other words, 400 yards lineal of sewer 2 feet in diameter may be put down at the cost of 100 yards lineal of 4 feet in diameter; and if the sewer of the lesser sectional area will remove all the sewage, it is not only four times cheaper, but very much better than the larger and more costly structure, because the ordinary flow of sewage is more concentrated, and there is less space in which sewage gases

can be generated. If the large sewer be egg-shaped, the sewage will pass more rapidly, and leave less of deposit, than in a broader bottomed sewer; but there will be the greater air space: if the invert be broad and flat, or if even the section be a circle, there will be deposit, stagnation, and accumulation of foul refuse in such a sewer.

There are many miles of sewers in this metropolis far too large for the amount of sewage, and the consequences are stagnation, deposit, accumulation, ultimate choking, and great nuisance and danger to health. We may refer to the earlier reports by the Commissioners of Sewers, as also to reports by sundry Government commissions. Into the disputes of rival engineers it is not our intention to enter,—are they not recorded in "blue books" and in counter—that is, rival—reports, in which they may be found by those who desire such reading? We have scrupulously abstained from the sewers question contention, confining ourselves to facts, and only stating these as they appeared calculated to be generally useful.

We recently drew attention to the state of the sewerage in Windsor, and inquiry has confirmed our former statement. Some of the public sewers in Windsor and Eton, along the lower levels, are too large, and, consequently, afford space for the generation of foul gases of decomposition, which gases will rise to the upper parts of the system if not previously liberated. As we remarked in our first notice, Mr. Turnbull has protected the Castle both by flaps and by surface ventilating grates and arrangements; but the Castle sewers and the town sewers are in some respects connected and complicated, so as to render it almost impossible to protect the whole of the Crown property from the effects of negligence by the Local Boards of Windsor and Eton. Public sewers were formed in the districts under the charge of these Boards some ten years since; but there are many cesspools in existence to this day, and very many of the "private" or "house drains" have been carelessly and badly constructed, and are in a sad state. We do not say that all the recent cases of fever in Windsor have been due to foul air from festering cesspools, choked drains, and stagnant sewage; as foul air may be produced by overcrowding, by defective ventilation, and by the proximity of decaying refuse of any sort.

Fevers may occur in cellars, as in Liverpool; or in attics, as in Glasgow, Edinburgh, and other places. There may be sewers to affect cellars, but attics, ten stories up, are tolerably removed from such influence. Those who even expect the best planned, and most perfectly constructed sewers and drains to prevent all fevers, will be disappointed; as diseases of this class result from many other evils,—overcrowding, defective ventilation, unwholesome food, starvation, mental anxiety, and more causes than we can enumerate.

Efficient sewers and drains will ever be the foundation of sanitary improvement; but there must be a superstructure on the "foundation," and there must also be unceasing attention. Sewers and drains may be so constructed as to act without the aid of men to cleanse them. We have an example of this in the city of Carlisle; where, although the district is flat, and the outlet is liable to be back-watered and flooded, the sewers and drains have acted efficiently, we learn, from the time of their completion (some four years ago) to the present date, without the aid of manual labour within them, and they are clean at all times. There is the power of flushing, and this is occasionally used. In Birmingham, in Cardiff, in the metropolis, and in some other towns, men spend their lives in the public sewers—at, of course, a great annual cost to the ratepayers—and what is far more to be lamented, at the sacrifice of their own health and lives.

The progress of the sanitary question in England, is watched with great anxiety by the whole of the civilized world. Our big-endian and little-endian disputes have sadly troubled many inquirers, and we fear have hindered some, while false examples have been followed in distant parts of the world. Some American engineers have, however, visited this country, to examine for themselves. Mr. Chesborough, of Chicago, has reported to the authorities of that town since his return, and is now carrying out a system of sewers on a plan devised after full examination into the whole question. Earthenware pipe sewers will be adopted for all branches. The engineer in New York is also using earthenware pipes to a large extent. We also happen to know that earthenware pipes and soil-pans are sent out and are disposed of and used in large quantities in Australia. The make of earthenware sewer and drain pipes in England alone is upwards of 12 miles lineal per week, and of soil-pans about 1,000 per week; that is, 624 miles of sewer and drain-pipes, and 52,000 soil-pans per annum. Land drain-pipes are of course not included. If there be any truth in sanitary science, we ought surely to be improving. Much of the private work is no doubt badly executed, as at Windsor; but we hope for better things in time. At present health and life are at a discount with many public bodies, or we should not have a retention of cottage cesspools advocated, as in Manchester and in many other towns, practically by neglect, though not actively by legislation. The Registrar-general will some day startle the public from its apathy when the next epidemic sweeps through the land, and Government may even learn to value the bugbear charge of "centralization" at its proper worth. In Newcastle-upon-Tyne upwards of 2,000 lives were sacrificed to cholera in 1853, at a cost of some 40,000l. to the community, and this town remains as liable to cholera as before; the only improvement was made by the great fire subsequent to the cholera, in consuming many wretched habitations of a crowded district. We are not advocates of centralization as practised on the Continent, but of wise government in the truest and fullest sense of that word under its most liberal interpretation. "Government!" cannot mean neglect of human health and life, as the strength and the glory of a state consist in the numbers, wealth, and health of its inhabitants. Human life and the well-being of a people must, therefore, be the first and most sacred duty and care of a just government. Our parish Dogberies and vested interests may cry out centralization! centralization! but if loss of health, loss of life, increase of poverty, pauperism, and crime can clearly be shown to spring from local inefficiency or local apathy, a superior power must be created to step in and avert so much

human misery. We must live beyond the doctrine of *laissez faire*, and neither pander to any class interest nor fear ignorant exclamations. Those who read our pages regularly will not be ignorant of the scenes of wretchedness, vice, and misery in this metropolis, and we think our conclusions cannot be disputed, namely, that the poor have no power to help themselves, and that therefore either the Imperial Government or a local government must step in and remove the causes of evil. The poor cannot build houses, regulate ventilation, sewer towns, scavenge streets, or even secure wholesome meat. We do not say, nor desire, that a central power shall be enabled to step in and do such things; but we do say, that, after the central government has created a local power, it ought to establish and retain power sufficient to enforce necessary movement, and give the superintendence requisite to secure something like honest efficiency. Government regulates labour in coal-mines and in cotton factories, with advantage to the whole community; but miserable houses, no sewerage, and defective sewers, work incalculably greater social evils than coal-mines and cotton factories, because the first are general—as wide as the empire—and the latter are local, and therefore limited in their power of mischief. Bad government implies human misery (preventable disease), pauperism, and crime. We have shown that these evils exist in fearful and in terrible realities in this the greatest and by far the wealthiest city or metropolis in the world. That the Imperial Government is expected to assume certain public duties, we learn from the verdict in the recent accident case at the Polytechnic.

The evils of cesspools have been over and over again commented upon by us, and yet we find cesspools retained even where public sewers have been carried out. There is also another evil of great magnitude, more frequently committed than it is easy to believe, namely, leaving house-drains, into which closets and sinks send all the refuse of a large family, unconnected with the street sewer, until the whole basement and subsoil are flooded and saturated with putrifying refuse. This has been the case in London, and, no doubt, many such cases of gross neglect are now accumulating their full measure of mischief. If the residences of our metropolitan hospital fever cases were examined, we should find cesspools full and foul; choked drains; and drains unconnected with the street-sewers. Cleaning such choked drains, and making a connection with the public sewer, do not sweeten the tainted subsoil: the whole floor should be taken up to remove as much as possible of the foul material, and the space made good with concrete. There are frequent complaints of bad smells being perceived from drains, from closets, from sinks, from street gullies, and there is a loud outcry for "trapping." But trapping alone is a delusion and a snare. Foul gases are not destroyed by such means, but are concentrated,—made far more deadly, and are forced into houses through every rat-hole, crack, or imperfection in sewer, drain, wall, and floor. By far the safest remedy is external ventilation, free and abundant at any point where there is the least chance of harm, remembering that foul gases admitted to the open air are diffused into space, and seldom injure, but that foul gases admitted within houses are diffused through the rooms, and injure at all times, but especially at night and during sleep. We often read that gullies have been removed or trapped, because foul gases escaped, to the annoyance of some one; and we have learned that the Queen, in driving about Windsor, detecting a stench from some of the gullies, ordered them to be trapped. We most sincerely hope her Majesty, at the same time, ordered better and fuller ventilation to be provided; as, also, the sewers to be examined, cleansed, and improved. If there are foul smells from any sewers, sinks, or closets, there is something wrong, requiring constructive improvement, and full and free external ventilation. A ton of gunpowder permanently stored beneath any dwelling-house would be neither safe nor desirable, but it might work far less

mischievous than foul sewers, with foul drains, thoroughly trapped. We would prefer the gunpowder, which might go off once, to the fever poison, which is acting all ways.

CONSTRUCTION OF STONE STAIRCASES; AND THE ACCIDENT AT THE POLYTECHNIC INSTITUTION.

It is a generally received opinion, that the stability of a stone staircase, fixed into a sound wall, depends in no small degree upon the gravitating support it receives from the lower step; and that each step, resting upon the one underneath, assists in maintaining the stability of the whole. No doubt this idea is correct to a certain extent: all the steps assist to support, and uphold each other; and from examining the remnants left in the wall at the Polytechnic, there is every reason to believe that that staircase was thus constructed. I have no hesitation, however, in saying, that in such a staircase, or any other in which the stone is of a proper quality, and the fixing performed in a workmanlike manner, each individual step would not only bear its own weight, but also any reasonable load that is ever likely to be put upon it; and this entirely independent of the steps either above or below it. During my practice, I have had to insert a new step in place of one broken; and, in a particular case, three steps were broken off close to the wall, by a weight falling upon them from a considerable height. This work was restored by taking out the broken ends, and sliding in the new steps from the end under the iron rails, and pinning into the wall as before; the joggled joints being very correctly fitted previously, and the entire staircase, I have reason to believe, was as sound and secure as before the accident.

In the absence of positive evidence, it is extremely difficult to determine the precise place on the staircase at the Polytechnic where the accident commenced, or to say what gave rise to the first break, or starting point; and some difference of opinion may probably be entertained respecting this particular part of the inquiry. On carefully examining the top of the staircase, it appears that the stone landings at that part have been improperly joggled. This fault arose, no doubt, from some mistake of the workman, or of two masons employed on different stones misunderstanding each other, and making a joint with both stones grooved or channelled, instead of one having a projection, and the other being worked hollow, to receive it. This top landing had, therefore, little or no support from the joggle to the adjoining stone, and appears evidently to have been naturally weak at the fracture, in consequence of fossils or shells occurring at that part, which are of a different substance to the great mass of the stone; and to which the ovoid, or oolitic portion is but imperfectly or slightly united: hence, as several of these fossil shells occurred near to each other, the rudiment of a rend or fracture was there; and, with any unusual concussion, it is almost certain that the stone would break at that particular part; and, in all probability, such defects in the landing might not be observed until after the separation had taken place.

On viewing the staircase, in its present condition, the first impression on the mind of an observer would most likely be directed to the circumstance of cutting away the worn part, and thereby weakening the steps, for the purpose of inserting the cast-iron trellis treads; and it would be unreasonable, as well as inconsistent, to suppose for an instant that the strength of the steps had not been, to some extent, lessened by this proceeding. But before we arrive at the hasty conclusion, that weakening the steps, to a certain degree, was the sole cause of the accident, we should fairly and deliberately take into account collateral circumstances which bear upon the subject.

The absence of a proper joggle, and the weak part of the stone landing at the top of the stairs, was, I think, as I have elsewhere said, the first cause of the accident. When this top stone gave way a large portion of its weight was instantly thrown upon the step immediately beneath it, and for a moment might probably hang with its entire weight to the iron railing, which was properly inserted and run with lead into the stonework of each step. The first step being broken, would communicate much of its weight to the one beneath, before it was completely liberated: the same would occur to the next, and the one after, and so on to all the others. The iron railing, which was firmly attached to the stones, must soon have been torn from its junction at the upper part, and would thus be entangled or threaded

amongst the steps, thereby adding, by its weight and tenacity, in no small degree, to the general destruction.

It is by no means surprising that all the steps should have broken exactly at the part near the wall, where the whole thickness of the original solid step is left, and where the iron trellis is inserted. It would have baffled all my theory and practice had they broken at any other part. This particular place in each step acted as the starting point—the commencement of a rend or fracture, somewhat analogous to the effect of a glazier's diamond on glass, which, supposing the glass to be an inch thick, will not penetrate to more than about the thousandth part of an inch, and in this state the glass is scarcely appreciably weakened; yet a few sharp blows or concussions with a hammer will cause it to separate exactly at the scratched line. The masons who paved our foot-paths with Yorkshire flagging nick the stone with a chisel and hammer, about a tenth of an inch deep, where they wish to separate it, and then a few blows with a hammer divide it along the line indented. In the case of the stairs now under consideration, it was proved, that only a few minutes before the accident, they bore a weight of human beings very far exceeding the weight or number of persons upon them at the precise moment of the disaster; but it was some fatal blow, sudden jar, or concussion, which set the whole affair in action.

We will now consider what might have been the effect if the assumed cause, namely, the failure of the top landing, had operated upon the same steps before the iron trellises were introduced, even when the stones were but recently erected, before they were appreciably worn. We are justified in concluding that the steps, as originally constructed and fixed, were sufficiently strong for all contemplated purposes; because the staircase had stood the test of crowded meetings, during about twenty years, without any apparent defect, except that produced by fair and reasonable wear. Unfortunately, it happened that several circumstances of an untoward description were combined in the same stone, at the most vulnerable part of the staircase; and at a particular moment of time, this weak point received a vibratory shock or concussion, which from the starting point, set off the whole disaster.

Artificial substances, such as different kinds of cements, and the various metals, which, in their natural state, are almost invariably found in the earth mixed with sulphur or other material, may be homogeneous and uniform throughout their entire mass: hence, well-conducted experiments on such substances are likely to be very useful in arriving at conclusions relative to their strength; but the longer my experience extends, and the more I investigate the subject of experimenting on the strength of natural substances, such as building-stones, and more especially that of Portland stone, the greater are the difficulties which present themselves before any formula can be attained that will not lead to very erroneous conclusions. No two pieces of Portland stone the size of the steps of the Polytechnic staircase can be found that do not vary considerably in their texture at different parts, in the hardness, soundness, number of fossils, and many other peculiarities well known to a mineralogist, and also to an intelligent working stonemason: these remarks apply with equal force to different parts of one and the same block. No dependence should rest on a single mechanical experiment upon Portland stone. If a formula be required, it can only be obtained by at least six or eight experiments, performed in the most careful manner, and then taking the average or mean proportion of the entire number.*

Two experimental tests were prepared at a builder's, in Tottenham-court-road, expressly for the purpose of testing the strength of Portland stone, as applied to steps: they were wrought in the form of winders, one with an iron trellis let into it, the other without, so as to resemble as nearly as possible those at the Polytechnic; and after being properly pinned into a wall, they were both loaded uniformly over their surfaces until they broke. That in which the iron was inserted, broke with 5 cwt., the other with nearly 13 cwt. These tests might have been satisfactory provided the stone could be viewed as a substance of one uniform homogeneous quality throughout its entire mass, but, as already stated, such uniformity of structure rarely or never is found in Portland stone. Long blocks of such material are almost invariably obtained from the quarry in an upright position: the top end is always hard,

* Averages in such cases will not ensure safety.—Ed.

strong, and durable, when exposed to the weather: the lower end is soft, much weaker, and is very likely to decay rapidly, under atmospheric influences. Hence, it is of considerable importance, in a staircase with long steps, that they should all have the strong ends of the stone towards the wall, where there is the greatest amount of leverage. In the case of two of the stones, prepared expressly for experimenting upon, they were both sawed out of one block, of an oblong form, and so contrived, that the piece was sawed nearly on the diagonal, to form winders round a semi-circular well-hole: the broad end of one step, and the narrow end of the other, being of the hard and strong part of the block; one of the steps was necessarily obliged to be turned end for end; therefore one had the hard end pinned into the wall, and the other the soft and weak part of the stone in the wall: consequently, other conditions being equal, the two steps, when loaded, broke with very unequal weights; therefore such an experiment would be no criterion of comparative strength.

Another experiment was tried with a step (having an iron trellis let in) rebated on to a landing beneath it. This step, and the landing together, bore a weight of 26½ cwt., during two or three hours, without breaking: having no more weights at hand, it was left, thus loaded, and broke when no one was by, probably in consequence of some carriage passing through a narrow adjoining, and causing the ground to vibrate. This last experiment proves that very considerable strength is obtained by the steps resting partially upon each other. These various tests or trials were made with new stone, thoroughly wet; consequently not so strong as if dry and well seasoned, which renders the stone stronger than when fresh from the quarry.

A staircase is one of the most indispensable objects belonging to almost every description of building; therefore, it should be well understood, and safely constructed, especially in public edifices, where great crowds may occasionally be expected to assemble. Since the accident at the Polytechnic, numerous proposals have been suggested for improvements in the safety of this important feature in practical architecture: the most general proposition is, that the steps should be supported by a wall at each end,—a very safe plan no doubt; but, in practice, attended with many difficulties, especially those of space, cost, light, ventilation, &c. Another scheme is, that if the steps are only in the wall at one end, the other end should be supported by iron columns raised from the ground. This, I must confess, would be a rather dangerous construction; for, unless the iron supports be in close contact with the stone, they will be useless; and if they do touch, or are the least approaching to tight, they may, by variation of temperature, which expands the metal, be raised, in the space of 20 feet or 30 feet high, at least a quarter of an inch: if the steps are properly fastened at the wall end, and such an expansion will be quite sufficient to hoist up the steps, and break them off close to the wall.

During the inquest at the Polytechnic, it has been stated that, "as a rule, cylindrical staircases having open well-holes, together with a great width of step, supported only at one end by insertion into the wall, are greatly to be condemned, as highly dangerous." In answer to this fearful assertion, I may confidently state, that, during the long period of half a century, I have been practically and theoretically acquainted with all matters relating to the construction of new, and repair of old staircases: I have also been long associated in business, and on friendly terms with an unusual number of eminent architects. It has also been my good fortune to be honoured with invitations to attend nearly all the meetings of architects and engineers during the last twenty-five or thirty years. Nevertheless, I cannot recollect hearing of a single instance of a stone staircase falling or breaking down, either in a public or private edifice. In offering this statement, of course I do not include cases where the building has been consumed by fire, causing the roof to fall in, and thereby totally knocking down the stairs; neither does it refer to the falling of scaffolding, or other heavy weights, whereby a few steps may be broken. But I may say, without fear of contradiction, that no stone staircase, erected in the usual manner, ever broke down under the heaviest load of human beings that could by any possibility get upon it, or under the greatest weight likely to be carried up or down by manual labour.

C. H. SMITH.

MERTHYR TUDFIL BOARD OF HEALTH.—Last week Mr. Alfred Taylor was unanimously elected engineer to this board, out of fifty-three candidates.



MODERN FRENCH DOMESTIC ARCHITECTURE.
House-Doorway, Paris.—M. Clerget, Architect.

MODERN FRENCH ARCHITECTURE.

THE doorway whereof we give an engraving is one of the eccentricities of Paris architecture, in which one overlooks the abomination of the broken pediment, and other weaknesses, for the sake of the playful fancy and artistic carving that it exhibits. It is the doorway of the house of a sculptor; was designed by M. Clerget; and, being placed at the bottom of a little garden, is protected from the degradations too common in Paris.

THE ECONOMIC MUSEUM, FORMED BY MR. TWINING, AT THE POLYTECHNIC INSTITUTION.

IN prosecution of his scheme of popular instruction in sanitary and domestic economy, by collections of books, designs, and specimens of appliances of various kinds, with the ultimate object of permanent repositories of useful knowledge for every-day life, Mr. T. Twining, jun. has lately brought together, at the Polytechnic Institution, a small but very useful collection as the nucleus of a larger museum, or an illustration of the agency which he proposes should be set on operation by Mechanics' Institutes, as well as on the required national scale. A somewhat similar illustrative "Economic Museum" was formed at Paris as part of the Exhibition of 1855; one was opened at Brussels at the Philanthropic Congress, in 1856; the idea was repeated at Vienna and Feldsberg; and in 1857 an Economic Collection, got together at Mr. Twining's expense, was, with the aid of Dr. Lyon Playfair, made part of the South Kensington Museum. The present collection, like that last mentioned, is formed in the name of the Society of Arts.

The objects are classified under the heads,—

"Building Designs;" "Materials for Building, Furniture, and other Household Requisites;" "Fixtures, Furniture, and Household Utensils;" "Textile Materials, Fabrics, and Costumes;" "Food, Fuel, and other Household Stores;" "Sanitary Department;" "Home Education, Self-instruction, Recreation;" "Miscellaneous Articles, not referable to the foregoing classes;" and "The Economic Library." Divisions first and last named of those specially interesting to ourselves, are those in which the distinctive value of the collection at the Polytechnic Institution at present consists; and any one requiring to design and carry into execution dwellings for the working classes, or to get information in matters of domestic, sanitary, educational, and social economy, would find here arranged, some of the chief books and pamphlets, British and foreign, as well as plans and designs, and illustrations of the dwellings, for the same classes, as erected in various countries, besides some models or illustrations of improvements in the construction of staircases, floors, and external galleries, furnishing information much of which could not be procured elsewhere with ease. To render the library portion of the collection, however, as useful as it might be, a printed catalogue, following the classification adopted, should be at once procurable. At present, the better part of the collection (or, except in the division of food, fuel, and household stores, scarcely what the public will pay due attention to) cannot be as useful as it might be to those who would turn it to account.

For general purposes, it is very properly part of the scheme to dispense with reference to catalogues, instructional labels being substituted.

The intention is more particularly to impart to those of the community having moderate incomes, knowledge of what sort of dwellings they should live in; what improvements in domestic economy

they may derive from scientific discovery, and from other nations; what fabrics they should wear, and what food they should eat, distinguishing things durable, or wholesome, and really cheap; and also how their food should be cooked. Eventually it is hoped that the museum will form a medium between Great Britain and foreign countries, for interchange of publications and contrivances. Something of this kind appears to be in process of realization under the direction of M. Ducpétiaux, at Brussels—according to the plan recommended by the Congress of 1856. Arrangements have been made at the Polytechnic Institution for lectures in every branch of the "Practical Philosophy of Common Life;" and lectures on the food section are already in course of delivery.

In the second and third classes, there are already arranged some specimens of bricks, tiles, glass, felt, metals; the manufactured articles, as nails, and screws; pigments, and paper-hangings, with prices affixed. Some of the Belgian paper-hangings are certainly better in pattern than the English which are near them; and they appear to be cheaper by very much. The sanitary department chiefly devoted to appliances medical and surgical, will include also means for preservation from injuries and diseases—or amongst the number of those, plans for ventilation and for securing healthy dwellings. Also in the division of miscellaneous articles, the arrangement of berths and ships' cabins, two classes, is shown; and a small beginning is made at the representation of a working-man's home—to include stationery, clocks, scales and weights, workbox, tools, string and glue, and the like, and appliances for cottage gardening. In the head of education and recreation, "instruction in the principles of taste," "correct patterns," and "articles for cottage decoration" contrasted with the uncouth ornaments which are too common, are set forth as amongst objects intended, or articles to be exhibited.

Enough has been said to show that the undertaking is a very comprehensive one, and if the museum and library at all fairly reflect Mr. Twining's excellent scheme as drawn,—the space at the Polytechnic Institution must be quite insufficient, as indeed the space allotted is at present. We should be disposed to restrict the undertaking as closely as possible to the illustration of what should be the working-man's every-day life. Otherwise, with any space likely to be obtained, the collection will not merely be unmanageable,—it will lose those advantages of the speciality of character, for the sake of which the museums and libraries repeating what may or ought to be in Great Russell-street, are most advisedly set on foot. Everything in the present collection should interest the working-man, and yet objects may have crept in, which having regard to classification, and the best facilities for instruction, may be rather suited to other departments of the Polytechnic Institution. Mr. Twining's devotion of his abilities and his means deserves the grateful thanks of his countrymen.

INSPECTION OF THEATRES.

DRURY-LANE.

IN a report read to the annual meeting of proprietors and renters last week, Mr. Marsh Nelson says:—

"The melancholy accidents that have lately occurred in theatres and places of public amusement prove the advantages of the regulations which you have made from time to time for the security of the public.

There has, however, been great difficulty in enforcing these regulations, in consequence of an unfortunate omission in the Police Act of the 2 & 3 Vict. cap. 48.

By this Act the police can prevent obstructions, and make regulations outside the theatre, but they cannot enforce any regulations inside the walls (except as to the prevention of crime); in fact, they have no power to enter licensed theatres even whilst the doors are open to the public, and the performances are going on.

The Lord Chamberlain is in the same difficulty; he is obliged to rely upon the managers to carry out his orders, and he is powerless unless he resorts to the extreme measure of taking away the license.

It is true that the lessees of theatres have "paid policemen," but these policemen are in a great measure under their control. It is a bad system, and for the interests of both the managers and the public ought to be altered.

The frequent inspections at the Theatre Royal Drury-lane have tended much to the greater security of the building, and the safety of the public. Your Act of Parliament enables you to appoint proper officers to attend to these duties, and in this respect you are better off than the Lord Chamberlain or the magistrates.

The Lord Chamberlain's Act, the 6 & 7 Vict. cap. 68, for regulating theatres, neither provides him with officers, nor with funds to pay them another strange omission, and up to 1853 no inspection was made. The circular of plays now visits the theatres (accompanied by a clerk of the works), at the annual renewal of the licences.

Great credit, however, is due to the Lord Chamberlain's department for instituting any inspection where none is required by the Act.

The magistrates license theatres out of the Lord Chamberlain's jurisdiction, and under the 25 Geo. II. all other places of amusement in the metropolis. It is well known that they institute no periodical inspections."

In conclusion Mr. Nelson pointed out, as we have before done, the advantages possessed by Drury-lane Theatre. "There is no theatre or opera in the metropolis where so large a space is allotted for staircases, corridors, and entrances. They are all under a separate roof, and divided from the several tiers of boxes, pit, &c. by a thick wall. The result is that in a few minutes an audience, however large, is enabled to leave the theatre, and to enter these spacious fire-proof corridors and staircases, where they are secure from any danger in case of accident."

In this report there are some passages calling for notice. Mr. Nelson, whilst remarking on the merits of the plan of the building—or in regard to the large space appropriated to staircases, corridors, and entrances for the galleries, pit, and boxes—there being for each a double set, fire-proof, and the whole under a separate roof; and remarking in words similar to our own, on the security that might be felt, since every person amongst the audience might in a few minutes reach these staircases and corridors, and there be free from danger, as well as adverting to the advantages of insulated site, says that "the melancholy accidents that have lately occurred," "prove the advantages of the regulations" in the case of this theatre, which have from time to time been made, by those whom he is addressing, "for the security of the public." Now, we are sorry to destroy the equanimity which exists amongst those concerned with Drury-lane Theatre, and their satisfaction that they are not as others are. But we should not discharge our duty, did we fail to observe that facts, during the greater part of several years past, offer no ground for the praise which seems to be accorded in this particular respect, the regulations actually in force having been rather the reverse of those which could be called advantageous, or those proved to be so by the recent accidents. The truth is, what is well known to many of our readers, that the entrances on the Vinegar-yard side of the house were, till quite recently, closed, and had remained so during many years, unless with very slight intervals of exception; and we believe it is due to the management of Miss Pyne and Mr. Harrison, aided by the general apprehensions excited by the accident at the Surrey Music-hall, Sheffield, that the advantages of the architect's original design and plan are no longer absolutely negated by "regulations." Indeed, Mr. Harrison, in a letter to the *Times*, dated in September of last year, refers to the fire-proof communications, as though then for the first time discovered. Some of the passages, staircases, and doors, he said, had not been made use of for five-and-twenty years, and even said that the *extra* means of egress which he had thrown open to the public were as many as six in number. Whether the case of Drury-lane Theatre was present to Mr. Nelson's mind when he referred in his report on the Polytechnic Institution accident, to the "cutting off or otherwise appropriating means of exit from places of public resort," we need not examine, since he limits his "instances" of exit-ways closed "merely to avoid the expense of check-takers," to a period within six months; but the closed doors in Vinegar-yard, with a similar explanation to that now suggested, have been present to our mind on every occasion of our taking up the subject, of late years.

What the public are interested in, is the question whether the present arrangements at Drury-lane are such as should be in all respects quoted as example, or, if so, whether the law affords sufficient safeguard against future destruction for the time, of the advantages of plan, by "regulations." Now we do not take the plan of Drury-lane Theatre as possessed of more advantages, comparatively as regards other theatres, than those of an unusual number of staircases and exit-ways placed somewhat widely apart. These, certainly, already so prominently dwelt upon by us, are points of by far the greatest importance. But, in certain details as to steps, the planning of Drury-lane Theatre is not to be approved of absolutely; whilst, in regard to the use of baluster-rails to open well-holes of staircases, in place of inclosing walls, preferred at Covent-garden as also to some other matters, the questions for consideration in that branch of theatre-planning become less important here, only from the ample area given to the communications, and become immediately predominant questions when such area of the plan is lessened. We question whether the inadequate utilization of means provided, which we have been referring to, in-

volving danger, would not be found to exist, at the very date at which we are writing. At the close of the night's performance, we know, the exit-ways into Vinegar-yard are all opened; but we also know that the same communications in the early part of the evening, though available, are not generally supposed to be so, for exit; and, indeed, it could not be otherwise from the circumstances of their long disuse, and present disuse of some of them as money-taking entrances. But beyond this, the arrangement as to the barriers remains unimproved; and, in place of the long narrow *galerie*, extending if need be, outside the theatre, so that people on foot might be regulated by the police with little more difficulty than the line of carriages, the system is to admit a vast crowd into a covered space, and then to let them undergo the process of wedging up to the aperture, at the pay-box, wide enough for the admission of one person, during which they cannot be under control, and on stairs, are, as the accidents have shown, in a state of constant danger from a stampede. The object is to prevent many persons from visiting theatres, and so to interfere with that regularity of returns and income on which the success of the management and proprietary depends. It seems to us not unreasonable to expect that with site completely insulated, and in an open part of the town, and with sufficient length of colonnaded footway (all required for general reasons), there would be no difficulty in getting rid, in a properly devised plan, of such danger as exists even at Drury-lane, where, especially in regard to the barriers, by the defects whether of the plan, or of alterations, or "regulations," the consequences any night at this time of the year, from panic, might be calamitous, far beyond all recent experience. To show the necessity of attention to safety of the public, further than seems to be paid by the proprietors of Drury-lane Theatre, we may mention that each gas-light in the pit, under the boxes, with the flame wholly undefended, projects from the wall, at 5 feet from the floor, or about the height of a lady's bonnet; whilst during the attractions of the pantomime, the pit has been so densely crowded, up to the walls, that there has been little room to move, and some slight difficulty occasionally in keeping from contact with the light. Thus, absolutely bad as are the arrangements at other theatres built some time back, inadequate as they are even at those recently erected,* it is clear that much more study than has yet been given to the subject is needed, and much better arrangement of plan and better regulations for constant observance are required than those which exist in the best planned and regulated theatre of the metropolis.

We must at the same time point out, that whilst it may be said that Drury-lane Theatre "abuts on four public ways," so as to get "entrances and exit-ways for the public on three sides,"—regarding which we need only refer to what we have said as to the advantages,—the theatre still has not really the insulated site, and has much less the shutting upon wide exit-ways, all along its four sides, for which we contend as essential to arrangement of the best internal plan, and to police regulations on the improved system suggested externally at the entrances, and to safety in the streets, freedom from danger by fire to neighbouring property, and that use of an opportunity for architectural effect which should ever be made, as the opportunity should be required to be offered, in the erection of such a building, and every other of a public character. The architecture of London theatres, externally, is not now very worthy of our metropolis.

In drawing attention, however, to the actual state of the law affecting the arrangements of theatres, Mr. Marsh Nelson has done service. It appears that the Lord Chamberlain's department, under the act for regulating theatres, does not require any inspection of buildings, and therefore does not provide officers or funds for such purpose. Up to 1855, no inspection was made; but the Examiner of Plays, accompanied by a clerk of works, now visits theatres on the annual renewal of the licenses; and great credit, Mr. Nelson thinks, is due for the institution of an inspection where none is required—though the Chamberlain cannot enforce regulations unless he resorts to the extreme measure of

* Often without blame to the architect. See, for example, the pit of the Olympic, where, by the conclusion of the performance, all are forced to go in and out by one narrow door, though a second exists. The mischief that would result here in the event of a panic, cannot be calculated. If for technical reasons it could not even be our any special exit in case, when those who are in, desire to go out at the half-price people are entering.

taking away the license. The magistrates license theatres out of the jurisdiction of the Lord Chamberlain, and all public places of amusement in the metropolis for music and dancing; but they have no system of inspection. The conclusion, however, in which we are justified, is, simply that much of the power asked for in the presentment of the jury in the case of the Polytechnic Institution, does exist; and the need is only in the one case, of the performance of the duty of inspection, and in the other, of the appointment by the Chamberlain, of a person professionally qualified. For, it must be quite clear that the licensing of the building of a theatre, admittedly a distinct duty, is quite a different sort of duty to that of examination of plays and the permission to be granted prior to performance; and although the license for the building may be given specifically to an individual, this does not seem to us to alter the requirement of the Chamberlain's or magistrates' duty, the obligation of which otherwise could be but little. There is no doubt what view will be taken of the whole subject, if time and the Reform Bill, in the busy session just commenced, should permit; but meanwhile, the course for the Lord Chamberlain and the magistrates is plain, unless they be invested most erroneously with powers as licensers. As to the structural question, we have already shown that the district surveyors have requisite power, if supported by the magistrates. A large question as to many places of resort, such as the news-rooms, however, remains.

That there is defective power of the other authorities, by the Police Act is more clear; in fact, if Mr. Nelson be correct, it is difficult to say that the police have any power inside a theatre. They could, however, do more than at present to prevent confusion at the doors, even by regulations outside; but this part of the subject calls for more attention than we can now give. Want of aptitude in the management of crowds, has been a failing in the police on several important occasions.

We have dwelt upon this question of entrances and exit-ways of places of public resort, in connection with the recent report on Drury-lane Theatre, because we feel that the public and the official mind, with all that has been learned by the recent accidents, have still to make an advance, the nature and extent of which, in order to secure required safety in buildings, especially places of amusement, is not at all supposed. The architect to Drury-lane Theatre is right in seeking of that building, as being in plan almost the only theatre in the metropolis designed with any consideration for the requirements of large audiences; but he obviously does not think it susceptible of improvement; and he must on further consideration question the advantage, with regard to "security of the public," of some of the "regulations" which have been made, or he would be unfitted for the post which doubtless he fills with excellent effect.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

MR. G. G. SCOTT ON THE ARCHITECTURE OF THE THIRTEENTH CENTURY.*

The bases of columns throughout the Romanesque period were most usually founded on some traditional variety of the attic base. The resemblance is often obscure, but in many cases very close.

Towards the end of the Romanesque period very great attention began to be paid to the sections of base mouldings, and in transitional works they are often more beautiful than at any other period. The difference between these bases and the ordinary attic base is of the same kind which distinguishes Greek from Roman moulding. It is an extreme delicacy of curve, the substitution of elliptical section for circular, and a wonderfully studious grouping of the hollows, rounds, and arrises, so as to produce a refined and delicate contrast and gradation of light and shade without destroying the strength necessary to the main supporting feature. In this they showed a high appreciation of what is in all architecture a difficult problem—the uniting the conflicting claims of the lower part of a building, as on the one hand demanding the greatest strength of character as supporting the whole structure, and on the other a delicate finish, as the part open to the closest inspection.

The bases have usually one more part than a Classic base, having in most cases a projecting subplinth, either chamfered or moulded. In earlier

* See p. 76, ante.

instances, the plinth and subplinth are both square in plan, and here again we obtain a feature of great beauty, which antique architecture did not possess—I mean the beautiful leaves or bosses of foliage which spring out of the lower torus to cover the projecting angles of the plinth.

This projection is often reduced by making the torus overhanging the square plinth in the centre of its sides, and a little projecting corbel is often put to carry this overhanging as well as the leaf to cover the angles of the plinth.

At a later period the square plinth gave way to the octagonal, and in England and Normandy often to the round form.

In early work the bases often faced about diagonally, as the caps, to indicate the direction of the arch-ribs to be supported.

In France the elliptical section of the lower torus continued much longer than in England, and the upper torus was often converted into a kind of ogee; and both in France and England the scotia was usually very narrow and deep, so much so, indeed, as to hold water. In England another kind of base is frequent, in which a bead is substituted for the Scotia. In some rich work the plinth is clothed with foliage.

I have said a good deal of the history of the capitals of the Early Pointed period in my last lecture. I particularly showed that about the period of the transition a great change took place in France in the form of the capitals, in which the old Romanesque form was almost universally abandoned in favour of one of a distinctly Byzantine origin, which I suggested came in all probability by way of Venice at the time of the erection of the Byzantine churches in Aquitaine; and that though the domical construction of churches then brought into France does not appear to have extended northward of the Loire, the Byzantine capital of the Corinthian type was adopted quite into the north of France, and became the parent of the exquisite capitals and foliage which in the next generation pervaded the architecture both of France and England, and, a little later, of Germany.

I also showed that the peculiar stalk, or crocket, which became so constant a feature in early Gothic capitals, took its origin from a plain unravelled leaf frequent in the Byzantine capitals, which in their turn, may have been suggested by unfinished leaves which are of very common occurrence in capitals of that period.

During the first half of the thirteenth century these crocket capitals were brought to very high perfection, the stalk or crocket either appearing in its most normal form, or being more or less clothed and concealed by foliage. In the latter case it forms a strong background to the leaves, giving them the apparent stiffness and strength necessary to their position. These usually turn over in a bunch of foliage, which is distinct from the leaves which clothe them; so that there is no inconsistency, but the reverse, in the clothing foliage being natural, while the terminal bunch which completes the crocket is conventional. Towards the middle of the century, the natural and conventional foliage were very much used together; the former being often a light, playful overlaying of stronger leading forms, but afterwards in French work, and still later in English, natural foliage became the rule and conventional the exception.

The capitals which prevailed during this century form the most magnificent series which any style of architecture can boast. Whether the foliage is natural, conventional, or both united, the artistic power evinced is truly delightful; and when it is recollected that no two capitals are ever found exactly alike, the fertility or invention they display is perfectly wonderful.

It would be hopeless in such a lecture as this to attempt to go through, even in the most cursory manner, the endless varieties of capital, from the stupendous masses of noble foliage which crown the apsidal colonnats at Rheims, whose single shafts are 6 feet in diameter, to the delicate reeds which decorate the mullions of windows. This one feature alone would form an ample subject for an entire lecture, or almost for a series of lectures. I will confine my present remarks to the characteristic differences which distinguish French from English capitals during the thirteenth century.

This great distinction lies in the plan of the abacus, for while in France the square form of the preceding style continued, the English architects very soon substituted the circular plan.

It is a curious question how and when this arose. In both countries the round abacus was in some instances used from an early period, but this was chiefly on great cylindrical columns with low

capitals, such as those in the nave of Gloucester Cathedral; though even in France the round form occasionally occurs to subordinate shafts, as at St. Omer; but, as a general rule, both countries used the square, or the angular form, till late in the transition, when the English commenced the free adoption of the round, first alongside of the other, and afterwards to its almost entire exclusion.

So early as the erection of the crypt under the Trinity Chapel at Canterbury, by William the Englishman, about 1180, we find the round moulded capital; and in the altar recesses in the eastern transept we find the round abacus on foliated capitals, though I confess I doubt its belonging, in this last-mentioned instance, to the original work.

Much difference of opinion now exists as to the comparative merits of these two forms. By some the square abacus is assumed to be the great symbol of force and vigour, while, by others, it is said to be inconsistent with the true principles of Gothic architecture. Perhaps the question might be solved by deciding that both are beautiful, both vigorous, and both consistent with Gothic architecture, and, therefore, that both should be admitted on equal terms as portions of our general material.

The advantages of the angular abacus are, that it allows of the capitals indicating the direction of the arch-ribs, and assuming irregular forms suggested by them, which the round form forbids; that it allows of the use of square orders, and consequently of simpler and more effective arch mouldings than can be placed in the round abacus, on which the mouldings have to be somewhat crushed in their section, and their parts multiplied to bring them nicely on to the round support; and that the angles indicate the direction in which the main stalks of the foliage should tend. There can be no doubt on the whole that it produces the most vigorous effect, and I must plead guilty to an un-English preference for it, though I also greatly admire its competitor, whose advantages are the beautiful form which the round moulding takes, as seen in perspective from below, and its less disturbance of the continuity of line.

Another great characteristic of English architecture is the moulded (unfoliated) capital. This is almost wanting in French architecture, and I strongly contend that the invention of this capital, which we may almost claim for our own country, is one of extreme value, and supplies what would be otherwise a great hiatus in the style. Among its earlier instances is that I have already mentioned in the crypt at Canterbury. It is there in rather a plain and normal form, nearly resembling a capital denuded of its foliage, but with the space below the abacus and the bell somewhat increased for the sake of strength. The fully developed moulded capital differs from this in having a considerable overhanging moulding, which is the substitute for, and the representative on the foliage of, the richer capital. Though this overhanging moulding is uniform in type, the varieties it assumes in detail are endless, and the groups of mouldings in these capitals are among the most beautiful in the whole range of Gothic architecture, and the addition of this beautiful feature to our rich treasury of forms of capital is of infinite value.

The abacus of the moulded capitals is not necessarily round. There are many instances of its being square, and still more of its being octagonal, a form in which it continued through the later periods of English architecture.

I ought to have mentioned that, in its normal condition, the abacus is in a separate stone from the rest of the capital, though convenience frequently suggests its being in one.

When marble shafts, however, are used, it is far better that the same material be used also for the abacus.

Next in importance to the column, as a characteristic of the style, we must place the window; indeed, it has generally been made to take the precedence of it, and is no doubt that by which the date of a building is most readily ascertained, and its style denuded.

The Romanesque windows were simply openings with round heads, the jambs and arches being either perfectly plain, moulded with or without enrichment, or the jambs shafted. These windows were most usually isolated, but were here and there grouped into couples, triplets, &c. or made to form portions of continuous arcading.

In the early days of the transition, the windows remained unaltered, otherwise than as to the general refinement of their details: later on the arches were made pointed, and their proportions somewhat elongated; and even in the fully de-

veloped Early Pointed style (properly so called) the window differs little in principle from that of the Romanesque period, though, in fact, it assumes a widely different form through its carrying on, towards their ultimate results, of the principles of grouping, which began during the previous style, and those of refinement and elongation incident to the transition.

It is in carrying out these principles to a still greater extent that the Early Pointed of England differed from that of France. It is really the same style, and no important feature can be pointed out in the one country which is not to be found in the other; but, just as the Germans, by dwelling longer on the Romanesque style, rendered it more refined and perfect than elsewhere, the English, by the continued retention of the unmoulded window, systematized its use in a manner not equalled in other countries. I see no difference of principle in the fenestration of the Early French and the Early English Pointed styles: in both the principle was the decoration and combination of single lights. Nor do I see that in England this was done in a manner essentially differing in any respect from what was common in France. The great difference was the far greater width of the French openings, which often rendered their windows inelegant in proportion, while it offered a noble field for stained glass. The characteristic of the English windows, on the other hand, was narrow and tall proportions, and a greater amount of enrichment of the jambs and arches, though none of these are by any means constant features. Sometimes we find in English works lightness carried to a vicious extreme, as in the beautiful but frail eastern transept at Worcester, though, in a majority of instances, it retains a masculine firmness and solidity, as in the east end of Whitley.

Time would fail me to illustrate the magnificent combinations of this early class of window to be found in cathedrals and monastic churches, as the east end of Ely, the west at Llandaff, or the north transept at York; nor would it be possible to enumerate the simple and impressive village churches to which in their humble forms, though with equal artistic merit, they lend such a charm.

The style is too well known in England to need minute description, and its merits are too fully acknowledged to need enforcement from me.

I will rather proceed to consider that great invention which may be considered to complete the series of developments which constituted Pointed architecture. I mean the mullioned and traceried window; not that I consider it as in all points better than its predecessor, nor that in our own revival it should supersede it; but that, as a matter of fact, Gothic architecture would have been imperfect without it. Like almost every other feature of Pointed architecture, the traceried window grew out of the Romanesque.

In all periods of Romanesque we find occasionally two or more arched openings comprised under one enclosing arch. This arrangement is more frequent in belfry windows and triforium openings than elsewhere, but occurs in ordinary windows, especially in secular buildings. The space intervening between the large arch and the two or more placed below it was, even as early as this, occasionally pierced with circles or other forms of opening. Here, then, we have the elements of the mullioned window before even the introduction of the pointed arch. In the same situations it gradually developed itself, step by step, during the Early Pointed period, so that we have in triforium arcades and in other positions, a pretty full development of what is called plate tracery, before its use became frequent for ordinary windows. The case was pretty much the same both in France and England, though, on the whole, the love of placing two openings under one arch was greater in France. Thus we see in the aisles at Chartres two plain lights under one arch, with a circular opening, and above, in the clerestory, a very large circle, with somewhat complex subordinate piercings. The same is the case at Bourges, where three lights are often comprised under one arch, with a single circle in the head.

The next great element which aided in producing tracery windows was the wheel or other richly-pierced circular window. This, again, originated under the Romanesque style, as we may see at Barfreston and elsewhere. It is, in fact, a very close approach to tracery; and when placed in the space between comprising and comprised arches, it almost completes the change. All that is wanted is the piercing of the intervening spaces in forms whose outlines are parallel to the main piercings so as to form what Professor Willis calls *bar* tracery. This was, I fancy, commenced in France, though there are very early traces of it

in England, and was done at first in a partial and clumsy manner, as in some windows at Le Mans and Tours, but soon was systematized.

I do not see that in any of the previous steps the French were in advance of the English architects; but in this last step I think they were so, and this led them to a much earlier abandonment of the single window and its combinations; so that for some time the French were using tracery windows while we were rendering more perfect the unmillioned system,—not from want of knowledge of the other, but rather preference for a system in which we were producing more beautiful combinations than our neighbours had attained.

It is not a very profitable question to inquire by how many years the French may have been in advance of us in this development, and it is so exceedingly difficult to get at positive dates of the erection of buildings in either country, that it would be impossible if desired. The fact no doubt is, that for many years the two kinds of window were contemporaneous: thus traceried windows may have been in use at Rheims and Amiens while the older kind was being used at Bourges and Chartres.

It is said that in England the fully-developed bar tracery was first used in Westminster Abbey, which was commenced in 1245, but this is merely an assumption; and it is clear that it was used in the eastern part of St. Paul's, a part of which was consecrated in 1240. The east window of Netley Abbey looks very early. I do not know its real date, but believe it is said to have been finished in 1249; while the eastern windows at Lincoln look too thoroughly developed to be very early specimens, though known to have been erected between 1250 and 1280. In any case, the change had fully established itself in England during the third quarter of the century.

There can be no doubt that whichever class of window we prefer, this invention was of immense practical utility. It rendered possible what was never attained before,—the formation of windows of any width which might be wanted without injury to the beauty of the building. This is, in fact, the great use of the mullion,—to enable you to use wider windows than you could use without it; indeed, to render their width unlimited,—and the consequence of the invention was the introduction of windows in some cases not less than 30 feet or more in width, and 60 or 70 in height, and that without appearing to make any unseemly gap in the walling, which would otherwise have been the case with a window of one-sixth of the size.

After the system was once introduced, it seems to me to have been often more beautifully carried out in England than in France; indeed, I hardly know, in France, windows of equal beauty with those at Lincoln, Tintern, or St. Mary's Abbey at York.

At a later period excess of tracery became the great vice of the style, but when kept within bounds it unquestionably was a great element to its perfection, and though it must always be remembered that a building of any amount of beauty and dignity can be designed without it, it would be placing upon ourselves a very foolish restriction, if, merely from an individual preference for the earlier and sterner style, we were to debar ourselves from the use of so convenient and reasonable an element.

One feature in which the English works of this period appear to me to be peculiarly excellent, is the base moulds,—I do not mean of columns, but of the building itself. I have never seen any in France to equal many of our own in the quality of appearing eminently fitted to support the whole structure, or in the artistic arrangement of their parts.

Against this we may balance on the other side the French cornices and foliated bands, which are one of their most beautiful characteristics. They usually consist of two courses—a hollow projecting moulding containing the foliage, capped by a weather moulding,—the equivalent respectively of the bell and abacus of the capital; indeed, in many cases forming the continuation of the capitals of window jambs across the intervening piers. We have in many cases cornices equivalent to these, as at York, Howden, and the nave of Lichfield; but they are, on the whole, a much less English than French feature. The foliage they contain is usually of great beauty, and eminently suited to its position.

The great glory, however, of the French churches, is their doorways; and beautiful as are those of our own, they make no kind of pretension to vie with those of our neighbours in magnificence. In this respect the architects of the two nations seem to have gone on quite contrary principles; for the

French, even in buildings on a secondary scale, introduced portals of prodigious size and extreme richness; while the English, even in buildings on a grand scale, often made their doorways very inconspicuous. Compare, for instance, the façades of Amiens and of Wells: in one the portals are everything, so that you can recollect little else; in the other they are nothing, and you can scarcely recollect their existence; while, in the facade above, the English example is the richer of the two; and the illustrative sculpture, which, in the one case, is expended on the portals, is in the other diffused over the entire front. In England a magnificent portal is of rare occurrence: in France one looks for it as a thing of course. Nothing more glorious than the great French portals can be conceived: the lofty and deeply receding jambs are divided in their ample height into two portions—the pedestal or basement—which is richly decorated either with diaper work, or with sculptured medallions; or, as at Amiens, with both; and the upper stage contains colossal figures of Apostles, or other holy men of old,—who appear to view with severe and solemn benignity the entering crowd, and to express by the gravity of their countenances the caution,—“Keep thy foot when thou goest to the House of God.” In the tympanum are sculptured scenes from Scripture history, the lives of saints, our Lord surrounded by the Evangelistic symbols, or perhaps the awful scenes of the final judgment; and the mouldings of the arch are probably filled with angelic figures as if the guardians of the faithful worshippers; while this impressive array of imagery is placed in a setting of the noblest and most perfect architecture, and that on a scale well suited to the sublimity of the sentiments expressed.

The portals of Notre Dame at Paris, of Amiens, and of Chartres, may be instanced as among the most striking examples, but all great churches of the end of the twelfth and of the thirteenth century have the same truly glorious approaches, well calculated to solemnize the minds of those entering by them, and to prepare the way for the overwhelming dignity of the interior.

The nearest approach which we have in England to this class of doorway is the south entrance to the eastern part of Lincoln, a truly noble portal; but on the whole, though of a different class, the most dignified approach to any English cathedral is the western part of Ely.

St. Alban's has had three magnificent western entrances. The small ones have been wonderful works of art, though now ruined.

The north porches of Salisbury and Wells are very noble; indeed, many of our great churches have portals which we should deem magnificent, could we forget those of France, and what we know to be eminently beautiful, however they may be surpassed in magnificence.

In almost all other parts the English cathedral of this age are often richer than the French, as in the clustering of the columns, the richness of the arch mouldings, the beauty of their wall-arcading, the importance and detail of the triforium, &c. while on the contrary side they have to yield greatly to the French in altitude, and in many cases in general scale, as well as in the amount of sculpture with which they are enriched.

My object in drawing these comparisons is not a wish to lay any claim to superiority for either, nor to shake the claims of our neighbours to general precedence, as I view Paris to be, in a certain sense, the centre and metropolis of Mediæval art. It is rather to show that these were the arts of a great period, not of a single people; that all were labouring together in perfecting a great and glorious development of art,—each knowing well what others were doing, each according to their means taking care to keep up to the standard already attained, and to add to the public treasury developments of their own,—each making it his great endeavour to do his own work as well as it could possibly be done according to the means at command, and each people vying with their neighbours, not in the spirit of petty, jealous competitors for praise, but each striving with a noble and glorious emulation to do the utmost in their power to further the great art which all had contributed in generating.

Having given in this and my two preceding lectures a rough and very imperfect sketch of the rise and perfecting of Gothic architecture, it is not my intention any further to pursue the subject historically; but, assuming the thirteenth century to be the great period of the style, I should wish in any future lectures I may give, to illustrate and discuss its principles, and the many sections into which it divides itself, whether geographical varieties, or the leading features of the buildings themselves. I may not be able to carry out this

intention, but in the one lecture I hope to give next week I purpose,—after alluding to some of the most remarkable works of the period, and with some slight description of their characteristics, and after calling attention to the all-pervading character of the art as it bore upon secular and other buildings upon the allied arts, and upon the ordinary arts of common life—to found, upon what we have had in review before us, some general suggestions as to the practical lessons we ought to learn from what we have been considering, and the influence it ought to have upon our own artistic practice.

Lecture II.*

In my last lecture I gave a hasty outline of the developed architecture of this great period (thirteenth century). I will now endeavour to give an equally hasty glance at some of its more marked creations; beginning—as in duty bound—at home. Their number, however, is so great, that one is perplexed to know where to begin, or in what order to take them. Perhaps the most profitable way will be to imagine the student to live in London, and to commence with the works of this century which he may study within a walk of his home.

Let us begin, then, with the church of St. Saviour (formerly St. Mary Overie), in Southwark.

When I first knew this church, the whole of it was standing; externally, it is true, the aspect it presented was not very pleasing, for it had been cased almost throughout with red brick, and the Lady Chapel was little else than a ruin. The choir was then in course of restoration. The interior was a most noble structure, and was almost perfect, and nearly all of this century, though some small portions westward were earlier, and the south transept possibly a little later. The whole was on a very symmetrical design, that of the nave being very much on the same with the choir.

Its character may easily be judged of from what remains. It was nobly massive, and grand; not of lofty proportions, but still such as to satisfy the eye. The pillars were alternately round, and canted squares, flanked with attached shafts; the triforium consisting of arcades, and interrupted only by the vaulting shafts. At the east end is a beautiful Lady Chapel, vaulted on light clustered pillars.

The restoration of the choir was carried out by the late Mr. George Gwilt, aided by his sons; and it is impossible too warmly to praise the zeal and ardour with which they pursued their work—their study of the style then so little understood—or the untiring pains they took to render their restoration accurate. All these ardent lovers of ancient art are now deceased, and I feel a melancholy pleasure in bearing witness to their merits. I was intimately acquainted with one of the sons, and never did I meet a man more enthusiastically devoted to the style on which his artistic education had been founded. He absolutely adored everything which was Early English; and in carrying out restorations (in one of which he aided me), so faithfully did he reproduce the old work, that nothing could induce him to alter even the positions of the jointing of the ashlar work.

The pains which Mr. Gwilt took in restoring the choir disgusted the heartless parishioners, who, on proceeding to the transepts, placed the work in other hands; but on the Lady Chapel being undertaken by private individuals, Mr. Gwilt nobly undertook the work gratuitously, and carried it out with the same care he had bestowed on the choir.

Shortly after this, a report having arisen that the nave roof was decayed, a surveyor was employed to examine it, who recklessly condemning it as unsafe, it was taken off, and none put on in its place. The walls being of chalk became shattered by exposure to the frost of several winters; and, when the restoration of the nave was proposed to the parishioners, that enlightened body of men negatived it, and, taking down the glorious old structure, erected the present monstrosity in its place.

Happily, however, the interiors of the choir and Lady Chapel are still perfect. Let us hope and pray that their widowhood may not be of much longer duration, but that a reproduction of the noble nave may be substituted for its unworthy supplanter.

I should mention that the nave was entered on the south side by a very noble double doorway of great height and depth, though when I knew it its decorative features had perished. I will only add, that if measured drawings of this church are

* Delivered on Thursday, the 27th.

in possession of the family of Mr. Gwilt, it would be most desirable that they should be deposited among public archives, to await the time when they *must* be wanted as a guide to the re-erection of the lost portions. In the meantime let me beg of you to study well what remains.

Next in importance and probably in date comes the choir of the Temple Church, which was consecrated in 1240,—a more fortunate building than the last, and not needing from me any chronicle of its restoration. It is, in idea, a magnified transcript of the Lady Chapel at St. Saviour's, being, like it, vaulted throughout upon pillars of equal height, and is probably about the most perfect specimen in England of this beautiful mode of construction.

The only other important instance I recollect in London of the earlier portion of our style is the chapel at Lambeth—a very good Early English chapel, though somewhat dis honoured by plaster sauling, the ribs of which I myself saw being prepared for by a core of spikes and tar-cord. Let us hope that this is the last instance of such construction, especially of its introduction in a time-honoured building like this.

We now come to one of the noblest of England's temples, the Abbey Church of Westminster; and you will readily excuse me from dis honouring this truly glorious temple by attempting its description in the course of a hasty catalogue like what I am now giving. As you all know, it was commenced in 1245 by King Henry III. and the eastern portions finished about 1269. This makes it contemporary, in a certain sense, with Amiens; for, though the latter was commenced in 1220, it was not completed till 1288. There can be no doubt that the cathedral at Amiens was at the time of its erection viewed as the most perfect development of the style, for it is clear that it was made in many instances the model on which the designs of other churches were formed.

Cologne Cathedral, for instance, was commenced in 1248, during the erection of that at Amiens, and is manifestly a free copy of it so far as concerns its earlier portions; and, though Westminster Abbey is by no means built on the model of Amiens, it was probably influenced by it. That prodigious pile, carried forward through so long a series of years, would be a great object of interest to all contemporary church builders, and Henry, who was much in France, would naturally send the architect of his own sacred mausoleum to see the great work of his day.

Westminster Abbey is a church built on a French ideal, but with English detail,—a great French thought expressed in excellent English.

The windows are of the perfected bar tracery, which had not yet been much used in England, but in other respects I cannot find a distinctively French detail (or scarcely any) in the building, excepting the work of a single French foliage carver. Even the plan, which is purely French in idea, is carried out in a manner quite different from that of any French church I have seen.

In the architecture the union of the manners of the two nations is most happy. The pillars are nearly like those of the great French cathedral, but the side shafts, instead of being attached, are separate shafts of Purbeck marble, the nucleus and the capitals and bases being all of the same beautiful material. The use of this hard stone led to that moulded unfoliated capitals, in which they lose in effect when compared with those at Amiens; but the nobler material would more than compensate for this.

The triforium is far superior to that at Amiens, both in design and detail; and the whole internal design, though inferior in size and altitude, is to my eye far more pleasing, and when its varied materials retained their colour, and the Purbeck marble which pervades every part preserved its polish, there cannot be a doubt as to the superior magnificence of its effect.

The parts, too, are much better proportioned, with perhaps the one exception of the too acute form of the main arches: the wall arcading is much more beautiful, and the details generally more richly moulded. We have, then, here at our doors a building whose interior is equal to that of any existing Gothic building, and we have no excuse if we do not avail ourselves of so noble an opportunity of study.

Of the exterior I will say nothing. All its old features had perished by the end of the seventeenth century, when they were vilely renewed; and this base restoration is now in its turn decayed.

This chapter-house is a splendid but melancholy relic,—little more than a ruin,—and that not like those ruins which seem to do honour to the memory of their bygone glory by the picturesque

loveliness which graces their decay. It is choked up with presses, chests, galleries, huge sacks of parchment, and every possible obstruction and disfigurement. Its beautiful windows—which filled the entire width of its sides—walled up, and its elegant vaulting destroyed. Just enough remains to render its restoration practicable. I have with great labour traced out all the old details, and only wish for the chance of restoring it in some degree to its pristine beauty. I exhibit a drawing of it as restored. I should mention that the splendid encaustic floor is still perfect, and that very fine specimens of wall-panelling still remain.

The vestibule and staircase by which it is approached are beautifully designed, and the doorway from the cloister is among the most splendid relics of English art. The latter is in a dreadful state of decay, but I am happy to say that it has just been stereotyped in its present state by the application of an invisible solution, which will prevent the further progress of disintegration, and which has set and hardened the crumbling particles which the gentlest touch would have before displaced.

The foliated carving in Westminster Abbey unites the two great types which characterise the century,—the conventional and the natural, and contains some of the best of each. I commend it to your careful study, and will mention that all within reach has been indurated in the manner I have just alluded to. What remains of the figure-sculpture is also of great merit, especially four angelic figures in the triforium of the transept, and two full-length figures in the chapter-house, one of which I had the great happiness of discovering.

The internal proportions of the abbey seem to me to surpass those of any other I have seen. They appear to be generally founded upon the equilateral triangle, and a comparison of this with many other churches will confirm the truth of what I have heard has been stated by an ancient Freemason, that the square will furnish good proportions, but the equilateral triangle much better.

The introduction of Italian mosaic work, both porphyry mosaic on the pavement and glass mosaic on the tombs of the builder and re-builder of the abbey, is a fact of great interest, as showing the high estimation in which the arts peculiar to Italy were then held,—so much so as to lead to the bringing to England of two master mosaic-workers, Odorico and Pietro (each, no doubt, with his staff of workmen), to carry out the two branches of the art. Both artists were from Rome, as the inscriptions still testify; but their work was put together here, as is proved by the use of Purbeck marble, both as the groundwork of the pavement and for the architecture of the tombs. This architecture is not very elegant in its details, excepting only the beautiful spiral pillars and some of the surface patterns prepared for the mosaic, and the introduction of art so inferior to their own, for the sake of the rich inlaying it contained, still more strongly proves their appreciation of the merits of the mosaic art. Let us follow the example more wisely; and, when we import any foreign speciality, let us not bring with it any of the demerits which chance to accompany it, but unite it with the best art we are masters of.

I know few, if any, churches which possess the same internal beauty as Westminster Abbey. More modern art has done its worst to ruin it, but its intrinsic loveliness overrides every such attempt, and reigns triumphant over every disfigurement. One characteristic it possesses almost alone,—I mean the virgin privilege of perpetual exemption from the brush of the whitewasher. It probably owes this unique happiness to its having been built on the principles of constructive polychromy. It has materials of at least four varieties of colour, and those in some degree systematically and artistically used; and this fact has been sufficient to keep the whitewasher at bay. We are told that it is un-English and fantastic to care anything about the colours of our materials; but let it never be forgotten that the churches which could boast of the chaste dignity of their unvaried stone-colour have been, both at home and abroad, made over periodically to the tender mercies of the monochromist, while this, at least, has been spared,—and that on account of the un-English phantasy of using more than one natural colour in its construction. These colours are now nearly concealed by smoke, but they still show modestly through, and still aid in rendering the tone more solemn and striking than that of any church I have seen excepting that very different one, St. Mark's at Venice.

Among the monuments in the Abbey belonging to this century I will mention (in addition to the

Italian works already alluded to), the effigy of William de Valence, an oak figure plated with enamelled copper, the enamels on which are of magnificent workmanship. The beautiful bronze effigies of Henry III. and Queen Eleanor with the marble altar-tomb on the latter and its beautiful iron grille. The pretty little altar-tomb of some of the royal children, and the gorgeous monuments to Edmund Earl of Lancaster and Aveline his countess. The latter have been among the most splendidly decorated works of their day, and are worthy of the very closest study both by the architect and the architectural painter.

I will call attention to one other object in the Abbey, I mean the remarkable ancient retable, or movable reredos, formerly belonging to the high altar. It is a wonderful work of art, and I call attention to it, especially in this place, because it contains the most beautiful specimen of very early painting remaining in this country. It is, probably, by an Italian artist,—several of whom are known to have been brought over about this time,—but I confess I have seen no work of its age in Italy which I thought equal to it,—an opinion confirmed by an Italian professor of architecture, to whom I once showed it. It is, I believe, contemporary with the early days of Giotto.

I will now pass on to a far humbler building, and one very little known or visited: I mean the chapel of St. Etheldreda, in Ely-place, Holborn.

This was the chapel of the splendid town palace of the Bishops of Ely, and was built by Bishop de Luda, soon after 1290. The destruction of the palace you will, I dare say, recollect to have been celebrated by Pugin, in his "Contrasts." It was sold during the last century, and the present untimely-looking street built on its site,—a place where one would as little expect to find a gem of ancient art as the ripe strawberries which Dickon, of Gloucester, saw growing there, and begged for.

The chapel is in a wretched plight: its side windows have lost both tracery and mullions: its west window is, in a great measure, boarded up,—the cradled roof plastered,—the whole galleried around and fitted up with pewing which would disgrace a tabernacle of the last century: yet through all this its beauty still shows. The chapel is, as was so usual with private chapels, elevated on an over-ground crypt, so as to bring it to a level with the principal apartments of the palace. Curiously enough, this crypt is not vaulted, but has over it the original floor of massive timber.

The east and west windows, of five lights each, are among the finest of their period and size. The side windows, and denuded of their tracery, retain internally their beautiful jamb-mouldings, and the wall between them, has a graceful canopied, and crocketed panel to each intervening pier, and which gives the sides a very rich effect. I had long and often lamented their mutilated condition, and was one day trying to get at some clue to the design of the tracery by examining the scars where it had been amputated, when the thought struck me that the two westernmost of them being blocked up by the adjoining houses, might, if opened out, be found to retain their decorative features. I applied for permission to do this, and what was my delight, on removing the material which obstructed them, to find the old window—mutilated, indeed, and shattered—but still retaining every element needful to the restoration of its design.

The doorway to the chapel is very beautiful, and its foliated ornament well worthy of study. The internal dimensions are about 90 feet by 30 feet, a favourite size, it would seem, and not differing much from the dimensions of St. Stephen's Chapel, that at Temple Balsal, or the Sainte Chapelle, at Paris (reckoning the latter in French feet).

The architecture of the chapel is nearly allied to that of a series of sepulchral monuments I alluded to in my former lecture, and some of them again in this. One of these is that of its own founder at Ely: the second and third are those of Edmund and Aveline, Westminster Abbey; and the fourth is that of Archbishop Peckham, at Canterbury. All these date between 1290 and 1300, and are works of exquisite beauty, and of the richest decorative art.*

LIVERPOOL ARCHITECTURAL SOCIETY.—At the fortnightly meeting of the Liverpool Architectural and Archaeological Society, held on Wednesday evening, the 26th ult. Mr. T. D. Barry read the continuation of his paper on "The Cost and Construction of Cemeteries; and the Incidental Buildings."

* To be continued.

ON THE APPLICATION OF ART IN MANUFACTURE.*

I do not address you upon the general question of art as applied to manufactures—the value and importance of *that* is too well and too generally appreciated for me to attempt by any arguments to impress it more strongly upon you. It is upon the due and distinctive application of that art in each particular branch of manufacture that I purpose to claim your attention.

I believe that throughout this country the knowledge of art has, during the last ten years, become very much more diffused; but precisely, as that knowledge extends, it is essential that the principles of its application be clearly defined and generally understood. A smattering of art-knowledge is more dangerous than absolute ignorance; for, the savage who weaves a mat is compelled to adopt the simplest forms suited to the texture of the fabric at which he works,—and this, indeed, is the rudimentary principle of design; while the chances are that the man who has a slight and superficial knowledge, brings together scraps of ornament copied from this or that work, and forms a pattern incongruous in itself, and inappropriate to the object he seeks to adorn; and as his skill increases so does the evil, if he is not guided by those principles which should regulate the composition of design, and if his mind is not cultivated to distinguish the characteristics of each particular style and each particular period of art.

At the present day our artists have a difficulty to contend with unknown to those of Etruria or the art-workmen of the middle ages. They knew but one style, and, knowing that well, carried it to a high state of perfection, while too often our own artists get but a confused knowledge of a mixture of Greek, Elizabethan, Gothic, and Louis Quatorze. This imperfection of art-education has given rise to a particular sort of style: borrowing certain forms from the Greek, it exaggerates them into grossness and coarseness, altogether destructive of their original beauty: it adds to them a touch of the "rococo" of Louis Quatorze, and produces an ensemble utterly meretricious and vulgar, but largely prevailing in provincial architectural ornaments, carpets, cabinet-work, and crockery, and is vastly admired, as the manufacturers tell us, by country purchasers in general.

The Government schools of design established throughout the country have no doubt done much good in correcting this perversion of taste; but the student, when he has finished at the school, has still much to learn. He has been taught the precepts: he has had little practice; he must gather knowledge, and gain experience, by studying good works, exemplifying what he has been taught. Here has been hitherto the grand difficulty of our English designers. Where were they to find examples? Where were they to study their art in their own country? Great indeed is the boon to them of a museum like this, which now brings before their eyes the materials for study in practical examples of art manufacture, as well as ornaments in various styles of art. This is the real school for design. At the schools of design they learn the grammar; here they may study the language of their art.

There is still another element to be considered, and that is the proper remunerative price which should be paid for designs. What avails it to an artist if, after having studied his art, and gained considerable experience and ability, he gets little by it.

I think manufacturers in general have too low an opinion of the value of good designs. How can it be expected that a man of talent will devote himself to this profession if it is not made worth his while? In my own experience, how continually do I see money wasted in the purchase of quantities of low-priced designs, which cost ten times their price in preparing the cards for weaving, or the blocks for printing. How many thousands of designs are yearly produced by manufacturers on the happy go-lucky principle of those that succeed paying for those that fail. I pray them to calculate the yearly cost of printing-blocks and weaving-cards thus thrown away, and to consider how much better, how much more economical it would be, to remunerate handsomely a clever artist to assist in producing fewer but more carefully prepared designs.

This is an important subject, and I shall allude to it more in detail under the head of the manufactures particularly affected by it. Above all, O manufacturers! learn somewhat of the rudiments of these arts which you employ in your works; enable yourselves to exercise your own

judgment, with less of chance in the selection of designs. How often have I heard manufacturers reply to my suggestions for a better class of design, "But, sir, the good things don't sell, it's the things you condemn that pay." How difficult to make them understand that their good things were not what I called good, and that failure arose from a perfect misunderstanding of what was the right thing.

Till the genius and great powers of mind of Wally Pugin brought such crushing ridicule upon the abortions of taste as applied to design, we know what monstrous things were perpetrated. The principles he enunciated have taken root, and well-informed men thoroughly appreciate them; but still it takes time to eradicate a long-grown evil.

To correct such errors by endeavouring to explain how a knowledge of these true principles will enable us to avoid them, is my object in preparing these somewhat desultory remarks that I bring before you.

I shall divide my subject into the following heads: Woven Fabrics, Paperhangings, Metal Works, China and Glass, and Furniture. In the first of these—

Woven Fabrics.—I shall confine myself to those articles pertaining to architectural arrangements, such as curtains or wall hangings: to enter upon the consideration of ladies' dress would open too formidable a question, and yet I think on a fit occasion a few hints upon the subject might be given with advantage.

These woven fabrics consisting of various tissues depend on particular circumstances for the character of the design suitable to them; but all are influenced more or less by this leading principle—"That the fabric itself should, as far as possible, be the fundamental element of the design."

In silk we have the lustre, richness, and beauty of the raw material; in wool we have solidity and quiet depth of tone; while in muslins or lace we have transparency and delicacy of texture.

The class of design, therefore, for each of these should be studied with reference to the nature of the material, and a consideration of the kind of pattern best calculated to give it due effect; but in every case it should be remembered that the ornament must be perfectly flat: shadowed projections would be alike ineffective and absurd.

Woollen fabrics as furniture hangings have a fine effect if not inappropriately ornamented; but if you draw attention to a fanciful pattern, suited only to show off the lustre of silk, you lose altogether the real merit of the material.

It is desirable in stuffs of any solidity to have the design boldly and firmly expressed, and not to go into delicacies of detail suitable only for a finer material. The pattern may be small, but in that case it should be simple and geometrical. I think, generally speaking, our manufacturers keep too much to one sort of design for these fabrics; they rarely venture out of the all-over pattern. Now, very fine effects are produced by an arrangement of horizontal lines, which in some materials gives great facilities for the introduction of various colours, and are particularly effective as curtain hangings. At the same time this requires skilful arrangement of colours; and here, I fear, would be our difficulty; for, a matter that is a simple every-day affair to the weaver of Africa or Asia, is to us, in our advanced state of science and the arts almost an impossibility.

Here is a kind of blanket which I purchased at the Exhibition of 1851. How beautiful are the modulations of colour as well as the distribution of patterns! And it will be noticed that these patterns are not repeated, but constantly vary; indeed, I saw no two blankets alike.

Similar to these are the cotton stuffs still used in Spain for the *alfombras* or saddlebags, which give beautiful examples of rich contrasts of colour. Another class of pattern is often seen in Medieval illustrations, running thus:—This has an excellent effect in the vertical folds of curtains.

This is shown in the handsome silk and wool tapestry curtain, to which I beg to call your attention, and likewise in the printed chintz pattern which I will allude to presently. The man who originally composed these patterns must have considered carefully the particular arrangement of the stuffs, and have made their designs accordingly.

When silk is used in a woollen stuff it should be made to take some leading feature, or form a boundary to the ornament, and not be worked in unmeaning and ineffective patches, as I have sometimes noticed.

When the pattern of the stuff is small and arranged either geometrically or in scroll pattern,

the effect of the curtain is improved by a bordering.

The design of the border should be clear and precise, and above all, in accordance with the style of the filling; it is of no use in a narrow margin attempting to cram in bouquets of flowers, such as the rose, shamrock, and thistle, which by the-by however elegant in fancy, I have rarely seen blended comfortably together.

There is no reason why the ground of the border should not contrast in colour that of the fillings, or be even somewhat prodigal in colours if the style of the room will justify it.

These kinds of fabrics are well adapted for table covers; but it is almost impossible to find them of suitable designs and colourings: a table cover is to be considered a surface on which ornamental objects may be placed; therefore, the part that lies on the table should be either plain, or of small geometric pattern in two shades of the same colour, such as deep red, green, or blue; and the part that hangs over may have a border richly coloured of flowers, or ornament, or both. Or again, the border may partake of the colouring of the centre according to the room where it is required to be used.

In *silk fabrics* the beauty of the material, and the means of displaying it, afforded by the various processes of weaving, should influence the character of the pattern.

In *Brocades* the silk is brought to the surface, while the back is cotton; a very solid material is thus produced, in which the pattern is richly raised in satin, the ground being silk, and either of the same tone or contrasted in another colour. It is most desirable therefore in these stuffs to have a bold design, showing broad surfaces, which in deep colourings and in a shaded light have almost the effect of velvet.

In ordinary silk damasks of uniform colour, as in the Chinese silks and others of that kind, it is again desirable to have the pattern of bold design, otherwise it would be scarcely visible.

But in rich satin damasks of two or more colours, the design should be so arranged as to give a play of light and shade upon the ornament, which should be more delicately treated in parts, though the main design must be effective and bold.

The specimens I show you will best explain my meaning in this respect. If flowers be introduced it is essential that the lights and shadows be treated with great breadth, to preserve that flatness so requisite to the proper effect.

I have not yet alluded to the Indian stuffs, reserving them for particular consideration, and in truth they will deserve it.

It is extraordinary that while the French have borrowed so much from the designs of the Arabs of their Algerine colony, we regard so little those valuable products of India, which exhibit to us perfect specimens of the true principles which should guide our designers for woven fabrics.

They are alike remarkable for the rich invention shown in the patterns, as for the beauty, distinctness, and variety of the forms ornamenting the surface, without destroying the flatness.

The leading lines of the ornaments are first clearly expressed, and then the foliage, flowers, and flowers, flow with graceful undulations, covering the surface with symmetry. We have no highly shaded natural flowers, but conventional representations of them, sufficiently suggestive to convey the intended image to the mind.

In the management of the colours, also, we have beautiful examples of the mode in which the most brilliant contrasts of colour may be brought together, and be made to harmonize, so that the whole appears one soft bloom of colouring.

The ornaments are clearly defined by outlines of white, yellow, gold, or black, according to the colour of the ground they are worked on.

The Indian patterns are mostly very small; but they are highly suggestive for designs of a larger character applicable to other fabrics.

Cotton stuffs, except as chintzes, are little used as furniture hangings, and yet they admit of extensive application, if made of sufficient solidity and in fast colourings; but the designs should not be of the same description as for wool or silk hangings, or for dresses. The best form of pattern for them would be the horizontal stripes in contrasts of colour, which I instanced just now as much used in Spain, and is also well shown in the pattern before you.

But the principal use of cotton stuffs is as printed hangings or chintzes; these are become a very favourite article of furniture for their clean, lively, fresh appearance; therefore, in designing for them, these characteristics should be considered. In all the superior chintzes, flowers

* Read by Mr. John G. Crace, Wednesday, February 2nd, at the Architectural Museum.

seem to be the only resource of the designer, these are often very beautifully drawn, and the colouring admirably brought out; but still a little consistency (we will wave principle) would avoid on a hanging which has folds, and therefore its own shadows, the introduction of roses tumbling over each other with deep projective shadings: careful drawing will prove that greater beauty is attained by avoiding those projections, and also by preserving a broad, flat effect in the lights and shadows.

Though I admire some of these flowered chintzes, I yet maintain that flowers conventionally treated as in the Indian chintzes are, when arranged in hangings, quite as effective, and are more appropriate than natural flowers.

It is not, however, necessary to depend on flowers alone: ornament, when properly designed, has an excellent effect. I will instance this Gothic chintz, designed by Pugin.

In patterns such as this, it is possible to have as much colour as can be given by flowers; and in some rooms it is more appropriate, especially in Gothic or Elizabethan architecture.

I will now say a few words on *muslin and lace hangings*, but more especially the latter, because it is a very beautiful fabric, which most ingenious machinery has enabled us to have at a moderate cost. I dare say that the manufacturers have found difficulty in obtaining appropriate designs for a new class of manufacture; but certainly I have seen scarcely any which fulfilled the principle, "that the element of the design should be founded on the fabric itself." Very few of them have the least characteristic of lace.

The manufacturers have either copied some of the coarsest old damask patterns, or have adapted extravagant ornaments of outrageously vulgar taste,—such as masses of melons, pears, pineapples, vast branches of grapes, or extraordinary foliage and flowers of gigantic proportions; and, as appropriate to a light elegant dwarf curtain, a leopard one-third the size of nature. This is shocking perversion of taste and common sense. It is evident that talent is not encouraged to devote itself in designing for this fabric; and I am not surprised to learn that the most meagre prices are given for these designs, perhaps 2*l.* for a work that, to put it in the loom, will cost 80*l.* before a yard of lace is made. It is not difficult to obtain specimens of old guilder: there are works on ornament giving designs for lace; many elegant patterns have been worked in muslin curtains. It is thus easy for an able man to find matter to study from, but he must be paid for his talent. A good pattern for a lace curtain is cheap at 20*l.*; and it would pay better than the one at 2*l.*

Either geometric patterns, or patterns of flowing lines branching into ornament, elaborated with the stitches characteristic of lace, are suitable for this material; borderings are desirable, but they should be kept within reasonable dimensions.

Carpets.—These are of various manufacture—such as the Brussels, velvet pile, Kidderminster, patent tapestry, Axminster, patent Axminster, &c. Besides these, we import such as the Turkey, Persian, and Indian carpets.

The principle of making the fabric itself the element of the design, is particularly to be observed in this manufacture; for, certain kinds, from the coarseness of their stitch, absolutely require it. In preparing designs for carpets, these considerations should always be borne in mind—that they are to cover a floor—and therefore to be trodden upon; that they are a ground for the furniture, and, from the great mass of colour, are an important feature in the general harmony of a room.

It will therefore be evident, firstly, that the design should be flat, without cast shadows of any kind; and all shadows of objects to be carried out with flatness also.

Secondly, That the general colouring should not be too obtrusive, so as to destroy the effect of all the other objects in a room.

Kidderminster carpets are the commonest and cheapest of those I have mentioned. The nature of the fabric does not admit of many colours with good effect, and it always looks far the best when made in small geometric patterns, which alone are suitable to it; but being cheap, and therefore sold to purchasers of limited means, the designers fancy that they will like to have a good show for their money, and the consequence is, large sprawling patterns, most disagreeably coloured, and utterly destructive of pleasing harmony in a room.

The ordinary Brussels carpets are, upon the whole, more tastefully and more consistently designed than most of the others. Being a more important manufacture, greater attention has been paid to the designs; and though I am aware

that most atrociously ugly and vulgar patterns are occasionally produced, yet I believe that the right principles are generally understood.

In designing flowers for carpets I would recommend our artists to observe closely the best examples of the French Aubusson tapestry carpets. It will be observed that, though the flowers have all the freshness and brilliancy of nature, the lights and shadows are treated with great breadth, flatness, and solidity, producing a far more beautiful effect than shading them up in the way of a water-colour drawing. I do not object to flowers in a carpet if consistently and properly designed; but where such a carpet is used there should not be flowers on the furniture or walls, otherwise confusion arises. On the whole, I must confess I prefer quiet carpets, of deep rich tones, with ornaments geometrically arranged, and flowers conventionally treated. I fully appreciate the glowing and beautiful productions of April and May; but I like them in their proper place.

Perhaps these remarks apply with more force in reference to the tapestry carpets, a manufacture of recent date, and brought to a great degree of perfection with infinite perseverance and ingenuity. By this process the range of colours is unlimited, and any degree of shading is to be obtained; therefore the manufacturers run riot in their freedom, and produce the most gaudy, magnificent, and outrageously inconsistent patterns that can be conceived: enormous scrolls, à la Louis XIV. strongly shaded in bold relief, entwined by the most brilliant flowers of every gay colour, three times the size of natural ones, with rampant foliage in deep masses; these are the popular patterns, selling enormously, and therefore the manufacturers shut their ears to the whisperings of consistency, and what we should call good taste. I am aware that a carefully studied design requires a higher talent, and therefore will be more expensive than those rampant designs done with a facile hand.

But they need not fear but that improved productions will bear an increased value, and easily obtain a proportionate price; a better feeling for art is extending, and will produce a steadily increasing demand for good things: those manufacturers who regard the sign will reap the advantage.

In the Axminster carpets, made at Wilton, the stitch is necessarily a large one; and, therefore, in most of the patterns, the natural conditions of the fabric have been regarded, and always with good effect. At various times I have noticed in country mansions, carpets perhaps fifty or one hundred years old, made at Axminster, where the manufacture originated, which are perfect models of good taste as regards the style of ornament and colouring. I understand the firm still possess some of those patterns, which I strongly advise them again to work.

The patent Axminster carpets, by an ingenious process, have a finer stitch at a more reasonable cost; but the necessity for multiplication of the same pattern diminishes this advantage. A more careful arrangement of the designs, and a more sober style of colouring, would add greatly to the value of these carpets, more especially if the principle I have before expressed about the flowers is properly carried out. These Axminster carpets can be made of any ordinary dimensions in one piece, so that they may be made particularly to accord with the decoration of a room. But it must not be forgotten that the room has to be furnished, and that the main ground of the carpet should be kept quiet, while the outer portion and the centre may be more richly worked in ornament or flowers. In these expensive carpets, good, appropriate designs of the several styles are so necessary and so precious, that the very highest talent in ornamental art should be engaged to prepare them.

Of the carpets imported from the East, none are so beautiful in my opinion as those from India manufactured at Masulipatam. The designs are perfect examples, combining symmetric arrangement, elegant and pleasing forms suited to the fabric, and rich but harmonious colouring. They cannot be too carefully studied by the student of design, or by any carpet artist who may have the desire to improve himself. Particular attention should be paid to the borders; you will not find in them any gross exaggerated forms: on the contrary, the ornaments are delicate and unobtrusive, and yet brought out clearly and pleasantly by the contrasts of the ground. These carpets can be safely placed in almost any kind of room, either Mediaeval or modern.

The Persian carpets are also in good taste, but are rarely brought to this country except in the form of rugs.

The Turkey carpets are always quiet, rich, and harmonious in the colouring, but the designs have of late years lost much of their excellence. It appears to me as if the patterns were entirely traditional, and that some of the better kind being lost, the men of the present day had no power to compose others. There is a great want of leading lines, especially in the margins of the borders.*

THE ARCHITECTURAL EXHIBITION, 1859.

THE galleries in Conduit-street are being rapidly proceeded with, and the Architectural Exhibition will be opened to the public on the 10th day of March next. The committee are of course anxious that the collection should be a good one, and we would appeal on their behalf to the elder members of the profession, and beg them to forward works for exhibition.

The department for models, carvings, decorations, specimens of manufactures, and inventions connected with building will receive particular attention: all contributions are to be delivered and fixed in the spaces allotted between the 1st and 12th of March.

Arrangements are being made for a series of lectures on the Tuesday evenings. Messrs. Sydney Smirke, A.R.A., T. H. Lewis, George E. Street, F. P. Cockerell, and others, have already promised to assist in this respect.

The report of the committee for the past year is congratulatory, and they are, for the first time, enabled to point to a balance on the credit side of the account. They say:—

"On the last occasion it was only by contending with difficulties which were almost insuperable, that it was possible to open the Exhibition on ad. as it was, the season was much curtailed, and the drawings were hung while the room was full of scaffolding, and while the workmen were finishing the alterations in the galleries, and the roof and ceiling were never completed till the Exhibition was over, so that the galleries were cold and comfortless, and there was the least possible inducement for visitors to congregate."

"It must be confessed that a critical period in the history of the Exhibition has now arrived; the new galleries in Conduit-street, built expressly for the purpose, have been taken for the months of March, April, May, and June, at the rent of 200*l.* which, though moderate for the benefit received, is yet so much larger than has ever been paid before, that the committee may well feel much anxiety as to the result.

Under these circumstances the committee trust that their subscribers will exert themselves to obtain as much additional support as possible, and they would especially hope that a much larger number of season tickets may be taken, the cost of which (half-a-crown each) is not intended to raise."

Earl de Grey, Mr. C. Oldfield, and Mr. Waterhouse, of Manchester, have invested sums in shares of the Architectural Union Company, the dividends from which they have given in perpetuity to the Architectural Exhibition.

The receipts last year, including money paid at the door, subscriptions, and donations, were 375*l.* 1*l.* 9*d.* The payments (rent being 70*l.*) left a balance of 10*l.* 2*s.* 2*d.* in the hands of the treasurer to begin the new campaign with. The accounts were audited by Mr. F. Teyman and Mr. J. Drayton Wyatt.

We may add that the galleries and other parts of the new Home for Architects in Conduit-street promise well.

MOORISH ART.

LECTURES AT THE MUSEUM OF THE DEPARTMENT OF ART.

ON Monday, the 31st ult. Dr. G. Kinkel delivered a lecture on "Mahometan Art, illustrating the Influence of Byzantine Art on the Schools of the East." First sketching the marvellously rapid spread of the religion of Mahomet, the lecturer showed that the Arabs had the tact to employ the capabilities of the countries they conquered. On the Ganges the buildings of Mahometanism are quite different from those produced by it in Sicily. Showing how that the form of worship had produced the arrangement of the mosques, an open court with a covered portion, where the Koran might be read if it rained, and a lofty slight tower, whence the muezzin might cry, if in the morning, "Come to prayer: prayer is better than sleep," the lecturer described some of the best known structures of this kind. In Cairo Mahometan art reached its greatest completeness, as far as regards plan, and display of splendid roofs, rich gilding, and the pointed arch. In Western Asia the pointed arch had been used "shilly" before the Christian era. The Arabs were not satisfied with the round arch: the pointed, as being more picturesque, suited them better, and they used it early. To them he thought we owed it. The Culna, at Palermo, which he attributed to the Moors (the evidence, by the way, is

* To be continued.

against this latter assumption), displays it throughout. In the East a more splendid style arose, because the Byzantines had ruled before them. The cupola was the leading characteristic of Byzantine art, and was used as the type of a despotic government! The Mahometans adopted it because it represented their feelings in this respect too. He considered the works in India the best that the Mahometans had produced in any part of the world, and he dilated at some length on the beauty of Moorish colour and outline ornament, showing the weakness that resulted from the prohibition in their buildings of sculptured representations of living things. The lecture was made interesting by fluency and a pleasant manner, but was deficient in useful teaching and in a clear enunciation of dates.

NATIONAL GALLERY FOR IRELAND.

THE first stone of the new National Gallery was laid on Saturday, the 29th ult. by his Excellency the Lord-Lieutenant. Our readers are aware that this building will form a northern wing to the premises of the Royal Dublin Society, its gable end facing Merion-square; and that the corresponding southern wing is the new Museum of the society, which has been fully described in the *Builder* already. Although entitled the National Gallery, it is also intended as a "Dargan testimonial" in commemoration of Mr. William Dargan's philanthropy in maturing, at his own individual expense, the Great Industrial Exhibition of 1853. A portion of the building will be devoted to the reception of Archbishop Narcissus Marsh's library, which at present occupies an obscure position near St. Patrick's Cathedral. Internally the National Gallery building will comprise, on the ground-floor, a sculpture-hall, to be called the Dargan Hall, 114 ft. in length, by 40 ft. in width, by 23 ft. in height; and a library apartment of 91 ft. by 40 ft. in which the volumes of Marsh's library are to be placed. At the end of the sculpture-hall a spacious staircase will lead to the great picture-gallery, which will be 126 ft. in length by 40 ft. in breadth. In a portion of the building is introduced a second library apartment, and some officials' rooms. The galleries will afford much greater space for the display of artistic works than those likely to be available in the first instance. Externally the building will have chiselled granite rusticated basement, blank windows, with Portland stone dressings, and ornamental frieze and cantilever roof. The probable cost of construction will be 12,000*l.* Messrs. Cockburn and Son are the builders. The disposition of the remaining portion of the lawn will now demand serious attention, and as a feeling for national monuments seems to exist in Dublin just now, here is a glorious site for a few statues of eminent men.

THE POLICY OF RAILWAY COMPANIES.

THE SOUTH-EASTERN.

As we have concerned ourselves in promoting the success of railway companies, through notices of places of interest on different lines—the South-Eastern railway amongst others,—and by showing advantages, healthful and educational, to many of our readers, of occasional country trips,—we may, perhaps, ask for explanation of the peculiar arrangements of the South-Eastern company as to fares—arrangements which, in general, might go towards explaining much that is obscure in the present condition of railway property.

For Blackwater, 34 miles from London, the ordinary return ticket, first class, in the South-Eastern company's list of fares, is priced 9*s.* For Reigate—town the return fare is 6*s.* A gentleman connected with this journal, having to proceed to Blackwater, and being desirous to alight for an hour or two at Reigate, lately took a return-ticket to the last-named place, under the very natural supposition that he could thence proceed to Blackwater, returning to London at a total disbursement of the amount of fare—9*s.* between London and Blackwater, or with some very slight addition to the 9*s.* or to the 3*s.* amount of difference, to cover the extra trouble to the company. The actual fares charged amounted to just double, or 18*s.* Now there is no grievance with the company for a charge of 12*s.* for the distance (31 miles each way) between Reigate and Blackwater as compared with a charge of 6*s.* for that (23 miles each way) between London and Reigate, however absurd the contrast. But it is nothing less than an imposition on the part of a company, whilst omitting all statement of such a fact as that fares for one part of a journey are double those for the other half, or that by a break in the journey an expense amounting to double the through-fare is

incurred, to make a statement which can only lead to the belief that the fare will be half that intended to be charged. In the present case it was of no particular importance to call at Reigate; and it will be observed that, had this been avoided, a second journey could have been made to Reigate; and yet the total expense of the journeys would not then have amounted to the 18*s.* charged in the actual case. Had the holder of the Reigate ticket entered a train for London at some further distant station without payment of fare, delivering up only his ticket for the short distance, he would have been rightly judged guilty of swindling the company. But where would have been the difference between the criminality on one side and the deception practised on the other?

Now, this experience of the practice of railway companies is of far more importance than concerns ourselves. If the companies choose, they can, by moderating their fares and consulting the comfort of their passengers, still vastly increase the number of those passengers, and serve a great educational object,—conducting to knowledge of each other, and of their country, at present wanting, amongst masses of the people who hardly yet have been able to avail themselves much of railroad communication. That there is ground for the financial argument is, perhaps, adequately shown by the fortunate experience of the Brighton company, lately reported on. But if companies, after the practice of the hotel-keeping interest, merely try what they can make out of their passengers, regardless of other objects, as of fair-dealing and principle, the state of railway property will be worse than it is, instead of following the natural tendencies of population and development of resources of the country. For those who must travel any expenses may be inevitable; but by those who consider their inclinations, railroads managed on the principle of the South-Eastern, will be avoided or exchanged for other routes of interest.

RESPONSIBILITIES OF ARCHITECTS ABROAD.

AT the end of last year, a house in progress of erection in the Rue Tant-perd-tant-paie, in Boulogne, fell, and caused the death of two young girls, and injury to six other persons. In consequence of this, M. Delhière, architect, and M. Diensot, contractor, have been brought before the Tribunal on a charge of homicide and of wounding by imprudence, negligence, and inattention.

At the trial, experts reported the results of examinations. According to the *Journal Belge de l'Architecture*,* they deposed that the mortar was too poor. It consisted of three parts sand to one of lime, and was not sufficiently beaten: in the walls, the material of which had been supplied by the proprietor, there was not a sufficient number of perpendicular stones; so that instead of being bonded into one whole, they consisted of two halves, placed side by side. Moreover, the masonry negligently performed contained voids, which could never be prevented but by constant superintendence. After hearing the witnesses, the president interrogated the accused.

Delhière pleaded that having fallen ill some time before the accident, and not having recovered when it happened, he had not been able to superintend the works sufficiently, and that the disaster was due to the proprietor and the contractor; that the rapidity with which the works had been carried on, was neither directed nor forbidden by him; that as to the mortar and the absence of perpendicular stones, these were the business of the mason, and not of the architect; and, finally, that he had made the drawings gratuitously, and gratuitously gave such time to the superintendence, as within the limits of his means he could afford.

Diensot admitted that the walls had been carried up too rapidly; that the materials employed were defective; and that he had pointed this out to Delhière. He maintained that the mortar was good; that it was made in the usual way, of three of sand to one of lime; that the vacancies spoken of could not be avoided; that he was not a contractor, but merely a task-master; and, finally, that he had in all things followed the plans and instructions of Delhière, who had the sole charge of the works.

After hearing counsel, the Tribunal condemned Delhière, architect, to five months' imprisonment, and fifty francs fine; and Diensot, contractor, to imprisonment for fifteen days, and a fine of twenty-five francs.

* The same number of this periodical, *Illustration* 10*e*, année 5*e*, contains a portion of our account of the new Theatre Royal, Adelphi, translated, with the plan, &c.

THE SPEAKER'S RESIDENCE, NEW HOUSES OF PARLIAMENT.

SCOT is the hurry-scurry of the time, that the only chance of obtaining general attention for anything is to make it *appropos* to some event, or give it at some epoch which for the moment engages the public mind. It is full of evils, this necessity, but there it is: and so, as her Majesty, Heaven bless her! opened Parliament on Thursday last, and all the kingdom is talking about her passage through the Westminster Palace, and the appearance of the new Westminster Palace, and the near approach to completion of this extraordinary pile of buildings, we give a view of the State Dining-Room in the official residence of the Speaker, now for the first time ready for occupation.

The Speaker's House occupies part of the two pavilions, if we may so term them, forming the end of the river front of the Westminster Palace, next Westminster Bridge, and is approached by archways from Palace Yard. It is of considerable extent, comprising from sixty to seventy rooms, and is finished throughout in the style of the structure generally. The staircase, with its carvings, tile-paving, and brass-work, is exceedingly effective and elegant, and everywhere there is a large amount of painted and gilded decoration. Cloisters, approached from the House, surround a court, about 20 feet square: the window openings in the cloisters are filled with stained glass, containing the arms of all the Speakers, with the date of election.

The Times, in a recent notice of this building, gives the following account of the Speakers whose arms appear:—

"The first Speaker actually mentioned by that title in legal documents is Sir W. T. Hungerford, elected 1377, in the reign of Edward III. We meet with the old name and armorial bearings of the Wodegraves as Speakers as early as 1332; while, in 1409, Sir John Tiptot is elected, and was the first Speaker elevated to the peerage, Henry IV. of Lancaster creating him Baron de Tiptot in 1406, in return for certain 'courtly compliances,' which in those days meant a great deal. The Wodegraves are found as early as 1415, while the Baynards of Castle Baynard, in the city where kings once stayed, and where the Duke of Buckingham offered the crown to Richard III. are seen no more after 1421. John Russell was Speaker in 1423 and 1432. From this date the election of Speakers seems to have occurred with each meeting of Parliaments about once a year, till the time of Elizabeth, when that arbitrary sovereign refused to ratify the election of Sir John Popham; and when afterwards the great Edward Coke filled the chair. 1641 gives us the next name of great note, the William Lenthall of Charles I.'s ordered Parliament, the man who refused to answer Charles's questions when he came to seize the members; and in that ill-advised act began the war in which he lost both crown and head. Sir Harbottle Grimston, of 1650, whose arms are surmounted with the bloody hand of the Ulster knights, was the first Speaker whose election was never ratified (though he still kept his Speakership) by Charles II. The haughty Edward, who was summoned in 1659, after James II. Somerset as the young branch of his family, followed the example of Sir Harbottle, though in a different way. Instead of asking Charles to ratify his election, which he knew the monarch never would, he contented himself with announcing simply that he had been elected and was the Speaker,—a statement which left no course open to the irritated king but to add sharply, in reply, 'Very well! The House that was summoned in 1659, after James II. died, also elected its own Speaker, Henry Powle, and this election, also, was never confirmed by William of Orange. Wyndham Greville, also, was elected without royal sanction in 1750, while George III. was mentally incapable of attending to any business.

The name and arms of Sir John Trevor are also in the Gothic windows, though Sir John was expelled the House for taking bribes. Of the whole 131 Speakers only fifteen have been elevated to the peerage,—by the titles of Baron Tiptot, Lord Hungerford, Lord Audley, Earl of Oxford and Mortimer, Lord Oslow, Earl of Wilmington, Lord Granley, Lord Grenville, Viscount Sidmouth, Lord Redesdale, Lord Colchester, Viscount Canterbury, Lord Dunfermline, and Viscount Eversley."

The principal floor includes the state dining-room, the drawing-room, 37 feet 3 inches by 28 feet 9 inches; morning room, 34 feet 6 inches by 23 feet 9 inches; and a smaller dining-room, 31 feet by 21 feet 6 inches. The state dining-room, shown by our engraving, is 45 feet by 23 feet 6 inches. Frames set in the walls will receive a collection of portraits of past Speakers. The room is lighted at night by wax-candles in coronas, omitted in the view. To light the four rooms, 100 wax-candles are employed. Sir Charles Barry appears to have been exceedingly successful in the house he has provided for the Speaker.

THE SPACE BY ST. PAUL'S. Why should not the hiding up of St. Paul's, by civic Vandals and covetousness, be stopped by the country taking the piece of ground as a site for the monument to Wellington? In the cathedral the proposed erection will be one of many memorials of our generals: without it, would stand, as it ought, a remembrance of the great warrior of our history, seen by hundreds for one who would ever enter the Consistory Court to look at it, and sitly placed as a pair to the conqueror of Peace—Sir Robert Peel.—A COUNTRYMAN.

THE SPEAKERS HOUSE, WESTMINSTER PALACE.—SIR CHARLES DRAKE, R.A. ARCHITECT.



ROBERT BURNS AND SCOTTISH EDUCATION.

THE centenary of this poet has passed by, and the enthusiasm of the day has given way to more calm reflections, which, however, lead us to feel no diminished interest in the writer who has uttered such manly and patriotic sentiments, excited so many excellent feelings, and put before us such exquisite pictures of nature, as Burns has done. His failings, and they were great, have been passed over in consideration of the circumstances in which he was placed, and the natural kindness and warmth of his feelings. The man who wrote the "Cottar's Saturday Night" could not have been one without solemn and religious feelings; and, so far as the history of Burns has been traced, it is seen that, in spite of straitened circumstances, he did not prostitute for gold the talent which had been given to him. For Mr. Thompson, Burns wrote some of his most popular songs, concerning which, when offered payment for them, the poet said that they were either "above or below price;" and, although kindly presents were made by Mr. Thompson, no request for money was made for these songs—which stir the souls of Scotchmen and Scotchwomen all over the world—until a very short time before Robert Burns's death. He, weakened by illnesses, prostrated and enfeebled in mind, fancied (there might be justice in the thought) that he was about at the time of his waning life to be taken from his bed to prison, and then he sent to ask Mr. Thompson for the loan of 5*l.* to save him from this disaster.

When the poet's faults are thought of, it should be considered that about seventy or eighty years ago men of position, and those who headed the intelligence of the age, were not of such moderate habits as those of similar position at the present time: then it was by no means uncommon for our nobles and great men to drink deeply, and debauchery was not looked upon as a disgrace.

Young and inexperienced in the world's ways, Burns was introduced to persons of rank and condition, who, when the novelty of the "lion" had passed away, left him, in a manner forgotten, after he had become accustomed to luxurious habits, to battle with the under-currents which beset him. Let it pass: for his errors he has himself suffered: by his abilities mankind has been the gainer.

There have been some things taught by the recent festivals. Amongst them it may be noticed that although we are looked upon by some as a nation of shopkeepers—a plodding lot,—still the six hundred and twenty poems contributed in connection with Burns show, even if they may not be of very high mark, that a feeling for poetry, and even poetic feeling, exists. Lord Brougham says,— "It is impossible to read the accounts of Burns's family, and his description of and correspondence with his friends of the same age and the same humble station, and not be struck with the manner in which they were all raised above their condition by the ordinary education of the parish schools, and the taste for reading and for contemplation to which it gives rise. . . . The existence of genius must ever be an accident; but as it cannot be confined to any class of the community, the chances of its appearing—that is, of its existence being known—must needs be in proportion to the numbers placed in circumstances which shall nurse and unfold it." Let those who have the opportunity of doing so celebrate the memory of Burns by bestowing some time, if they can spare it, or in other ways assisting, in the improvement of those who, like the Scotch poet, were born amongst the lowly of the land.

THE FRENCH AND ENGLISH GOVERNMENTS IN RESPECT OF ART.

IN, according to the Roman saying, "it is right to be taught by your enemy," it surely must be much more so to be readily corrected by a friend. I feel obliged to Mr. Kerr and to yourself for allowing me the opportunity of removing an impression upon my mind, which may also have occurred to others present, in regard to what I intended to say upon the occasion of Monsieur Silvestre's address to the Institute of British Architects, at the ordinary meeting held on the 21th of January.

That gentleman has been sent over by his Government to inquire into the art-educational establishments of this country. I intended, therefore, to express my satisfaction at so significant a circumstance. History tells us that the French Government has preceded ours by two or three centuries in procuring facilities of study to artists, artisans, and manufacturers. Francis I. sent to Italy and engaged Primaticcio and other able

Italians to procure and bring over to France works of the most eminent painters and sculptors of the day, and also to enrich by their own productions the Palace of Fontainebleau, and to establish schools of art in France. This was about three centuries ago. Louis XIV. and his minister, Colbert, created the French academy at Rome in the middle of the seventeenth century; since which period twenty artists and five musicians have been constantly maintained in Italy, there to study the productions of that country of the fine arts; while we have only one pensioned student, not from the Government, but from the Royal Academy. By these means the French school at an early period gained European eminence, and the manufactures, impressed by the taste given them by the artists, had in many foreign markets the advantage of ours, from the elegance and refinement of their patterns. I did not seek to institute a comparison depreciating to our artists: in fact, I did not allude to them; and I know too well their merits and excellencies ever to speak disparagingly of them. What I did mean was, to notice the previous neglect of our Government in disregarding the cultivation of the fine arts as a source of national wealth. To this they have been alive only within a very few years, and have now made great efforts to supply deficiency.

Monsieur Silvestre alluded to the gigantic improvements now carrying on at Paris; and, noticing these, I could not but refer to the neglect of our Government in disregarding opportunities and the necessities of ample metropolitan thoroughfares. When vacant spaces are made which enable us to enjoy a view of our cathedral from a most favourable point, or to improve our communications, an extravagant economy, a meanness of spirit leads to covering the vacant plot near St. Paul's and the space at the west end of Cheapside. We must surely confess that they manage these things better in Paris. Such consideration may be humiliating; but so little alive are the public generally to these facts, and the public press also, except the *Builder*, that, unless they are reiterated and kept alive before public observation, London will never have the means of communication such as those now being given to Paris, and which are much more necessary to us from our larger population, from our extensive commerce, and from the inconvenience and loss caused by the obstructions arising from the absence of sufficient arterial lines from one side of London to the other. Without noticing the south side of the Thames, where matters are in a still worse state, let us consider this side. From Regent-circus, Oxford-street, to Farringdon-street, and from the Old Bailey to King William-street, in the City, there is not one street through which three vehicles can pass abreast,—hardly any for two; and Mr. Kerr may count upon the fingers of one hand even the direct lines from north to south, from Hyde-park, Oxford-street, to the Miuories—a distance of four miles. Such was Paris ten years since. What a magical change have the judgment and determined will of the emperor now effected! Let us not, then, be ashamed to take a lesson from our neighbours, as they now seek to take one from us in our Governmental schools for instruction in the fine arts in connection with our manufactures.

I object to nothing that Mr. Kerr says in regard to myself. I could have wished the allusions to others had been expressed in more considerate language and less unjust terms,—more akin to Mr. Kerr's own inner kindly feelings, to which his writings and speeches too often offer a striking and not pleasing contrast. THOS. L. DONALDSON.

THE "BUILDER'S" LAW NOTES.

Insolvency.—Selling property within three months of the date of a petition to pay an execution levied to satisfy a judgment for debt is not such a "parting with property" as will invalidate a petition under the Protection Acts.—*Re Israel.*
Lands Clauses Consolidation Act. Where the occupier of land has no greater interest therein than as a tenant for a year, or from year to year, and such land has been entered upon or injuriously affected by the promoters of an undertaking within the Lands Clauses Consolidation Act, he can obtain compensation only by the determination of two justices, and is not entitled to have his claim settled by arbitration. *The Queen v. Manchester Railway Company.*

Master and Servant.—A person, with the consent of the owner of the soil and of the surveyor of the district, employed a labourer to cleanse a drain running from the employer's house under the public road, and paid him for the job. He had never before employed him, and did not direct him in doing the job. It was held, however, that the

relationship of master and servant was established, so as to render the employer liable for an injury occasioned to a third party whilst riding on the public road, by reason of the negligent manner in which the labourer left the soil of the road over the drain.—*Sadler v. Henlock.*

Auction.—Contents of a Lease.—A lease containing a covenant against carrying on a particular trade was sold by auction; but it was not stated in the conditions that the lease contained such covenant. The purchaser was, however, compelled to complete, because, as he knew he was buying a lease, it was his business to make himself informed of its contents.—*Grosvenor v. Green.*

Meaning of "Ready Money."—A testatrix being possessed of cash in the house, a balance in a savings bank, and two promissory notes, bequeathed all her "ready money." It was held that the terms "ready money" included the cash in the house and the balance at the savings bank, but not the promissory notes.—*Re Powell.*

ALTERATIONS OF THE SHOREDITCH WORKHOUSE.

THE Board of Guardians for Shoreditch—a newly constituted body, possessed, under the Poor-law Board regulations, of executive functions formerly accorded to the vestry, and which has heretofore held its deliberations in a committee-room of the Shoreditch workhouse—has determined on such alterations in that establishment as will adapt a portion to its special purposes, and at the same time afford better accommodation to clerks and other officers. For this purpose, the designs of Mr. Jones, architect, of Dalston, have been adopted. The proposed alterations on the principal floor of the Shoreditch workhouse, consist in providing a board-room, to which will be attached a committee-room, a waiting-room, and a suite of clerks' apartments. On the lower floor it is proposed to provide for the relieving officer's department, with every facility for the despatch of business. The workhouse is said to be too small for the accommodation of the inmates.

SURREY COUNTY LUNATIC ASYLUM COMPETITION.

THE Surrey Lunatic Asylum, at Wandsworth, having become inadequate to accommodate the increasing number of applicants for admission, the Committee of Visitors proposed to apply the present building for the use of females, and to erect a new building for male patients.

With this view they invited four architects, namely, Mr. Taylor, of King-street, Cheapside; Mr. Martin, of Birmingham; Mr. Jarvis, of Trinity-square, and Mr. Henry Currey, of Lancaster-place, to supply them with designs for the proposed building.

The designs were delivered on the 24th of December last, and that marked "Addenda" by Mr. Currey, has been selected by the committee to be recommended to the next Quarter Sessions for adoption.

No premium was offered in this case, but the complimentary sum of 25*l.* was paid to each competing architect.

THE INVENTORS OF THE LOCOMOTIVE.

IN the review of the book "Who Invented Locomotive Engines" great praise is due to you for the candid spirit you have given to the elucidation of the truth as to the original inventor of locomotive engines. George Stephenson certainly was one of the greatest promoters, but not the inventor. A mistaken impression is also abroad of his being also the first person who proposed the application of the locomotive engine to railways; and I am surprised that some of those able men who are now living do not contradict the statements in Smiles's book of the "Life of George Stephenson." On referring to parliamentary documents of the proceedings of the Houses of Parliament, I find the first movement commenced in 1822, by a Mr. James, who consulted Messrs. George and John Rennie, the engineers, on the practicability of the scheme. They assisted Mr. James with their advice, and he surveyed a line at his own expense from Liverpool to Manchester, which I have no doubt these gentlemen, if called upon, would corroborate. James's line was abandoned for want of sufficient funds. The next account we have of it is in the year 1824, when a Bill was before Parliament, the engineer being Mr. George Stephenson, but which was thrown out in consequence of errors in the surveys and sections. Notwithstanding this failure, the next year a new line was surveyed by

George and John Rennie, the engineers, and carried through both Houses, after a very long discussion and opposition, and passed in March, 1826, by a large majority. Thus was the first railway in England commenced, namely, the Liverpool and Manchester; the promoters of which ought to have their names printed on a monument in letters of gold; and although George Stephenson assisted in promoting these undertakings, he cannot claim, as Smiles's book states, the original invention, as James and the Rennies appear by parliamentary records to have been before him. A READER.

PESTIFEROUS SEWERS, BROMPTON.

WHILE the great reform of sewerage is being planned out, it would be well if the Commissioners were to pay a little attention to those by-lanes and courts where the labouring classes are forced to herd together in crowds, which are the more dense just in proportion to the mean character of the houses they occupy.

The best and most fashionable localities of London have their plague-spots and reserves of contagion, where occasionally epidemic disorders rage with virulence, and that amongst those who are least able to contend with adversity. There is, in fact, no quarter free from them; and the evil which cries aloud for redress arises everywhere from defective and ill-contrived sewerage.

There is a part of the suburbs which is at least 30 feet above high-water level. The soil is a dry yellow gravel: the neighbourhood is open to the park and to reserves, still uncovered by buildings, where the main drainage is good, and where there are great facilities for the sanitary protection of every house; and yet here, in the centre of Brompton, we find a most populous street, or rather *cul de sac*, of seventy houses, in the most disgraceful state of neglect as to the sewerage. Every house has on an average six resident families: every kitchen floor has two tenants; and in each of these the stercor arising from the sewage is so abominable, that none unused by habitude to malaria could consent to remain for half-an-hour exposed to the nuisance! This row has been for years noted for the ravages of scarlatina and other disorders, which cling always the closer to misery and indigence.

Could not an inspector of the Board of Health be persuaded to extend his rambles to this hotbed of disease, and to enforce the provisions of the Act now in force for the public security? The hint is given by one who has visited several of these wretched houses, and who, feeling for the helpless condition of the inhabitants, has it not in his power to do more than to claim the attention of those whose duty it is to avert contagion before it is too late.

It need hardly be added, that by cleansing and stopping the drains, and a little attention to the traps, the evil complained of could be lessened.

Q.

THE WEDGWOOD TESTIMONIAL.

A CROWDED meeting of the inhabitants of the Potteries has just been held at Burslem, the native town of the late Josiah Wedgwood, who resided in it for forty years, the purpose being to promote the object which for the last four or five months has been in course of agitation, namely, to erect a memorial building in his honour, to comprise a school of art, museum, and free library, in Burslem.

The Earl of Carlisle was in the chair, and among those present were the noble lord's sister, the Duchess of Sutherland, and Mr. Child, M.P.; Mr. Hammersley, master of the Manchester School of Art, Mr. E. Wedgwood, Mr. Hitchen, Chief Bailiff of Burslem, and many other gentlemen of influence in the district. Letters favourable to the object in view were read from the Marquis of Stafford, the Duke of Sutherland, the bishop of the diocese, Mr. J. L. Ricardo, Mr. S. C. Hall, and others.

The chairman addressed the meeting with his usual eloquence, and strongly supported the idea of erecting a useful building in Burslem such as that proposed. It seems to me, remarked his lordship, that that character of memorial must be best which would most accurately represent the wishes and reflect the character of the person in whose honour it was designed, and that if he had been a benefactor of his neighbourhood, his country, or his race if he had led the way in useful inventions, or fostered the arts of progress—then the memorial which was to commemorate his character and achievements ought to be itself of a useful and practical character. And let it be borne in mind that Josiah Wedgwood was born here, in Burslem. I believe his family first came

from a village or hamlet not far off, which bore their name; but it was here, close to the churchyard of Burslem, that he was brought up to the business of a potter, and at first performed the work of a thrower. We are told that a lameness in the leg, which limb he afterwards was forced to lose, threw him upon the imitation of fancy models of ornament. Within the present limits of the parish of Stoke he entered into connection with various firms; but it was again in Burslem, at what was termed the Ivy House manufactory, that he set up on his own account, and gave great lead to the bearings of chemistry upon his own line of work, which afterwards led to the honourable distinction of his being made a member of the Royal Society. Here, besides various other articles, he produced what was called the queen's ware, which supplied caudle-cups to Queen Charlotte upon one of her confinements, and which seems first to have led to his being called into notice and becoming the fashion. And you will not be ignorant that fashion, besides the more indispensable qualities of industry and merit, has yet something to do even with so ancient and useful an art as that of the potter. Soon after came the diligent study which he bestowed upon the imitation of the fabrics of the Italian terra cotta,—admitted, now, I believe, to be the undoubted works of the unrivalled Greeks, but which then conferred the name upon the wares and upon the spot which he chose for his manufactory and home, the classic name of Etruria.

Various other gentlemen addressed the meeting, and appropriate resolutions in favour of the projected "Wedgwood Institute" were cordially passed.

Subscriptions to the amount of upwards of 800*l.* have already been obtained.

There is also a proposal to erect a statue of Wedgwood, as we think we lately mentioned. A meeting in favour of this project has also been held, but at Stoke, so that a rather unfortunate competition for Wedgwood honours has been got up.

Even at Stoke, however, this rival scheme has not been so cordially received as was probably expected. The proposal was only carried by the casting vote of the chairman, the dissentients being that moiety of the meeting who were in favour of the rival project at Burslem, which the working classes of the district, it seems, also strongly support.

THE NINE HOURS MOVEMENT.

As we briefly announced in our last, a public and crowded meeting of the working classes connected with the building trades of the metropolis filled Exeter Hall on Wednesday evening of last week, for the further consideration of the best means of effecting the very desirable object of reducing the hours of labour from ten hours to nine without any reduction of wages.

Mr. Turriff, a bricklayer, was called to the chair.

Mr. Potter, a joiner, in moving the first resolution, made an able speech, in which he spoke in hopeful language as to the prospect of success in the object in view. In recounting what had already been done, he remarked that in course of the present movement they had issued an address to the trade, held district and aggregate meetings, sent two memorials to the employers, asked assistance of the architects, and advertised for a prize essay on the subject. Mr. Potter complained of the unwillingness of the masters to meet them in conference, and stated that they had not yet received the reply of the architects. He did not hesitate, he said, to adopt the principle of urging a reduction of the hours of labour without any reduction of wages, because he conscientiously felt that the present rate of wages was not adequate, as every one must feel who knew any thing of the homes of his brethren of the building trades, especially where there were wives and families to support. How was it possible, under present circumstances, to lay aside anything for a rainy day, or for self-support in old age? The old horse in the paddock was better provided for than the worn-out operative in this latter respect. Overtime was another great evil against which he set his face; but there was a little inconsistency amongst themselves on this point: while some there were agitating for a nine-hours' day's work, they were actually working twelve! and how were their unemployed brethren to be provided for under such circumstances? Overtime was a curse to society, and the greatest barrier to the elevation of the working man. The employers had said there was now no compulsion upon any man to work more than nine hours a day. Surely, then, ten hours were at least enough, and no one ought

even now to work overtime. Overtime was a hinderance, but it could not stop the progress of the nine hours movement. Of the masters they only asked for some consideration of the workmen's interest in future estimates and contracts. The masters had already had six months to meditate on this, and they had not hurried them into it. Men were wiser now-a-days than to regard machinery as an enemy to them, but at least they ought to have some share in the advantage, which should be fairly diffused.

There were various other speakers on the resolutions, which were unanimously adopted, as follows:—

1st. "That it is the opinion of this meeting that the present number of hours devoted to labour are far too many, both for the mental and physical powers of the working classes; that unless a readjustment be devised the health and intelligence of the artisans must become seriously impaired, much to the disadvantage of the general welfare of society."

2nd. "That this meeting is of opinion that, by refusing to receive a deputation from the united building trades, the employers deprived them of the opportunity of showing the justness of their cause, and of bringing about a more friendly feeling, and that they pledge themselves never to cease agitating until they have carried this movement to a successful issue."

3rd. "That we believe the conceding of our request to reduce the working day to nine hours, would not only be the means of affording more certain employment, greater physical comfort, and expanding the intellect of the working classes,—but would in all these things prove a boon to our employers, and a check to the unnatural and ruinous system of competition which is fast reducing the condition of the working mechanic to a state that may ultimately prove destructive of that kindly feeling which ought to exist between the employer and the employed."

Thanks having been given to the chairman, the meeting then separated.

BUILDERS' BENEVOLENT INSTITUTION.

At a recent meeting of the directors of this institution it was moved by Mr. Joseph Bird, and seconded by Mr. William Ellis,—"That one male and one female be elected pensioners in May next." At the same time they deeply regretted that the state of their funds would not permit of a larger number being chosen from the number as applicants (fourteen) for the pensions granted to the distressed aged builders and their widows; and they thought that if it were represented in the journals more immediately connected with the interests of their class, many would be induced either to increase their present help, or induce their friends who have not yet become subscribers (of whom there are thousands connected with the building interests), to come forward at this period when their help is so much needed. The treasurer, Mr. George Bird, who spoke warmly to the point in question, stated that he trusted by their next meeting to be able to inform them that the publicity given to their present position by the insertion of the above facts in the *Builder*, would enable him to present to them a long list of the names of new subscribers and donors, who had (influenced by the statement) forwarded to him at his residence, 33, Edgeware-road, their aid at a time when it was so much required; or to the secretary, Mr. A. G. Harris, at the office, in Southampton-street.

"BOARDS OF HEALTH.—LAYING OUT LAND."

We have received several communications relative to a letter under this heading in our number for January 22nd, together with a printed report of proceedings at a meeting of the Liverpool Health Committee, from which it appears that the writer of the letter is thought to have intended it to apply to an officer of that borough. Our correspondents, including some of the candidates referred to, indignantly deny the statement as to "douceurs" and "testimonials;" a denial which, so far as we are concerned, is unnecessary now that we know to whom the assertion was intended to apply. The letter complained of was addressed to us by the surveyor to a local board of health on the official paper of the board, and signed with his name. On applying to him for an explanation, he writes: "At this time I could not confidently identify the person who I conjectured made the statement asserted; a statement which I can assuredly say I

did most thoroughly misunderstand, and I regret that such an unguarded, or, as I firmly believe (not being able to prove it), unfounded statement, should have been made by me." We cannot express in sufficiently strong terms our reprehension of such incautious and improper proceedings. A public officer should know better than to trifle with the reputation of another without the clearest evidence.

PROCEEDINGS UNDER BUILDING ACT.

Penalty for not giving Notice.—At the Police-court, Wandsworth, before Mr. Ingham, on the 25th January, Mr. John Scott, builder, of Upper Tooting, was summoned for neglecting to give notice to the district surveyor of Wandsworth and Tooting, Mr. A. J. Hiscocks, previously to his commencing the erection of an additional story to a previously-existing building, 24 feet by 12 feet, at Mr. Booth's, High-street, Tooting.

Mr. Hiscocks stated that the building was within 8 feet of some small cottages, and was a dangerous structure of timber and woodwork, and had been built very adroitly by bringing it on the spot (mostly) already framed.

The builder stated that he did not deem it necessary to give notice, as the lower part had been built under the district surveyor's inspection, and that it was an oversight.

Mr. Ingham asked Mr. Hiscocks if he thought it was done to evade payment of the fee, 15s.?

Mr. Hiscocks said no; and that, as the building would have to be altered in accordance with the rules of the Act, that would be a sufficient penalty.

Mr. Ingham inflicted a penalty of 20s. and 10s. costs.

Books Received.

Designs for Factory Furnace and other tall Chimney Shafts. By ROBERT RAWLINSON, C.E. John Weale, High Holborn.

MR. ROBERT RAWLINSON, well known to our readers as an energetic and successful engineer, and one of the Crimean sanitary commissioners, has amplified the paper "On Chimney Construction," originally read by him before the Liverpool Architectural Society, and published it with twenty-five plates of illustrations in the shape of a handsome folio volume. The pith of the first paper is printed in our volume for 1857,* and in the same volume (p. 231) we gave a group of these designs for chimney shafts, so that our readers know the scope of the work. It is difficult in these times to find unoccupied ground, but Mr. Rawlinson has done so, and has made it his own: his efforts will, we have no doubt, influence the appearance of all lofty shafts hereafter built. We do not accept all his designs: we do not want a chimney shaft to look other than what it is, and some of his, as might be expected (where, for example, the effect of window openings in the chimneys is given), do so; but many of them are perfectly consistent and irreproachable, and display much skill and taste. The illustrations include views of ventilating towers, elevated water-tanks, and engine and boiler houses, of which Mr. Rawlinson has executed many, and there are at the end three sheets of constructive details, which will be found very useful. As we have before said, in adopting vertical lines in chimneys, great care should be taken to graduate the strength of the walls as the shaft is carried up, so as to secure lightness with elevation. The upper portions should be light, so as to reduce oscillation. Tall chimneys, having heavy cornice finishings, have fallen: a storm of wind sets them in motion, and over they go. There are the ruins of chimneys which were so weighted, and have fallen, near Stoke-upon-Trent, and in other places. The student must not be drawn into any mistake in this respect. A tall chimney must have a secure foundation, a well-arranged shaft, growing lighter in substance as it mounts upwards, and any ornamental finishing must be the lightest possible, to secure the required appearance with strength. Great attention must be paid to the mortar, and to the workmanship. The views are drawn on stone, and printed in colours, by Kell, Brothers; and the book is dedicated to the Liverpool Architectural Society.

Electricity and the Electric Telegraph, together with the Chemistry of the Stars. By GEORGE WILSON, M.D. and F.R.S.E. New edition revised. London: Longman and Co. 1858.

This is a little volume we have already favourably noticed. It is now re-issued in a revised

form, together with a description of the Atlantic cable. The second part of it was a kind of precursor of the rather too famous treatise on the plurality, or rather the non-plurality, of worlds. Dr. Wilson confesses to a sort of partizan feeling in upholding the earth against all comers for its "uniqueness as an abode of living creatures,"—as if we, upon this little spot of mud, were the nonesuch of an infinite universe of spheres and stars. The author's "aim" ought to have been clear of any such questionable, and clannish, earth-conceited feeling, in his dealing with "the chemistry of the stars," of which in truth we know little, or rather nothing, even from that very equivocal source of information, meteoric stones, on which so much is based. The treatise on this subject is suggestive, but that on the telegraph is much more interesting and practical.

Miscellaneous.

AIRDS FREE-CHURCH SCHOOL, ARGYLSHIRE.—A school-house and teacher's residence have been erected on the estate of Mr. Robert McPhie, Airds, Argyshire, from the designs and under the superintendence of Mr. J. Ford Mackenzie. The style is Italian. Airds is within a few miles of Oban, whence steamers start daily during the summer season to visit Iona, Staffa, Glencoe, and Ben-nevis. The cost of the building was about 1,000*l.*; part of the expense being defrayed by a Government grant, and the remainder from Mr. McPhie's private purse.

NORFOLK AND NORWICH ARCHÆOLOGICAL SOCIETY.—The annual meeting of this society has just been held, Sir J. B. Boileau, bart. in the chair. The chairman exhibited some Sicilian vases, showing the difference between them and those of Italy proper, the clay of the latter being much lighter in colour, and not brown or red like the Sicilian. Other objects of interest were exhibited, and the honorary secretary read the usual report, which spoke of the prosperous state of the society and of its doings throughout the year. Office-bearers were then elected or re-elected, and some other proceedings transacted before the meeting closed with a paper from Mr. Planché on a Mould of a Cast.

ACCIDENTS TO PROPERTY AND PERSON.—At an inquest, held before Mr. William Carter, coroner for East Surrey, on the body of William Hobman, aged 29, who carried on business in John-street, Harper-street, New Kent-road; it was proved in evidence that the materials used in the construction of the building which had fallen in the New Kent-road, as already announced, were good, but that a portion had given way from the extreme bad weather which has lately prevailed. A verdict of accidental death was ultimately returned.

At Woodborough, as a bricklayer was taking out the framework inside an arched cellar he had been building, all the arch gave way, falling upon him with its whole weight. The poor fellow was entirely buried alive under the fallen brickwork, and remained in this perilous state while a boy who was with him ran to get assistance. He was very much bruised.—A new suspension-bridge, recently erected over the Garonne, at Marmande, having been subjected to the usual tests, says *Galignani*, could not withstand the weight, and the mason-work split in several places. The engineers are of opinion that it must be entirely taken down and rebuilt.

THE MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY. At the ordinary meeting of this society on January 11th, Mr. W. Fairbairn, F.R.S. the president, in the chair; the president exhibited various specimens of the iron of certain locomotive boilers which had been found to have suffered local corrosion of a dangerous kind, after only a few years' work. These remarkable effects belonged exclusively to locomotive boilers, and had not been noticed in those of stationary engines. They indicated a source of hitherto unsuspected danger. In the lengthened conversation which ensued, some members were of opinion that the phenomena were owing to the vibratory motion of the engine, predisposing certain parts to chemical action. Others thought that currents might exist in uniform directions, by which the part might be kept in that condition, as to cleanliness, most favourable to oxidation. Several members thought that the action was owing to galvanic currents arising from portions of the iron taking the electro-negative condition, which that metal is so apt to assume. Professor Roscoe called attention to the pernicious consequences attending the use of unglazed arsenical green paper hangings; and Mr. Dyer read a paper on "Imponderable Matter, considered as an Element."

THE WELLINGTON COLLEGE.—The college, already fully described by us, was opened by Her Majesty the Queen, on Saturday, the 29th ult. We are asked to mention that the quadrangles and arcades were laid with asphalt (and not with Portland cement), by the Metropolitan Mineral Rock and Sessal Asphalt Company.

WAKEFIELD CHURCH INSTITUTION BUILDING COMPETITION.—Thirty-one designs were sent in, which the committee reduced to two, between which the competition rested, viz. that with the motto or figures of a Lion and Star, and "Phoenix." After deliberation, the committee awarded the prize of 20*l.* to the former, which, on opening the sealed letter accompanying the plan, proved to be by Mr. A. B. Higham, architect, of Newcastle-on-Tyne. The committee have decided on exhibiting all the plans at the Grammar School, during the whole of next week.

MAP OF JAPAN.—That exceedingly interesting new country (as we may well call it), the island or islands of Japan, which the perhaps rather highly-coloured accounts of it would lead one to look upon as the nearest approximation on earth to the fabled "isles of the blest," forms the subject of a new map, just published by the Queen's geographer, Mr. Wyld, of Charing-cross. This map, we believe, contains information not before given to the public, and, indeed, it is surprising how much appears from it to be already known, not only of the existence and the names of the multitudes of isles and islets of which the group consists, but of the existence and names of even inland towns and districts, rivers, mountains, &c. in the three or four larger islands.

ART-UNION OF LONDON NEW PRINT.—We have before us an engraving by Mr. C. Sharpe, from the interesting original picture by Mr. Frith, R.A. of "Life at the Sennide," the property of Her Majesty, a copy of which, as announced in our advertising columns, every subscriber to the Society for the current year will receive. The plate has cost a very large sum, and is certainly the most important engraving ever produced by any Art-Union. It is not only a work of high artistic merit, combining able treatment and elaborate finish, but from the nature of the subject, truthfully depicting as it does a scene at one of our most popular watering-places, a large amount of character is forcibly shown in it, and we at once recognise the groups found at such resorts. Double the amount of the subscription would not have purchased this engraving if it had been produced in the ordinary way; and we shall be much surprised if there are not at least 15,000 members for the next distribution. Next week subscribers will receive the engraving on paying their guinea, and we advise an early application.

THE WATT TESTIMONIAL.—I was just leaving the British Museum Library, where I had admired the splendid edifices of Florence, and especially the admirable campanile of Giotto, when my attention was drawn to the strange tower projected to the memory of Watt, published in your last number. I consider it was a great condescension for you to publish in your valuable paper such a design; but when it is asserted that "some of the Italian campanilli have been used as types," I could not refrain from entering my protest against such an assertion. You know, as well as I do, that architecture is a matter of reason, and that to improve will not increase, but save the expense; and I offer to the managers of the intended tower, and also to the architect himself, to convince them of the verity of what I assert in the name of the Italian campanilli. If we are not able to surpass our predecessors, we must not do worse than they did. Considering your paper is a tribute for the architecture—improvement, I hope you will publish the letter of yours truly—HECTOR HOREAU.

DEATHS FROM OPEN DITCHES.—Two children, who dwelt in a cottage, at Westbourne, in West Sussex, within a few feet of an open ditch, into which several cottages drained, were taken ill and died, the cause of death having been testified by the parish medical officer to have been, in his opinion, the offensive sulphuretted hydrogen, which emanated from the open drain, and which was so disgusting, that he could not remain in the room at the back of the cottage, which faced the drain or ditch, though divided from the cottage by a wall. A coroner's inquest was held, and the verdict of the jury, after much deliberation, was, "That the children died at the house of their father; that at the back, and within 10 feet of such house, was an uncovered drain in an offensive state; but whether the deceased died from inhaling sulphuretted hydrogen gas, or from natural causes, we are unable to determine."

THE WOOLWICH WORKMEN.—The discharge of workmen ordered to take place at the Royal Arsenal, at Woolwich, has been to a considerable extent unattended.

INSTITUTE OF BRITISH ARCHITECTS.—At the next ordinary meeting, to be held on the 7th instant, the following paper will be read:—
“Various matters connected with St. Paul’s Cathedral,” by Mr. F. C. Penrose, Fellow.

STRENGTH OF MATERIALS.—On Monday and Tuesday last a series of experiments were made at the Testing House, Woolwich dockyard, upon small blocks of stone, slates, brick, cements, in iron, and wood, for the purpose of ascertaining the resistance of those materials to pressure. The experiments were conducted by Mr. George L. Purchase, architect, at whose service the testing apparatus was placed by the Lords of the Admiralty.

GAMES AND DRAUGHTS FOR THE POCKET.—There has been submitted to us a little box, about 4 inches square, containing the above games combined in one. A folding board, in black and white squares, serves to place flat chessmen, the characters stamped in gilt on dark purple and white grounds. By inverting these, draughts are obtained. The whole goes easily into the pocket, and may be obtained for a few postage-stamps. It is a very good notion.

LONDON INNS.—That ancient and once thronged hostelry, the Swan with Two Necks, as it has been called in modern times, is now in course of demolition, and by the time this is in print that rather quaint-looking building will have been levelled with the ground. For some time past the front of this old inn, which was once a well-known retreat for travellers, has presented a sadly neglected and weather-beaten appearance. It had become necessary to shore the walls; the windows were neglected, cracks appeared in the stucco, which had been vainly applied in the hope of making the Swan in Lad-lane correspond with the new and stately structures which have been raised around it. For some time past the courtyard has been occupied as a station for railway parcels.

“ADDITIONS OF THE AGE.”—Our anticipations as to the success of Mr. Carter Hall’s lectures on this subject, his written portraits of great men and women, were more than fulfilled on Friday the 28th, when Willis’s Great Room, King-street, St. James’s, was filled with a brilliant audience, including the Lord Mayor, and a large number of eminent artists. Possessed of a good voice and manner, over the former of which he has considerable power of modulation, Mr. Hall is enabled to convey his opinions and remarks clearly and effectively. The second lecture will be given this, Friday, evening, the 4th, and the course will be repeated on the 7th and 11th.

BENNETT’S FLOOR.—At page 55 is the description of a patented fire-proof floor, accompanied by a diagram. It appears to me that it might be improved by the joints between each hollow brick, each taking their bearing upon the one between it and the retaining wall, although the arch is tied in by the iron rods. My view is, that the joints should be the reverse way at each side (as in an arch, however flat), and should finish with a key brick. The same mould will do; it is only to turn each brick round the reverse way for the two sides, and finish with a line of key bricks, as suggested along the centre.—J. B. W.

SMALL PARCELS POST.—At the Society of Arts, on the 26th January, Mr. Nicholas in the chair, Mr. Peter Graham introduced for discussion the report of the committee appointed by the Society to consider the subject of “A Small Parcels Post.” The report tended to show that the present rate of postage on parcels amounted to a prohibition, except in very few cases; and that the private means of transmission were expensive and uncertain. The Post-office, however, already had an agency established and paid for, which might be called a general portage for the delivery of letters, and which would render a separate portage for small parcels unnecessary over a large portion of the kingdom. The committee was therefore of opinion, that, at a payment of 4d. for a parcel of 1 lb. weight, the post might do at a profit that which private employers could not do for a very much larger sum. A discussion ensued, in which Messrs. Alderman Melville W. Hoare, Laurence, Salomons, Harry Chester, E. Chadwick, Sir Thomas Phillips, Edwards, Tennant, W. Brooks, and the chairman took part.

PLACED BOARDS.—Sir: Pray lift your voice against that abominable usage, the placed-board at the foot of Waterloo-bridge (Middlesex side), a disgrace to the authorities of the bridge and to our English (want of) taste.

A LOVER OF ARCHITECTURAL PROPORTIONS.

GAS IN DUBLIN.—A rival gas company has been started in Dublin, under the designation of “The Independent Gas Consumers’ Company,” and the requisite buildings are already commenced. The company promises to supply better gas than the original company, at 8s. 6d. per 1,000 cubic feet, free from meter rent, and thereby save the consumers 50,000l. per annum. Mr. Flintoff is the promoter and secretary.

DRAINAGE.—Sir: I beg to submit the following suggestion,—that it would be a useful provision in the majority of contracts for tubular drains, in cases where the soil is clayey, to stipulate that the trenches should be filled in to a certain depth, say 1 foot, with hard materials, as ballast or gravel, before the excavated clay be thrown back again; the purpose being to secure a system of “rumbling drains” that will take away the excessive moisture which is apt to permeate such a soil, arising from rain or other causes, and to which the very efficiency of the glazed tubes in respect to their being water-tight must hinder their giving vent.—G. M.

OPENING OF A NEW MANUFACTORY OF DRY GAS METERS.—The gas meter factory in the Kingsland-road has been opened, under the auspices of the Lord Mayor and a party of gentlemen interested in the manufacture and supply of gas. The buildings have been carried out from designs, and under the superintendence, of Mr. William Lee, architect. The factory contains three floors, of an area of 5,000 superficial feet, each floor being supported by cast-iron columns. They are lighted on all sides by Rogers’s patent glass, and are ventilated by flues formed in the external walls running up to the roof. The whole is constructed with a view to the health and comfort of the men, and is divided into several departments of case constructing, leather cutting, index making, and brass finishing and completion,—affording altogether accommodation for 200 and odd workmen. The proving and experimenting room, 64 feet by 20 feet, is lighted by a lantern, and is 20 feet high. The closets, &c. are lined with Rulifson’s patent enamelled bricks. The offices are next the Kingsland-road, and have a frontage of about 100 feet. The design is in the Italian style, executed with red and white Suffolk bricks, with stone dressings and ornaments. In the principal archway a colossal head of Old Time forms the keystone, and a corbel for supporting a clock, on either side of which are figures of Mercurius and Night, and above, a group comprising Childhood, Maturity, and Age. These have been sculptured by Mr. R. Jackson, of Maids-head, from designs of the architect.

THE DRINKING-FOUNTAIN MOVEMENT.—The town of Worthington has been presented by Mr. Charles Linsport with an ornamental fountain of polished red granite, which the waterworks trustees of the town have agreed to supply with water. Messrs. Alder Dunn and Co. have intimated their intention to present the town of Newcastle-upon-Tyne with four drinking fountains, of polished Aberdeen granite, which they propose to erect at their own cost.—Plans and specifications for the fountain which is to be erected in the Market-square of Warwick, in commemoration of Her Majesty’s visit to that town, will shortly be ready; and on their completion tenders are to be advertised for. It is probable that the cost of the work will amount to 200l.—The *Manchester Courier* speaks of having inspected a specimen drinking-fountain at the marble works of Messrs. Patteson, being one of a number intended for erection in various parts of the city by Mr. Robert Barnes. The fountain consists of polished Aberdeen granite and bronze, and only projects from a wall 13 inches. A large shield-shaped slab of highly polished granite forms the upper portion of the fountain, and from its centre projects a conventionalized human head, in bronze, ornamented with ivy leaves and other decoration, out of the mouth of which flows the water, almost imperceptibly, so that there is no splashing. The liquid falls into a small basin, and thence into a larger one, whence it passes off by two openings. Drinking cups of galvanized iron are suspended at the sides by chains of the same metal. The fountains will be placed at a convenient height for children, but means will be taken to prevent them playing with the water. There is an inscription, recording that the fountain was “Presented, A.D. 1859, by Robert Barnes.” It is intended to erect this specimen fountain beneath the railway arch in Oxford-street. Mr. Barnes has offered to erect as many of these fountains as the populous necessities of the city may require. A suggestion has been made that, by the use of a ball-pat, the lifting of the drinking-cups might be made to turn on the water, which would then not be wasted.

TENDERS.

For works at Offington House, near Worthing. Mr. H. Clutton, architect. Quantities supplied by Mr. Clutton.

Anson	£2,460 0 0
Fowler	2,000 0 0
Bushby	2,000 0 0
Myers	1,990 0 0
Macey	1,797 0 0
Pitcheard and Son	1,740 0 0

For alterations, No. 67, Cheapside, for Messrs. Roberts and Co. Mr. Thos. Burton, architect.

Conductor	£2,420 0 0
Piper	1,833 0 0
Brass	1,829 0 0
Rigg and Stanger	1,805 0 0
Oxford and Co.	1,800 0 0
Lawrence and Sons	1,780 0 0
Sargent	1,690 0 0
Downs (accepted)	1,620 0 0

For building Detached Cottage, at Dorking. Mr. Wm. G. Bartlett, architect.

Clarke, Westcott	£841 14 3
Lynn and Dudley, Dorking	531 0 0
F. and F. J. Wood, London	520 0 0

For the partial rebuilding of Crown Tavern, Vinegar-yard, Drury-lane, for the Company of Proprietors of Drury-lane Theatre. Messrs. Nelson and Innes, architects.

Knight	£670 0 0
Greig	85 0 0
Cartwright	891 10 0
Carter	870 0 0
Soward	859 10 0
Rider	840 0 0
Hill and Son	815 0 0
Hind and Aldred	761 0 0
Patman	665 0 0
Glenn	500 0 0
Todd, Brothers	648 0 0

For new Shop Front, No. 250, Regent-street, for Mr. Wentmore. Mr. Wm. Harris, architect.

Foster	£305 0 0
S. S. Wilson (accepted)	375 0 0

For the Preparatory Commercial School, Bedford. Mr. J. Horsford, architect. Quantities supplied by Mr. Horsford.

	Ancestor	Deduct for
	stone.	flat stone.
Downes	£2,460 0 0	£240 0 0
F. and T. Wood	2,070 0 0	20 0 0
G. Myers	2,000 0 0	39 0 0
M. Lennan and Bird	1,968 0 0	40 0 0
G. H. Smith	1,945 0 0	20 0 0
A. Mould	1,865 0 0	7 0 0
W. Webster	1,819 0 0	—
H. Spencer	1,794 0 0	12 0 0
T. Lawson and Joy	1,720 0 0	11 0 0
T. Harvey	1,576 0 0	26 0 0
G. Cooper	1,558 10 0	10 0 0
Conquest	1,550 0 0	11 0 0
R. Young	1,495 0 0	5 0 0
Lindley, Firm, and Co.	1,431 0 0	—
Thos. Reynolds	1,396 0 0	9 0 0
G. Thompson	1,389 0 0	—
J. Houghton	1,384 10 0	11 0 0
W. Freshwaters	1,386 0 0	11 0 0
E. Masters	1,238 0 0	11 0 0

For first portion of restoration of St. Peter’s Church, Thetford, under Mr. Joseph Clarke, diocesan architect.

	Pitch Pine.	C. Deals.	Old Materials.	Lead cat.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bischoff	1,397 0 0	1,207 0 0	77 0 0	13 0 0
Lancaster	1,413 0 0	1,333 0 0	35 0 0	10 0 0
Wilsford	1,441 0 0	1,351 0 0	25 0 0	18 0 0
Denne	1,450 0 0	1,375 0 0	45 0 0	18 0 0
St. G.	1,452 4 0	1,378 0 0	46 0 0	12 0 0

TO CORRESPONDENTS.

31. Sir—Capt. Pick, (the above process is) turned in polished granite as in polishing marble, but it requires longer time. To polish granite properly requires powerful machinery; it can only be done by means of a large wheel (the diameter of which is 10 feet) and a large quantity of water. The process is not a new one, but it has been, I think, first used by Mr. J. A. Forster, who has been, I think, the first to use it in England. The process is not a new one, but it has been, I think, first used by Mr. J. A. Forster, who has been, I think, the first to use it in England. The process is not a new one, but it has been, I think, first used by Mr. J. A. Forster, who has been, I think, the first to use it in England.

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The Builder.

VOL. XVII.—No. 836.

The Designs for the Rev. Mr. Spurgeon's Chapel.



N exhibition of the competition designs received on the 31st ult. for the New Tabernacle for the congregation of the Rev. C. H. Spurgeon, to be erected at Newington, on ground nearly opposite the Elephant and Castle, is now open at the Horse and Carriage Repository, close to the intended site. The drawings are comprised in sixty-two different sets, and are upwards of 450 in number, besides one model. They are arranged in the large committee-room of the Repository, and in a portion of one of the galleries, and are well displayed as compared with drawings in similar exhibitions that we have had to notice—a circumstance for which we are disposed to award due praise. We should, however, observe, that the admission-fee of 1s. added to the retention of the motto system, operates to prevent that advantage to the authors of designs, which we have considered should be looked for in these cases.

As there are matters connected with this competition in the mode to be adopted, of selection (by the competitors), which will lead to discussion hereafter, and others of equal interest belonging to the questions of plan, and decorative character, appropriate to buildings for large assemblages, and for religious uses, it may be desirable, before reviewing the designs, to place on record the circumstances which have led to the present appeal to the profession, and to the peculiarity of the printed "conditions;" which circumstances may be referred to at a future period, as marking the incidence of changes of a certain importance in practice of church architecture, though of what extent it might be unsafe to predict.

The popularity of the Rev. Mr. Spurgeon's preaching having extended beyond the capabilities of the area of Exeter Hall, the newly-erected Music Hall at the Surrey-gardens was resorted to, and was discovered by the minister to be admirably suited, as regards seeing and hearing, for the accommodation of an unusually large congregation. Some time afterwards, induced by the success of Mr. Spurgeon's ministrations, the movement commenced in the Church of England, which has led to the evening services in the nave of St. Paul's Cathedral and that of Westminster Abbey—an appropriation of that part of a cathedral-building which had been often suggested, but not before attempted in cases of the same importance. Tending otherwise towards the modification of a particular branch of architecture, is the circumstance that during the last few years a considerable number of chapels for Dissenters of various denominations have been built, nearly all of them ostensibly Gothic in their details, but marked distinctively from the churches,—as externally by general forms and proportions, resulting from the arrangement of the school in a basement, and a pretty general omission of aisles and towers, and of north and south porches—in favour of a wide recessed porch at one end, with piers and arches and a lofty flight of steps,—and internally by the use of galleries, considered a desirable adjunct, and by the studious diminution of all obstructions, such as those of the nave piers of the old churches and their modern imitations. In a large proportion of these new chapels, in point of detail, there was for some time great deficiency as compared with con-

temporary architecture of the same character in the churches; for, whatever might be the amount of mere imitation, and sometimes inappropriate as to location, in the latter—in the chapels, to any eye familiar with the old examples, the impression produced was that of caricature, or one of inferiority arising from the comparison with those examples,—an impression such as will be always fatal to effect of art; because, whilst it may be a condition of the best living art to avoid *fac-simile*, it must equally be a condition of it to produce what is of *not less* intrinsic value than the art of the example or model. Most recently, however, the details of the architecture of churches and chapels have become assimilated, whilst, in the points of plan and internal arrangement, in the chapels, considerable invention of a meritorious kind has been shown; and instances of this will be found on reference to the illustrations in several of our volumes. Evidences are at this same present time to be observed of dissatisfaction amongst architects and one section of the public, with the Mediæval arrangement of nave and aisles, and much more so of transepts, as suited to the Protestant ritual. The question raised here is not of style, but simply plan appropriate to certain objects; and the only consideration that could be brought into play other than would dictate arrangement in whatever class of building, or other than one of convenience and use, would be an argument drawn from traditional association, which has unusual force in church-architecture, if only from the present use throughout the country, of the very buildings erected in the Middle Ages on the plan in question, and the habit thus formed of considering their particular character ecclesiastical. The fact, however, remains, that for the uses of a Protestant church, apart from value of association, the Mediæval plan is not fully adapted; and to show what is the public opinion, we shall quote what has been said by a writer, of whose personality we have no knowledge, in a popular work of large circulation, and known to our readers. Speaking of a particular church, as "a fair, perhaps a favourable type of its class," the writer says,—

"It is another proof that Gothic, as rendered by the present race of architects, does not properly meet the requirements of the form of worship of our Established Church, of which common prayer and preaching are the essentials; and to join in the one and listen to the other, the object of the congregation. Here, all who occupy seats in the nave can see and probably hear the preacher; out of the nave, the chances are that either seeing or hearing will be difficult, if not impracticable. To test this, we visited the church on three or four different Sundays, taking whatever seat the pew-opener pleased. We were placed in the south aisle, and could see the preacher, but neither see nor hear anything that went on at the reading-desk or the altar: on the north side of the chancel, and we could not hear a word of the sermon or catch a glimpse of the preacher, except as he walked to the pulpit: in an odd nook near the vestry-door, where—on the one hand the east wall, in front a pier of prodigious width—we could neither see the clergyman in reading-desk, pulpit, nor at the communion-table, nor hear from either place anything more than a strange confusion of words, of which now and then a disconnected one was comprehensible. Very likely we were unfortunate in our 'placing'; but it is the sort of 'church accommodation' which too many a chance visitor finds, we fear, in modern Mediæval churches."

And the writer well says, it deserves serious consideration whether it is not "giving up too much to Mediævalism" when its "best structures" are so far from answering their "primary purpose." The church he had been speaking of, intended to accommodate 1,240 persons, he thinks could not accommodate near so many, "in the sense of enabling them both to hear and see." And he continues:—

"At the Surrey Hall, a congregation of 10,000 persons has been collected every Sunday morning for a considerable period; and as any one may satisfy himself who will go, the whole of them can see and hear too. We are not, be it remarked, advocating a change of style."

He believes the Gothic most suitable for ecclesiastical purposes, but urges reconsideration of the Mediæval "form" and internal

arrangements, not devised by the inventors for purposes as now applied. In conclusion, he asks, for "not the unreasoning following of the 'old examples,' but 'original development' of them; and in place of 'nooks and corners, and huge sight-and-sound-obstructing pillars,' a structure which, with solemnity of character, shall exhibit 'the results of the highest researches in the sciences of construction and acoustics,' 'combined with our noblest attainments in architectural art.'"

Such a structure, then, as, following others, this writer refers to, ought with slight changes for ritual, to be the result of the competition now before our attention. In the "conditions" of the committee we find that "the plan of the Surrey Music-hall," as having been "proved to be acoustically good," "will be decidedly preferred;" and probably this is not on the score of any decided prejudice in favour of the decorative character of the particular building. The "conditions," indeed, say that "Gothic designs will not be accepted by the committee;" but this restriction, whether desirable or not, has, if our impression be correct, arisen in error as to what constitutes style. Objects of whatever character can be attained from any style, taken up in the spirit in which alone we are justified in adopting old style; and if it be thought otherwise, the defect existing will be found rather in our own practice, than in the nature of the basis; or it will be from our making imitation, rather than our special wants and associations, the principle. The one course, the imitative, will produce works properly to be called Gothic or Italian; but will not produce *art*,—that is to say, works designated by particular names, solely from the absence of others accurate in the main and just to ourselves. The objection of the committee to "Gothic designs," we believe, was partly founded on the impression of Mr. Spurgeon, that the common feature of a modern Gothic building, the open-timbered roof, was unfavourable to hearing; and we imagine may have been also in some degree due to the desire to avoid resemblance to buildings of a character which has become associated with tenets and ritual different to those of the denomination to which Mr. Spurgeon belongs, and which, if supposed to embody in materials and decoration the idea of a visible presence, would be even repugnant to the feelings of Baptist dissenters. We wish to point out, however, that none of these grounds required the interdiction of any known style—used in the manner in which alone, as we have said, every such style should be used—and perhaps less, a style which has intrinsic qualities, favourable even to the objects which were in view. For, the value in regard to new production, which there is in old style, as the Gothic, is by no means destroyed by a particular form of roof, or by the introduction of galleries and a general arrangement of plan completely different to that of the old churches; though, more narrow-minded views may have found expression in the Gothic revival and the practice of too many architects. Nay, if in place of interdicting style called by an old name, the requirements were simply for avoidance of certain things useful in the one case, but only imitative in the other, the result would be, rather than anything to be dreaded, that art and national architecture, after sacrifice of no acquisitions of the past, which all desire to arrive at. Styles, by the very infusion into them of new art, would lose still more, their title to the present appellations; but after having assimilated to one another, they would tend to a progress expressing both the requirements and the taste of the time; and the more characterised by art, that is even by the union of novelty with beauty, the less easily the distinctions were definable by language, and the more these were addressed to and realized by only the visual and the intellectual impressions.

These views, not less than conviction of inadvisability as regards purposes of a building and objects of a committee, have led us always to discountenance instructions to competitors, of the kind found in the "conditions" in the present case. Results of experience, and opinions, as in regard to the Surrey Music

hall, are of course valuable; but it is not desirable that they should be given or adopted as directions.

From what we have adverted to,—the different circumstances combined,—or those named historically, and those connecting the present competition with the design of the Surrey Music-hall,—there will be no difficulty in conveying to such readers as do not visit the exhibition, an impression of a character which pervades the whole, and prevents much of that variety which should be looked for amongst sixty-two designs, and that skill and taste which there have been so many recent evidences are at the public service. If we wanted grounds for thinking that competitions do not conduce to the public objects, they would be afforded by a glance at the drawings now at Newington, where we find little reason for supposing that the competent men have responded to the call, or that the problem, interesting and most important as to the future, but most difficult, put forth by the committee, has received a satisfactory solution. For, the requirements were for a building, including, first, a chapel, to contain not indeed so many persons as the Surrey Music-hall,—which (shown by the plan and section in our volume for 1856) has three tiers of galleries above the floor level,—but to contain 4,000 persons, or 3,000 seated, and 1,000 in "standing room"—which it seems was to imply space additional to the passages. A basement floor (5 feet below the footway) was to contain school-rooms for boys and girls, 12 feet high, and a lecture-hall for 800 persons. There were also to be six vestries, and various conveniences. A baptistry was to be provided, of course in the area of the chapel. The total cost was to be about 16,000*l.* including the required commission, which the competitors were to state, and which was to comprise all expenses for measuring.

The architects competing (as we have said, under mottoes) were to be requested to award the first and third premiums, the committee awarding the second premium. The names of the competitors have been forwarded to the committee, by requirement, but are supposed to be not known to one another. Each competitor is now furnished with two voting-cards, and is to record his votes so soon as Monday next, by four o'clock, "after which no vote will be received." The ballot-box will be opened by the architects present on Monday. The whole business seems to us as being conducted in too great haste—even admitting the aptitude at forming a correct judgment of those who have studied the particular subject. Certainly no others have the peculiar advantages on this point possessed by those who have prepared drawings, but we are not sanguine in this case as to the result. Considerable excitement, of course, prevails; and a meeting has been arranged for (this) Saturday, "for the purpose of adopting some principle" upon which to give the votes. Votes, however, have been already given. One course to be proposed at the meeting, it is said, is an arrangement amongst those present for a reduction in the number of candidates by several successive votes, in order that some competitor might ultimately have a majority calculated to have weight with the committee in their award of the next prize superintendence of the work. The premiums are 50*l.*, 30*l.*, and 20*l.*—premium to the architect employed to be deducted from his commission. It is predicted, that unless some arrangement is adopted, the votes will be so distributed over the lot of designs, that no one competitor will occupy a sufficiently prominent position; and this may still be the result of the secret voting,—or if there are any dishonest enough to prefer voting for an obviously bad design, to taking pains to discover the design deserving of the vote. The committee, it is needless to say, will allow no architect to select his own design, and probably believe, having the names, that they will be able to prevent unfairness in any particular. But we do not think with the short time allowed, and the absence of any call upon the competitor to defend his vote before the profession, that the present case can be accepted as any test of a system of

awards by competitors. The exhibition, first announced to be open till Monday next, must for all objects be continued much longer.

It has been shown above, that the leading principle for plan, adopted by the committee in their statement of requirements, was that of the *auditorium*, assumed to be embodied in the Surrey Music-hall, a principle which was once laid down by Mr. Cockerell, in his lectures as Professor at the Royal Academy, as that which should characterize the Protestant Church, and towards which the plans of the churches of Sir Christopher Wren, or of the old Chapter-houses, were better adapted than the arrangement of the long nave and chancel, developed in the Roman Catholic times. The argument for the square or octagon plan without obstruction, is even stronger than has been represented; for, in the Roman Catholic Church, sight of the altar is really of primary importance; and, in every church, seeing the preacher is not unimportant even to hearing and understanding him properly. On the other hand, the common arrangement of the seats, looking in one direction in churches, has advantages for public worship, quite unconnected with any doctrine, or a ritual observance of looking to the east, which are certainly not obtained where the worshippers or auditors are placed to look at one another. We do however conclude, without attempting to solve the difficult question, that the arrangement of the Surrey Music-hall should not have been laid down authoritatively as the best for the observance of the competitors. Truly, the galleries, instead of three as there, were to be not more than two in number; but the result of length (excessive as it is made by some of the competitors), and of the bulk of the accommodation being in galleries, is that a considerable proportion of those in the galleries at the further end, do not sit in the desired position with reference to the pulpit. The author of the design "Palma" has however thought fit to avoid the defect by placing his seats in the galleries obliquely. The author of the design "Faith,"—a noticeable one in some respects—with principal front of Italian-Romanesque character, and angle tower, and with the usual high-curved roof of the Surrey Hall, to which is added a low clerestory with circular lights, carried by the iron columns and arches of internal galleries, has a plan of which the length reminds us of Norwich Cathedral; and he is not singular in that particular. But, in many of the works the advantage of a more compact form is seen: though some of the designs show forms of the oval, circle, or octagon, on plan, so far as regards the gallery fronts—not avoiding the evil we have adverted to; whilst most of the competitors have been compelled or induced to advance the pulpit considerably, and to place a large number of the sittings in rear of it. One architect, in the design marked "Phawbh," places the pulpit in the middle of one of the longer sides of the chapel—a most objectionable arrangement, as those who have ever addressed an audience from such an ill-placed *rostrum*, well know. Galleries are omitted on the pulpit side in this design, as are windows on the other; and the upper gallery has no supporting columns, and does not project so far as the lower gallery,—a principle followed by few of the competitors, but which has advantages. Externally, the design, of Romanesque character, with tall slated spire-like terminations to the towers, partly formed by curves of contrary flexure, has good points.

Not only does the resemblance which is general to the Surrey Music-hall, include internal plan and section, and the manner of supporting the galleries, and arched ceiling, on tiers of iron columns; but it extends to the position of staircases. Regarding the question of entrances and exit-ways, the requirements of the case before us are obviously of the greatest importance. There is generally in the designs, provision by number and area of staircases, larger in proportion to the number of people even than exists at the Surrey Gardens, whilst as to the construction and planning of the steps themselves, there is every appearance that our words in predicting the disaster which afterwards occurred, and the reference to it

which we have had to make so often since, as well as all our special requirements—such as avoidance of winders with narrow treads, of open well-holes, and of very long flights,—have been taken into consideration, and have led to the alterations in these matters which are generally observable; and for attending to which, credit is claimed by many of the authors in their written particulars, though we did not observe that any of the number did us the honour to refer to us. But it is curious, that whilst the lessons each way, accruing from the plan of the Surrey Hall have taken some root, the principle of good entrance and exit-way planning is not always comprehended—staircases or sufficiently numerous doors to the body of the chapel being reached through really inadequate doorway area in the external walling. There is also too frequent omission of vacant space next the street—an absolute essential both as to the crowd of 4,000 persons and the noise of passing carriages. It is however fortunate that attention has been drawn to the subject of staircases. The single step (or two steps) between the quarter-space landings, is to be found in the plans too frequently. The insufficient attention to the subject in the designs, which, after all, is observable, is clearly one result of the system of competitions. Our authority only, should not be taken on a vital question; nor should our recommendations be merely copied: in a word, the hurry and defective study, of which the impression is given by the present collection of works, must be exchanged for the matured design and careful planning which each subject demands, and which alone can serve the objects of a committee and reflect credit on the body of architects.

It will be seen, that however interesting the subject put before the competitors, we are not very favourably impressed with the result in designs shown. The exhibition well deserves a visit; but we have not succeeded in finding one of the designs that would seem quite likely to solve the problem interesting just now to several religious denominations—how to accommodate a very large number of persons, in a building of accepted religious character, within range of the preacher's voice, and with perfect contrivance for the efflux of the multitude. The short-comings of the works are such as our experience of these exhibitions has impressed us with, as becoming the characteristic of competition designs,—namely, whilst happily considerable merit in one part of a design—as plan or decorative character, or interior or exterior—with all, frequent want of that comprehensive grasp without which the architect's special office can scarcely be said to have exercise. This sort of contrast is observable even in the design marked "The Propagation of Faith,"—one in many respects studied with care, and not open to some of the objections spoken of. The building is set back about 50 feet, to allow space for carriages to set down, and for persons on foot to congregate before doors are opened. The principal staircases, four in number, whilst at the corners of the plan, as in the Surrey Hall, do not project into the internal area,—the architect considering such arrangement objectionable, and that the good acoustic effect at the building named is attributable more to the lining with match-board than any peculiarity in the form or proportion; he therefore rounds corners, and endeavours to keep "clear of internal projections." In the general transverse section the prescribed model is followed—externally, however, covered by a sloping roof. The design involves a peculiarity in plan at one end of the chapel, the area of the floor being retrenched thereat, by the height given to the lecture-hall, which, thus having its principal floor one story lower than the floor line of the chapel, is provided with galleries on the level of the latter floor; whilst over the lecture-hall, the difference comprised in its area is added to the first gallery of the chapel,—the minister's pulpit and the baptistry being there placed. The galleries of the lecture-hall, however, can be thrown into the chapel,—the division being only by sliding screens. But, by this arrangement, the chapel proper has not

the accommodation which seems to have been intended; since there would be no "standing-room," except in the ordinary passages. Most of the competitors have provided this space *extra* to the passages of seats; but the "conditions" were hardly clear on the point. The seats in both galleries, and beneath, are all within sight of the minister. Two designs for the exterior are shown. One has a double portico of coupled columns, after the model of that to St. Paul's Cathedral, very well planned; and the other design a Corinthian hexastyle portico of equal merit. The flanks, however, with several stories of windows, are discordant,—though it may be right to say they would be concealed to some extent. The staircases in the principal front form square masses, and in one of the designs are terminated by Italian turrets. In the design without the turrets, there is little character of a place of worship,—a defect which is frequently repeated in the works exhibited,—and the portico of the upper story seems to have no way into it, and consequently has no appearance of use, which we must also regard as an error.

The design marked "Let the house be builded," is still nearer in plan to the Surrey Hall. The author says he has avoided "winders" in the staircases "except where necessary." In this design, and many others, the abutment to the thrust of the roof-timbers is not shown. Reference should be made to our notice of the Music-hall, for description of the ingenious contrivance resorted to in that building. The exterior, with many arch-headed windows, is rather what would be called "work-house-like" than ecclesiastical.—"Mea Gloria Fides" has the same arrangement, but with semicircular ends to the plan, and the staircases in the radii of the semicircles. The chief feature of the exterior is a Corinthian portico, semicircular. The seats of the lower floor are slightly curved in plan. The staircases have no winders, but have open well-holes.—The next design, "Except the Lord build the house, they labour in vain that build it," is amongst those having the general arrangement of the Music-hall, but with a ridged or sloping roof-covering in place of the curved roof corresponding with the form of the ceiling. The plan has transeptal additions, as well as an apsis behind the pulpit,—the latter being a little in advance of the chord of the arc, and, as usual, on the level of the first gallery. The stairs have open well-holes and winders both. The chief front has more of ecclesiastical character than usual, but poor details: there is a Roman Doric portico on steps, and there are turrets at the angles.—The design marked "M," though made with reference to the same model, is avowedly based on the Free-trade Hall, Manchester, which it resembles internally more in general forms than in the details, which are not satisfactory. The ceiling is panelled, and coved at the sides like the building at Manchester; the columns not running up. Here, again, there is an apse in rear of the pulpit, but in the gallery-story only. The baptistry is correctly placed in view of the congregation,—instead of behind the pulpit, as in some designs. Externally, the design is of Florentine character; and there being no windows to the lower gallery-story, the ends and the flanks are not inharmonious. The square-angle blocks of the staircases are terminated by cappings formed of curves of contrary flexure.—The design "In good faith" has a nearly square form of the *auditorium*, with the addition of seats in recess opposite the pulpit, and others angle-wise. The author would support his centre roof, with the roofing at the sides, by trussed girders from end to end of the building, a span of 70 feet, in lieu of columns, and states that his intention is to avoid handrails, as well as balusters, to stairs. We need not now tell a committee, that though they may fittingly avoid the balusters, and have a different method of inclosure, they should, under every possible arrangement, require the handrail, and one on each side of stairs. The features of the exterior are an eight-columned portico, and high truncated roofs to staircases.

The design marked "Ebenezer" is one of

the best in the collection, so far as details in the exterior are concerned. Besides the entrances at the ends, there are others at the sides—a desirable arrangement; but the author rather overstates the whole number of entrances, we think. The front and flanks here are in harmony, by the two-storied arrangement adopted; but internally, one of the ranges of windows would be cut into two parts by the gallery. The general style is Palladian, with addition of floriated ornament to the hips of the curved roof and ends of the low louvre-like termination which runs along its summit. A two-storied portico, with the columns clustered in fours together, and flanking turrets carried up to a considerable height, but well composed as to the recession of the stages and general details, form the features of the end elevation. The baptistry is misplaced.—"Truth" is a design of Romanesque character, with staircases at the sides as well as ends, carried up as turrets with spire-cappings. The stairs wind round a central newel,—we need not say, the worst possible arrangement. The gallery fronts take the elliptical form on plan; and the ceiling is elliptical in section. The porch with piers, and arches springing from columns, is the best part of the design.—"De Propaganda Fide," a boldly-executed set of drawings, is Lombard-Romanesque in character, for brick with stone dressings.—The design "Honi soit qui mal y pense," the author calls "Lombardo-Eclectic." The main building is set considerably back from the street; two towers, with high ornamented roofs, an apse, and a gable, with the common feature of the small colonnade, terminate its end; and the space next the street is appropriated to an arcade on columns (forming a covered porch the full width of the frontage), and to vestries.—In "The Temple," one of the very elongated plans, whatever there be of merit is in the chief elevation, which has a portico, formed by a central arch, and side openings with straight entablatures, the piers being clustered pilasters and columns.

There is on one of the screens, a hastily-executed set of sketches which few will look at (marked with a peculiar device, not within the scope of type), having no claim to selection, but in which there is a clever touch in the pencilling, and taste and novelty in the ornament and the colour introduced.

In another design, marked "The Tabernacle," with some labour in the drawings, there is a distinctive arrangement of plan and longitudinal section, but inadequately worked out. In the main portion of the plan, four columns carry arches of 30 feet span and a wooden ceiling; and the galleries, circular on plan, are carried independently by iron columns. Opposite the pulpit, or next the chief end of the building, the galleries extend back a considerable distance, and over the school-room. The main doorway leads directly up to the gallery-floor, the main floor in the circular part of the chapel being on the ground line, instead of raised some steps above it. The result is not in proportion to the ingenuity which is in the leading idea, and to the labour. The exterior is generally Lombardic.

The author of "Non Nobis Domine," adopting the plan of the Music-hall, and managing his exterior well in the grouping, though not otherwise, has copied the staircases of the hall, the narrowed treads included.—The author of "A. Z." has planned the passages of his seats radiating from the pulpit.—In the interior of "Templa quam dilecta" there are two arches spanning 44 feet on each side, springing from shafts, the galleries being carried by much smaller columns. The exterior has a Roman Doric portico, and a clerestoried central feature. The structural boldness which there is in many of the designs is something extraordinary. The author of "Ubique" proposes an iron building, with a segmental roof-covering, carried by lattice girders on the outside.

The design "Metropolitan" is one of the very few which appear to adopt for the galleries, columns from the regular orders instead of iron shafts.—"Quod erat faciendum" (*sic*) has some good features, though bad staircases.—In "Deo Volente," the plan is an adaptation of that of St. Sophia at Constantinople; an arrange-

ment which might have been worked upon with advantage by other competitors.—"Byzantine" is Saracenic rather than the style indicated by the name: the plan is bad, especially as to entrances, but the decorative details have considerable merit, and the drawings deserve praise.

We are concerned to find that the merit of the majority of the works is in such slight proportion to the requirements of the case.

MIR. SMIRKE'S LECTURES AT THE ROYAL ACADEMY.

INTERIOR ARCHITECTURE.

LAST year I had the honour of addressing to you some remarks on the subject of Form, as it affects design in exterior architecture.

I propose now to submit to you the result of my experience and reflections on design in interior architecture. These two subjects readily admit of separate consideration, and, indeed, almost demand it; for the aim and purposes, as well as the means, of the designer in each case are widely different. In determining the external features of a building we have to consider, besides the character of the building itself, various collateral circumstances; such as, the nature of the site, the character of the surrounding scenery, and the aspect of the architecture with which our work may be associated; and it is the contours or bounding out lines of the building we design that in a great measure determine its effect.

It is far otherwise with internal architecture: there we may disregard any collateral circumstances, and are enabled to limit attention to the individual character of our subject.

In designing the interior architecture of a building, there arises, however, a new and peculiar source of difficulty. Considerations of convenience come in to embarrass our pencil and to complicate our difficulties. Architectural effect and fitness of arrangement will often militate most inopportunistically against each other. We must needs have a door, perhaps, exactly where we would fain have had solid masonry; and light, perhaps, can only be obtained from the east, whilst aesthetic considerations urge us to prefer the west. In fact, to reconcile these two important, yet often incongruous, objects forms one of the severest trials of architectural skill.

The art of conveniently arranging the various parts of a plan, so as to fully adapt them to their special purpose, is truly one of primary importance to the architect. It is indeed an obvious truth that, unless our plan be such as to afford a convenient collocation of its several compartments, and unless these compartments themselves are well adapted to their respective purposes, all the rest of our labour and our art will be idly and wastefully expended.

To lay down a good plan, therefore, becomes the first duty of an architect, and demands his first and most earnest attention.

It is not, however, on an occasion like the present that this subject of a convenient arrangement of a plan can be entered upon with advantage. Such a consideration is too technical for our present purpose, and comprehends too wide a range of subject for the time at our disposal. I will, therefore, on this point confine myself to the general observation, that simplicity and directness are cardinal virtues in all architectural arrangements. Avenues should be as straight, as short, and as obvious in their course as possible. The rules for the moral conduct of a man are very applicable to this branch of our art: his ways should be clear and obvious; free from ambiguity and uncertainty; without tortuous or dark places. When a turn is necessary, let it be one which cannot be mistaken. There should be no seeking for the way in or out.

The first impression on entering any building should be such as is becoming its special purpose. The temenos of a Greek temple was well calculated to give an impressive air of sanctity to the temple itself, by excluding from view all incongruous and mean objects; enhancing, too, the architectural effect of the façade by surrounding it with suitable accessories.

A similar feeling, perhaps, led the early architects of Christendom to form that peculiar forecourt, or atrium, in front of the naos, of which but few examples now remain, although probably this atrium was an essential part of every early Christian church. The Basilicas of San Ambrogio, at Milan, and of S. Clemente, at Rome, are very interesting, and nearly complete examples. There can be little doubt that the builders of that devout age were influenced by subjective con-

siderations of this kind, although the ritual appropriation of this portion of the building was to receive the catechisms of the church, and to afford a suitable and becoming place wherein the candidates for baptism might present themselves.

At all events, a very powerful effect must have been produced upon the eye and mind by thus shutting off from view the outer world and concentrating attention on the more sacred structure about to be entered. It was perhaps a similar motive, a legitimate artifice for the purpose of strongly impressing the mind of the worshipper, that led our old church-builders usually to form their doorways of very moderate dimensions. Great emphasis was ordinarily given to the western and often to the lateral doors, by exterior decorations, and by recessed and gabled porches, often rising to a height of great grandeur; but the actual opening of the doorway will generally be found comparatively low. The natural effect of this is to produce, as it were, a surprise, and by the contrast to make more impressive the extent and loftiness of the structure within. Turning to domestic architecture we shall not fail to recognize the efforts made by the early Italian architects in designing the entrance-halls of their noble palazzi to secure the benefit of a favourable first impression. At Venice, especially, these halls are of large dimensions, and are treated in a broad and grandiose style, sparing of mere surface ornament, but usually embellished with ancestral statues and warlike trophies, of which one of the most striking, as well as the most frequent, are the gigantic bronze lanterns taken from an enemy's gallery.

Beyond the entrance-hall of domestic buildings in Italy we sometimes meet with those inner halls which, perhaps, owe their origin to the example set by Palladio in his well-known Villa Capri, where a central hall of large size and graceful proportions gives means of communication with all the principal apartments, itself sufficiently removed from the exterior to admit of being used as a saloon of general domestic resort; a happy idea, that was alike productive of beauty and convenience, not only in the land of its birth, but in the interior arrangement of many of our own country residences. On turning to the ground-plans of some of our own princely structures we shall perceive how largely English architects availed themselves of this feature of Palladian art. Somewhat analogous to these inner halls are the *ambulatoria* which form so usual and so graceful a feature in Italian palazzi.

These *ambulatoria* may probably be regarded as lineally descended from the central peristyle of the Romans, which, as we see at Pompeii, formed the ordinary place of resort for the residents and visitors, as well as being a means of general communication with the adjacent apartments. The cloisters of conventual buildings were also, apparently, an amplification of the same idea, and may claim a similar descent, although used not as a forecourt, like the atrium of a basilica, but rather as a collateral adjunct, well adapted alike for exercise and for contemplation. Whatever the phase of art, whatever the mode of treatment, whether arcaded, columnar, or both, these enclosures afforded occasions for most picturesque and pleasing designs.

At these interesting remains of Roman magnificence, called the Villa of Mecenas, at Tivoli, we find a remarkable instance of the union of an arcade and colonnade, forming a cloistered ambulatory; and examples such as this became the parent of a host of beautiful arrangements in after times, by which the greatest possible amount of variety and chiaroscuro was obtained.

We must proceed now to an important feature in the plan of every structure of moderate height, destined for man's occupation—I mean the staircase.

In the design of this, often very picturesque feature, it must be admitted that we owe but little to any examples of antiquity. In temples, staircases of ample size were obviously not required; but I am unable to cite any instances of an internal staircase of striking effect or dimensions in even any classical remains. Magnificent flights of steps no doubt occur in interior architecture; and in Belli's "Description of the Greek Theatres of Crete," translated by my able friend Mr. Falkener, as well as in other examples, we see evidences of the existence of double, returning flights of stairs, similar to those in frequent use in modern architecture, having each flight enclosed within solid walls, and setting us an example of sound and solid construction well worthy of careful study in the execution of our own public buildings. The newel-stair, so characteristic a feature in the plans

of a subsequent age, was certainly of purely Greek origin.

A perfect example exists in good preservation among the ruined temples at Selinuntum. Its dimensions, however, are small; the diameter of the circle which contains it being but 6 feet 4 inches in dimension, which were subsequently greatly exceeded in the similar spiral stairs within the monumental columns of ancient Rome. The domestic architecture of Rome seems to have required little aid from interior stairs; and even in so sumptuous a building as the Coliseum, where many thousands of spectators had to be provided with ready means of access to very high levels—a building, too, erected when Roman power and art were in their zenith, expressly to gratify the extravagant love of splendour and display, which characterised the Roman people, we find no indication of any fine staircase. Among the buildings which remain to us of the earlier Middle Ages, it is still difficult to point to any notably fine stairs. Highly effective flights no doubt occur; striking examples occur at Assisi, and at the cathedral in Lucca, where flights of stairs 7 or 8 feet wide occur, with marble balustrading, sufficing to show that Mediæval builders were to some extent alive to the fine effects attainable by the artistic treatment of this portion of their plan.

Still these examples are of rare occurrence. It will be difficult to refer to any case in this country of equal importance to that in the cathedral choir, at Canterbury. The newel stairs, of which so many examples remain, as at Dover Castle and Tanworth Church (the latter presenting, I believe, an almost singular example of a double spiral stair round one newel), were certainly the most usual form of stairs in buildings, even of the most important character during the whole Middle Age period. So much so, indeed, that the detached turrets which contained these newel stairs, became one among the most prominent features of domestic architecture throughout Europe during that period. It is needless to point out the numerous examples that everywhere remain, but I would say that perhaps no city contains more remarkable ones than that, so rich in scenic effects, viz. Nuremberg. Wherever this turreted staircase occurs, it always constitutes a pleasing and striking object, imparting an agreeable variety of outline to the architectural composition.

As peaceful arts advanced, and men ceased to look for security in embattled buildings, the artistic eye of the builder soon perceived the opportunities that were afforded by interior flights of stairs for pleasing and pictorial effects. Nor could he be insensible to the extreme inconvenience of a newel staircase which, whatever its width, can necessarily offer but one place where the treads and risers are of proportions at all convenient to persons ascending or descending.

In the quiet times of the later Tudors, staircases in this country began to assume their proper position and character, and there is no part of our old Elizabethan mansions on which the builders seemed to have dwelt with more pleasure, or on which they were more wont to exercise their fancy than the staircase.

But whilst those fantastic works were in course of erection, which we see at Crewe Hall, Hatfield, and many other places, the more polished artists of Italy were erecting staircases of magnificent proportions and bold character, although of a totally different aspect. This is a phenomenon of art well worthy of observation. At the very time when these rude and sometimes grotesque works were being executed here, to which I have been alluding, there existed in that land of art staircases, designed by the great Italian masters, which were consummate models of grace and refinement, like that at S. Giorgio, in Venice, by our great master, Palladio. From these our Elizabethan and Jacobean works differed as widely as these latter did from the works of their English predecessors. The genius of each people is well typified in this diversity. Broad, bold, irregular and unrefined—such were the characteristics of the one school; whilst the staircases, contemporaneously erected by the other school, were grave, symmetrical, and extremely simple, although of much bolder dimensions.

I am well aware that the study of this contrast may lead different minds to very different conclusions. The picturesque and quaint exuberance of our own old manner of designing the balustrading, for example, seems calculated to win the admiration of the mere painter more readily perhaps than the plainer and more sober balustrades of the Italians; while a different feeling may prevail in the colder temperament, which is forced, as it were, on the architect by the very nature of

his profession, working, as he does, not on canvas, but in solid masonry.

That this more simple and less ambitious character of balustrading was affected by Mediæval architects of the best period, as well as by the architects of the Palladian age, is a fact that may lead us to the conclusion that, much as we may admire, we must, as architects, be slow to imitate the pictorial wantonness of design prevalent in the sixteenth and seventeenth centuries in this country.

As time advanced, the sobriety of manner which distinguished Italian architecture in the fifteenth and earlier part of the sixteenth century gave way, and staircases began to be designed in a capricious and fantastic manner.

An excess of freedom, and a wonderful power of execution, led to the erection of staircases that are fit rather for the study of the scene-painter than for that of the architect.

Greatness of dimensions, however, was a merit to which all were alive, and we accordingly find in Italy staircases of a size sometimes almost extravagant. The staircase in the Albergo dei Poveri, at Genoa, is 115 feet by 63 feet; and that in the Royal Palace, at Naples, is no less than 163 feet by 85 feet.

The Renaissance school, of which we are treating, employed two very different types of staircases, each, perhaps, equally susceptible of beauty: one wherein both ends of the steps are inserted into and supported between two walls, as at the Cretan Theatres already named. The other, where only one end of the steps was inserted into the walls, the opposite end simply resting on a wall, or other sufficient support. As notable and familiar examples of the first type, I might point to the principal staircases at Versailles, Fontainebleau, and the Louvre, and to a host of Italian examples, which it would be superfluous to enumerate. This form of stairs is capable of great dignity, as well as of great beauty, but it has some inherent inconveniences. The raking soffit of each flight is a source of difficulty in design, and gives rise to some unpleasant appearances: it is wanting in lightness and freedom of effect, and is open to this practical objection, that persons ascending and descending do not see each other until they abruptly meet on the landing. The staircases of the second type are, on the other hand, far more free and open, and the eye expatiates over the whole area of the staircase at once. It is needless to multiply examples of this latter, familiar, form.

The elegant work of Palladio, at Venice, already named, and the stupendous staircase already referred to at Naples, are well-known illustrations of this type. I might add, perhaps, as a third variety of staircase, those wherein there is no turn, and where the stairs extend in a continuous straight line,—a form of plan by no means to be recommended, except where the height to be attained is very moderate, or where the width of the staircase is of the most ample kind; as at the Royal Library at Munich. The Scala Regia, in the Papal Palace at Rome, must, however, be admitted to be an example presenting an extremely striking architectural scene.

The proportions are colossal, and the flight is flanked on either side by a stately colonnade. The effect of this staircase is artfully heightened by a very peculiar expedient, which, as far as I know, is without a precedent. The flanking walls of this staircase are not parallel, but gradually and imperceptibly approach each other, the width at one (the lower) end being 10 feet more than at the other. The result of this is, by an illusion, to prolong the perspective, and to increase the apparent length of the colonnade to the view of a person approaching the state apartments,—an architectural fraud, ingenious it may be admitted, but which I cannot recommend to your imitation.

It is, I think, to the second type of staircase, that I would point as that which most deserves your attention.

Schinkel's great work, the Museum at Berlin, affords a favourable illustration of it; and a still more colossal staircase at the same Museum has been recently executed by Stüler. The dimensions on the plan are about 140 feet by 70 feet; the walls affording, of course, a vast expanse of surface for the frescoes of Kaubach and others.

Munich, also, furnishes various fine examples, which the architectural student will do well to observe.

The principal error to avoid in these great open staircases, is any appearance of tediousness in mounting. It should never be overlooked that the great—indeed, the sole object of a staircase is to facilitate our way upwards or downwards, and no display of architecture will reconcile us to any unreasonable amount of manifest

indirectness in our upward or downward course. Those large, straggling, tedious stairs, up which we are occasionally obliged to travel, interrupted by perpetual landings, and which, by following, in their turnings, all the four sides of the staircase, seem to lead us in any direction rather than that which we desire to take, are at once unsightly and inconvenient.

Before I quit the subject of staircases, I desire to commend to your observation and study, the opportunities that a single flight of even a few steps afford of producing an agreeable effect. It would be easy to multiply illustrations, but I will confine myself to two or three very simple instances, occurring in that land of art—Italy. At the entrance into the Ospedale dei Incurabili, at Genoa, some local circumstances imposed on the architect the adoption of a very indirect line, the public street not being at right angles with the direct line of access to the interior of the hospital. So far from submitting to this awkwardness as a necessary evil with ignominious resignation, the architect struggled successfully to overcome the difficulty, and to give an apparent, although he was unable to give a real, symmetry to the plan, by the somewhat picturesque arrangement shown on the drawing.

To descend to a still humbler illustration, I would adduce an instance which I chanced to observe in a small and very unpretending house at Bologna. In a straight passage of moderate width it was necessary to rise 4 or 5 feet. The most convenient place for the steps required for this purpose was in the middle of the passage. The natural course for an uninventive mind would have been to adopt the very plain and prosaic course of placing so many parallel steps in a row, and so to get the passenger up and onwards in the simplest and most unartificial way; but such a mode of proceeding would ill accord with the aesthetic views of an Italian artist of the sixteenth or seventeenth century. He broke his flight of ten steps into two flights of five steps, by a landing, with a short piece of ornamental parapet on either side, and thus not only gave these few steps a positively ornamental effect, but really assisted the passer, both up and down, by affording a means of intermediate support. I cannot refrain from pointing to a third example of a like nature, which attracted my notice at a convent in Rome. Bernini, who was its author, belonged, no doubt, to a debased school; but he was an artist of excessive boldness, and indeed vigour. His principal aim seemed to be to avoid ineptitude at any cost. In this little work he outlived it, it is true, upon all succeeding ages, as long as his staircase may be used, a constant and never-failing source of inconvenience; but he achieved his great object of avoiding the abhorred simplicity of a straight flight, and produced a highly pictorial effect with very small means, and within a small compass. Do not imagine that, in pointing out to you this example, I am advising you to follow it; but such instances are suggestive; and we may frequently observe that in contrivances of this nature, insignificant and unobtrusive though they be, a really inventive talent displays itself. But it is time to quit this subject of staircases, and I hasten to enter the apartments to which they lead. Let us first, however, stay our steps for a few minutes, and parley on the subject of the passage or corridor that we have to traverse before entering the apartments.

Good taste, and, indeed, common sense seems to point out the propriety of rendering the architectural aspect of a passage somewhat conformable in style and treatment with the more important object to which it leads, whether it be a church or a chamber. The eye and the mind would thus be, in some measure, prepared for and attuned to the subject upon which it is about to be exercised; care, however, being always taken to keep this passage subordinate and comparatively subdued, so that no danger may be incurred of disappointment. Many modes present themselves of giving architectural effect to this passage: variety of light and shadow is an important means of doing so. We all feel the beautiful effects of this variety in natural scenery: those glimpses of sunshine, those alternations of gloom and cheerful daylight, which are such charming incidents in a forest scene. Analogous effects are obtainable in our own art. A long passage may be greatly diversified by a judicious breaking up of its length with alternations of chiaroscuro. With the same object in view of diverting the attention and relieving the monotony of a long corridor, we may often perceive the advantage of placing an object of interest for the eye to dwell on such as a picture or a piece of sculpture at its termination, or at a turn in its course.

In Italy, where our art was always so intimately related to the painter's art, and where the architect scarcely ever failed to see his object with a painter's eye, examples of these tasteful arrangements abound.

The most beautiful passage in the world is, probably, that which Raffaele designed and, with his pupils, executed at the Vatican Palace. Independently of its frescoes, of world-wide celebrity, the proportions of its arches and piers give it an unspeakable grace. Yet, beautiful as it is, the subordination to which I have just adverted has been so well observed, that the Stanze to which it gives admission lose nothing whatever of their beauty by the contrast, that beauty being of a grander and more elevated character. Whilst on the walls and vaulting of this corridor are depicted light arabesques and playful ornaments, the walls of the Stanze bear some of the grandest masterpieces of the genius of painting.

In the vaulted corridors which surround the great Flavian Amphitheatre we have another very remarkable instance of correct judgment in our art—a most dignified work of architecture, and strictly consistent in character with the great building of which it forms a part. There can be little doubt that the imposing corridors which surrounded this, the greatest, as well as the most popular public buildings in the ancient metropolis of the civilized world, were repeated over the whole empire, and became, not only the model on which all other works of a like nature were subsequently erected, but the fertile parent also of those beautiful arcades which so frequently court our admiration in works both of the middle and the later ages.

These are indeed two pre-eminent examples which I have cited, and it may be thought that, as in moral training deeds of heroic daring seem to be almost discouraging examples to set before ordinary minds, which need rather lessons of conduct in ordinary life, so those noble works of the highest grades of art, if they be thought, offer no available materials for our imitation or study in fulfilling the humbler tasks that fall to the lot of most of us. It is not so, however. A right principle is applicable alike to great things and small, and I consider that the rule to which I have just adverted, and which I wish to urge on your attention, viz. that which teaches us to render every passage conformable in style, yet subordinate in treatment, to the exactment to which it leads, is of universal application. Let us now proceed to the consideration of those apartments towards which we have been advancing.*

ROME.

LECTURES AT THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

MESSES. ASHPITTEL, G. E. Street, and F. Hayter Lewis having kindly arranged to describe, respectively, Rome, Venice, and Cairo, as illustrated by the photographs on the walls of the gallery in Pall-Mall, East, on Tuesday evening last, Mr. Ashpitel commenced the course.

Mr. Tite, M.P. F.R.S. took the chair, and in doing so showed how large a sum the Society had already raised for its purpose, and dwelt on the value of photographs in an archaeological and architectural point of view. He said this was the second exhibition of the Society, which had been formed for the purpose of obtaining exact representations of all that was valuable to architects and archaeologists; so as to bring to their own doors, at the cheapest rate, those subjects of interest that could only be seen after long and expensive journeys. He dwelt with much force and effect on the excellence of the institution, and congratulated the members, not only on the rich collection of artistic treasures on the walls, but on the prospects for a future year. Many works, the speaker went on to say, were now made accessible to all, which were not so when he was a young man: the object of the Architectural Photographic Society was to carry this out even more fully. It had done something, but hoped to go further. Spain, for example, offered them a new field; and next year they hoped to have many from that country. David Roberts had shown the value of the buildings there, but the majority were unknown excepting to a few. It was very gratifying to see so large a meeting has had then assembled, and he had great pleasure in introducing to them Mr. Ashpitel, who had kindly undertaken to speak to them of Rome. He might express his conviction that no one had looked more carefully than Mr. Ashpitel had done into the problem still unsolved,—the arrangement and position of the Roman forum.

Mr. Ashpitel commenced by regretting that it was impossible to do adequate justice in the short space of time to such numerous and such important subjects as were then before the meeting.

There were no less than 120 beautiful photographs by Mr. McPherson, representing the temples, fora, triumphal arches, basilicas, amphitheatres, aqueducts, churches, fountains, tombs,—every one of which had some valuable history attached to it. In fact, he believed no spot on earth had so great and various points of interest as Rome. A holier feeling might attach itself to Jerusalem, and a bright, though transient, literary history to Athens. But Rome was not only the seat of the empire of the world; the home of poets, orators, and statesmen; the cradle of the arts; but here were the footsteps of the first apostles; here was shed the blood of the first martyrs of the Church; hence went forth the missionaries of the truth to the western world; and hence we derived our arts, our civilization, and our religion. It was here, again, in the Middle Ages, that the revival of literature began, and poetry, painting, and music flourished, and a second era of glory commenced. No one, whether painter, sculptor, musician, soldier, orator, statesman, or Christian, could walk the streets of Rome, without at every turn meeting with some object to inspire him with the liveliest emotions.

He would first shortly describe the situation of the city. It stood in a vast plain, the Campagna reaching nearly from Florence to the borders of the kingdom of Naples, about 200 miles in length, and bounded by the Apennines on one side and the sea on the other. Rome, as is in the mouth of every schoolboy, stands on seven hills; but these are not hills in our sense of the word, like Shooter's Hill or Highgate, but rather steep cliffs. It is probable, in fact, at one time it was only one large hill, which had been cleft into various forms either by an earthquake or the action of water. These were pointed out in a diagram. It would be remembered that in the wars between the Romans and Sabines, the latter held the capital and the former the Palatine. These, though called hills, were really precipitous rocks, accessible only at certain points. Drawings of them in the state they probably were in during the earliest days of Rome were then exhibited. The low ground between these hills, afterwards so celebrated throughout the world as the Forum, was then a marshy swamp, and the Romans at that time had not sufficient engineering skill to drain it. But their common sense guided them to do first, what now in London we are doing at last. They determined before building a city to provide an effectual drainage. This was done by Etruscan artificers, in the reign of Tarquinius Priscus, and the work remains a marvel of their skill to the present day. The photograph was then pointed out. The arch is about 15 feet wide by the same height, while the largest part of the sewer now about to be commenced in London is but 10 feet by 12 feet. It is composed of three rings of vast blocks of stone, some 5 feet long and 8 feet thick.*

The next subject was the Temples: of these, which abounded in Rome, we have several very beautiful photographs. The oldest temple of which there are now any remains is said to have been that of Vesta, erected by Numa, of which there are three representations on the walls. But this, though a round temple and much like that represented on the medals, cannot be the Vesta, but probably is that of Hercules the Avenger, as it is close by the spot where the hero is said to have slain the robber Cacus. It is considered a small temple for Rome, but is 55 feet in diameter, and the columns, which are of pure white marble, are 3 feet higher than those of the church of St. Martin-in-the-Fields. It will be convenient throughout the lecture to refer to buildings existing in London, not that size always infers honesty, but, if connected with the latter, adds much to the magnificence of the object.

The next temple referred to was that of Saturn, of which eight noble columns remain, about the same height as those last described. This was originally begun by Tarquinius Superbus, and converted into a treasury by Poplicola: in later times the Temple of Ops was added to it as the public bank. It was injured by fire, and has probably been rebuilt. The same remark applies to the beautiful little temple founded by Servius Tullius, and dedicated to Manly Fortune. From its position, which agrees exactly with the accounts of Dionysius and of Ovid, there is no doubt of its identity. It was the favourite resort of the Roman ladies at a great annual festival, as we are

* To be continued.

* It is to be regretted, in a sanitary point of view, when the largeness of a sewer, per se, is urged as a merit.—Ed.

told by the latter author. The next in point of date of which we have a photograph are the Temples of Vespasian, built by his son Domitian; and Antoninus and Faustina, erected by order of the senate about fifty years afterwards.

The magnificence of Rome must not, however, be judged by these photographs alone. Taking only one part of the city, that occupied by the fora, we find, from the Coliseum to the Capitol, and from the river to the foot of the Quirinal and Viminal, was one mass of noble public edifices—temples, curia, basilica, triumphal arches, vast fora, &c. Let the meeting suppose the entire houses in London swept away, from St. Paul's to Somerset-house, and from the river to Holborn, and then the space filled entirely with public buildings, of dimensions far exceeding our own, and of the most costly marbles, and they would form some idea of what part of Rome was, without taking into account the Campus Martius, the Isle of the City, or the buildings beyond the Tiber.

Mr. Ashpitel then referred to a large drawing he had made, and which had been exhibited at the Royal Academy last year, and which was a view of this part of Rome taken from the Palatine.

As time pressed, he could only give a very short account of the fora of Nerva and of Trajan, and the triumphal arches of Dolabella, Titus, Septimius Severus, and of Constantine, as the photographs were severally referred to. These were, however, but a small part of those originally in Rome, which abounded in all the main public streets. Of the sixteen gates of Rome we have but two photographs—one of San Lorenzo, formerly the Porta Tiburtina, over which no less than three lines of arches passed—the Marcian, Julian, and Popelian, and which is said to have been rebuilt by Honorius; the other shows the Porta Maggiore, which contained two gates—the Labicana and Prenestina. The former gateway has been blocked up, and on removing a mass of old rubbish a most curious tomb was discovered—that of Vergilius Euryaces, who must have been a wealthy baker. The tomb is very large, about 35 feet in height, and is partly built of the old stone vessels used in making dough, and is decorated with very beautiful and spirited bas-reliefs of grinding corn, and all the operations of the baker's art. Much amusement was afforded by the epitaph to his wife, which says, she was "the best of women, and her remains are now deposited in this bread-basket." This led the lecturer to the subject of tombs, which in the later times of Rome increased in cost and magnificence to a degree that would be incredible here in England.

The photograph of that of Canis Cestius was next referred to. This is a vast pyramid of solid stone, 110 feet square, and a little higher than the Duke of York's Column. In this is only one small chamber, beautifully ornamented in stucco. It appears from the inscription he was one of the Epulones, who were charged with the office of providing what was called the banquet of the gods at the feast Lectisternium. Nothing further is known of a man whose name this vast pile perpetuates.

It reminds one strongly of the philosopher's visit to the Abbey in Goldsmith's "Citizen of the World." He pauses before a huge monument, and asks for what might this gentleman have been renowned? "Why," answers the guide, "not famous for anything I know of, except his having a fine tomb in Westminster Abbey." No contrast can be greater than the modest graves in the English burial-ground, which lies at the foot of this vast pile, particularly that of the poet, the unfortunate Percy Bysshe Shelley.

The next photographs were those of the tombs of Cecilia Metella, the wife of Cressus, the richest man in Rome: this is a round tower, 110 feet in diameter and 110 feet high, the walls of which are 35 feet thick. The tomb to the Tossii family, corrupted into the temple to the Cough (Tosse) the Minerva Medica, supposed to be a sort of Pantheon, and the tombs on the Appian Way, which have already been found to reach six miles from Rome, and probably further. But the most imposing and gigantic of all is the mausoleum of Hadrian, now the castle of St. Angelo. This consists of a lower story, 223 feet square (40 feet longer than the front of St. Paul's), out of which rose a circular tower 188 feet in diameter, finishing in a cone, the whole being 310 feet high, or half as high again as the Monument. This was covered with marble and adorned with most splendid statues: unlike the other tombs, it had a great many chambers, which are now converted into state prisons, in one of which the celebrated Benvenuto Cellini was confined.

After a short review of the photographs of the aqueducts which supplied Rome with water, and which were originally nine in number, and measured together the almost incredible length of 250 miles, the Coliseum was next brought into notice. This enormous building, 620 feet by 513 feet, and higher than the Nelson Column, would seat 87,000 spectators: while the number at the Burns festival at the Crystal Palace is said to have been 14,000. The building was used, as is well known, for the cruel purpose of witnessing the gladiators butcher one another, or some poor wretch thrown to savage beasts, to be torn limb from limb, the popular excitement being as great as that of our own on a Derby-day. There is, however, a peculiar interest attached to the building, as it is said to have been the work of a Christian architect, Gnadentius, and to have been erected by the Jews taken captive at the siege of Jerusalem by Titus. This was also the scene of the martyrdom of many of the ancient Christians: in fact, some traditions say that it was here St. Ignatius was thrown to the lions. The system of admission was then explained, and it was stated that metal check tickets, numbered just as ours are, had been found in the ruins.

WORKS IN FRANCE AND SPAIN.

THE Rue Neuve Notre Dame has been for some days closed against the circulation of vehicles. Excavations are being made in the middle of this street for the construction of a subterranean passage, destined to unite the ancient buildings (now abandoned by the administration of public assistance) with the Hôtel Dieu, to which they are to be annexed. These excavations have brought to light ancient vaults and stone piers, most probably the remains of the foundations of the church, Sainte-Geneviève des Ardents, which formerly stood in this street. In 1747 the church was thrown down to make room for additions to the Foundling Hospital, which served for some time as a Bureau des Hospices, and are being now prepared to fill their original destination.

The Rue Notre Dame, built in 1163, was first called Rue Neuve, and in the thirteenth century took its present title, which it, however, quitted for some time under the Revolution for that of Rue de la Raison. If the great projected works for throwing open a large space round Notre Dame are carried out, the above street will disappear by the demolition of the Hôtel Dieu and the Foundling Hospital.

Workmen have just commenced digging out the foundations for the piers of a gigantic bridge to serve as a viaduct for the railway from Paris to St. Mandé, Vincennes, Fontenay, Nogent, St. Maurice, and La Varenne, to be opened on the 1st of May next.

The Zoological Gardens of Acclimation of the Bois de Boulogne are to stand on 15 hectares (37.07 acres), purchased for fifty years. The annual estimate of receipts for sales and entries, 200,000f.; capital, 1,000,000f.; to be raised in 4,000 shares of 250f. each, in three instalments. Each shareholder of one share to have, besides the usual privileges, one personal right of entry per year, or twenty tickets. Each holder of five shares is entitled to a ticket for admission during reserved hours. M. Rothschild is banker to the company.

Some weeks past workmen were employed on the Place du Havre, in Paris, laying down a new gas-pipe, which was isolated from the old one by means of a stopcock attached to a small lead pipe. On the 6th ult. one of the inspectors of the gas company was independent enough to descend into the trench with a lighted cigar in his mouth, and while he was stooping down to measure the mouth of the pipe the end of his cigar came in contact with some escaped gas, and a violent explosion took place. The inspector received considerable injury, and a great number of panes of glass were shattered in the adjoining houses.

In the Rue St. Jacques the materials of Nos. 57, 59, 61, and 63, were sold by adjudication on the 10th ult. These houses were cleared away for the continuation of the Rue des Mathurins St. Jacques, parallel to the Rue des Ecoles as far as the market-place Des Carmes, where it will run into the Boulevard St. Germain. The Rue des Mathurins ran formerly from the Rue St. Jacques to the Rue de la Harpe. Now it ends at the Boulevard Sebastopol. In 1220 the street was called Rue du Palais des Thermes, on account of the principal entrance to this ancient palace being in the street. In 1300, 1421, and 1450, we find it still under the names of Rue du Palais des Thermes, and Rue du Palais. Towards the last

period it took the name of Rue des Mathurins, its actual name, derived from a convent of the Mathurins, founded there in an *almshouse* dedicated to St. Mathurin. The Rue des Mathurins St. Jacques was, at its origin, a very narrow street, about the same sort as its neighbour, the Rue du Foin, on the site of which the Boulevard St. Germain was opened in 1857. Later, by virtue of letters patent of the 3rd of December, 1672, and renewed the 29th of January, 1676, this thoroughfare was widened out, though in an insufficient degree, as we see that by a ministerial decree of 21-Mesidor *av. V.* signed Bonzeac, orders were given for the street to be 9 metres wide. The important modifications within the last few years in the quarter of the French schools in Paris have rendered the complete reconstruction of the above roadway perfectly necessary, excepting a portion which borders on the Rue St. Jacques.

Some months ago the municipal authorities of Paris determined to establish on the heights of Chamont, between La Petite Killette and Belleville, vast reservoirs for the distribution of water in Paris. The project is about to be put into immediate execution. The valuator of the town council of Paris is treating with various parties for the possession of such portions of ground as are indispensable for the commencement of the works. In all there are about fifty different proprietors, in fifty-five lots, five houses and six holdings covered with light constructions, temporary shops, &c. &c. The area required is 31,820 metres, and the sums offered amount to 261,483f. 50c. These new reservoirs will contain altogether as much as those of Ménilmontant, Monceau, Passy, Rue Racine, Pantheon, and Vaugirard united. They are to be worked by a powerful steam-engine, established a little beyond the Pont de Flandres, at the spot where the waters of the Canal d'Ourcq, are less disturbed by the passage of boats. When these works are completed, Paris will not suffer so much from scarcity of water.

The opening of the new Boulevard St. Germain will suppress fourteen houses in the cloister of the Bernardins, and nine in the street of that name. The latter, opened in 1216, and taking its name from the convent, was the theatre of a singular Fronde scene, related in the memoirs of Guy Joly, published in 1619.

Cardinal Retz and the Frondeurs, in order to excite a new sedition among the people, endeavoured to persuade them that the court wished to assassinate Joly, a councillor of state, at the Châtelet, and a great favourite with the people. To do this, they placed his portrait and cloak on a lay figure, and with a pistol shot made a hole in the sleeve. All preliminaries arranged, D'Estainville lay in wait for the carriage, and fired into it, Joly "died" in his hand, and lifting up his arm, as was arranged in the "programme." He was of course carried to the nearest surgeon, opposite St. Nicholas du Chardonnet, and was stripped to see if he was wounded. The surgeon was deceived, and in his report to the Government, stated that a very large scar was left by the ball, which passed through the sleeve, but it is on record that Master Joly scraped the skin from his arm with a gun-filth the evening before.

Several streets, those of Montholon, Ribouté, Blue, Cadelet, de Buffault, are about to lose a considerable number of their houses, by the prolongation of the Rue Lafayette. Their names originated as follows:—Montholon was the state councillor in 1780, when the royal order was issued, permitting a street to be opened on lands belonging to Lenoir and Co.

Rue Cadet, first called Rue de la Voirie, because rubbish was shot there, owes its present name to one of the landed proprietors, as does also Rue Ribouté, called after an agent of Lenoir and Co. Rue Buffault, was, by order of the king, called after one of the ministers. Rue Blue takes its name from a factory of washing-blue established in 1802 by a M. Story; its prior name was Rue d'Enfer, on account of the noisy disturbances created by the soldiers quartered in the Caserne de la Nouvelle France, hard by.

The following are the results of an inquiry recently made on the drainage in the department of l'Oise. The surface drained is 2,000 hectares (1942.29 acres statute), spreading over 153 "communes," and carried out by 224 proprietors. The average cost was 361f. per hectare. The return of wheat from 19 to 26 hectolitres per hectare, and the oats from 28 to 40. The actual value of the land per hectare was increased by 1,555 f. and the revenue 45 f.

At Boulogne, after four years' hesitation, the authorities are reconstructing the theatre, which can be terminated in the course of this season.

At Perigueux, barracks and a church are being

• To be continued.

built on the lands of Capeure, a new part of the town. The project of the floating basin, after having passed through the net-work of the administration, is to be shortly submitted to the approbation of the Corps Législatif.

The Roman Railway Company, "*La Société Générale des Chemins de Fer Romains*," have issued a notice that they are prepared to receive tenders for a supply of rails, called the "Vignole" rail, for the permanent way of the line from Rome to the Adriatic on the one hand, and on the Ancona line to the river Po on the other hand, forming together a length of about 510 kilomètres. The "*cahier des charges*" can be seen at the company's offices, 99, Rue Richelieu, in Paris, and tenders will be received from any ironmaster, home or foreign, up to the evening of the 15th of February.

At Rouen the question of warehouses and stores, or "*docks*," as the French term them, is again brought forward. Steps are being taken for the immediate purchase of a large piece of ground on which the future "*magazins*," already commenced, are to be established. Persons appointed by the company are to travel in England to study our models of that branch of our commercial enterprise, closely (*de près*) on the ground. The first information that they will obtain is, as one of the French papers says, "*qu'il n'y a pas de docks sans bassin, et l'on ne parait pas encore y avoir songé*."

A meeting of the Northern Spanish Railway Company was held at Madrid on the 19th ult. under the presidency of the Marquis de la Vega Armijo, in the grand saloon of the Spanish Credit Mobilier. The lines form a total length of 723 kilomètres, 237 of which are completed, and ready for the rails: 130 kilomètres will be ready in a few weeks, so that more than half the line is on the verge of completion.

Between Madrid and the Escorial, notwithstanding the difficulties encountered in the Torroloñes tunnel, and between Avila and San Childrian, the line will be finished in the beginning of 1860.

Between San Childrian and Valladolid the works will be completed next April. From Valladolid to Torquemado, they are already finished. The Alar section can be ready for the rails in about three months. At the end of this year the section of Torquemado to Burgos can be also completed. As to the sections from the Escorial to Avila, and from Burgos to Vidasoa, the nature of the ground will not allow any exact time to be fixed for the conclusion of the works, although they do not present any serious difficulty. The earthworks from Vittoria to Burgos (123 kilomètres), can be completed in a year. The greater portion of the works between Vittoria and Alsasua have been contracted for. Between Tolosa and Vidasoa there is no very heavy difficulty; and of the 46 kilomètres, of which the section consists, 20 have been contracted for on terms advantageous to the company. The difficulties of the line occur principally at the Pass of the Pyrennees, between Alsasua and Tolosa, where, in a space of about 60 kilomètres, it will be found necessary to construct sixteen tunnels (forming a total length of 6,596 metres) and four important viaducts. This is the only portion of the line likely to retard the total completion of the railway.

BUILDINGS IN NOVA SCOTIA GARDENS.

Our readers will remember the account we gave some time ago of this part of Shoreditch, and the sketches of what grew in these gardens. Since then the refuse heap has been cleared away, and a block of dwellings for families is in course of erection under the direction of Mr. H. A. Darbishire, architect, and at the cost of the excellent Miss Burdett Coutts.

The building is 176 feet long, and 32 feet 7 inches deep, with a total height from the ground line to top of the cornice of 46 feet. It consists of four stories of dwellings, and an attic story containing laundries, with the usual appliances for washing, boiling, and wringing the clothes, club-rooms, and large covered areas for the exercise and amusement of children in wet weather.

On the ground floor there are four tenements of three rooms each, six tenements of two rooms each, and two tenements of one room each. In addition to these there is a porter's tenement, consisting of two rooms and an office, which is situated between the two principal entrances to the building; an arrangement which brings the entire building under the inspection of one superintendent. Each of the three upper floors contains five tenements of three rooms, seven tenements of two rooms, and one tenement of one

room, giving fifty-two tenements and one office as the total habitable accommodation within the building. The dwellings are arranged on either side of two corridors, each 82 feet long, with windows at each end, and an open staircase in their centre. These corridors are intended as the great ventilators of the place, as they are always full of fresh air, which finds its way into the dwellings whenever their doors are opened. We are informed that in a building arranged upon this principle, which has been regularly occupied during the last six years by at least 250 persons of various ages and sexes, not a single case of fever has occurred, and the medical officers attribute this marked exemption to the constant and ever changing supply of fresh air to the corridors by means of the open staircases and windows at their extremities. Adjoining each staircase are two sculleries, one appropriated for the use of the men, the other for the women. Each of these contains two water-closets (there should be more), one bath, with sponging basin, lavatory, with five basins, and a waste. As these occur on every floor, there are eight sculleries in the whole building. They are supplied by cisterns upon the roof, and from their central situations, are accessible from every tenement.

A dust shaft, with suitable flaps at each corridor level, passes from the attic to a dust-bin in the basement, having a separate access from without, which prevents annoyance to the tenants, and tends to keep the passages clean.

Separate entrances are provided for the reception of baggage and furniture. All the dwellings are 8 feet high, and average 12 feet in length: their width is dependent upon the extent of their accommodation. The living-rooms vary from 10 feet to 11 feet in width, and the bed-rooms from 6 feet to 8 feet in width.

Each living-room is provided with a cooking range, containing fireplace, oven, boiler, hot-plate, and tryvet, a meat-safe and a cupboard.

The whole of the interior walling, except that of the entrance vestibules, which is plastered, is finished with distemper colour, upon neatly-jointed stock brickwork. The exterior is executed in stock brickwork of the usual description.

The entire cost of the building, when completed, will be between 8,000l. and 9,000l. much of this sum being absorbed by the excessive depth of the foundations.

We are not quite sure that those for whom it is intended will like the aspect of the lofty pile, substantial and handsome though it be, but we sincerely hope our anticipation may prove incorrect. We would have had it less lofty, and with more of the character of a number of separate dwellings.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

ST. PAUL'S.

The ordinary general meeting of the members of this Association was held on Monday evening last, at 16, Grosvenor-street: Mr. Henry Ashton, V.P. in the chair.

The minutes of the former meeting having been read and confirmed, Mr. Nelson announced some donations, amongst which were the *Revue Générale de L'Architecture*; from the Architectural Publication Society, the volume for 1857-8, part 2, with illustrations, some of which were copied from original drawings in the possession of the Institute; together with photographs representing Stonehenge, by Mr. E. B. Fisher, of Salisbury.

Mr. Godwin, Fellow, on the part of several members who took considerable interest in the progress of the Architectural Publication Society, claimed permission to address a few observations to the meeting in connection with the donation from the Architectural Publication Society, which had just been announced. The part presented to the Institute that evening, which was the second for the year, was one of an exceedingly interesting nature. It contained twelve plates, each having several subjects upon it, there being in all more than sixty examples; and some of these plates were such as could not be produced in any other way than by the arrangements of such a society: for example, that of chamber steps included a large number of specimens from the portfolios of half a dozen architects, or more. The observations which he was then addressing to the Institute were made with the express purpose of calling attention to what had been accomplished by this society, and in order that, through the published proceedings of that evening, its claims might be still further advocated with the profession generally. Many of the profession were scarcely aware

that there had been already issued 180 plates, comprising some 800 or 900 subjects, which illustrated the Dictionary down to the beginning of letter D. Nearly one-third of the text was, he believed, already completed; and supposing that they could receive an accession of 250 or 300 members, the committee would be at once able to proceed with the completion of the work in a manner that would do credit to them, and be of service to the profession, as well as to the art likewise, he ventured to hope. When it was remembered that these subjects were wholly contributed from the portfolios of members, and that the arrangement was entirely a labour of love, entailing, as was always the case, great exertions indeed on the part of a very few members of the society, it would be seen that the work possessed a strong claim on the profession generally. Those who put forward, as a reason why the work should not go on, the time which it had been already in hand, and who augured, from that, that a very long time would elapse before it was completed, had it in their power to shorten this interval very materially, because, in all cases of the kind, the cost of production in the first instance was the same whether 1,000 copies were taken or only 100; and it would be seen at once that an accession of members would not only enable them to proceed much more rapidly, but it would have the effect of giving to each member a larger quantity of matter for the guinea which he subscribed. Amongst those who had contributed were Messrs. Sydney Smirke, Digby Wyatt, T. L. Donaldson, Papworth, O. Hansard, D. Mocatta, F. Penrose, Falkener, Ferrey, E. L'Anson, Scoles, Lockyer, Lewis, Toulon, Gariag, W. Burges, Waring, Newton, and others, and any member of the profession who felt that the illustrations already published did not in his opinion include all the necessary subjects, had nothing in the world to do but to open his own portfolio, or to induce his friends to do so, and to place them at the disposal of the committee, who would be happy to avail themselves of the opportunity afforded them to render the work more perfect than it already was. It would be remembered that in that room, not long ago, allusion had been made to the excellent and costly nature of architectural publications issued abroad, and surely, in the case of the only publication of the kind which would be unique in this country, and which, he ventured to say, when completed, would be certainly worth more than the money it cost, it would be a disgrace to England, if aid were not given to those who were carrying it on in the way in which they felt it ought to be done, so that it might be rapidly completed, and might afford general satisfaction. He therefore begged leave, most respectfully and earnestly, on the part of the Publication Society, to solicit from the profession generally that co-operation which would enable the committee to proceed with their work vigorously and efficiently.

Mr. Jennings said he had withheld his subscription because he was informed the back engravings were not to be had. There was no doubt whatever as to the satisfactory mode in which the work would be executed in future, but there was a difficulty about the earlier portions.

Mr. Lewis, as a member of the committee, had very great pleasure in saying that the early copies were scarcely to be had. They were buying them up whenever they heard of their being in the market, but they had not been able to get them under cost price, and he hoped they never would. At the present moment they had thus got in hand one, or two, or three sets, which were ready for any member wishing to subscribe.

Mr. Jennings said he should be very happy to put down his name as a subscriber.

Mr. Kerr stated that it was only the earlier portions, consisting of essays and illustrations, which were out of print: these were quite independent of the Dictionary, which could be had complete at any time. He had now a question to put in reference to the proceedings at a recent meeting, which he felt sure would not be deemed impertinent: he wished to know whether Mr. Silvestre was connected with the schools of design in Paris, and had been sent over by them to inquire into some matters connected with our schools of design; or whether the position of that gentleman had been properly understood? Because he had seen some observations which were made by him to the Institute, quoted by the *Athenaeum*, and that body appeared to be treated with some disrespect.

Professor Donaldson stated, that he knew nothing of M. Silvestre, except what he had stated, the other evening, that he was a foreigner who had come over to England to inquire into the state of art in this country, and the means of

art-education which existed. He had never seen the gentleman until then.

Mr. Kerr was sure the council would excuse him for saying that while they exercised very great care in recommending any individual belonging to our own country, they ought to exercise equal care in introducing any foreigner, and that they ought to be perfectly certain of his intentions. The language which had been used at their meeting by M. Silvestre had excited very great astonishment amongst architects and artists generally.

Professor Donaldson said, M. Silvestre had called at the Institute usually, and had been introduced by Mr. Digby Wyatt, as a foreigner and a gentleman connected with a certain inquiry. He was not introduced by the council in any way, and the remarks which he (Mr. D.) took the opportunity of making to the meeting were without the concurrence or authority of the council. He was simply introduced by the honorary secretary, Mr. Wyatt, exercising that discretion which he felt sure that gentleman never exceeded or abused.

Mr. Nelson observed that M. Silvestre had previously given an exposition of his views before the Society of Arts, and some discussion had taken place there, from which he thought it must be evident with what views that gentleman had come to this country.

Mr. Kerr thought it was very unfortunate that the Society by whom he had been introduced should be held up to ridicule in a non-professional paper.

Mr. Bell said he knew nothing of M. Silvestre beyond the fact of his having called upon him. He believed, however, that he was authorized by the French Government, or at least by a minister of state, though he did not exactly know in what department. Our own Department of Art appeared to be satisfied that he had come to this country with proper authority, and, he believed, had done all in their power to forward his views. Personally, he might repeat, that he knew nothing of him; but, as his claim to a hearing was being discussed, he would really say, upon what he believed to be the best authority, that he had been duly authorized by the French Government.

Mr. Godwin said it would, perhaps, be satisfactory to the members of the Institute to be reminded that Sir Charles Eastlake, who was in the chair of the Society of Arts, as president of the Royal Academy, had distinctly received M. Silvestre as the accredited agent of the French Government.

Mr. F. C. Penrose then read a very interesting paper on various matters connected with St. Paul's Cathedral, having reference especially to the evening special services, the works done, and the proposed ornamentation of the interior of the edifice, after what might be supposed to have been the designs of Sir C. Wren. To this we hope to be able to return.

Mr. Hansard remarked upon the question of sound, that it had been found (as quoted in Saunders's book on Theatres) that the human voice, on being ordinarily excited, reached 75 feet around and in front of him, whilst at the back it only extended to a distance of 30 feet.

Mr. Parris said he had remarked, from his experience of St. Paul's, that he could be heard distinctly at the distance of 220 feet, when he was immediately under the eye of the dome. Any person standing on a particular part of the pavement below, at a right angle, or nearly at a right angle from where his voice would strike the roof, could hear even a whisper with the greatest distinctness: in fact, he had often held conversations in that way. He believed Mr. Penrose had likewise tried the experiment. As he moved to a different part of the dome, the person below would have to move to a different position, but in the same angle: when this became too great, the voice was lost. He had often tried the experiment, and found that the reverberations in a dome were always repeated thirty-two times, exactly corresponding with the points of the compass. It was the same at the Colosseum (London), where he had tried it with the flute, voice, and every means. He had tried experiments in the same way in St. Paul's, upon the level of the organ, and above and beneath it; and he found invariably that the sound was always best heard at the point opposite to where the voice had struck. It was precisely the same with the voice ascending as descending: in fact, his attention had been called to the matter by hearing a man below ask another for sixpence: he exclaimed, "Take care, he is giving you a bad one;" and the man immediately turned round, surprised as to where the voice could be coming from. He begged to return his thanks to Mr.

Penrose for the handsome and altogether unexpected manner in which he had introduced his name into the paper of the evening, touching the restoration of the paintings in the dome.

Mr. Ashpitel said, the action of the voice, as described by Mr. Parris, resembled on a large scale the familiar illustrations of the reflection in a looking-glass, or the rebound of a billiard-ball. He begged to move that the thanks of the Institute be given to Mr. Penrose for his instructive and agreeable paper.

Mr. Baker said, in the *Builder*, not long ago, there had been an able paper with regard to sound and the angle of incidence, and the writer rather differed from the idea that the angle was exactly similar to the angle of reflection. In the movements of wind and water the angle was somewhat inclined to follow the direction of the curve, instead of being reflected from it, and to glance off at a very obtuse angle. He certainly had no doubt that a great deal of the failure of the flat reverberators was owing to that circumstance; and if it was at a sufficient distance, the voice, when striking it, would follow the surface. The fact of a speaker sometimes hearing sounds which were only intended for the audience had been illustrated at St. Pancras Church, where the clergy sometimes heard the whispering of the children in the gallery at the other end, at a distance of more than 100 feet.

A Member said, allusion had been made to the model of St. Paul's at Brompton. He had gone there a short time since, and it was exactly in the same state as when placed there, although he understood it was to have been restored to its original condition.

Mr. Penrose.—I understood so, too.

Mr. Ashpitel said (with reference to an inquiry as to drawings of the means used to raise the materials at St. Paul's), that he had not seen these; but the original drawings for the building were at All Souls', and were of an exceedingly curious nature. Sir C. Wren appeared to have proceeded in this way: he first sketched out on a moderate size his plan and elevations, and then he set these up in perspective, which would be a very good mode for artists generally to adopt, for it was the only way of making a good and sound design. The geometrical drawings were drawn in pencil, and the perspective sketched in a rough way with ink and a little colour. He seemed to have designed and erased again and again, before he got a drawing to please him; and if any went to the Library of All Souls', at Oxford, they should ask for the folios of sketches of Sir C. Wren.

Mr. Godwin begged leave to second the vote of thanks to Mr. Penrose, and was sure those who had attended the special services at St. Paul's, would all agree as to the good taste exhibited in his arrangements for fitting up the centre of the church, although many of these were stated to be only of a temporary nature. His object in rising now was more especially to express a hope that the well-known epitaph or inscription to Sir Christopher Wren, which had become part of the history of the cathedral, and of London, and which had now been out of its place for so long a time, might be restored. It was the first thing which country people and foreigners coming up to London and visiting the cathedral looked for, and they were sadly disappointed when it was not to be found. There was another point to which he alluded with great diffidence, namely, part of the proposition for decorating the cathedral; and, without going into the general question, he would say that the inscription in immense letters round the drum of the dome, above the whispering gallery, as shown in the drawing exhibited, would, he was disposed to expect, be attended with anything but successful effect. These very large letters, it seemed to him, would have the effect unquestionably of reducing the apparent size of the cathedral. However, no doubt before anything of that kind were done, very grave consideration would be given to it. He believed that one of the most difficult things the present had to deal with was the satisfactory management of colour in decoration.

Mr. Lockyer ventured to remind the meeting that the inscription in St. Peter's, at Rome, was in a similar position, and was considered very successful. The letters there were 6 feet in height, and they certainly did not diminish the effect in any way.

Mr. Godwin thought that and other exaggerated forms most destructive of the effect of size.

Mr. Lockyer contended that any letters of small size would from below appear insignificant by comparison. He was glad to find that Mr. Penrose was an advocate for decorating the dome with Mosaic, for he was certain that any one who had

seen the magnificent effect at St. Peter's would be satisfied that it was the best material that could be used for the purpose. Its cost in the first instance would undoubtedly be serious, but its imperishability would, he thought, fully compensate for that, when they found that the frescoes and oil paintings in Italy, executed several hundred years after the Mosaics, were so faded as often to be difficult of recognition, whilst the latter, many of which were executed in the twelfth century, were perfect in form and colour: he believed there could be no doubt as to which were the most economical.

Mr. Fraser was of opinion that the remark as to the unsuitability of the inscription had been elicited by the circumstance that in the drawing the letters were made to appear very dark and pronounced, whilst at St. Peter's the letters were by no means such as would attract the attention of any person unless he was absolutely looking at them.

Mr. Lewis said, when at St. Peter's, he had formed a very strong idea, which was, that the entire scale of the decoration was too large, and quite in opposition to Medieval and Gothic ideas. He had never met a person who did not think that St. Peter's was much smaller than it really was, and he quite agreed in what Mr. Godwin had said. The holy-water font was supported by children, beautifully executed of course, but at least 6 feet in height, and the effect of the accessories being on such a large scale, was of course to diminish the size of the building in the eyes of any one who saw it for the first time. In his opinion the effect would have been vastly enhanced had the ornamentation been on a smaller scale.

Mr. Marable said, that the oftener one went into St. Peter's the more he perceived the fitness of one object to the other, and the more the proportions grew upon him, until he was at last duly impressed with the gigantic whole. The proportions being so nicely adjusted did certainly take away from the first impression; but these grew upon the spectator as soon as he became accustomed to the building. He had not found anything at all oppressive in the inscription there, and he thought that the cupids and cherulim impressed one with an adequate appreciation of the immense size of the entire edifice. Mr. Parris had made a remark about sound, in which he did not quite agree; namely, that the echo of St. Paul's dome, or of any circle, always gave thirty-two reverberations. That was a musical rather than an architectural question, and different notes gave different vibrations, thirty-two to one, and sixteen to another; so that it all depended on the particular note given in the building.

Mr. Parris replied, that music had nothing whatever to do with it. The clapping of hands would echo thirty-two times in a circle. It was not tone, but reverberation, that he was speaking of. He had struck the canvas repeatedly at the Colosseum; and, whether the stick was long or short, or whether the note was A or G, it always came to the same thing.

Mr. Bell said whatever decoration might be achieved by Mr. Penrose's careful hands, he felt confident that sufficient experiments would be tried to ensure that the effect would eventually be good. But in the remark that St. Paul's should be decorated with colour he thought everybody would agree. It was a most noble building, and it certainly seemed inadequate that it should halt half way, as it now did, between conception and completion. There was no doubt the interior required decoration; and if that was to be of a sacred character, he ventured to say that subjects could be in a great measure afforded by the life of St. Paul, of whom almost more was known than of any other apostle; and in the "Acts" alone a great number of passages in his life could be found which had never yet been made the subject of a painting. Sacred art in this country was not at all encouraged to the same extent that it was in Italy. Historic art at present received encouragement in some degree in the Houses of Parliament, in which were gradually growing up representations of great events in history. And it occurred to him, that it was feasible, to Mr. Penrose to say whether it was feasible, that a great and noble purpose would be accomplished if St. Paul's could be made to afford the same opportunity for a display of sacred art which was yielded on historic subjects by the Houses of Parliament.

Mr. Kerr said the question as to different modes of artistic treatment, whether in accordance with the scale of the building, so that the mind had to grow up to it, or small, so as to give apparent size, was a philosophical and admirable one, and opened up a very interesting point of artistic study. In

dealing with the decoration of our own noble cathedral, however, as he hoped Mr. Penrose would be called on to do, he would necessarily continue the ornamentation upon the scale in which it had already been commenced. He fancied that Gwynne's drawing, which was suspended on the wall, was upon the large scale of St. Peter's; and this was why the details that had been alluded to appeared so objectionable. He would not enter further into the subject than to allude to the extreme gracefulness of Sir C. Wren's designs, and to remark upon the surprising circumstance that a mathematical scholar as he was, and a mere outsider, should have come into the profession, and have produced a structure unmatched in the whole world. The view of the dome of St. Paul's, as seen from the river, was one of the most magnificent sights which the realms of architectural perfection could produce. It would require the utmost tact and skill, on the part of Mr. Penrose, to produce a model of internal ornamentation that would harmonise with the exceeding gracefulness of the cathedral itself. He looked upon the sounding-board which had been contrived by that gentleman (part of a parabola) as an exceedingly ingenious construction, and one for which he deserved the warmest approbation of the Institute.

Professor Donaldson concurred heartily in the motion of thanks to Mr. Penrose, for having introduced to the notice of the Institute the first section of the decorations of St. Paul's; and he thought they should also hail with satisfaction the step taken by that gentleman for the proper ornamentation of our central Protestant cathedral, for this was a point in which they ought not to fall short of any other nation or sect; and, in carrying out the great end for which the great architect had designed it, there ought not to be anything stingy or mean in their mode of proceeding. He was sorry that the appeal had not been responded to in the manner in which it ought to be, and that the British public had not come forward to furnish the means necessary for carrying out this great design. Unfortunately the question was not between fresco and mosaics, but whether the improvements were to be carried out at all; for if St. Paul's were to be finished in a manner worthy of the original design, they should contemplate a large expenditure. Allusion had been made to the inscription at St. Peter's, but the reason it did not show to any disadvantage there was, because it was only made to fill up a frieze, and it occupied a subordinate position; whilst, according to the plan, the proposed inscription would occupy three times that amount of space. He agreed with Mr. Godwin, and should be sorry to see any inscription or mere lettering occupying the place of high art; and for his part he would rather see that portion of the building taken up with something artistic than literal. He took it that the letters had been merely introduced into the drawing to show that that portion was susceptible of something in the way of ornamentation. He would like to see there a procession of the saints, for example. The windows, which had a great effect on the interior aspect, ought to be filled with stained glass; and if these were appropriately decorated, they would give great dignity and volume to the whole church, besides doing away with the cold air which was derived from light passing through windows of a transparent whiteness. Mr. Penrose had alluded to Mr. Mylne, by whom the inscription to Sir C. Wren was put up. Mr. Mylne was not merely an engineer, but an architect, and went to study architecture at St. Luke's, where he carried off a medal for the best design. It passed into the possession of his son, and he had seen it at New River Head hanging up a few years ago. It reflected great credit on our English artists that this should be carried off by a countryman from amongst Italians. Mr. Mylne's feeling of art had been exemplified in Blackfriars-bridge, which was extremely creditable to his skill in design; and he was sorry to say that of late it had been short of some of its fair proportions, and did not do credit to the original conception.

He found he was wandering from what he intended to say, but he had been led to do so by the mention of Mr. Mylne's name, who had been associated with his own father for many years, and had done many things for the advancement of art in this country. Mosaics were a very splendid decoration for permanent monuments of art, and did not require renovation in the course of centuries, like frescoes or other styles of ornament. At Rome there was a very fine establishment maintained for purposes connected with this art, and many thousands of scudi were annually expended in the purchase of pictures and other artistic works. Such a cost would never for a moment be

contemplated in England, but there were many other sources of decoration in this country to which they could apply, if sufficient funds were only forthcoming to turn out St. Paul's in suitable and becoming style. There had been some very interesting discussion as to the proper scale to be used in buildings of such magnitude. He put the children on the steps of St. Peter's out of the question, for if they had been made of the natural size, they would have been floating in the water, or just looking over the edges; and therefore the conception was very paltry, and not that of a great mind such as Michelangelo's. It must be acknowledged that St. Peter's did not at first convey that idea of magnificence and grandeur which was to be expected, but the place to see it to advantage was to ascend into the gallery immediately over the inscription, and just beneath the dome, and from this point, in mid-air, as it were, a fine conception was to be gained of the magnitude and extent of that noble building. In the same way, the best place from which to obtain an adequate idea of the size of St. Paul's was from the whispering-gallery. Sir C. Wren had left many points untouched with a view to decoration: stones were left plain in many parts, and in others spaces were left for painting, and simply filled up with plaster. He had measured every part of the cathedral, and was therefore enabled to speak with confidence upon the point, and to state that perfect reliance might be placed on Gwynne's very valuable section. In conclusion, he would express a hope that their friend, Mr. Penrose, and the noble-minded dean, might be furnished with ample funds to carry out the decorations in a manner adequately to sustain the reputation of Sir C. Wren, and, above all, in a manner to do honour to the Protestant religion.

The Chairman, on putting the motion of thanks, stated that members, and especially those having the architectural care of public monuments, could not perform any service more valuable to the Institute, or to the profession at large, than in devoting their time to the production of some such paper as the present. There was nothing of more value, either theoretically or practically, than to receive the impressions of gentlemen who had such constant opportunities of observing these public monuments; and more especially throughout the country there were some as valuable and as interesting as any which were to be found in other parts of Europe.

The motion having passed unanimously, Professor Donaldson stated that a very important special meeting would be held that day week, to receive the report of council as to the award of the Royal Medal, and other medals, and also the prizes for essays. It was very important that they should have a large attendance on that occasion.

Mr. Henry Simpson Legg was then elected an associate, and the meeting separated.

ON THE APPLICATION OF ART IN MANUFACTURE.*

Paperhangings.—The principles that should regulate the designs for this manufacture are in many respects the same applicable to woven fabrics.

Flatness is essential for a wall-hanging, and designs giving shaded projections are against every principle of sound taste. Flowers, when well executed, I regard as decoration, for some of those by the French are so beautifully designed and exquisitely coloured, and when tastefully adjusted their effect is so artistic, that I cannot classify them with simple wall-hangings; but the more ordinary flower papers, though I may admire them when well designed and coloured, I consider to have rarely so good an effect on the whole as flowers conventionally treated and geometrically arranged.

Machinery now produces papers of many colours at a price so reasonable, that they come within the means of the humble cottager. It is to be desired that these papers so often used were in simple and quiet taste; but they are too often vulgar imitations of more expensive papers.

Great progress has certainly been made during the last twenty years, and many difficulties have been surmounted. The papers are now in far better taste, and made at one half the cost; still they are not equal to the French; and those who have visited foreign factories as well as English, soon discover the reason.

Firstly, in England, they rarely wash the colours before using them: in France they wash them two or three times, and thus obtain those soft, solid grounds, with well defined and coloured, and so even, which we find it difficult to equal here.

In large French establishments there are artists engaged to design specially for them, and also to direct and control the workings of the patterns. This has a double advantage, for it brings intercourse with the workman, and makes him thus more intelligent in the arrangement of colours.

Our manufacturers think it necessary to bring out yearly too many patterns. It would be far better to bring out one-fourth of the number, pay four times as much for each design, be-tow four times as much consideration on the working of each pattern, and save three-fourths the expense of printing the designs.

In France, when a manufacturer thinks of some particular kind of ornamental design, he would consult a

good authority on the subject. But you manufacturers in England, you have not *amour propre* enough, or perhaps you dread the expense. I strongly urge you never to fear asking the advice and assistance of architects who have made the various kinds of ornaments their particular study. Your inquiry is, at any rate, a compliment to them, and if men of reputation cannot spare the time, they may recommend you to some young travelled architect, who may help you most advantageously.

It appears to me that from the absence of artistic direction there is too much repetition of certain colourings, as reds, blues, and greens, in docks; and rarely any thing but light grounds for the common papers, utterly neglecting the deep tertiary shades which throw up with such brightness the lighter colours printed upon them.

I think I have before said that I do not believe there is any ordinary English designer who understands the niceties of the various styles of art. If you were to ask for a wall-hanging consistently in Greek taste, I do not doubt he would bring you an acanthus scroll pattern, shaded in high relief. He would think that in copying a Greek architectural ornament of undoubted authority, he was quite correct. It would not occur to him to study the draperies and ornaments on the Etruscan vases.

On *Porcelain and Earthenware* I shall not say much. In the former of these our country holds a high position from the devoted energy and good taste of certain manufacturers.

In the common earthenware we have certainly much to improve as regards the forms. A vessel can as easily be made a pleasing shape as an ugly one. In an obscure village in Ireland I have seen girls carry on their heads from well water-jars in common earthenware of a form that might have come from Etruria. The potter moulded them to what best suited the purpose, and luckily had not knowledge enough to distort them into extravagance.

In toilet services all raised ornaments on the basin are completely out of place; they only tend to hold the soapsuds. The forms of the ewers I think may be much improved: I scarcely know one of a thoroughly graceful and convenient shape.

The Etruscan vases are particularly valuable as a fund of ornament for objects such as these. It is not necessary to copy them in black and buff. On the contrary, those tasteful borderings can be used appropriately in any colours.

I think a work giving the full-sized outlines of these vases, and a good selection of the ornaments, would be of great value to the potters and various industrial trades of this country. It is worth the attention of the Government.

In glass, for ornamental purposes, such as enamelled vases and objects of that description, we are still behind the French and Germans; but, in white cut glass as applied to lustres, I think our countrymen are equal, if not superior, to them.

Very often, however, the designs of lustres are far too heavy and clumsy-looking. Transparency, lightness, and brilliancy are the characteristics of glass, and, above all, an arrangement of cutting which shows the beautiful prismatic colours to the best effect.

I have noticed of late years very considerable improvement in the taste of our table glass, and especially some, delicately relieved with Etruscan ornament.

I do not refer to the subject of stained glass: it is not a manufacture, but an art.

Metal-work.—Perhaps in no branch of our manufactures has a greater change been produced than in iron and brass work originated by the writings, the designs, and the personal instruction to workmen by the late Mr. Pugin.

The facilities offered by cast iron seemed to have quite effaced all idea of the wrought metal, till he called attention to the absurdities committed in the former, and pointed out the superior beauty of the latter: above all, he brought forward the great principle—"Truth in construction," and explained the necessity of "suits the design to the material, and decorating the construction."

Notwithstanding the force and conclusiveness of these arguments, it is astonishing how great is the ignorance still prevailing upon these subjects: you may see even in the present day at the most eminent makers Gothic grades of which the sides are of stone design.

In almost all specimens of this style, the grades are too clumsy, and many of them have the sides ornamented that little heat can come from between them; as Pugin expresses it, "All this comes from disguising instead of beautifying objects of utility."

I think a simple grate, with plain bars, supported on handsome fire-dogs, in a recess lined with tiles, is better looking and more suitable than a grate overloaded with incongruous ornament, modelled as it were to be carved in stone.

A few years ago it was impossible to obtain the various iron fittings suitable for Medieval work: now there is no difficulty, the art is spreading, and is becoming more generally understood. We can now depend on having an iron railing decorated with appropriate scrolls and leaves, which bear a consistent ornamentation, while they give pleasure by their recall of natural forms.

In brass-work the improvement has, perhaps, had a wider extension, from its more frequent application to objects of daily use.

In the various forms employed for lighting, particularly by means of gas, a more consistent style is now generally adopted. In medieval work, especially, the construction is founded on utility and the hand of the workman is seen in his skill upon the ornamental forms that strengthen while they decorate it. What a contrast to the clumsy works of thirty years since, when the taste for ponderous masses of unskillfully cast work prevailed!

Not many years ago, I remember seeing in one of the first London houses a chandelier called Elizabethan: its enrichments were partly Gothic and partly Grecian, usually relieved with portions of the architecture of Louis XIV. The ornaments were evidently selected, not because they were appropriate, but because they fitted.

To design gas-lights in the Classic style, an artist may stand with advantage the huge ornaments from Pompeii and Herculaneum. He will there see no copying from architectural forms, but ornaments suited to the material.

If the great element of beauty in metal work that it should be designed consistently with its material and its use; and this law applies equally to Classic and to Medieval work.

In artistic bronze work I fear we have no class of workmen whatever: this metal is in Paris, and the export of fancy works in this metal is of very considerable value, encouraging and employing a vast number of modellers, designers, and artisans.

On Furniture.—The principle which should guide us in

* See p. 92, ante.

our designs for furniture is still the same that I have before cited, "Truth in Construction."

In the report drawn up by me for Class xxi. of the Exhibition of 1851, I thus expressed my opinion, not my own alone, but generally shared by men of taste —

"It is important both for the strength and good effect of furniture that the principle of sound construction be well carried out, that the construction be evident, and that if carving be introduced, it should be by decorating that construction itself, not by overlaying it or disguising it."

A designer should seek to render a piece of furniture elegant in form, and tasteful in all its details, and not depend, as is too often the case, upon superfluous ornamental carving. The leading lines should be expressed, and the various mouldings and projections in correct style, and of suitable proportion. The great fault in the commoner furniture of the present day is excessive size and projection in the mouldings; and, worse than all, overcarving it with carving, the carved carving, designed by those who cannot draw for it other immediate facility to ignorance: it is a hedge-podge of a bit of scroll, a bit of shell, and a bit of foliage, all grossly abused.

In the better kinds of plain furniture, made by the first London houses, the taste is generally good; and I think the workmanship of the better kind of English cabinet-work is not to be excelled.

Of late years the art of marqueterie, or the inlay of woods, is again come into fashion. This kind of ornamental work is a very legitimate way of decorating furniture. It was carried to a state of high perfection in France in the time of Louis XVI. by Reissner and others; and is well understood and fairly executed in London at the present time.

I think that when a cabinet or other piece of furniture is inlaid with marqueterie-work the panels should not alone be ornamented, but that a slight recall in the form of lines to the styles, or other subordinate parts, gives a better finish to the work. In the designs of these panels I would recommend a worker in marqueterie to consider that an arrangement of flat ornament is more consistent than a bunch of flowers in a vase, which is too often introduced.

Marqueterie inlay work is not peculiar to any style of furniture: it is equally applicable to the Classic and the Medieval; as to the Louis XVI. periods (I course the ornaments must accord with each of these styles).

Occasionally I find that furniture in the Gothic style is considered to be incompatible with modern ideas of taste and comfort, but this is quite an error. There is no quality of lightness, elegance, or beauty, possessed by any other style, which cannot with equal propriety be maintained in Medieval furniture.

In all work of a superior character, it is of importance to consider the architecture of the room. The peculiarities of the style should be well studied, and properly recalled in the furniture, and not only in that, but in the wall-hangings, the carpets, the curtains. No one of them should hang away at the expense of the rest, but all blend together to form one harmonious whole.

I believe I have now considered most of the manufactures in which the application of art is of importance, not only as regards their fitness for architectural decoration, but really and truly also as to their commercial value. Our neighbours say, and very wisely, "Le goût est le plus adroit de tous les commerces."

Let us hope that our manufacturers will devote a little more of that energy they possess towards fostering a taste which will give value to their works; and though I have made observations that may seem depreciatory in some sense, believe me that no one can estimate more highly the enterprise, perseverance, ingenuity, and high mercantile honour of a class of men who have added so much to the wealth, power, and prosperity of this country.

I will say to the artist who intends to direct his talents towards the art of design, first study nature, make your hand ready in the delineation of the varieties of flowers and foliage; then apply these in combinations of ornament; then study the various styles of ornament, more especially any one style to which you may propose to devote your efforts. Afterwards, when you have arrived at any particular manufacture, recollect that there are certain principles which should regulate the designs for it. Nor let me forget the artisan, the bone and sinew, the humble means of carrying out these manufacturing products, who by quick intelligence, and quiet daily thought, has often originated vast improvements in them. These have my full sympathy. Let each and all engaged in manufacture ever bear in mind the words of an ancient Greek philosopher —

"The useful and the beautiful
Are never apart."

JOHN G. CRACE.

THE NATIONAL GALLERY, AND THE TEMPORARY BUILDING AT BROMPTON.

THE Chancellor of the Exchequer has announced in the House of Commons that the whole of the National Gallery will be devoted to the national pictures, and that the Royal Academy, considering that their independence would be compromised by accepting an offered site and grant of money, have determined to raise a building themselves. Marlborough House being now required for the Prince of Wales, it was necessary to remove the Vernon and Turner Collections. The building, known as "Carlton Ride" was supposed to be the most proper place; but it was estimated that it would be necessary to incur an expense of not less than 3,000*l.* to place that building in a condition to receive the pictures, and that after all they would not be safe, as the building was not fire-proof. It was almost impossible to find any building competent for the purpose, and it was then suggested to the Government that they might, on that part of the land at Kensington Gore rented by the Royal Commissioners, for the convenience of the Government, erect a gallery to receive those collections until the building at Trafalgar-square would be ready to receive them.

So far as expense was concerned, the building at Kensington Gore would not cost as much as would be necessary to put the temporary building at Carlton Ride in a fit state to receive the pictures.

REMOVED DECORATIONS AT THE CRYSTAL PALACE.

We hear that it is not unlikely that endeavours will be made to give a more striking aspect to the great orchestra, on the occasion of the approaching Handel Commemoration, than it possesses at present, and that the vast area of the centre transept, and more, will be covered with a velarium, after the manner of the Roman amphitheatres, appropriately decorated. To paint and raise it will be a work of some difficulty. An allegorical painting, in the place of the ugly bed-tick that encloses the tropical end, is also spoken of. The general idea has been sketched out by Mr. David Roberts, R.A.; and Mr. Dawson will probably aid in carrying it out.

THE WALLACE MONUMENT FOR STIRLING.

FROM about twenty designs and models sent in for competition, and which have been on view for several weeks, the committee have chosen a model by Mr. Noel Paton, consisting of the representation of a lion, in an enraged or threatening attitude, bending over the prostrate figure of a man whose body terminates in the coils of a serpent, his right-hand grasping a broken sword, and his left a broken chain. The other portion of the chain hangs from the neck of the lion, indicating that the animal had arisen exasperated and broken the chains with which it had been attempted to bind him. It bears the inscription on the base on one side, "To the Memory of Wallace, the Saviour of the Liberties of Scotland;" and on the other an inscription in Latin. The tower and colossal figure supported by the minority are the production of Mr. J. Rothead, architect, Glasgow.

OTTAWA, CANADA WEST.

WE have received a lithograph, the "inevitable lithograph," as Mr. Cockerell used to call it, of the river front of a mansion now in the course of erection at Hunterston, on the banks of the river Ottawa, two miles distant from the city of Ottawa, the capital of Canada as selected by Her Majesty. If it be, as we are told it is, one of a class of buildings of which several are now being constructed in Western Canada, it speaks well for the progress of the country. The building is 120 feet frontage, by an average depth of about 50 feet, and is constructed of the limestone of the district, with marble dressings to the quoins, window jambs, and cornices, also found in great abundance near the locality. The mansion is being built for Mr. Robert Hunter, from the designs of Messrs. Stent and Laver, architects and civil engineers, of Ottawa, and is described as replete with every comfort to which modern domestic architecture is capable of contributing. The grounds are being laid out by Mr. Wyatt, of Hamilton, in keeping with the style of the architecture of the building, which may be called Elizabethan.

THE NEW GEOLOGICAL ASSOCIATION.

THE inaugural address by Mr. Toulmin Smith, barrister-at-law, the president, on "The finding of true facts," has been printed for this Association by Taylor, of Little Queen-street, Lincoln's-inn-fields. It is an able and practical address, evidently of an enthusiastic fact-finder in geology, and contains minute instructions how to chip stones for specimens; how to bag and pack them; how and where to seek for them, &c. &c. In the outset are some remarks on theory and fact, to which it behoves both false fact-mongers and false theorists, as Mr. Smith would call them, to give heed; but how does it happen that although he distinguishes, pointedly enough, between theories and false theories, as well as between "true facts" and "false facts," the drift of his remarks goes entirely to confound theories with false theories on the one hand, and facts with true facts on the other? Perhaps it was to be expected in one who has such a horror of centralization, and such a love for — how shall we correctly express the antithesis? — centrifugalization in matters of social policy, that he should be rather lop-sided in regard to the relative estimation of the centralizing profundity of theory on the one hand and the circumferentializing superficiality of fact on the other; but even Mr. Smith ought to know that "true facts" as he calls them, or facts

as we would, are merely the materials of theory, — or true theory if he will, — and that geologists can no more build up the science of geology without theory, and with mere facts, than a builder can erect an edifice with mere pebbles, and without either plan or mortar. As for the talk of facts, and true facts, and false facts, a fact is a fact, whatever be its explanation; and what Mr. Smith appears to mean by a false fact is simply a fact involving a false hypothesis or a theoretically erroneous explanation. This only shows the importance of theory all the more. He does not even seem to be aware that generalization based on facts is in truth, so far as it goes, just theorization. The discovery of facts requires little else than hands, eyes, and ears, all centralizing in the mere circumference or superficies of the mind, as it were; whereas the rearing of theories based upon these facts is a generalizing process which requires a man to have something like mental depths, beyond the shallows of mere fact-collection. Geology runs much more risk, in the present day, of going astray in the hands of the fact-dealers than in those of theorists, and Mr. Smith's false balance between fact and theory assuredly tends stray-wards.

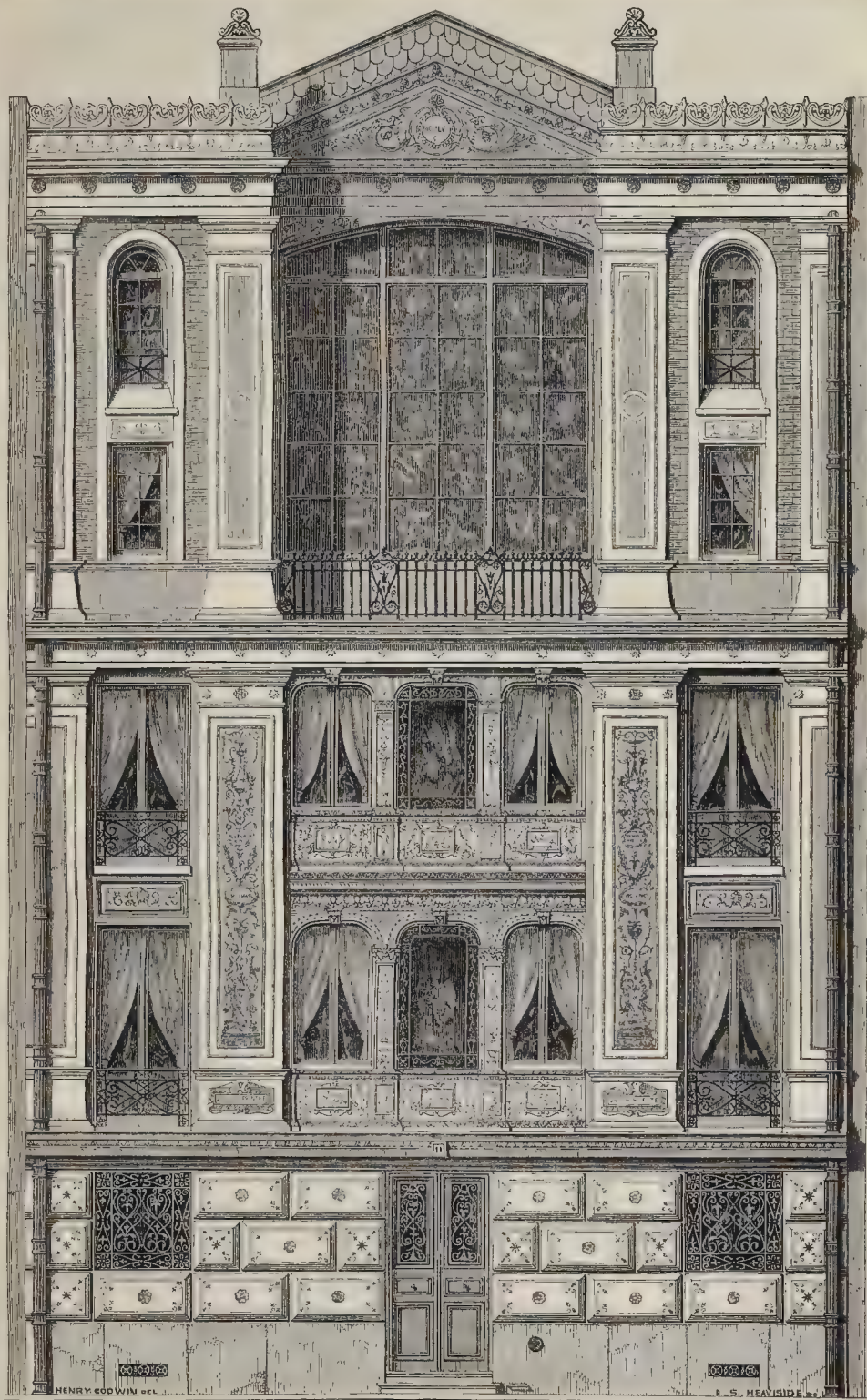
THE HOUSE OF A PAINTER IN PARIS. EXTERNAL DECORATIONS.

LAST year a house was completed in the *Cité Malesherbes*, Paris, by M. Jollivet, painter, as a residence for himself, aided by M. Anatole Jal, architect, which calls for notice, especially because of the amount of art bestowed on the external decorations of it. The *Revue Générale de l'Architecture* (Vol. XVI. pp. 73 and 115), contains a full account of it by the owner, with various illustrations, of which we have availed ourselves in preparing the accompanying view of the north front. It stands on a site of which the two fronts — facing north and south, and therefore favourable for a painter's studio — extend 10 mètres 50 c. while the depth is 23 mètres. The land cost 874*l.* About 1,600*l.* was the sum set apart for the house, which occupies the whole width of the ground, and is 11 mètres in depth. At the end of the ground there is a glass-covered atelier for painting on slabs of lava. The third story above the basement of the house is the painter's studio, and is about 18 feet 6 inches in height. The window, if it be seen, is of large size, and so arranged with a landing in front as to admit of the sending in of a block and fall of large pictures by means of a block and fall. The north, or entrance front (engraved), is constructed in stone and brick, and decorated with terra-cotta, enameled and coloured, and with paintings in enamel upon lava. The garden front is constructed in brick, rubble, and plaster. The interior is fitted up plainly, with a view to the execution of painted decorations hereafter by the owner. Referring to the works of Luca della Robbia and Bernard Palissy, M. Jollivet describes very fully the processes adopted to produce what he desired. He selected the terra-cotta of M. Garnaud, which was treated with olive oil to get rid of its porosity before applying the enamel. The terra-cotta and the lava slabs are fixed by means of strong brass eyes on hooks, or rides, of similar metal in the walls. He recommends the enamel of M. Hachette. Blocks of lava are obtainable, 2 mètres 40 c. by 1 mètre 35 c. M. Jollivet, it may be mentioned, executed the paintings on this material for the porch of the church of St. Vincent-de-Paul, Paris. He cautions those who would use it against attempting to fire plates of it of larger size than that named above. The plates can be joined without injury to the effect. The paintings on the lava were executed by M. Gillet. The enameled decorations cover about 30 mètres superficial, and cost about 161*l.* charging nothing for the drawings, which were made by M. Jollivet himself. This could be reduced, it was thought, in a second work. The amount was thus divided: —

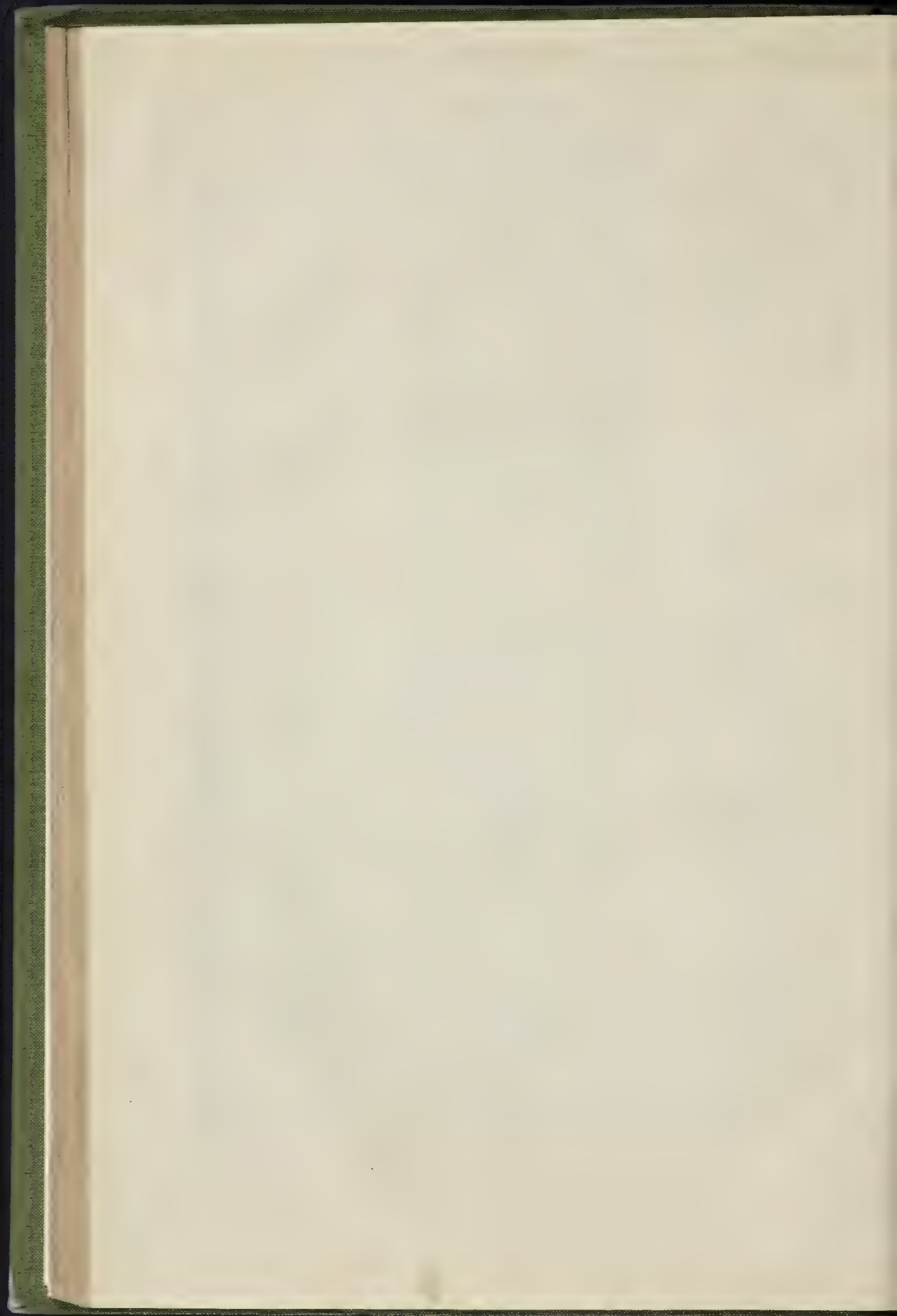
Models in plaster, furnished to M. Garnaud ..	Francs. 430
254 mètres of impressed terra cotta, without the white enamel ..	600
43 mètres of lava, covered with white enamel ..	280
Enamelling and burning the terra-cotta and lava, and painting part ..	2,700
Fixing ..	40
	Francs 4,110

In looking at the façade, the small prominence given to the entrance doorway will be objected to by the majority of the examiners.

* Of this excellent work we shall have something more to say in an early number.



THE HOUSE OF A PAINTER: CITÉ MALESHERBES, PARIS.—M. JAL, ARCHITECT; M. JOLLIVET, PAINTER.
(Decorations, Enamelled Terra-Cotta and Lava Painted.)



FRANCS AND POUNDS.

I PRESUME that the adoption of the decimal system in money is only a question of time, and any striking advantages which belong to it, beyond those which are popularly known, should, I think, be communicated to the public. Anyone having transactions with France must occasionally have to reduce francs into pounds sterling; and, as we have no equivalent to the franc in our present money, errors in small amounts constantly occur. At the exchange of 25 francs to the pound, the franc, valued at 9½d. gives 19s. 9½d.; at 9½d. we have 20s. 3½d.; and at 10d. (the general notion), we get 20s. 10d. The correct value is 240d. ÷ 25 = 9½d., which is not represented in our coinage. By the decimal system, the exact equivalent at par (25 francs) is 4 cents, or 40 mills. Thus, 25 f. × 4 = 100 cents, or 1,000 mills, or 12. Take a larger sum, 172 f. 90 c. × 4 = 691.60; i.e. 691 cents and 6 mills = 6.916f. By reversing the process, our money will be readily converted into francs, thus: 25.570f. call it 2,557 cents ÷ 4 = 639 f. 25 c. The following table shows the analogy which will exist between English and French moneys:—

Francs.	Cents.	£.
1,000	00	= 40.000
100	00	= 4.000
10	00	= .400
1	00	= .040
10		= .004
5		= .002

That is to say, the French *sou* will be the exact equivalent to our new halfpenny, or 2-mills piece.
GEO. CLARIDGE.

ELECTRO-TELEGRAPHIC PROGRESS.

THE alleged circumstance of the transmission of the news of the birth of the Prussian prince in six minutes after that auspicious event took place, is a wonderful one, if true; and the speech of Mr. Bright made at Rochdale is known to have been reported,—telegraphed from the north of England,—and, although delivered *visu voce* at Rochdale in the evening,—was in course of being printed at the *Times* and other newspaper offices at three o'clock of the same night or morning, so that at early breakfast time the full intelligence was on the table of many thousands throughout this metropolis and of the important towns adjoining. Mr. Bright's speech occupied nearly a page of the leading papers. The Queen's speech was sent with the same celerity to distant nations; and we have faith enough in science to believe that ere long intelligence from the most distant parts of the civilized globe will be conveyed to the great centres of civilization in London and Paris in the same rapid manner.

The recently-invented machines used for telegraphing by electricity have gained the power of printing, on paper, by means of the needle, the messages sent from a distance. It will not be new to those who are particularly connected with the scientific progress of the age if we mention the manner of electric printing, which has now come into general use; but to many of our readers it will be interesting to know that the electric printing is managed by means of an application of delicate clock-work, which causes the motions of the electric needle to be placed on narrow slips of paper in the following form:—

H	O	W	A	R	E
Y	O	U	T	H	I
M	O	R	N	I	N
G					?

These characters, which in such a simple way express letters, are marked on long strips of paper with very great rapidity. At Louthbury we are in a few instants in communication with the Hague, and if the wires were laid we might hold similar discourse with the capital of the Sultan, or with that of the Russian empire.

The electric telegraph has thus been taught to write or print in letters which are as intelligible as ordinary printing to all those engaged in this method of communication; and seeing how well this great power, when thus wisely applied, performs its work, why should we despair that, having learnt its letters, and got well forward with writing, composition for the general use may not be equally possible?

We have before mentioned that the electric telegraph affords employment to a considerable number of respectable and educated females: at the Louthbury office about eighty are constantly at work; and the increasing use of this means of communication will throughout this

country alone give the means of obtaining an honest living to several thousands of women, which will be infinitely better than the starvation of needwork.

Mr. Allan, the telegraph engineer, has been exhibiting and explaining, at the Liverpool Underwriters' Rooms, to a large number of merchants, ship-owners, and others interested, his deep sea rope, or conductor, of which we have already spoken.

The Channel Islands telegraph has twice been injured, and failed to carry intelligence between England and Jersey. Friction against a rock appears, according to the *Jersey Times*, to have been discovered to be the cause of injury.

Street telegraphy, by wires overhead, seems to be making progress in Glasgow.

On the 29th of October telegraphic communication was first completed between Sydney and Melbourne and Adelaide; and the telegraph is now complete, and cannot fail to unite more closely provinces whose future destiny is evidently a common one. There were some objections made in the Assembly to the vote of money necessary to carry it out; but if the task had been left to private enterprise, it would probably have been even yet uncommenced. Extensions to Bathurst and Maitland have been sanctioned, the money in these cases also to be provided for by loan. These extensions will exhaust the wants of New South Wales. Along the east coast of Australia is obviously the telegraphic highway to northern Asia and to Europe. Tasmania will soon be united with the main land, and even the New Zealand colonists are beginning to talk of the submarine telegraph.

A new company, "The Great Ocean Telegraph Company, limited," is about to undertake the laying of a cable across the Atlantic, based upon Allan's system of ocean telegraphy, and a specimen of their rope has been exhibited, and has received, it is said, the approval of some of the first scientific men of the day. The conducting power of the rope is said to be greater relatively by 120 per cent. than that of the late Atlantic cable, whilst the insulating medium is much thicker, and prepared so as to withstand heat and pressure. Under this system it is calculated there will be comparatively an economy of forty per cent. on the first cost of construction, besides fifty per cent. on the working. The submarine cable between Dublin and this country, belonging to the Electric and International Telegraph Company, which has been recently broken by a ship's anchor, is now repaired.

SCHOOL-BUILDING NEWS.

Reading.—The St. John's National Schools, which have lately been in course of erection, are now completed, and the opening has been inaugurated. The cost, including (Pierce's Pneumatic) stoves, curtains, fences, boundary walls, &c. is about 1,000l. The architect is Mr. Charles Smith, of Reading; and the builder, Mr. B. Dunn, of the same place.

Bedford.—The trustees of the Bedford charity have had before them the tenders sent in for building the proposed New Grammar and Commercial Schools, previous to their being submitted to the Vice-Chancellor. It is stated that there was a large number of tenders, and that the lowest were as follow:—

Mr. Freshwater, Bedford: Grammar School,	
2,827l.; Preparatory, 1,386l.	£4,213
Mr. Thompson, Derby: Grammar, 2,450l.;	
Preparatory, 1,389l.	3,839
Mr. Masters, Bedford: Grammar, 2,548l.;	
Preparatory, 1,238l.	3,786

At the meeting, when these tenders were examined, a discussion arose whether the lowest in the aggregate was to be taken, or whether the work should be divided by the acceptance of the lowest tender for each school. The majority of the trustees approved the latter course, and the tenders have been forwarded to the Vice-Chancellor, with a recommendation that the tender of Mr. Thompson for the Grammar School, and that of Mr. Masters for the Preparatory School, be accepted.

Rochester and Chatham.—The following is the amount of each tender sent in for executing the alterations at St. John's National Schools, Chatham:—Clother, 910l.; Wilkins, 900l.; Stump, 863l.; Naylar, 777l.; Lilley, 746l.; and Spicer, 676l. The last-named tender was accepted.

Wells.—Plans for St. Thomas's Schools, Wells, in keeping with the style of the church, have been submitted to three builders by the architect, Mr. S. S. Teulon. The tenders for the erection of these schools, according to the original plan, were as follow:—Davis, of Langport, 1,750l.; Knight,

Wells, 1,800l.; Bevan, Wells, 1,900l. Some reductions of plans were then proposed to each of the builders, the result of which has been a contract with Mr. Davis for 1,565l. The schools are to be erected on a site nearly opposite the church. The subscription list amounts to about 900l.

SCHOOLS OF ART.

Brighton.—The inaugural meeting of the Brighton and Sussex School of Practical Art was held on the 1st instant, at the Town-hall, the Mayor in the chair. The body of the room was nearly filled; but only a small proportion were of the male sex. Letters from Lord Carlisle, Professor Owen, Mr. Layard, the Earl of Chichester, the Bishop of Chichester, various Members of Parliament, and other influential gentlemen, were read. Mr. Redgrave, of the department of Science and Art, was also present, and addressed the meeting. At the close of his address, Mr. Redgrave remarked, that although it had been said that we were behind our Continental neighbours in the execution of the fine arts, still he believed that we could bear competition with our neighbours. But as to manufactures, so great was the artistic improvement in articles produced by this country, that it excited the astonishment of the French authorities, and they sent over deputations for the purpose of examining and becoming conversant with our schools of art. He was happy to inform them that there were now between 70,000 and 80,000 pupils connected with the School of Art in London, which was 30,000 more than last year. Various other speakers addressed the meeting, and appropriate resolutions were cordially adopted.

Sheffield.—The annual *conversazione* of the Sheffield School took place on the 26th ult. The exhibition, according to the *Independent*, was an improved and interesting one. The guests were some of the principal families in the town. Mr. Young Mitchell, the head master, read a letter from Mr. Redgrave speaking favourably of the drawings sent in competition for the prizes, which were distributed on the occasion. There are now 1,200 National School children connected with the school, although at the time of last year's *conversazione* there were only 150.

PROVINCIAL NEWS.

Rochester and Chatham.—The Watts's new almshouses, which are now being erected by Mr. Naylar, on the Maidstone-road, approach completion. The buildings are in the Elizabethan style of architecture. The almshouses are to be finished and ready for the reception of the inmates by the 25th of March.

Sittingbourne.—The corn market has been opened in the new corn exchange building. The funds were raised in 320 shares of 5l. each, with donations. The foundation-stone was laid on the 19th of August, 1858. The building was contracted for by Mr. E. Aldous, of Sittingbourne, the architect being Mr. Andrews, of Rochester. It has a frontage of 37 feet facing the High-street. The inside dimensions of the market-room (and which is also intended as a general assembly-room) are—length, 60 feet, width 30 feet, with an orchestra capable of holding fifty performers. The ceiling contains two large lights, of enamelled glass, and also a sun-light, containing fifty-six gas-burners, for lighting and ventilating the room. There is also a room at the end of the above, 25 feet long by 21 feet wide, with a dome of enamelled glass in the roof. There are also several ante-rooms, waiters' rooms, closets, &c. It is proposed to place a clock with three illuminated faces in the tower, subscription lists being open for the purpose.

Worcester.—The new works at the County Gaol will forthwith be carried on to their completion. At a meeting of the Gaol Enlargement Committee of county magistrates, the tender of Messrs. Wood and Son for the completion was accepted. There were tenders also from several large contractors of Birmingham, Coventry, and London, the amounts varying from between 10,000l. and 11,000l. to 15,300l. Tenders were also accepted for the following additional works:—Warming, ventilation, and fittings, by Messrs. Haden, Trowbridge; water distribution, Messrs. Mallory, Cheltenham; gas fittings, Mr. Rainsford, Birmingham; and for the locks, bells, gongs, and ironmongery, by Messrs. Talbott, Birmingham. The amount of the whole tenders was 12,566l. 10s. 9d. The works are from the designs of Mr. Rowe, the county surveyor, and will be executed under his superintendence, comprising portions of two radiating wings, with enclosed corridor round the chapel, which will commun-

cate with the several corridors of the males' prison. The females' prison will also be extended to meet the side of the chapel corridor, and the whole of the buildings will be as it were under one roof, and may be approached from under one entrance. In addition to this there will be a new washhouse and laundry. The new works comprise the remaining portion of the original plan adopted by the Court of Quarter Sessions.

Stroud.—The surveyor of the Local Board of Health has amended the estimates for the cost of drainage, bringing the amount within the sum fixed by the Board. Tenders were directed to be advertised for forthwith, so that the work will speedily be commenced. An offer to advance the necessary funds at 44 per cent. was accepted.

Seisdon.—The contract for the new workhouse was signed last week, and the works will be at once commenced. The building has been taken by Mr. Hveningham, of Wolverhampton, and will be carried out under the superintendence of Mr. Bidlake. The site is near to the village of Trysil, about four miles from Wolverhampton.

Hartshill.—The Working Men's Institute here has been opened. The building was erected at the cost of Mr. Colin Minton Campbell, a nephew of the late Herbert Minton to whom also Hartshill has been much indebted. The designs were furnished by Mr. Edgar, of Stoke, architect. The building comprises a reading-room or lecture-hall, about 46 feet by 23 feet, and a keeper's house in immediate connection. The turret between the hall and the dwelling, forming a central feature in the grouping of the exterior, contains the stair which conducts to the gallery over the front entrance to the reading-room. The hall has an open-timber roof, which is so constructed as to form a large lantern by which the hall is lighted—there being no side lights except those in the front gable, where the chief points of the architectural design have been reserved. The building and all its details are after the Gothic manner, though not on the model of any particular period of the Medieval styles. The front is constructed of a red brick, and the decorative features are produced in stone, marble, and timber; while polychromatic embellishment is attended to. A rose window is introduced in the gable. The brickwork was executed by Mr. Sutton, of Newcastle; and Mr. Young, of Lincoln, performed the masons' and joiners' work.

Chester.—At the county sessions, a motion referring to the Chester Lunatic Asylum, "for a grant not exceeding 10,000l. for the following purposes, viz.—To afford accommodation for the erection of new buildings for 100 males and 100 females; for the ventilation of the present washhouse, and alterations of the drying-closets; for the erection of a chaplain's house, and for erecting a new boundary wall adjoining the high road," has been referred to a committee.

Sandbach.—The range of buildings called the Sandbach Public Building was opened by amateur musicians—ladies and gentlemen who offered their services on the occasion. The Sandbach Public Building has been erected according to the plans of Mr. G. G. Scott, under the auspices and management of the Rev. John Armstrong, the vicar of Sandbach, supported by a large number of the principal inhabitants of the town. The cost of the building and the site has been raised nominally in shares, which were speedily taken up by the inhabitants and neighbours; but the fittings and decorations are still a charge.

Liverpool.—At a late meeting of the Town Council the proceedings of the special committee on the removal of the public offices from the Town Hall (Mr. C. Turner chairman) were read, from which it appeared that nothing had been agreed upon, as the motions and amendments submitted were met on a "tie" five voting for and five against. Mr. Turner said the Council would have learned, from the proceedings of the committee just read, that they had been unable to agree upon any report on the very important subject referred to them. But the subject had been very fully considered by the committee, in all its bearings, and they had come to the conclusion, he believed he might say unanimously, that, *per se*, centralization was desirable to enable the town-clerk to have a proper supervision over the different departments into which the business of the corporation was divided. The locality, however, was a matter upon which the opinions of the committee very much differed. Mr. Turner moved that the question be referred to the finance committee, with instructions to examine the land in Exchange-street West, and to ascertain and report to the Council whether the necessary offices could be constructed upon that land in connection with the Town Hall, and the probable expense of

such construction. Mr. Holson said it was his intention to take the opinion of the Council upon the amendment he proposed in the committee,—that in the opinion of the Council it was advisable to concentrate the public offices in Dale-street, together with the Council-chamber; and upon that he intended to divide the room. Mr. Alderman Dwyer, in seconding Mr. Holson's amendment, said the cost of the new building, supposing all the offices from Cornwallis-street and the Town Hall were removed there, would be 67,000l. Supposing only a portion of the offices were removed from the Town Hall to the land opposite, the cost would be, not including the alterations they would have to make in the Town Hall, some 78,000l. To remove the offices only from Cornwallis-street to Dale-street would amount to 38,000l. so that for the other 28,000l. they would get the whole of their offices provided for, and a council chamber included, all in one locality. Mr. Pictou said he felt it difficult to come to a perfectly satisfactory conclusion on the subject. He did not consider that having buildings clustered in one locality, although it might be necessary to cross a street to get from one department to another, would be an utter nullity so far as regarded the principle of centralization. There were many things in this world of more importance than money. Could they put a money value on the prestige of six centuries which belonged to them as a municipality? Could they put a money value on the associations attaching to a noble centre, the centre of business, the centre of locality, to which every stranger, every illustrious person coming to Liverpool would immediately look as the centre of the vitality which had made Liverpool what it was? After some further discussion the amendment was carried by 27 to 17.

CHURCH-BUILDING NEWS.

Helpham.—Designs for the new church here, according to the *Norfolk Chronicle*, have been flowing in from all parts of the kingdom, and on the last day five and the day previous between fifty and sixty were received. It is feared the edifice cannot be commenced this spring, from want of funds.

Colchester.—The old octagonal Independent Chapel in Lion-walk, Colchester, having been long found inadequate to the requirements of the congregation, it has been determined to erect, upon the site of the present building, an entirely new and more commodious place of worship. The following tenders have been received and opened by the committee—Messrs. Grimes and Sons, Colchester, 3,100l.; Messrs. Lee and Baker, Colchester, 3,167l.; Mr. Sanders, Dedham, 3,170l.; Mr. Evans, London, 3,214l.; Mr. Gibbons, Ipswich, 3,805l.; Mr. Simpson, 3,970l.

Wotton.—Some alterations have been made in the chancel of the parish church here. The pews have been replaced by Glastonbury chairs and standards, and the screen restored. The east end is now separated by a light rail of brass, with standards of blue and gold surmounted by Maltese crosses. The walls have been re-plastered, and cornices, string course, &c. scraped and restored. The chief work is the erection of a new east window, by Messrs. Ward and Nixon, of London. The window consists of five lights, surmounted by a quatrefoil and tracery of flowing design. The subjects represent the six clauses of the second division of the Apostle's creed. The design for the stone tracery of the window was executed by Mr. Vanzand, of Maidstone.

Poynton.—St. Mary's Church, Poynton, has been consecrated. The church is built upon the site of the old edifice, which was dedicated to St. George, and stands in Woodcock-lane. It is in the Gothic style, with old Norman walling. The chief feature of the interior is the chancel, which is decorated. The east window is of four lights, and in each compartment is a scene from the life of our Saviour—1st, "The Nativity;" 2nd, "The Crucifixion;" 3rd, "The Ascension;" 4th, "The Descent of the Holy Ghost." The upper part of the window is filled with Gothic tracery, and the whole fringed with a border. The stained window on the south side is of three lights, and similar in design and execution to the east window. It also contains three scenes from the life of our Saviour—"Simeon blessing the Infant Jesus;" "The Flight into Egypt;" and "Our Lord as Joseph the Carpenter's Son," where He is represented in the act of cutting out, with a bow saw, the transverse beam of the cross. The windows have been supplied at a cost of about 330l. Mr. Hadwen, of the Towers, being the principal contributor. The designer and manufacturer was Mr. Conner, of London. The body

of the church consists of nave and side aisles. The roof is high pitched, and of bracketed woodwork. Six Gothic windows light the nave, but the principal source of light is from two one-light elongated windows with Gothic points, which extend the whole length of the western wall. The nave is separated from the aisle by Gothic arches. The body of the church is fitted with stalls of Dantzic deal, and will accommodate about 600.

Bromsgrove.—The old parish church of Bromsgrove has been reopened for Divine service, after having undergone a repair and restoration at the hands of Mr. Scott. Two stained-glass windows, by Clayton and Bell, of London, have been inserted in the chancel in memory of some branches of Mr. Maund's family, and another, the east window of the north aisle, the gift of the Rev. J. D. Collis. The principal windows at the east and west ends remain to be similarly adorned. Skidmore, of Coventry, furnished the gas standards, &c.

Newcastle-under-Lyne.—The foundation-stone of a new Congregational church has been laid at Newcastle, by Mr. John Crossley, of Halifax. The architect is Mr. Moffat Smith, of Manchester. The style will be Gothic, of the Decorated period, with a tower and spire 90 feet high; and the materials yellow brick, relieved by bands of blue brick and Hollington stone dressings. The church will be in the form of a parallelogram, the interior dimensions being 68 feet 4 inches by 35 feet, with a chancel-like projection containing the organ-gallery and a minister's vestry. Underneath will be a school-room of the same size, on the ground-plan, as the church, and 13 feet high. There will be a gallery at the entrance end of the building, but the committee do not intend at present to erect side galleries. The cost was estimated at about 2,000l. The subscription-list now amounts to above 1,100l. and a chapel-building society gives 100l.

Wolverhampton.—An iron church has recently been erected at Essington, on ground given by General Vernon, in front of the schools. The church has been built by voluntary subscriptions, the total cost being about 850l. of which only 100l. was deficient prior to the opening. The exterior is plain, without any pretence to ornamentation. The structure is of an oblong form, the entrance being by a portico at the west end. The external walls are painted a warm stone colour, the roof being also painted to represent slating. The interior of the building has been designed and fitted up in the same unpretending manner as the exterior. Above the communion-table is a stained-glass window, and light is diffused throughout the edifice by smaller windows, on each side, each window being relieved by a border of coloured glass. The church has been built to accommodate two hundred and sixty persons, and is fitted up with three rows of benches, running from end to end. The walls have an inner case of wood, a space of a few inches being left between the outer iron wall and the wood. The roof, which is supported by light iron girders, has also been lined with waterproof felt, and afterwards covered with wood, so that in point of fact it is a wooden building, enclosed with an iron shell. Messrs. Hemmings, iron church builders, of Bow, were the contractors for the erection of the building.

Wodlesfield Heath.—For the new Wesleyan chapel, the committee have adopted the plans by Mr. Bidlake, architect, of Wolverhampton. The building will consist of a nave and transepts, accommodating 500 on the ground-floor, of which 150 will be free sittings. The estimate is 1,250l.

Halifax.—Mr. John Bailey, turret clock manufacturer, Albion Works, Salford, is the successful competitor for the large turret clock for the Haley-hill new church, Halifax, which is at present being built at the expense of Mr. Ackroyd, M.P. The clock will be on the principle of those invented by Mr. Richard Roberts, C.E. of Manchester.

AMERICAN NOTES.

A new cathedral is erecting at New York which will far excel, both in size and splendour, any ecclesiastical structure on that continent. It is not so long as some of the largest European cathedrals, but it is broader than most of the French, and higher than the majority of English. It is 20 feet wider and 30 feet higher than York Minster, and vaulted with masonry. The nave is 3 feet wider, and nearly 40 feet higher, than St. Paul's in London.

A new church, dedicated to "The Immaculate Conception," and said to be not only one of the finest in the diocese of Hartford, but in the United States, has been consecrated. It is in the Gothic style of the twelfth century. Its dimensions are,

162 feet in length by 65 feet in width, and 60 feet in height. The interior is embellished with fresco paintings by Munich artists. The twelve apostles are represented, one over each arch. The chancel dome contains a monogram of the passion: angels, and religious devices decorate the ceiling, and the pillars are touched with gold. The altar is stated to be of elaborate design.

The recently-erected St. James's Church, in St. Denis-street, Montreal, has been destroyed by fire. It was one of the handsomest ecclesiastical structures in British North America, and was completed at a cost of some 30,000*l*. The cause of the calamity is said to have been the overheating of a flue.

FALL OF A HOUSE IN HACKNEY.

ON Thursday afternoon in last week, the front wall of a house in Lansdown-road, St. John's, Hackney, one of several in course of erection by Mr. Luscombe, builder, fell out, and in so doing killed one poor man, and injured several others, one of whom has since died.

At the first inquest, which was held on Saturday, the 5th, Mr. T. H. Wyatt, the district surveyor, showed that the wall was even thicker in the upper part than the Act required, being 14 inches to the top, where there might have been two stories of 9-inch work. He attributed the accident to the fact that along the whole frontage, 33 feet, a flat arch, over a vault 8 feet 3 inches wide, had been turned, and for which a skew-back, 3 inches deep, had been cut into the front wall of the house. On this earth had been thrown; and there being no cross wall to steady the front wall while in a green state, the earth, the rain, and the vault had driven in the front wall. He considered it an error in judgment, and not negligence.

Mr. George Pownall, as an independent witness, confirmed what Mr. Wyatt had stated, and said a district surveyor had no power to prevent such an occurrence.

The jury, which included some builders, returned a verdict of "Accidental death," and recommended, we believe, that in future skew-backs should not be cut without a special notice to the district surveyor, and being done with his advice and superintendence.

COMPETITION DESIGNS FOR MR. SPURGEON'S CHAPEL.

SIR,—We here annex certain motions we propose to bring forward at a meeting of the competing architects for the Rev. C. H. Spurgeon's Tabernacle, which is to be held at Mr. Rea's Repository (on this Saturday, at 2 p.m.).

We are led to make the said motions, as we fear, looking at the designs submitted, there are so many which show such a want of thought and study, that they appear, and no doubt are, sent in to command votes: it is easily conceived that a meritorious design stands a very poor chance against odds so obtained.

And we think that the following propositions, if not meeting the evil, will tend to call forth some more effective mode of arrangement.

COMPETITORS.

Notice of motions to be placed before the meeting of the competing architects on Saturday:—

1st. That the number of designs submitted be reduced by a preliminary ballot to a number to be agreed upon.

2nd. That the authors of the said chosen designs do, by their votes, further reduce the number to (say) six designs.

3rd. That the whole of the competing architects do vote for the last obtained six designs; that each architect give one vote; that the design having the greatest number of votes be the first design, and the design having the next greatest number of votes be the third design.

Books Received.

Painting Popularly Explained; with Historical Sketches of the Progress of the Art. By THOMAS JOHN GULLICK, Painter, and JOHN TIMBS, F.S.A. London: Kent and Co. Fleet-street. 1859.

ACTING together, Mr. Gullick, a painter, and Mr. Timbs, known to every one as an indefatigable literary man, have produced a valuable book, which supplies a want. A large amount of interesting matter, gleaned from various authentic and reliable sources, shows perhaps the very considerable share which Mr. Timbs has borne in producing this useful volume, of the special contents of which we may give our readers some idea.

Besides the sketches indicated by the title, it includes a mass of information as to fresco, tempera, encaustic, miniature, oil, mosaic, water-colour, and missal painting, together with an in-

roduction, appendix, and index. In treating of each special kind of painting, of course, information is given as to the nature of the materials and tools worked with and the processes adopted; as well as historical and other details connected with it. In the division on oil-painting, for example, there are sections treating of the painting-room, the implements, vehicles, oils, varnishes, canvas and panels, grounds, colours, processes, and manipulations, followed up by historical sketches of the different schools of oil-painting.

As an example of the style in which the book is written, we may quote a passage on the subject of fresco painting:—

"The fact that the grandest works of human genius in painting have been executed in fresco, not to speak of the rare development in our times of fresco painting in Germany, and the revival of this style of art in England for the decoration of the New Palace at Westminster—will assuredly justify our treating the subject at some length; especially as the details are interesting, and there appear to be frequent misconceptions in reference thereto.

Painting in fresco—in Italian *al fresco*—takes its name from being executed upon the last coat, while it is *freshly* laid and still wet, which the plasterer puts on when finishing a room. This last coat, called by the Italians *intonaco*, is composed of finely-sifted river-sand and lime mixed in certain proportions. The well-known tendency of lime thus used to imbibe water and harden, gives its peculiar character and durability to fresco. The colours being ground in water and mixed with lime when applied to this absorbent surface, become incorporated with the lime-water and sand of the plaster; and when dry they are not to be dissolved again by water, although internal damp will in time have the most injurious effect: the bases of fresco and the colours thus become inseparable and positively harder than stone. The rapidity with which this coat of plaster dries, presents, however, to the artist, one of the greatest difficulties of the process. Only so much of the plaster must be laid on as the painter can cover and complete as a portion of a picture in one day. Joinings are therefore unavoidable, and some ingenuity is necessary to conceal them by making them coincide with lines in the composition, or take place in shadows.

Only those colours can be used which light will not act upon or lime deteriorate. The fresco painter is therefore limited to a few pigments, which are principally natural colours or earths, and consequently sober in hue. The blue is the only brilliant colour in fresco; but the old masters rarely employed either the cobalt or the still more beautiful ultramarine used in modern frescoes; probably on account, partly, of the extensiveness of these colours. Their blues, therefore, being generally imperfectly prepared mineral compositions, have commonly faded; the frescoes by Guercino being one of the rare exceptions. The blacks and greys, which are nearly all derived from animal and vegetable substances, have also proved very fugitive. Lime is mixed, as we have said, with the colours; but lime itself is also used alone as a pigment for the lights, the presence of sand with the lime rendering the plaster ground a delicate half-tint. The German fresco painters consider it indispensable that the lime should be slaked and kept buried underground several years before it is used, either as a pigment or for coating the walls. Early authorities do not, however, insist upon the necessity of keeping the lime for a very long period, and there is no apparent scientific reason for doing so.

From the power of absorption, little force of shadow is obtainable in fresco compared to the depth and transparency of oil painting; but this deficiency is more than compensated, for internal decoration, by the far greater luminousness of colour in fresco and its breadth of bright pearly effect. The colours assume, as it were, crystalline brilliancy, yet with none of the glare of an oil painting, which prevents, if the picture be large, a great portion being seen.

"The power of fresco," Haydon says, "lies in light—the power of oil in depth and tone."

It must not be supposed, from what we have said, that this volume is simply a compilation. It contains a large amount of original matter, agreeably conveyed, and will be found of value, as well by the young artist seeking information as by the general reader. We give a cordial welcome to the book, and augur for it an increasing reputation.

GAS.—At the half-yearly meeting of the Worcester company, a dividend after the rate of 7 per cent. per annum has been declared.

Miscellaneous.

BRITISH INSTITUTION.—The exhibition now open consists of 579 pictures, and thirteen pieces of sculpture. It has little distinctive character: a notice of a previous year's exhibition, with merely the numbers altered, would answer the purpose on this occasion.

WESTMINSTER MARBLE WORKS.—The firm of the London Marble and Stone Working Company, Escher-street, Westminster, having suddenly wound up their affairs (thereby throwing a number of workpeople out of employment), Mr. Hartley, the proprietor of the Westminster Marble Works, purchased the whole works, and, to inaugurate the re-opening of the premises, recently entertained there from 200 to 300 of his tenants, workpeople, their wives, and friends. The entertainment was carried out with great hilarity, and tended to promote feelings of amity and goodwill.

DRINKING-FOUNTAIN MOVEMENT.—The Town-council of Gloucester are about to erect several drinking-fountains, and a committee has been appointed to select the sites.—The Rev. Dr. Cottle is agitating at Weymouth for the erection of public drinking-fountains for the town.—Mr. Samuel Gurney has promised a donation of 20*l*. towards the fund for erecting drinking-fountains in Brighton, provided the movement is sufficiently supported by the inhabitants. The contributions already exceed 40*l*.

METROPOLITAN BOARD OF WORKS.—The usual weekly meeting of this Board was held at the Guildhall, on the 4th inst. when the chairman congratulated the Board on the fact of the main drainage works of the metropolis having been commenced on the Monday previous. Tenders, he believed, would be shortly invited for subsequent portions of this work. The Board, he said, would shortly have to take into consideration various other metropolitan improvements, together with the best means to be adopted with reference to the financial question of taxation for the purpose of defraying the cost of their execution. Mr. Leslie, in a long address, opposed the removal of the present offices of the Board from Greek-street, Soho, to Berkeley House, Spring-gardens, putting his case in the form of a resolution, which, as subsequently altered, was put to the vote; and on a division there appeared, for the motion as amended by Mr. Leslie, 12; against it, 24; majority, 12. There were 37 members present out of a total of 45, constituting the Board.

THE BOYS' REFUGE AT WHITECHAPEL.—From the fifth annual report of the Refuge in Commercial-street, Whitechapel, which has been issued in a printed form, it appears that a new house for the refugees has been completed and the playground enlarged. The cost seems to have been provided for, and the charity is clear of debt, only they do not possess the site, which they are desirous of having. The Privy Council, however, have intimated a cessation of aid, which constituted about a fourth of the income of the Refuge, which is a pity, seeing that much good appears to be doing there. During the year, 78 boys had gone through the hands of the governor. Of these 15 were restored to their parents; 13 restored to their parents, and sent to situations; 5 further payment refused and sent home; 7 bound apprentices; 6 sent to sea; 1 sent to an institution in Aberdeen; 8 provided with situations; 6 expelled, as injurious to other boys; and 17 left irregularly. Of all these young roughs only one had a step-mother,—a fact which we indicate in justice to that much reviled class of society; 21 had both fathers and mothers, and only 8 were orphans; 12 were fatherless, and 6 motherless.

DELAY AT THE BOARD OF WORKS.—Sir: Knowing your readiness at all times to assist those who may have grievances to complain of against public bodies, I beg leave to submit the following statement. Having a contract to carry out two shop-fronts near King's Cross, I supplied the required plans and papers to the Metropolitan Board of Works on the 3rd of January last. Since then I have waited on the superintending architect several times without being able to get an answer, but that the Board are dispensing important business, and I must wait for their sanction, although there cannot be any objection to the proposal. Since then I have been kept in suspense. My materials are lying idle as well as myself; the landlord worrying me, and the tenant losing his business in consequence. Surely the Board were never intended to obstruct business in this way.—J. G.

* * * We have before now received similar complaints, and are disposed to think the Board are scarcely aware of the inconvenience and loss sometimes caused by their delay.

INSTITUTION OF MECHANICAL ENGINEERS.—The twelfth annual general meeting of this Institution was held on the 26th ult. at the house of the Institution, Newhall-street, Birmingham, Mr. John Penn, president, in the chair. The annual report of the council was read, which showed the satisfactory position of the Institution, and a large increase in the number of members. The election of officers for the present year then took place. A number of new members were also elected. A paper was then read "On the Progressive Applications of Machinery to Mining Purposes," by Mr. Thos. John Taylor, of Earsdon, Newcastle-on-Tyne. The next paper, by Mr. Benjamin Fothergill, of Manchester, was a "Description of a Dry-clay Brick-making Machine."

THE DUKE OF BUCKINGHAM'S ESTATES.—A portion of the Duke of Buckingham's estates, comprising a valuable freehold estate in the parishes of Rodney Stoke, Priddy, and Westbury, Somerset, including two-thirds of the manors of Stoke Rodney, alias Stoke Gifford and Draycott, the rectorial title rentcharge of Westbury and Priddy, and about 2,400 acres of land, producing altogether nearly 3,000l. per annum, were last week submitted for sale by auction at Wells. The bid-dings started at 70,000l. and reached the sum of 85,000l. *bond fide* offered, but the property was bought in at 86,000l.

TURNPIKE LOCOMOTIVE.—A steam-engine has lately been constructed for the Marquis of Stafford, at Buckingham, for travelling on the turnpike-road. In front there is a seat for four persons, and the engine is guided by a handle in front. It weighs about 22 cwt. is of two-horse power, and will travel at the rate of fourteen miles an hour. The marquis went through the streets of Newport with it lately, creating a little astonishment and curiosity among the inhabitants, although the fact is, that turnpike locomotives were in experimental use before our present locomotive ran on rails.

UNION OF OPERATIVE BRICKMAKERS.—A series of meetings, commencing on Saturday week at Dudley, and terminating on the 29th ult. at Birmingham, have been held at the principal places in the district, for the purpose of forming a co-operative association for the establishment of a joint-stock brickmaking association, by means of which members of the union, who are out of employ may find work. This movement has originated in consequence of some brick-masters refusing to employ members of the trades' union. The shares are 1l. payable in weekly instalments of 6d. and about 100 have, it is said, been taken.

ROAD SURVEYOR'S ASSISTANT HINTED FOR LAYING STONES ON TURNPIKE ROAD.—Recently, James Whitehead, employed by the surveyor of the Bradford and Keighley Turnpike-road, was summoned at Bingley, charged with placing on the turnpike-road near to Ryshworth, large stones, in order to compel the public to avoid those portions of the road where the stones were laid. Mr. Busfield proved the offence. He did not, however, wish to press the case hard against Whitehead, but he hoped that the magistrates would express their disapprobation of a practice so inconvenient and so dangerous to the public. The magistrates stated that as this was the first offence brought before them, and the offender had pleaded guilty, they would only impose a penalty of 5s. and costs, but they expressed their strong disapprobation of the practice of surveyors laying stones upon the highways.

ADDRESS TO THE GLASGOW CARTERS.—At a carter's *soiree* in Glasgow lately, Dr. Norman McLeod delivered a humorous speech. He commenced by relating an anecdote of George IV. when walking in a procession up the High-street of Edinburgh, and seeing the crowd all so well dressed, he had looked round and asked where were the mob. He might in the same way look round this meeting and ask, "Where are the carters?" While they were working for their sheet and movement, he wished they would give the ministers a lift to get short time, too. Coming home, he said, from a meeting the other night, I was getting out of a cab, when the cabman said to me, "We're owre hard wrought, sir," I replied to him, "Is it yourself, your horse, or I you mean, for I think we are all much about it?" He looked upon this moment as the cause of Glasgow, or by any of the working classes of Glasgow, to secure short time for themselves, to be of immense advantage, provided they improved so precious a gift. He beseeched them to improve their time, and by so doing the carters would, every day, become better informed, and more steady, and be elevated to take that position among the working classes of the city which they had hitherto failed to take, chiefly from their being overwrought men.

LECTURES ON THE FINE ARTS AT THE BROMPTON MUSEUM.—On the 7th inst. Mr. Westmacott, R.A. delivered a lecture in the theatre of the Museum, "On Sculpture in Relief," its character and application to architectural art, in the course of which he conveyed a great deal of elementary knowledge in pleasant language. The theatre was well attended.

MONUMENT TO THE LATE BISHOP OF LONDON.—It has been decided to erect a monument to the late Bishop of London, in St. Paul's Cathedral; and a fund, called "The Blomfield Monument Fund," has been originated for that purpose, the subscriptions to which already exceed 1,000l.

THE ARTESIAN WELL AT OSTEND.—A huge stratum of clay has been penetrated by the boring machinery, and a bed of sand was pierced, when fresh water made its appearance. The depth just now is 175 metres 50 cts. The town is in jubilee. The geology of the basin under the German Ocean is now explored to that extent.

METAL-CASTING.—Mr. Shrapnel, of Bradford, in Wilts, proposes that the iron or other metals, or mixture of metals, to be used in making a casting, should be subjected whilst in the furnace to a mechanical stirring, and then run into the mould, the stirring to be kept up in the mould till the metal sets.

NEW BARRACKS FOR THE GUARDS.—General Peel has said in the House of Commons that all the sites in London available for the purpose had been inspected and reported upon. It was intended to ask the house for 120,000l. for the erection of the new barracks, and the work would be begun as soon as Parliament had sanctioned the expenditure.

THE IRON TRADE.—BESSEMER'S IMPROVEMENTS.—The *Telegraph* says, "It will be recollected that when Bessemer's patent was brought out, great things were expected of it; but on being put to one test it was found to be defective. We have it, however, on information of which we think we can with confidence rely, that the defects which marred the success of Bessemer's plan have been obviated by another patentee, whose discovery has been tested at some of the Welsh iron works, and is about to be brought into practical operation by one of the most influential firms in the South Staffordshire district."

MEXICAN AND SOUTH AMERICAN COMPANY.—Before the Master of the Rolls, on Thursday, the case of Mr. Blanford, adjourned from the Chief Clerk's decision, who had placed him on the list of contributors, came on. The ground for resisting this decision was, that the directors had unduly declared dividends, and Mr. Blanford therefore claimed not to be liable for the debt of the company. Mr. Linklater entered at great length into the legal bearings of the question of liability.

LEEDS FINE ARTS ASSOCIATION.—A meeting of the committee of the association formed some time ago for the decoration of the Leeds Town-hall with works of art, says the *Latelligence*, was held on Thursday, Dr. Batson in the chair, when a good deal of correspondence was read respecting the best mode of decoration to be adopted. Mr. Cope and Mr. Armitage recommended that the Victoria-hall and vestibule should be decorated with fresco paintings; but as the cost was estimated at upwards of 10,000l. the committee came to the decision that it was desirable to confine their efforts in this direction, at all events for the present, to the vestibule, and a resolution was unanimously adopted to the effect that the vestibule should be decorated with fresco paintings and that a subscription should be commenced to raise the amount required for the purpose, which is estimated at 1,500l. The committee will be glad to receive further gifts of paintings and other works of art for the decoration of the various parts of the Town-hall, as well as contributions to enable them to ornament the vestibule in the manner proposed. All will cordially approve of the objects they are making, and hope that their object will be accomplished in a manner worthy of the project and of the town.

NAILS.—Those who know what French nails are—sharp-pointed cylinders—know that they are very far better than the pyramidal English nails. The French nails want no Bradawl to make a hole for them: they are more easily driven in than English nails; and, when in, they hold much more firmly, and never start. When will our English nail-makers get rid of their present absurd form and take to a good one? How long are they willing to let French carpenters have a great advantage over English carpenters? Why do not our carpenters insist on having nails of the best form? Pray drive this into their heads.

N. R.

TENDERS.

For a villa and stables at Walham-green, for Mr. Ree; Messrs. W. and A. Mosley, architects. Quantities supplied:—

Elliott	£2,780	0	0
Weaver	2,705	0	0
Pearson	2,630	0	0
Howe	2,607	18	6
Avis and Sons	2,390	0	0
Pitts	2,350	0	0
Jackson and Shaw	2,205	0	0
J. White	2,200	0	0
Oliver	2,200	0	0
Williams	2,150	0	0
Adamson and Sons	2,109	0	0
Dawson and Son	2,052	0	0

For a new ten-quarter brewery, dwelling-house, stabling, &c. at Cardiff. Mr. R. Davison, of London, architect. Quantities by Mr. G. E. Chittenden, of Cardiff:—

D. Jones, Cardiff	£2,990	0	0
J. and W. Webb, Cardiff and Birmingham (accepted)	2,724	0	0
Finch and Heath, Chesham (ironwork only)	261	16	6

For the erection of warehouse, Cooper's-row, Crutchedfriars; Messrs. John Young and Son, architects. Quantities:—

Hume	£2,217	0	0
Nixon	1,777	0	0
Pearce	1,493	0	0
Rawlinson	1,447	0	0
Coleman	1,389	0	0
Lugg	1,350	0	0
Hart	1,329	0	0

For the erection of about 800 columns, lamps, &c. Norwich. The Gas Committee have provisionally accepted Mr. Robert Thompson's tender, at 1l. 19s. 6d. for columns, and 10l. 1s. for brackets, subject to confirmation by the Town Council, the number of column lamps being in excess of the brackets:—

Lamps, Columns, &c.		Bracket Lamps.	
Defries and Sons, Houndsditch, London	£3 17 6	2	2
John Newark, Coventry	3 7 6	1	12
The Horsley Company, Tipperary	2 17	1	18
Benjamin Wheeler, Nottingham	2 16	0	17
Francis Ford and Sons, London	2 12 6	1	7
William Murrell	2 9 6	1	14
J. M. Turner	2 7 0	1	15
T. Smithdale	2 0	1	10
John Barnes	2 0	1	10
Lynch and White, London	2 0	1	0
Abraham Park, Norwich	2 0	1	0
Harmer and Son, Westminster	2 0	1	0
Robert Thompson, Junr. Norwich	1 19 6	1	4

For best portion of alterations to Mr. Pratt's villa, Harrow; Mr. Charles Laws, architect.
Gammou £335 0 0
Chapman 212 0 0

For new business premises, St. John-street, Smithfield; Mr. G. Somers Clarke, architect.

	Building.	Fittings.	Total.
H. and R. Hollands and Co.	£8,830	£610	£9,440
W. Culver and Co.	8,117	535	8,650
Lucas, Brothers	7,903	496	8,399
Clark and Parry	7,380	529	7,909

For various works for Mr. E. Balcombe. Mr. E. Clifton, architect. Quantities supplied by Mr. W. F. Meakin:—

	No. 6. Houses.	No. 3. Villas.	No. 5. Stables.	Total.
Gray and Son	6112	0 0 2 06	0 0 0 08	0 0 2 14
Patman	5903	0 0 2 00	0 0 1 00	0 0 2 00
Conder	5670	0 0 2 02	0 0 1 07	0 0 2 09
Pickard and Co.	5770	0 0 2 04	0 0 1 22	0 0 2 06
J. and W. Sanders	5354	0 0 2 00	0 0 1 13	0 0 2 00
McLennan	5870	0 0 2 07	0 0 1 05	0 0 2 00
Tippet	4367	0 0 2 10	0 0 2 15	0 0 2 00

For the works of the King's Cross Patent Wheel Company, drawings for iron buildings, &c. prepared by Mr. Baker, architect; for machine-shop and mechanical works, by Messrs. Charles Fry. Quantities supplied by Mr. S. R. L. C. and Mr. Henry W. Pass:—

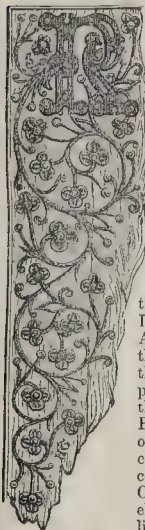
	Con. No. 1.	Con. No. 2.	Con. No. 3.	Total.
Longmore and Burce	£. 2,094	3,383	1,020	7,133
Low and Newham	2,117	3,295	1,529	7,033
Reid and Co.	2,045	3,187	1,71	6,933
Trooper and Sons	2,068	3,227	1,539	6,884
Mallett	2,100	3,050	1,600	6,810
Vicker and Neave	2,058	3,095	1,711	6,761
Reid and Co.	1,920	3,113	1,611	6,744
Barnes	1,932	3,185	1,633	6,690
Rymers	1,980	3,038	1,635	6,662
Moxon	1,813	3,052	1,669	6,650
Bird	1,840	2,560	1,470	6,170
John Glyn	1,845	2,740	1,410	5,995
Ray	1,747	2,867	1,350	5,964
Hammond	1,720	2,778	1,402	5,899
Palmer	1,890	2,710	1,381	5,980
Mann	1,816	2,677	1,399	5,792
Purkiss	1,798	2,803	1,172	5,733
Robertson and Son	1,791	2,510	1,421	5,741
Stevenson	1,603	2,523	1,330	5,555
McLennan and Bird	1,683	2,516	1,345	5,555

* Those marked with an asterisk (*) were too late.

The Builder.

VOL. XVII.—No. 837.

The Past Week.—The Lecture Course—Royal Institution.—The Foreign Office.



ARELY have there been so many persons talking about architecture, or so many matters, interesting to those concerned in it, under discussion, as there are just now. The number of lectures delivered, indeed,—all readable and interesting, and many valuable,—is so great, that we can scarcely find space to place them before our readers without trenching upon that reserved for our own notices, observations, and correspondence. At the Royal Academy, the Institute of Architects, the Architectural Association, the Architectural Museum, the Architectural Photographic Society, the Museum of the Department of Art at Brompton, lectures tumble over each other in rapid succession; while all over the country, as at Liverpool, Oxford, Birmingham, and elsewhere, the example is liberally followed. Mr. Sydney Smirke delivered his second lecture at the Academy, on Thursday in last week, and we shall print it hereafter: it treated of Ornament. On the following evening, Friday, Mr. Denison, Q.C. entertained the members of the Royal Institution, in Albemarle-street, with an exposition of some of the causes which conduce to the unpopularity of modern Gothic architecture, wherein he fluently, and with much vigour, scoffed at every body and every thing, excepting two churches recently erected "under his superintendence," in Doncaster. These successful works he denominated "monuments of soldiering;" and he made it evident that but for his supervision, Mr. Scott—no, Mr. Scott's clerks—would have produced here two of the same namby-pamby, flat, ineffective, and ridiculous buildings as are to be found everywhere else, and have served to prevent Gothic from being popular. Mr. Denison abused the profession generally, the "light and neat" principle adopted by them, Mr. Ruskin's logic, the colour mania, the present striving for height, finish, precision ("precision of any kind is feebleness"), the eclectic mania, the "architecture of the future,"—in fact, nearly every thing that he mentioned. Our opinion on some of these points is known; nevertheless we must, in the interest of art and progress, question Mr. Denison's right thus to sneer and condemn. The staple of the lecture was a repetition of what he has before said and printed on two points,—the folly of modern architects in placing the tracery of Gothic windows nearer to the outside than the centre of the wall (a folly, by the way, often exhibited by the Medieval architects), and the stupidity of putting a fine surface on the stonework,—the vile process which is called "finishing." The objection to these courses deserves every consideration, and has been felt by many besides Mr. Denison; but it will not in all cases hold: it is but a half truth, and cannot be laid down as a not-to-be-departed-from canon. Mr. Denison is an able man, who does not scruple, as he says, "to censure and expose the particular men" who may do what he happens to think is not right; and there is the more reason, therefore, why he should be exhorted to the practice of charity and moderation, and reminded that good men have differed in opinion, and that sometimes the want of knowledge of an occurrence is assumed to prove that it has not taken place.

On the same evening the House of Commons, on Mr. Tite's inquiry as to what steps had been taken relative to rebuilding the Foreign Office in Downing-street, discussed the question of style, and the lecturer made it the reason for a fling at that "great authority in matters of art," as he expressed himself, "Lord Palmerston." The taunt was, probably, simply founded on the fact, that while accident had on the one hand led Lord Palmerston to find beauty and fitness in Greek architecture, and none in Gothic, it had made the lecturer delight only in the latter. Were Lord Palmerston to speak in a peculiar tone of that "great authority in art, Mr. Denison," he would, probably, be as well able to prove it. A plague on both your styles, say we. As long as the discussion is carried on only on such grounds, we shall have no progress in architectural art.

The heads of the discussion will be found on another page, but we may here say that we have little sympathy with the objectors on that occasion. The objections taken were mainly those that have been removed, such as deficiency of light in the design, and costliness. Mr. Scott, writing us on the subject, says,—

"When I entered upon the competition, I felt that great stress would be laid on the lighting of the rooms. I gave, therefore, the most special attention to this, making my windows and their individual lights of extraordinary width, opening as ordinary sashes, and glazed with very large single plates of glass.

Hearing, long afterwards, in the evidence of some of the witnesses examined by the special committee, the necessity for large windows mentioned as an argument for the ordinary Italian or Grecian style, and feeling sure that my windows were far above the average size, I carefully collected the dimensions of the windows of sixteen or seventeen of the leading public buildings of London, including the Palace and the principal club-houses; and, taking the area of glass in each, I made a statistical table of their contents, as compared with those of my own windows; and the result was, that, according to the classes of windows compared, my own exceeded those of the average of Grecian and Italian buildings by from 24 to 63 per cent.

Yet, in spite of this evidence, I observe that the deficiency of light is still brought up as an argument against my design; and while the smallest windows in any of the buildings I examined were those of the Board of Trade, that building, with windows not much exceeding half the size of my own, is still spoken of as the proper guide for the style of the new offices, whose great desideratum is increased light.

Again, though I showed before the committee that my windows were glazed with large sheets of plate-glass; that they were to be hung as ordinary sashes; that they were not to be hung like those in the Houses of Parliament; and that my lights were nearly double their width, the windows of those very committee-rooms, from which I showed specifically that mine differed in every way, and especially avoided all their deficiencies, are still brought up before the House as the guides by which it may be judged what I propose to give!"

On the question of expensiveness he says:—

"Then again, all the professional witnesses, however different their views from mine as to style, agreed in this—that in point neither of cost nor convenience did my style suffer any disadvantage when compared with the Classic styles,—an opinion which the committee adopted in their report. Yet I find it boldly stated that my style will be both expensive and inconvenient, and that it gives at the maximum of cost the minimum of accommodation!"

Persons may differ as to whether or not the evidence of Mr. Burn and the assessors was good for the exclusion of Messrs. Coe and Holland, but not for establishing an equality between Messrs. Banks and Barry and Mr. Scott; or as to whether Sir Benjamin Hall's reservation of a right of choice among the premiated designs authorized his successor to choose between the first premiated Italian and the first premiated Gothic designs; they may differ also as to the merits and suitability of the styles,—but surely there should be no difference of opinion as to the propriety of avoiding charging against a man or his proposals things which, in the hearing of, and in answer to, his

objectors, he had shown to be the reverse. Mr. Scott is suffering from those of his school who have been insisting on rigid adherence to the old forms and modes,—to glass in quarries of 5 inches,—to casements that let in the water and will not let out the head,—to mullions half as wide as the space for light,—and to the rejection of modern improvements and contrivances. Mr. Scott says, in other words, "I agree with the *Builder*. I am ready to leave a straight head or an arched head, as modern requirements or available materials may demand; to have mullions, or no mullions, as circumstances may dictate; to introduce the refinements and inventions of our own day, plenty of window light, our sculpture, painting, and art-manufactures."

At present, however, the opponents of the simple reproduction of Medieval buildings do not understand this.

We are dwelling too long, however, on one point, when there are half-a-dozen to which we can give but passing notice. For example, we can but mention that the lecture on Wednesday evening last, at the Architectural Museum, was given by Mr. Octavius Hudson, and that the subject was "The System of applying Colour to Architecture, deduced from examples of the thirteenth and fourteenth centuries." Mr. Hudson urged that each style of architecture had a characteristic mode of colouring, different colours being employed, as the styles produced differences in form, which he illustrated by various examples bearing traces of colours. He showed one which he considered exhibited two colours, red and blue, blending off to white in one member, the necking of a column.

In another part of the town, a body of competing architects have been getting a taste of the difficulty committees find in selecting the best design from those submitted to them, with the additional trammel of self-interest tending to lead them out of the right course. To their proceedings, however, we have devoted separate space.

Turning to another sort of architectural competition, the Metropolitan Board of Works have been appealing to juries in the little Court in the Broad Sanctuary, at Westminster, to settle how much, or how little, shall be paid to owners and tenants of houses in Long-acre and King-street, Covent-garden, required for the projected improvements there.

Mr. George Pownall, and Mr. Henry Hunt, aided Mr. Marrable; and Mr. Edward Roberts, Mr. Charles Lee, and Mr. Godwin, in one case, and Mr. Richard Tress and Mr. Bushell, in the other, were on the side of the tenants. The Board have enlisted the eloquence of the silver-tongued Mr. Montague Chambers, and have every reason to be satisfied with the result of his strenuous endeavours; but it may be well for them to recollect, that to administer justice,—to avoid doing injury to individuals, is as much their duty as it is to protect the public from extortion and chicanery. We may, perhaps, find an opportunity to put together some practical observation on the subject; but must here close our present gossip on the week.

MR. RUSKIN ON VENICE.

ARCHITECTURAL PHOTOGRAPHIC SOCIETY.

A MEETING of this society was held on Tuesday week, at 5, Pall-mall East. A number of valuable and interesting photographs illustrative of Venetian architecture were exhibited. The attendance was exceedingly large.

Mr. Ruskin, on taking the chair as announced, said that, in being permitted to introduce Mr. Street to the meeting, it was no part of his duty to insist on the value or interest of the present collection: its usefulness must be patent to all; and for the rest, it had been explained in a most admirable manner by their excellent chairman at the last meeting of the society. He might, however, be permitted to detain the assembly for a few minutes, whilst referring to a principal feature in the collection of photographs. The attention of the society had been mainly devoted to two Italian cities, which were interesting, not only in consequence of their past history, but of their present political position. Not only at this moment, but for many years to come, these two cities, Venice and Verona, must be in constant

danger of almost total destruction, in the event of any political movements taking place in Italy. The military preparations that had been made by Austria rendered this almost a matter of certainty. The Austrian guns bore straight down on the *façade* of the ducal palace, and on the very centre of the town of Verona, and it merely depended on chance whether that palace might not be shaken into the dust almost before any effort could be made to remove the causes that would give occasion for such an exhibition of authority. The meeting would permit him to express his sincere delight that Mr. Street had undertaken the duty of explaining the Venetian photographs,—a task for which that gentleman was peculiarly well qualified, having investigated the architecture of the north of Italy, not only with the utmost care, but with enthusiasm. Unlike the majority of architects, who travelled merely for the purpose of gathering such morsels as might be useful to them in their own business at home, he had travelled with a hearty admiration of all that he saw, and he had made his observations rather in a spirit of love than of labour,—at all times the preferable spirit. And not merely had Mr. Street done this, but he was qualified in a peculiar way by his natural gifts to interpret to his auditory the architecture of Venice; that architecture being, as they were all aware, distinguished from the architecture of nearly all the rest of Italy by its colour. The colour of the Venetian architecture was more or less the source of power among the Venetian painters, for it disciplined the eyes of those great artists who, whatever might be the general opinion with regard to their other qualities, were, as to colour, unquestionably supreme. He believed that if the testimony of the most renowned painters of all times subsequent to the Great Venetian school were gathered together, it would be found that they all bore testimony to the supreme greatness of the painters of Venice in this respect. There was a certain transcendental or religious character in other schools which they had never possessed, but as painters of colour they stood alone. This he thought might be established beyond doubt by the testimony of eminent artists. One man, Velasquez, when he went to Italy to buy pictures for the king of Spain, met Salvator Rosa whilst at Rome, who questioned him on his opinions with regard to Italian pictures. "Do you like Raffaele?" he inquired. "No," was the reply; "I don't care for him." Salvator Rosa went on to ask him about others; but finally said, "You don't like Raffaele, then we have nothing better to show you." "No," said Velasquez, "the great men are at Venice, and Titian is the first of all the Italians." This was the authority of Velasquez, and whatever weight they might be disposed to attach to it, at all events it left no doubt as to the impression which was made on the mind of that distinguished man. The same peculiarity was visible in the Venetian architecture as in their paintings: this would be noticed on glancing round the photographs. Mr. Street, whose own designs were pure beyond anything he had ever seen in modern architecture, in exquisite propriety of colour and in fineness of line, would not, he felt confident, recommend to the meeting an imitation of the luxury of Venetian architecture, but he was equally sure that he would enter into the beauty of their colouring, which was principally derived from their great study, the sea; which had afforded alike to all nations their best ideas. Conceptions were to be obtained from the sea-shore which could be had from nowhere else. The beautiful combination of purple and green with white, which was the foundation of all those lovely medallions in Venice, had been suggested by the shading of the rocks on the green sea, and reflected on the crests of the waves when breaking into foam. He knew how truly Mr. Street was impressed with these beauties, for he had seen a piece of his work in his own immediate neighbourhood. His friends and neighbours there had taken on themselves to build a Gothic church, which some two years ago was fortunately destroyed by fire. He immediately called on the different members of the congregation, and congratulated them on the occurrence: they thought him hard-hearted and lost to all feeling of true art, but since they had seen Mr. Street's restoration of that church they admitted that he had been right all along. This restoration, which was beautiful in all respects, was remarkable for a piece of colouring admirably introduced, and he doubted if it could be excelled by any of the colours in ancient art. In conclusion, he begged to congratulate the meeting on their good fortune,—first, in the district which

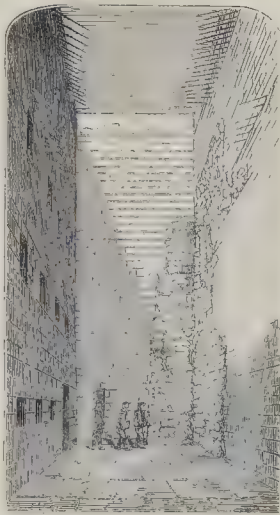
had been chosen for illustration; next, in the photographs that had been collected and the art on which they had been brought to bear; and above all in the lecturer whom he had now the privilege of introducing.

Mr. Street then proceeded to deliver a lecture on the subject of Venetian architecture, alluding more especially to those examples which were illustrated by photographs comprised in the collection. This we shall give in full hereafter.

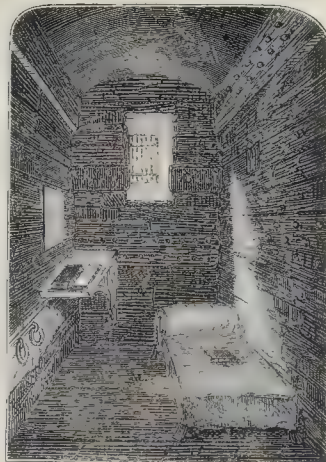
The Chairman said he was sure the meeting would concur with him in the expression of sincere thanks to the lecturer, for the pains which he had taken, and the intelligence which he had displayed, in tracing the peculiarities of Venetian architecture; although it was matter of disappointment to him, that from the limited number of photographs on the walls of the society, it had been impossible for that gentleman to give as consecutive a view of the subject as his thorough knowledge of it would have enabled him to do. As Venice was the subject of their consideration, they would perhaps permit him to add a few words in connection with these same photographs. He entirely accepted the condemnation of Mr. Street with regard to St. Mark's; it was a building that certainly could not be compared in any respect with the magnificent Cathedral of Chartres. But there was one feature that should make Englishmen ready to forgive St. Mark's. Venice was peculiarly the city of a mercantile and a warlike people: it was not a city that was given to ecclesiastical feeling in any respect—he meant thereby, ecclesiastical as distinguished from religious, for religion in a practical sense was found to have constantly influenced them in everything that they did. But to ecclesiastical feeling they were opposed, and even though Roman Catholics they were opposed to the ecclesiastical system; they were, moreover, always quarrelling with the Pope, and had no feeling of that abstract or transcendental kind which stimulated the architects of the rest of Europe in the formation of their noblest edifices. The characteristic of this school, which was shared in by Englishmen, was the feeling of disdain for that transcendental style; and we could not but feel that in their contests with the waves, and in their wanderings throughout the world, they were bringing from the luxurious East, and from other quarters to which their sway and commerce extended, materials for the instruction of the whole of Europe; and especially that they were fulfilling their duty in kindling the admiration and rivalry of the north of Europe, which meanwhile had given itself up to religious speculations and speculations, however, had arisen those aspirations of the mind which had given birth to the noble cathedrals, the proudest and grandest architecture that existed he believed in the whole world. It was interesting to notice in these photographs the subjection of the ecclesiastical to the secular architecture. In the one representing the Ducal Palace and Campanile, it towered over the city indeed, but could hardly be seen in the distance; whilst at Chartres, on the other hand, the cathedral was visible for a distance of twelve miles. With us it was only of late that our palace had begun to mount over our cathedrals; and perhaps it would have been better if it had not done so. He was quite sure that Mr. Street would have noticed the Venetian colouring, and he had gone at once to the colour of St. Mark's; but there was another point to be noticed with regard to these Gothic palaces, which would also account for the inferiority of their brickwork. There was no good brickwork in Venice; for, from the first rise of style among the painters, a considerable portion of it was covered with marble, and the rest was left as a field for the artist to work upon. Accordingly, at the close of the thirteenth century and the beginning of the fourteenth, they found subjects executed on the walls in brilliant diaper, scarlet and gold; and these had more recently still been followed out by great painters in the most magnificent way, so that the entire of those palace walls were filled with designs of the grandest colouring. One of the buildings to which the lecturer had just called attention, was not only remarkable from its beautiful window, but from the remains of a most splendid design, representing a flight of diaper angels with golden wings, on a scarlet ground—so numerous and beautiful in execution as to resemble a flight of seagulls. These Gothic palaces likewise displayed green and purple bosses, which had especial reference to the sea; and he was glad to see that Mr. Street had confirmed a supposition which he himself had entertained, but to which he was

afraid to give utterance, lest he should be thought fanciful, namely, that the floor of St. Mark's had been purposely rendered uneven, in order to convey an image of the sea. It was a beautiful thought, and he hoped that no more travellers would complain when they found a difficulty in walking on it, for it was the feeling of the old builder which had led him to do this—his love for the sea, which was indeed the throne and the foundation of Venice. He would only add one fact to the interesting discussion which they had heard regarding the Ducal Palace, namely, that the sculptures there which belonged to the fourteenth century were to be distinguished from those of the fifteenth by one very curious mark. Lions, or, as they were called, the lions of St. Mark, became a very constant ornament with Venetian architects, and they were invariably introduced over the spandril of each arch and throughout the building. The lions' heads of the fourteenth century always had fine wrinkled ears, which made them look more savage; but the architect of the fifteenth century, who must have been a smooth-going fellow, considered that ears without wrinkles were more graceful, and consequently he gave all his lions smooth ears. In front of the Ducal Palace there were two windows lower than the rest, which had also traceries left in them; there were also traceries left in other windows, but those of the two lower and larger windows fortunately rested on old capitals, bearing the lion with the wrinkled ears; and they were unquestionably the work of the fourteenth century. It did not follow, however, that if in Venice they found a bit of architecture of a certain date, they would be enabled to swear to the antiquity of the whole building, for the Venetians were marvellous thieves as well as merchants, and they used constantly to pick up a bit of stone wherever they could, and use it up with what was more modern. However, he had no doubt that these windows were of the fourteenth century, and that from them exactly the same meaning was to be drawn as from the floor of St. Mark's. He believed that the whole building was intended to be a type of the original raising of Venice on piles, and that this idea was borne out by the well-known paintings of Canaletti. The shafts underneath were arranged with a view to strength, and in such a manner as to confirm this view; they were singularly short and sturdy, and placed not so much architecturally as in order to bear the superincumbent mass that had been raised upon them. Mr. Street's utter disdain for the renaissance permitted him only to allude passingly to one or two of the photographs which might be interesting to the society. He had alluded to a discussion which took place in the House of Commons the other night; but it had proceeded on a misrepresentation of the facts, which were not known, and were confessed not to be known. The speakers stated that they were not acquainted with the style of Gothic architecture; they supposed it to be barbarous, or a combination of barbarisms, and on that supposition they were prepared to advance certain proposals for our new Foreign Office. But the saddest thing in all that debate was the total absence of perception by the assembly, of the connection existing between the Gothic architecture and our own Constitution. It was said to be a remnant of the dark ages, but it never seemed to occur to the speakers that the English Constitution was a remnant of the dark ages, and it seemed rather more desirable that the building for the purposes of our Government should be in the style of those noble vaults under which our sovereign worshipped, than in that of the edifice which was near to them, and with the central window of which such associations were connected—associations not altogether such as we should like to revive. But there were other points connected with the renaissance architecture, which could not be allowed altogether to pass without notice. They would perceive amongst the photographs three excellent specimens of palaces in this style, all notable for their enormous size, and each one with a peculiar aspect, imparted by standing out separate from the houses in its vicinity. Adjoining one of these they would observe a house of three stories in height, with another smaller one on the roof; all the houses in Venice were built with a view to afford comfortable room and air, and yet the top of the house which he had pointed out reached very little above the first story of the renaissance palace. The guiding spirit of the renaissance builders was ambition, and obeying this they cast aside all subjection to the old styles of architecture, and all the conditions of the country in which they were built. In the former edifices brick and clay, which were to be got from the lagnues, were freely introduced, but the

BITS OF LONDON.



Courtyard, Newgate.



Condemned Cell.

NEWGATE.—BITS OF OLD LONDON.

THERE is no sadder place to visit than a prison: it is more so than the hospitals, the dwellings of pauperism, or the asylums for shattered or dethroned intellect.

Many with hearts more heavy than those of the culprits themselves have passed through the narrow vault-like entrance of the Old Bailey prison, a building which, from its massive yet simple proportions and grim aspect, is one amongst the few architectural designs in the metropolis which are distinctly in character with their purposes. Many visitors to this prison, after they have ascended the steep steps to the spiked doorway, contrast the clean whitened entrance-hall, the portly and benevolent looking porter, and the quiet regularity which reigns, with the condition of the prison in John Howard's days, when the chief duty of the gaoler of Newgate was to supply strong drink *ad libitum* to all who had money to purchase, when male and female—the most criminal—even those sentenced to death for disgraceful deeds, were allowed to associate with the innocent and with unfortunate debtors and their families who were often obliged to find a shelter in this den, where the wildest and worst passions of humanity were allowed to run riot in an atmosphere the most pestiferous and terrible.

The chapel of Newgate, to which formerly persons of peculiar feelings were admitted to listen to condemned sermons, and meanwhile gaze at criminals trembling on the verge of the grave, is a London interior unique in its appearance. In this chapel, which is lighted by round-headed windows, the only relief from the black and white colouring are the royal arms. Opposite the pulpit are some pews of the style so common in George III.'s reign. On two sides of the chapel are galleries rising from the ground with strong iron railings in front, and also upper galleries, one of which has a mysterious-looking veil of black cloth hung before it.

The interior of the condemned cell, shown by our engraving, in which prisoners were at one time placed after condemnation to death, is an illustration of progress since Howard's time; when the last days of criminals were passed in the midst of drunkenness and brutal disorder, and the group of thieves would lustily at night cheer the convict who was to be hanged at Tyburn in the morning.

In the court-yard, with the high walls, into which but little sunshine can reach, is a part of the ancient wall of the prison, nearly destroyed at the time of the Great Fire of 1666, and injured in the riots of 1770.* From this yard the boy Jones, the chimney-sweep, who curiously intruded himself into Buckingham Palace, climbed up and made his escape.

The chaplain of Newgate has reported to the City Corporation on the fact that one part of this well-known prison has been altered, so that all

classes of offenders are not now huddled together in such a way that the youthful, and often innocent, are exposed to the contamination of the most reprobate characters; the hardy robber and ticket-of-leave man accommodated in the same common room with the young and well-educated clerk, who, in an hour of weakness, may, for the first time, have misconducted himself, or who may be even there only on suspicion,—and the young thief, practised from his birth in all wickedness, with some little child but past the verge of infancy, who may have, perhaps, gathered a few primroses or other flowers through the iron railings of a garden; and in the female department, those most profligate on the streets put close to those who, perhaps, have for the first time deviated from the path of innocence and honesty. In a prison such as Newgate, which is chiefly used as a place of confinement until those suspected of crime are either committed for trial, or awaiting their removal for punishment, the evil consequences of putting those confined into communication with each other is so evident, that it seems wonderful the practice should have been continued so long as it has. The chaplain remarks that since one half of the prison has been altered, so that a separate system can be practised, the improvement in the manner of the prisoners is most marked, and strongly urges the inconsistency of allowing the other portion of the prison to remain as it is.

HOW WE FORM HARBOURS OF REFUGE
DISCUSSION OF CIVIL ENGINEERS.

THE discussion upon Mr. M. Scott's paper, "Description of a Breakwater at the Port of Blyth, and of certain Improvements in Breakwaters, applicable to Harbours of Refuge," occupied four evenings, and led to statements which call for further inquiry.

It was stated, that the Admiralty Pier at Dover was formed of a hearing of large blocks of concrete, composed of Portland cement and shingle, and faced with granite. The width of the pier was about 80 feet at the base, and it was founded 45 feet below low-water mark, up to which level it was built by divers. The blocks were continued to a little above half-tide level, and above that point ordinary concrete was filled in between the granite faces. It was intended to have a parapet of Bramley Fall stone, on the sea side; but that was not yet constructed. The estimated cost for a length of 1,800 feet, including the parapet, was 650,000*l*.

In regard to a statement in the paper, that the cost of the works at Portland had been 150*l*. per lineal foot, it was stated, that the most expensive part of that work, in the deepest water, with the superstructure complete, and including the parapet and a wall 40 feet in width, had not exceeded 120*l*. per foot.

In reference to the calculated cost (150*l*. per foot) of the Portland breakwater, it was remarked,

ambitious builders, who were determined to raise structures that would quash everything else, were resolved to use nothing but solid stone. And very grand things indeed they made; but the end of them was ruin! for, as if to impress this upon us, the most notable of them all had never been finished; it was only half built, and on the top of this unfinished palace, in the centre of the grand canal, the grass now waved in perpetual desolation. In glancing at these photographs, it would perhaps be well to bear in mind the moral lesson which these facts conveyed. Although he had stated that Venice possessed no ecclesiastical spirit, Venetians were not wanting in religion in their earlier times, and they were most faithfully attached to their country. Perhaps in all Italy, or in the whole course of history, there was nothing to compare with the siege which was stood by the Venetians in the year 1380, when they were assailed by Pietro Doria and the Genoese. Their enemies had reduced them to a state of blockade, and had shut them out from all succour; and the admiral, Pizani, who had been forced to fight, by the impetuosity of his sailors, had been thrown into prison by the arbitrary spirit of the government of that period.—And, talking of prisons, he should like to correct an error on the part of those who accused the Venetians of cruelty in confining their prisoners under the leads, where they were exposed to the scorching heat of the sun; for this admiral was not confined under the leads, but in the body of the prison. At that time all seemed lost, and there was no hope for Venice but in the patriotism and spirit of the very man who had been imprisoned. The populace rose and claimed their admiral, and he managed to drag himself to the bars; and when they saw him, they exclaimed, "Live Pizani, live Pizani!" but he responded "No, live St. Mark." The Government yielded to the solicitations of the people, and restored the admiral; and after a series of the most interesting naval evolutions ever performed by any naval commander, the Genoese were reduced to total submission. That spirit lasted just to the close of the Gothic time; but at the very time that these magnificent palaces were being built, the courage of the nation gradually fell away, and they became more and more luxurious in all their habits, and less faithful to themselves, until nothing more was left to meet the attack upon them of Napoleon; there was no patriotism to induce any of them to come forward,—they were cowards, although meeting in these splendid halls. There were one or two curious things about their architecture, and one of the most striking was the adaptation of their style to the necessities of the place. A curious curve in the facade of one of their palaces struck the observer as a deficiency in architectural proportion, but the fact was that the canal bent just at that point, they had not lost their sense of architecture, though they had lost their sense of patriotism. Another looked as if it were not in perspective; such, however, was not the case, but the island on which it was built being triangular, the building of course could not be right-angled on one side. He did not know that he had anything further to say, beyond proposing a vote of thanks to Mr. Street, for the particulars which he had brought before them that evening. He was sure the meeting would all concur with him in the recommendation to foreign photographers to furnish more details of this most interesting city,—details were what that society required. He did not think, on the part of artists, he could accept the compliment which Mr. Street had paid them, for he did not believe that they could always tell what a building was by an artist's representation of it. He supposed that artists lost their heads much in the same way that others did their hearts, for he had seen a great deal more illusory painting by his own favourite Turner than by anybody else; and therefore, if they wanted to have "Venice preserved" as it really was, they should look mainly to the aid of photographic art. He believed, however, that artists would preserve that which photography could not possibly accomplish, namely, the beautiful colour of the Venetian facades.

Mr. Hesketh, in moving a vote of thanks to the chairman, said that it was the earnest wish of the committee to get photographs of sculpture. He begged further to state that on next Tuesday evening a lecture on Cairo would be given by Mr. Lewis.

INSTITUTE OF BRITISH ARCHITECTS.—At the next ordinary meeting, to be held on Monday evening, the 21st February, the following paper will be read:—"On Metropolitan Improvements as affected by the Bills now before Parliament," by Mr. T. M. Rickman, associate.

* See our volume for 1857, August 8.

that the basis of the calculation was in the Reports laid before Parliament. From the last Report, it appeared, that the total length already executed was 5,907 feet, including the entrance, 400 feet wide; and that the cost had amounted to £715,019. In this sum was included the cost of a coal store and jetty, which might be set down at 20,000, and of a length of superstructure of about 1,200 feet, irregularly constructed, which, at 45s. per foot, would amount to 42,000. These being deducted from the gross cost, left an amount of £653,019, which, being divided by the total length of the pier, gave 111s. per lineal foot. To this must be added the price of the superstructure, bringing up the sum to 116s. per foot, supposing the superstructure to be completed. But as the value of the convict labour was not allowed for in the cost of the work, the author had considered that the amount should be increased by whatever that was worth; taking convict labour, as compared with free labour, to be as three to one, nearly, being the proportion assigned to it by the engineer of the breakwater, or equivalent to 1s. 1d. per day, then the value of the labour of 800 convicts employed during the ten years the work had been in progress, would amount to 211s. per foot run, making the total cost 170s. per foot, whereas it had only been stated at 150s. per foot.

I reply, it was stated that the cost of the work, as given in the Parliamentary returns, included all the preliminary expenses, amounting to about 80,000 or 90,000, some portion of which had been incurred for special reasons; and that these charges must, in fairness, be distributed over the whole of the work, when it should be finished, as well as over all the contingent works. It was maintained that, in the most expensive portions, the Portland Breakwater had not cost 120s. per foot. The convict labour had not been charged to the cost of the breakwater, and it had yet to be ascertained whether that would affect the result. There were contingencies connected with the employment of such labour, which, although only subject to a mere nominal charge, would materially add to the cost in several other respects.

When there was to be a vertical wall, the slope should be so placed as to exhaust the force of the waves before they reached the supposed upright wall. This was judicious, and it was evidence of the correctness of the doctrine, that the form of section of sea walls should depend upon local circumstances, and should be fixed by the practical judgment of the engineer. At Dover a slope would not be practicable, as there were only soft materials at command, whereas at Holyhead and Portland there was abundance of hard material, and it was evident that in these latter positions slopes of "pierre perdue" were the proper kind of works to be executed, as they were less expensive, and required the exercise of less engineering and mechanical skill than upright walls. These latter were, doubtless, expensive works, and it was contended that if they could not be constructed at a less expense than the pier at Dover, which was stated to be now costing 415s. per lineal foot, such structures must be abandoned. At the present rate of progress, the projected Harbour of Refuge at Dover would scarcely be completed in less than one hundred years, and a cost of 5,000,000, but the actual cost would not be represented by that amount, as, if the interest of that sum was spread over the hundred years consumed in the progress of the work, it would, with the principal, amount to 40,000,000. Supposing, then, that our ancestors had commenced this harbour at Dover in 1739, what would have been its utility, as a work of military defence, during the past prolonged continental struggles, and would not 40,000,000, be much more usefully employed in reduction of the National Debt, than in a work of doubtful utility, either for the commercial marine or for the navy. If such works must occupy even fifty years, they had better not be commenced at all, as, by the time they were completed, the perils they were intended to guard against would have passed away. The great object, then, must be to devise some other and simpler system of construction for works of this kind; and it was a question whether some such plan of breakwater as those of which drawings and models were exhibited by Mr. Hays, Mr. Brunles, or Mr. Johnson, could not be adapted with advantage.

Reverting to the Blue Books, they would be found to reveal many things which were not generally even surmised. To the Report of 1845 there was appended the signature of Mr. James Walker, past president of the Institution. That report stated that the cost of breakwaters, whether constructed of "pierre perdue" or built as upright walls, would be nearly identical. Now, as a com-

mentary on that statement, it must be observed, as far as a Blue Book fact could be received, that the pier at Dover had cost 415s. per foot, and that at Portland less than half that sum. It was further stated that the works at Dover were to cost 2,500,000; those at Seaford, 1,250,000; at Portland, 500,000; and at Harwich, 60,000. Of these four works so recommended, three had been commenced, and two of them had been entrusted to Mr. James Walker, himself one of the commissioners.

The facts respecting Dover appeared to be, that the first contract was for 800 feet, extending from the shore, at a cost of 231,000s. or 290s. per lineal foot; and the renewed contract in 1851 was for 1,000 feet at 415,000s. or 415s. per lineal foot, and to be completed in 1861. It must be assumed that Parliament sanctioned that work, ordered it to be proceeded with, and voted the money on the report of the commissioners; yet, in 1858, on some of the members of a Committee of the House expressing surprise at the slow progress of the work, and asking Mr. Walker this question,—"Was it known, at the time it was decided to make the works at Dover, that it would take half a century to make them?" he replied,—"I do not suppose it was. I do not think any idea was formed at the time as to the cost or the mode in which it should be done." Hence it might be assumed that works were authorised and the money of the country was voted away by the Government, without any idea being given of the time of construction, or of the cost of such works, nor even of the mode of their execution. Now mark the result at Dover. About 100,000s. had already been expended, and yet it was at times nearly impracticable to effect the landing, at low water, of the passengers from the small steamers arriving from Calais until the outward bound steamer had left. This inadequate result, after such an expenditure, was not creditable to the administrative skill of the Government of the country.

At Portland the original proximate estimate was 500,000s. which, for the rough stone alone, was extended to 558,000s. It was, however, discovered subsequently that the mass of stone must be wider and deeper, and, therefore, the cost was increased to 932,000s. and it was stated that this addition was occasioned by an error of 7 feet 6 inches in the depths, which had been determined by soundings taken by one of Her Majesty's surveying ships, which had been specially deputed to make a chart of Portland Bay. Why an error of this kind involving an expense of 95,000s. had been passed over without any public notice remained to be explained.

The Harbour of Refuge of Alderney, which was estimated to cost 1,300,000s. had been placed in a situation where it was nearly valueless, as all shipping carefully avoided that part of the channel.

The works of St. Katherine's Bay, Guernsey, which were shown by the Blue Books to have cost 300,000s. were even, if possible, still less useful, as if a vessel would avoid Alderney, it would certainly not go near to Guernsey. The works were now stopped, and, after all the expenditure, there was scarcely shelter for a few oyster-boats.

The Parliamentary returns were nearly silent with respect to Holyhead. It appeared, however, that the original estimate had been 600,000s. but the expenditure, up to the present time, was 930,000s. The utility of this work was undoubted: it was in the right place; and the Government had at last wisely placed it under excellent and judicious management. There was, however, an unfortunate error in the original design of the work, the piers having been built concave in plan, instead of convex, towards the sea, thus making an angle in the construction, which was very prejudicial; and it was evident that, if the plan had been originally well considered, nearly 200 acres more of harbour space would have been obtained at the same cost. In fine, it appeared that but little hopes could be entertained of more rational proceeding on the part of Government so long as commissions were constituted as at present. The few members of acknowledged independence were swamped by other members, determined by foregone conclusions, and the schemes proposed by certain parties were, by some "hocus pocus," generally recommended. It was evident that no person should be placed on such commissions who was pledged to any system whatever, nor should the execution of any work be confided to any member of a commission by whom that work had been recommended. There were many modes of carrying out these views, and if a better and more equitable method was adopted, the best professional ability and the greatest executive skill would be secured, to the manifest advantage of the country. The subject is one which well merits the atten-

tion of some independent member of the House of Commons, who may do good service to the country by pertinaciously attacking and exposing the present objectionable system of executing all Government work.

The official abstract of the discussions on this subject speaks out much more plainly than is usual with that document.

THE ALBERT INSTITUTION, GRAVEL-LANE, BLACKFRIARS-ROAD.

On Wednesday in last week, the foundation-stone of this building was laid by the Right Hon. the Earl of Shaftesbury, whose presence had been solicited in consequence of his steady connection with the object of the Institution. The stone was laid with as much form as the heavy rain would allow; and after the usual speeches and hymns, the principal persons of the *cortège* moved on to a cold luncheon, at the schools in Green-wall; there meeting such of the subscribers as had not had courage to face exposure to the inclemency of the weather, but were still desirous to assist in the day's work.

The building, as explained by the architect, Mr. John W. Papworth, is about 50 feet deep, and will consist of a back and front structure; the floors, which do not range, being approached by an iron and stone staircase, occupying the centre of the front. On each side of the front are four living-rooms, 15 feet by 12 feet, supplied with water, gas, and ventilation from and to the street, according to the mode found efficacious by the peer above named, in rendering constant (by a concealment of the apertures) the ventilating tubes in his own labourers' cottages.

The back portion of the building has the basement devoted to five hot-baths, and twelve laundresses; the ground-floor to a reading-room for workmen; the height of the first and second floor, to a school in which service may occasionally take place: all these are about 40 feet by 30 feet. Over the back and front is to range a Refuge of about twenty beds, for which the funds (about 110s.) are now being begged.

The work, intended to be 43 feet high inside, is now being carried out by Mr. Down, of Union-street, for about 1,500s. exclusive of fittings. Mr. Papworth has taken great care in the supply of so large a quantity of water as will be required, and has therefore provided a cistern at one corner of the site in which each floor will have its separate cistern, &c. and tank. The front of the building, which faces the worst portion of one of the worst localities in London, will be a balustraded fence of brickwork, with an ascent to a porch, containing two doors; one, when open, dividing the basement from the rest of the building; the other, in similar manner, leading to the upper floors.

The front shows the application of somewhat Medieval Italian detail, with Renaissance principles. The effect, externally, will depend on the peculiarities of the forms of the shadows, on the east and west fronts; and on the application of red brick bands and dressings, to the bright, yellow brickwork of the front, which is 40 feet long.

The work appears to have been liberally supported by those who ought to be interested in the welfare of their fellow-creatures. Among the donors of the largest sums is Mr. C. J. Bevan (Perkins and Co.); and we understand that on the matter of party-walls great indulgence has been shown, under the advice of their surveyors, by Messrs. Calvert and Co.; and by the South-Western Railway Company.

When the building is completed, we shall have occasion to recur to this experiment of commencing under one roof in a very poor parish, the establishments in which the Prince Consort has shown so sound an interest, that it is proposed to call by the title here given, all those repetitions of the combination which it is proposed to build in other parishes, as soon as the architect has shown the actual cost of building and fittings to the respective committees.

We understand that the estimates of income formed by the promoter, the Rev. Joseph Brown, M.A. the rector of Christchurch, Surrey, appear to allow of very large margins, and yet to permit the assurance that the building will, besides paying the ground-rent, be self-supporting.

THE LIVERPOOL SOCIETY OF FINE ARTS.—The income of this society amounts to 1,662l. 5s. 4d. When the society started, a scheme was drawn up which estimated the income at 1,687l. 10s.

THE COMPETITION-DESIGNS FOR THE
REV. MR. SPURGEON'S CHAPEL.

THE AWARD OF PREMIUMS.

SOME of the architects, authors of designs for the New Tabernacle for the congregation of the Rev. C. H. Spurgeon, met at Rae's Repository on Saturday and Monday last, pursuant to arrangements which we have already mentioned; and on the last-named day, when the ballot-box was opened, it was found that forty-one architects out of the sixty-two had voted; and the final result was, that the first premium was awarded to the design, "Quod erat facierum" (as marked), which proved to be by Mr. E. Cookworthy Robins; whilst the third premium (in amount allotted by the committee, but second according to the manner of the award on Monday) fell to the design marked "Alpha," by Mr. William Hill, of Leeds.

At the meeting on Saturday, which was a noisy one, and not wisely managed, the motions for a reduction of the number of designs by preliminary ballot, to a smaller number for final selection by the same means, the design having the greatest number of votes to have the first premium, and that having the next number the third premium, were put, and not carried; but the following resolutions were passed:—

1. That each competitor be requested to vote for the two designs which he considers the best and second best.
2. That all designs which in their opinion will cost more than 17,000*l.* be excluded from receiving votes.

3. That all designs in which colour has been introduced in the elevations or perspectives be excluded also.
4. That any design having two perspectives be rejected.
5. That to pass any opinion upon the matter of commission to be charged, is not within the province of this meeting.

And previous to the opening of the ballot-box on Monday (Mr. Jarvis in the chair), in order that justice might be done to designs unsuccessful as to the first premium, but standing high in the votes, it was resolved:—

That in awarding the third premium, any votes a design may have received for the first premium be added to any number it may have received for the third premium, and the author of the design having the greatest number of votes, when so added together, shall be considered entitled to the third premium.

The scrutineers were—Mr. William Willmer Pocock and Mr. E. C. Robins, on behalf of the competitors; and Mr. Wm. Higgs and Mr. W. N. Olney, for the committee. The following architects voted:—Messrs. H. Grissel, H. Jarvis, E. L. Garbett, —Tarring, Alex. Fraser, J. R. Mann, Finch Hill, and Paraire, Graham and Phelps, R. H. Moore, S. Hewitt, John Johnson, J. Ashdown, De Ville and W. J. Green, J. T. Lepard, Herring and Knox, Richard Roberts, E. W. Godwin, Childs and Lucas, S. Field, W. B. Moffatt, Nicks and Letch, R. H. Burden, Edwin Pearce, —Cowell, —Lee, C. G. Searle, —Davis, James Cooper, —Stent, A. Billing and T. Jeckell, —Bardwell, E. C. Robins, W. W. Pocock, W. Hill (Leeds), —Russell, C. W. Eppy, J. E. Reid, E. P. Brock, Howell and Budd, James Wilson, F.S.A. (Bath), and —Tracey.

cannot consider that the case; for, amongst the designs which had votes were several manifestly not entitled to them: we may name the design "Veritas and Eagle"—a copy, in the internal decoration, of the St. James's Hall,—which had three votes for the third (or second) premium. The votes by Mr. Garbett, especially the vote for the design "Ubique" the author of which proposed to carry his roof by lattice girders on the outside,—we can only feel surprised at. Of what intervals of weakness and whim, opposite to their asserted and real principles, will not men of genius sometimes be guilty? Have we no recollection of letters addressed to us on the absence of art in the Crystal Palace version of building? Why, then, should "Ubique" have had its single vote, or the other design its word of favour, from one who wrote too well, some time since, to retain the opinions he for the moment has, on what constitutes good architecture? We wish that all had been obliged to state reasons for their votes. The design, "Non nobis Domine," and that marked, "In good faith," had each two votes, or, in each case, one for each of the premiums, though the misconception, remarked on by us, of the essentials in staircase-planning, should, with any competency of judgment, have prevented all chance of their selection. Similar instances might be given: indeed the selected design would be one of them.

We have spoken of the objections to very short flights of stairs, but have shown we are aware of the difficulty of avoiding such flights, whilst steering clear of the lately more prominent defects in staircases; and, equally, regarding well-holes, that we are aware of the very fair argument, from considerations of lighting and elbow-room, which may be used for them; though we think, as to public buildings, these are to be controverted. But there is no doubt of the disadvantage, or rather danger, of all stairs where there are wanderers of the common kind, in which, at one end of the thread, there is not room for the foot, and at the other end width too great, as being almost equally dangerous. Yet staircases as bad as any of those which caused us to pursue this subject of late, appear, we say, in designs which have here received votes; and *wonders* which have the defects we have spoken of, are to be found in the design placed first in the award of Monday last.

The votes of the authors of some of the best designs did not reflect credit on their judgment. As to the system, it is quite clear from the fact of the distribution of the votes and the smallness of the majority to one design, that a competitor, not possessed of principle, has only set to work a number of his pupils to get out designs, no matter of what sort, to qualify themselves for voting, and that he might thus derive the two or three votes which would be all that would be needed for a safe majority in his favour. However right the principle of an opinion by those best qualified, the question of *voting*, therefore, is open to much further consideration. As to good judgment, we cannot see that much of that was exercised in the single week allotted. Even in the drawings, there is generally no sufficient consideration of plan, and of the required arrangement of section. The back-seats of the upper gallery are often so slightly raised, as to be quite below range of the minister's sight. The architects copy the arrangement of the Music-hall, even more than they were called upon to follow it by the injudicious wording of the "conditions"; and few of them have thought of trying to provide the accommodation by only one gallery—like the authors of the design "Do unto others," &c.; not, however, to be praised on all points.

The design which has received the first premium has a good arrangement of the general plan, unless in the rather large number of seats in rear of the pulpit, and a certain questionableness as to the intended "standing-room" (which was to be otherwise than in the ordinary passages), and in the matter of the staircases; and it has a good exterior. To the idea of the exterior, the plan so far as regards the staircases, has, we apprehend, been made to conform. The error of proceeding is too common in architects' designs. If there be one profession more than another that requires in the preparatory education, to be indoctrinated in the rules of *thought*, it is the profession of the architect. It is sometimes said that plan should be designed first, and decorative character afterwards; but, that course, though better than neglecting essentials, is not exactly that which the mind and operations of the architect should observe. It is better to rule that no main essentials of plan shall be sacrificed; but that with such reservation, the several objects shall be reached by the same or parallel advances. The art of making a good design is to first find out the key-note, or logical starting-point, and to

MOTTOES OF THE DESIGNS WHICH RECEIVED VOTES FOR THE TWO PREMIUMS.		First Premium.	Second Premium.	
1st	"Quod erat facierum"—(First Premium)—Mr. E. C. ROBINS.....	5	+ 3 = 8 Votes.	
2nd	"Alpha"—(Third Premium, <i>i. e.</i> Second as awarded by Competitors)— Mr. WILLIAM HILL, LEEDS.....	4	+ 4 = 8 "	
3rd	"Ebenezer".....	4	+ 2 = 6 "	
	"Hope".....	4	+ 2 = 6 "	
4th	"Lex".....	1	+ 5 = 6 "	
5th	"The Propagation of the Faith".....	3	+ 1 = 4 "	
	"Honi soit qui mal y pense".....	2	+ 3 = 5 "	
	"The Temple".....	2	+ 1 = 3 "	
	"Templa quam dilecta".....	2	+ 1 = 3 "	
6th	"Fiat justitia".....	2	+ 1 = 3 "	
	"Omega".....	1	+ 2 = 3 "	
	"He that soweth plentifully shall reap plentifully".....	2	.. = 2 "	
	"Veritas and Eagle".....	..	.. = 3 "	
7th	"Let the House be builded".....	1	+ 1 = 2 "	
	"In good faith".....	1	+ 1 = 2 "	
	"Truth".....	1	+ 1 = 2 "	
	"Non nobis Domine".....	1	+ 1 = 2 "	
8th	"Faith".....	1	+ 1 = 2 "	
	"Deo volente".....	1	+ 1 = 2 "	
	"Do unto others as you would they should do unto you".....	1	.. = 1 "	
	"Here I raise my Ebenezer".....	1	.. = 1 "	
9th	"A 1 for 4000".....	1	.. = 1 "	
	"Metropolitan".....	..	.. = 2 "	
	"Except the Lord build the house, they labour in vain that build it".....	..	.. = 1 "	
	"M".....	..	.. = 1 "	
10th	"De propaganda fide".....	..	.. = 1 "	
	"The Tabernacle".....	..	.. = 1 "	
	"Ubique".....	..	.. = 1 "	
28 Designs.		41	82 Votes.	

We give above a statement of votes, arranged in such order as may present features of the case which are interesting in the question of advantages from competitions, and that of a method of selection by competitors themselves. These features, so far as they are of an objectionable character, are, though capable of modification in future, sufficiently important to call for some remarks.

Whether from votes having been recorded previously, or otherwise, some of the resolutions of Saturday were not fully carried out, as reference to the tabular statement will show to those who have seen the drawings. The voting-cards were signed with the names of the voters, so that some of the disadvantages apprehended in the method of voting, were not realized. The present experience, however, establishes the truth of what we said, that the absolutely open voting is the best, and is indeed necessary. The voting-lists having been publicly exposed in the exhibition-room by desire, we have not hesitated to give names.

The committee were able to guarantee from the list in their possession, that all who voted were *bona fide* authors of designs. But as only forty-

* And the rest of the collection (though including designs manifestly equal to some of those in special favour) according to the voting, nowhere.

one competitors recorded votes, it followed that of the number (twenty-one) not voting, each one had a chance in his favour which was not intended, and was denied to the rest who did vote. Both the successful architects voted, and for designs not their own, as intended; but, in future cases, if the mode of adjudication should be followed, it is clear that each competitor should be bound to vote, or should be placed out of the number of candidates for selection. There is another difficulty in the mode of adjudication less easily to be got over. Without reference to the inadequate study of the designs by the competitors in the single week,—to which point we adverted in our last (whilst it is obvious to us that nearly every one of the competitors has voted on what cannot be called matured opinion), the voting-power given to every one who attempts a design, a majority being incompetent professionally as well as judicially, does not necessarily lead to a decision on which weight can be placed. It will be seen that out of the sixty-two designs, as many as twenty-eight received votes of one kind or another; those designs in the greater number of cases, having either one or two votes only. It is true that this might have resulted from generally an equality, or nearly so, in the designs exhibited; but we

secure each object in right sequence, and with no undue preponderance over another. Architects are not so much, as the public believe, open to the charge of sacrificing a plan to a showy exterior; neither do they usually forget the uses of a structure or its need of strength. But in the matter of good planning, we mean planning for use and decorative effect both, they have something to learn, and chiefly by that sort of mental exertion and regulation, which would ever stay them from sacrifice of a great whole to one part, to a whim or a prejudice. The notion in this case seems to us that of making the plan with quadrant corners, an arrangement which adds something to the design in perspective, but may have cramped the space for the stairs so much as to lead to the objectionable winders. The arrangement of the chapel is that of an area, of general oblong form, with semicircular ends, but very slightly elongated; the galleries taking a similar form. Three thousand persons seated, and one thousand standing are said to be provided for; the estimate, including commission, out of which the clerk of the works is to be paid, and a charge for measuring, being 16,169*l*. There are two galleries, and the body of the structure is covered by a semicircular ceiling, with long skylight and louvre openings, showing not ineffectively externally along the summit of a sloping roof-covering. Entrances are planned for the sides besides those at the ends. In the principal elevation is a Roman Doric portico, which is well planned, but is slightly defective so far as regards certain ornamentation of the pediment. The columns are coupled—the intercolumns, three in number, a square pier, however, taking the place of one column at each angle. The order continues round the quadrant corners, and in the flanks is crowned by an attic. Thus, there is proper union between front and flanks, whilst the stories are lighted without prejudice to the same harmony.

In the design which has received the other premium, the internal arrangement is rather different, and the external harmony is of the same character, though decoratively inferior. The staircases, four, oblong on plan, at the angles, are probably better than those of any of the designs, inasmuch as they avoid alike winders, well-holes, and very short or long flights. These staircases form masses at the angles, and are carried up with attic stories above the level of the general cornice of the flanks. The coins are treated as *ante*, with rusticated shafts, and capitals like those of the portico. The latter feature is hexastyle and Corinthian, well composed, unless as regards the roof backed by a piece of attic, instead of continuous of the roof of the body of the building, which has a rather different outline externally. The general area of the chapel is square at the ends, whilst the ends of the first gallery are semicircular on the line of front, and the second gallery runs along the sides only. An organ is shown. The ceiling is semicircular. The entrances specially for the lower story, might be increased in number with advantage: there seem to be but two of the kind. The numbers provided for are the same as in the last design, but with the standing-room as required, and the estimate is £11,150.

It would not interest our readers to describe those works which were not named in our last notice, particularly since we are obliged to disclaim any power of settling the merits of designs, or arriving, by a glance, at the matured decision expected from those who have had their attention drawn to the particular proposed structure. We merely notice some points of planning which the committee must not overlook; and regret the prevalence of a character of design hardly that of buildings for religious uses, and which the particular condition as to style did not absolutely necessitate. The competition is no exception to the usual experience as to the difficulty of bringing to the aid of authorities, the best existing talent, in the preparation and in the choice of a design. It has been somewhere remarked that one chief evil of the prevalent system is, that it shuts out that interchange of ideas as to objects of the work which exists where an architect is consulted as by a private employer. But, without forgetting the obvious defects and the questionable advantages of the system, it is clear that if the exhibitions could be managed in the manner for which we have at different times contended, some advantage, in greater proportion to the wants of the committee and the labour given by architects, would result. We wish to lay the greatest stress upon the opportunity for study and interchange of ideas, which such exhibitions might afford. We think it is manifest, from the voting, that real study

had not been given by the competitors in the week before they were required to adjudicate. On Monday, after the decision, much time, however, was devoted by several of the architects to the exposure of the weak points in different designs, and amidst a good-humoured fire of raparets, many truths were learned which will be guides for years, and which, if spoken previously would have modified some votes and done more to help the committee than will the actual results of the award.

We have not received the committee's award of the second premium. It will probably not harmonize with that of the competitors. The peculiar adjudication divided between competitors and committee, was badly chosen; and it might, for example, either give the design "Alpha," two premiums, or keep it in the third place, that is one worse than that to which the architects considered it entitled. The exhibition closes on (this) Saturday. The admission-money was reduced after our allusion to the subject of it.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

MR. G. G. SCOTT ON THE ARCHITECTURE OF THE THIRTEENTH CENTURY.⁽²⁾

I WILL now lead you on a short excursion out of London, to a glorious old temple, which was, in the days of my pupillage, considered to be within walking distance, and can now be reached in less than an hour by railway.—I mean the venerable abbey church of St. Alban.

You probably know the general history of this church;—founded over the tomb of the protomartyr of England, and within ten years of his martyrdom, and rebuilt upon a larger scale by Offa, king of Mercia. It was again rebuilt of its present enormous dimensions by the earl of the Norman abbots, using the materials excavated from the ruined city of Verulam.

The Roman brick was not a material very suggestive of ornamental architecture, and we accordingly find the original portions to be plain and massive in the extreme, but nevertheless highly impressive and interesting.

In the work of a later Norman abbot, we find this unhappily material used with stonework, and of richly decorative details, but the church in general retained its severe simplicity unimpaired till the accession of Abbot John de Cella, in the reign of King John.

This worthy abbot was more a man of taste than of business, and his temperament more sanguine than calculating. He had no sooner taken possession of the abbacy, than he embarked on a magnificent project for rebuilding the western facade of his abbey—only a prelude, probably, to the reconstruction of the whole in the new style.

The massive brick front, with its flanking towers, would have formed an excellent nucleus for his work, but his ardent spirit would not submit to such an expedient, and he at once took down the vast facade, and that before he had collected money for the new one. The consequence was, that he had scarcely got his new work out of the ground before his funds were exhausted. His first builder turned out a rascal, and he had to discharge him: the stone he used was destroyed by the frost; and, mishap after mishap following his undertaking, the worthy man was led, as is so common with bad men of business, to bend his proud spirit to a paltry trick, and, as a means of raising the wind, he sent one of his monks about the country with a man whom he declared to have been raised from the dead by the agency of the relics of St. Alban, and begged money on the strength of the miracle: but all would not do, and after ten years' labour, during which the old historian tells us that all the funds he procured were merely like rivers flowing into the sea, which was no fuller for receiving them, he could not bring his work above the level of the masons' shed; and at length, giving it up in despair, contented himself with more humble undertakings.

He was succeeded by Abbot William de Trumpton, a man who united, with the taste for building inherent in the age, a more moderate ambition and greater aptitude for business. He resumed the suspended works, but moderated their costliness; and making all the details plainer, and giving up or postponing the flanking towers, he was not only enabled to complete the rest of the front, but also to carry on the new work a long way down the nave, and subsequently to make many other alterations.

Now, I beg you to go and examine these works, and in doing so to bear in mind their history.

You will find, as the Chronicler tells us, that just about the height of a mason's shed, there is a sudden change in the work: up to that height the details are very superior, and far richer than above. Below we find traces of the artist; above, of the constructor and man of business, though not to the forgetting of art. Thus, round the piers below, are bases for marble shafts; somewhat higher, are the marks where their moulded heads have been broken off; but above, their capitals are wanting,—

"For William's shears had cut the bauble off."

The three portals I alluded to in my last lecture are the work of the unfinancial artist,—the range of pillars, &c. down the nave of the not inartistic man of business:—both are noble works. Trumpton's works are bold and massive, and his details good, though simple; but for beauty of design we must award the palm to his less thrifty, but more *spirituel* predecessor; indeed, I know few works equal in design to what he commenced; and had he been able to carry it out, this facade might have vied with that of Wells. Unhappily there are, externally, little remains of the work of either of the abbots. Late in the century the choir, also, was in great measure rebuilt. Its character is less forcible than the earlier works, yet exceedingly beautiful.

The eastern chapels (which opened by five arches into the church) were at the same time commenced, but only in part carried out, the body chapel having been stopped short after rising a few feet from the ground, and the chapels which opened from the choir having suffered considerable alterations from their first design. They are now virtually in ruins, but their details are of exquisite beauty. The windows have tracery of very high merit, and the wall arced (now almost entirely destroyed) has been quite charming.

These works form a continuous series, from the last days of the twelfth to the end of the thirteenth century, and an admirable illustration of the architecture of that great period.

I will dip seven years into the succeeding century, to mention the exquisite fragments of the substructure which carried the shrine of the protomartyr. They have recently been exhumed in opening a walled-up arch. They are of Purbeck marble, and, in spite of the stubborn material, are most wonderfully carved, the leaves being so much undercut as in places to be quite detached.

This venerable church possesses claims upon the student residing in London second only to those of our own Abbey of Westminster. I recommend it to your special and diligent study, and you will, I am sure, never blame me for my advice.

On some of your visits there pray go to Dunstable, where you will find a noble priory church in the later Norman style, whose western portal was probably in its day the finest in the kingdom; but owing to the friable clunch of which it was constructed, has lost the greater part of its decorations. The west front contains excellent work of the thirteenth century. It is a great architectural enigma, which I believe I have solved, but I will not spoil it for you by explaining my conjectures.

I begin to see, however, that I have embarked in an endless task, and have got half through my time without getting through the home district. I will, therefore, leave it, with a request that you will not consider Stone Church, near Gravesend, the worse for having become somewhat hackneyed. It is a mutilated work, but what remains of it is as exquisite an example of a period about agreeing with that of Westminster Abbey as can be found anywhere to be found.

As I cannot pretend to give you a complete architectural itinerary, I will imagine, not seeing my way to a better, a northern tour, in search of works of the age I have been treating of, and giving a passing look at Waltham Cross, in which I once delighted, though now, I confess, its so-called restoration has rather damped my enthusiasm; and hastily looking in at Jesus Chapel, at Cambridge—a very excellent specimen of Early English—let us proceed to Ely. I have repeatedly alluded to the two great works in our style which it contains. The western porch, built between 1197 and 1214, is by far the finest object in this country. It is peculiar in its size and position; more of a narthex, perhaps, than a porch, or rather the western arm of the cross formed by the western transept. Externally it is covered with decorative arced in four ranges. It is of two stories, the upper one having formed a spacious chamber. The angle buttresses are of that beautiful kind which are almost peculiar to this period, being of the form of clustered pillars.

The two portals—the outer and the inner—are,

* See p. 89, &c.

in their leading forms, alike: they are double, and of very lofty proportions. Their heads were formerly filled with the *Vesica Piscis*, probably containing sitting statues, but this—why it is impossible to divine—was taken out in both instances, and a wretched piece of flowing tracery substituted by Bernasconi, to the no small detriment of the doorways.

The inner doorway is an exquisite work of art, the mouldings being most beautifully foliated. The sides of the porch are arcaded in two stages, in a most beautiful and artistic manner, and probably contained sculpture. The capitals are among the finest to be found in any English building. The porch measures internally 40 feet by 30.

The other great work of this century at Ely consists of the six eastern bays with the east front. They were commenced by Bishop Northwold in 1235, and completed in 1251.

It forms one of the finest specimens of the Early English style. The noble development of its triforium is an inheritance from the Norman church, with whose levels it was made to range. The liberal use of Purbeck marble adds vastly to the beauty of the work: the pillars are entirely of this material, including even these richly foliated capitals, as are the long and elaborately-carved corbels, which carry the vaulting shafts.

The carrying out of the whole, its proportions, its details, its mouldings, the massive strength of its construction united with such a sufficient degree of lightness, the great elegance of its vaulting, and the grandeur of its eastern façade, render it one of the most valuable objects of study which we possess. The tomb of its founder is a wonderful work of art,—a canopied effigy surrounded by statuettes, angels, and even subjects all in a single block of Purbeck marble.

There are other works of our period at Ely, and fine ones, but we must not linger there, but proceed onward to Peterborough.

If the three great arches which form the west front here are to be viewed as portals, I was certainly wrong when I said that English portals were small and inconspicuous. These are, in fact, of such vast elevation as to deprive them of that title. The whole may be viewed as a vast portico, it is true, but the doorways are within it, and of moderate dimensions, while above them, and still below the arches, are considerable windows. It is in fact a design which stands quite by itself, and can scarcely be judged of by ordinary parallels.

I confess that to my eye it has always appeared as a glorious conception, though one not often to be repeated. Had its flanking towers been completed in the same style, the two great towers which backed it up completed with their spires, and the odd little chapel which has been thrust into its central arch omitted, I know few fronts to which it would yield in grandeur, and none in originality.

Peterborough once possessed a noble work in the latter part of the century, in its Lady Chapel, but only a few fragments remain. Its mutilated cloister, the gateway to the Bishop's Palace, and the ruins of the Infirmary, are beautiful works of this period. I know few cathedrals which externally I more enjoy than Peterborough.

In old coaching days I used often to pass through at between four and five in the morning, and, if daylight permitted, I made it a point of conscience to run round the cathedral, while the mail-bags were in course of arrangement, and never will the impression it produced on my mind be effaced. I know no more beautiful group than its western transept presents as you return upon it from the north-east.

We come here into a country replete with village churches, many of which are in our style. Warrington, for instance, between here and Oundle, is an almost perfect thirteenth century church, and I only mention it as one specimen, for time would fail me to enter upon even an enumeration. Off to the north-east, too, there is West Walton, with its splendid and unique detached tower, an almost unequalled example; and nearer at hand are the mournful and tottering relics of the sister Abbey of Crowland, the details of whose western front are hardly to be surpassed, and are the more interesting as having been evidently the work of the architect to the eastern part of Lincoln Cathedral. Even the stone is from Lincoln, though it is a material not used in the district.

As you go from Peterborough to Lincoln, whichever road you take, there are endless series of village churches, as well as others of greater pretensions. Stamford is rich in work of this age, but I will only allude to the churches of St. Mary's and All Saints. Close by is the beautiful Early English town of Kettering. Grantham possesses the

most stately steeple (next only to Salisbury), in the kingdom; and on another road I may mention Frampton as having the most perfect of all simple early towers and spires that I know. But let us hasten on to the crowning glory of the district, whose lordly towers preside in serene majesty over the whole surrounding country.

No English cathedral is externally so imposing as that of Lincoln, nor do I recollect any abroad which, as a whole, surpasses it; and nearly the whole of its sublime architecture belongs virtually to this century, though in actual date it begins a few years earlier, and ends a few years later.

It is the custom to speak of Salisbury as the great typical example of the Early English style, and its unity and completeness may warrant the claim, but both for the grandeur of the whole and the artistic beauty of every part, and also as a complete exponent of English architecture throughout the whole duration of its greatest period, Lincoln far surpasses it. Its leading features form a perfect illustration, and that on the grandest scale, of the entire history of our architecture, from the last years of the twelfth to the early part of the fourteenth century.

As I have so often mentioned, the Pointed style commences here with the choir, the smaller transept, and the chapter-house, all of which seem to have been erected before the year 1200 by Bishop Hugh. It is commonly stated that his architect was a Frenchman, from Blois, and M. Lassus broadly states that he reproduced at Lincoln, in 1188, the design of a church commenced at Blois in 1138. I am not able to speak as to the authorities on which these statements are founded, but I must say that the internal evidence afforded by the building itself gives it, so far as I can judge, little or no support. In the first place, an Eastern transept, in addition to that at the main crossing, is much more frequent in England than in France: whether the cathedral of Blois (now destroyed) possessed this I do not know. In the second place, the polygonal chapter-house is an equally English feature. In the third place, one of the most remarkable characteristics of this work is the nearly universal use of the round abacus, that distinctively English detail, and that at a period somewhat earlier than that of its general predominance. The general distribution of the parts seems to me rather English than French, and, though the work displays some idiosyncrasies, I do not see in them anything to indicate a French origin, unless it be in the capitals of the main pillars: indeed, it is a work in which distinctively English characteristics appear in a somewhat advanced state of development. As to its reproduction of a work commenced at Blois in 1138, the assertion carries with it its own refutation, for in an age of restless progress it is likely that they would take the trouble to bring over a foreign architect of so retrograde a taste as to ignore the artistic progress made in his own country during half a century? In fact, the wonder of the work is its being so much in *advance* of its age, and that advance is not in a French but an English direction. The church of St. Nicholas, at Blois, is in the Early Pointed style of the latter half of the twelfth century, but bears not the least resemblance to this: it is of the same character which is usual in French transitional works, and its carving is strictly Byzantine, not a trace of which I have observed at Lincoln. If, then, a French architect was engaged here, he must not only have made over the details of his work wholly to Englishmen, but have studiously followed English forms in the general features.

The rebuilding of the cathedral seems to have been followed on systematically, westward, by the two successors of Bishop Hugh, till the completion of the nave by Bishop Grosseteste, about 1210.

The nave is by far the finest portion of the work as then completed, and is, probably, in the whole, the grandest example of the Early Pointed style in this country: it exhibits our Early English style in its highest state of development,—massive without heaviness, rich in detail without exuberance, its parts symmetrically proportioned and carefully studied throughout, the foliated carving bold and effective: there seems no deficiency in any way to deteriorate from its merits.

The west end is unique, being a vast and almost unperforated wall, covered over with range upon range of decorative arcading, flanked by two vast stair-turrets, and backed by two noble towers; the completion of which was, however, delayed till a much later period. It always strikes me as a very impressive front, but I find that it does not strike all eyes so favourably. I would call attention to the beautiful chapels to the right and left on entering from the west, with their light and elegant columns contrasting most agreeably with

the massive piers of the nave; also to the noble rose window in the north transept, perhaps the finest in England.

The most gorgeous part, however, of the cathedral is its eastern portion. This was added between the years 1256 and 1282, and is consequently a little later than Henry III.'s work at Westminster. It agrees with it in style, but carries out the principle of window-tracery on a far grander scale. It is, in fact, the most splendid work of that period which we possess; and, did it not lack internal height, I do not think it could be exceeded in beauty by any existing church.

The sculpture with which it was once profusely enriched was of a very high order,—the foliated carving perfectly exquisite, the mouldings and other details of the most perfect character. The east window is probably the finest in the kingdom, as is the east front in general, after allowing a certain abatement for the error of having false gables to the aisles.

I have already mentioned the exquisite portal, the sculpture in which is superb, and our gifted professor has published his views as to that which adorns the triforium.

The student of Mediaeval art ought to make a long sojourn at Lincoln, and study its treasury of art at his leisure; not forgetting, by the by, the beautiful remains of the chapel to the Bishop's Palace hard by the cathedral.

In passing northward from Lincoln, a profitable digression may be made to Southwell, whose noble choir seems to be an emanation from Lincoln, and its far-famed chapter-house from York; and to Newstead, whose beautiful west front and lovely carving agrees in style with the eastern portion of Lincoln.

Yorkshire is especially the land of minsters and abbey churches. To attempt here a description of them would be vain. A Yorkshire tour is one of the richest treats the student can look forward to, and one to which he ought to be liberal in his allowance of time. At York itself the transept is amongst the finest examples of the earlier part of the style, and the ruins of St. Mary's Abbey, of its later portion: I know few works so enchanting as the latter.

It agrees in date with the east part of Lincoln, and is not unlike it in detail. It is a mere wreck, but worthy of the closest study, and the shattered fragments which lie on every side offer melancholy facilities to the student. The chapter-house of the cathedral is a little later, and has been well called a "*Domus domorum*," though I would not willingly admit its superiority to those of Westminster or Salisbury.

The neighbouring village church at Skelton, said to have been built by the same hands as the transept of the cathedral, and the ruined chapel of St. Leonard's Hospital in the gardens round the abbey, show how unerringly the same style fitted itself to works of the most stupendous and on the humblest scale.

This great county is filled with the noble productions of the thirteenth century. The minsters of Beverly and Ripon owe much of their beauty to it, and scarcely one of the abbey churches, whose lovely but mournful ruins add a charm so melancholy to the secluded valleys of Yorkshire, fails to show the work of the great period.

I cannot attempt even a cursory description. Go, I pray you, and study for yourselves: go to Fountains Abbey and study well its choir and eastern chapels, with their beautiful pillars—the tallest, perhaps, in England, and the remains of its wonderful abbatial hall, exposed to view by the recent excavations, and its many other wonders; but do not be satisfied with a passing visit: take up your quarters at Ripon, and follow up your studies from day to day: a week is but a short allowance for so rich a school of art. Then go to Rievaulx and Whithy, twin works, it would seem, of the same accomplished architect: I cannot award the palm to either, they are truly a "*par nobile fraterum*," and it is fair to prefer whichever of them we have seen the last. Their great point of difference is that the choir of one has been vaulted, and that of the other has shown its timber roof; but in glorious architecture they are equal and almost unequalled. As you go from York to Whithy you pass a small fragment of the Abbey of Kirkham: stop and look at it. Small as it is, it is one of the best-designed pieces of work I ever saw. If from Whithy you cross the moors to Guisborough, you will see what was probably the work of the very end of the century,—the stupendous east end of that abbey, with its east window exceeding even that at Lincoln in height.

If you go on to Durham, the Chapel of the Nine Altars will rivet your attention; and further

vet, at Hoxham, at Dryburgh, and far on through Scotland to the chapel of Holyrood and the glorious remains of Elgin Cathedral, and that noble temple yet preserved unruined at Glasgow, you will find a long series of the footsteps of the art of this wonderful age.

In returning, pray look in at Furness Abbey, where you will find an absolute gem of our style in the ruined chapter-house. I intended to have had prepared an illustration of this exquisite little work, but time has failed. It has been of the same construction with the Temple Church, and of exquisite beauty.

But a mere catalogue is both useless and wearisome.

I have missed over the whole series of southern examples, as Hythe, Shoreham, Winchester, Boxgrove, Wells (the glory of our style), Landaff, one of its most original productions, Worcester, Lichfield, Hereford, and a hundred more examples, all of which supply proofs of the wonderful perfection of the architecture of this century.

I ought also to have called special attention to the circumstance, that while in France nearly every great church is vaulted, such is not the case in English works: they seem to have acted with perfect freedom in this respect, and their churches, even the largest of them, have frequently had open timber roofs, and suffer little by the variety.

One thing cannot fail to strike every one who closely studies our old architecture. In early Norman buildings we often find rude and clumsy workmanship: in works from the middle of the fourteenth century on to the extinction of Gothic architecture we frequently meet with the same,—the work of rude, untutored hands, evidently unable to do justice to their style; but from about 1175 to the end of the thirteenth century, and a little later, we scarcely ever meet with this inequality. The art seemed to be all-pervading. Certain buildings may have been plain to a degree, and rustic in their object and material, yet you rarely find anything you can call rude in workmanship or unskilful in treatment. It was a great period, and its greatness seemed to pervade even the most secluded districts, and the workmen everywhere to have felt a pride in keeping up to the period of their art in which their lot had been cast. Nor need we wonder at this, for everywhere were buildings going on: scarcely a village church escaped the notice of the builders of this wonderful age. The whole country was engaged in the one work of building, and that with an ardent feeling to render their work worthy of the style they had generated.

And let us not imagine that the architecture of the age developed itself only in cathedrals, abbeys, or churches of any kind: all other buildings evince the same spirit: a barn of the thirteenth century shows the nobleness of the prevailing style as clearly as even the cathedral itself, and what remains of their domestic architecture tells the same tale. Everything was done well, in good taste, and in accordance with reasonable and practical requirements and the means at command.

Nor was it to architecture alone that the arts of the period were devoted: we find the same art expended on stained glass, on metal-work of all sorts, on enamels of the most magnificent character, on the illumination of manuscripts, the painted decoration of the buildings, on jewellery, on ivory-carving, on embroidery, on woven fabrics, tapestry, seal engraving,—in fact, on every branch of decoration; every one of which arts is carried out with a degree of skill and instinctive taste truly amazing. All these branches should, however, be treated of separately.

In my enumeration of buildings I have limited myself to our own country; but we all know that in France the same great facts are, if possible, yet more wonderfully proved. The architecture of the thirteenth century in France is rendered illustrious by an endless category of buildings the most glorious, perhaps, which the world has produced.

Germany, though her style is broken harshly by the cause I have before alluded to, nevertheless furnishes, whether in the native variety of the former or in the adopted one of the latter half of the century, a series of buildings of which any country might well be proud.

In Italy the style was certainly imported from the north; but was it an unnatural transplantation? I should say by no means so. Had not Italy her own Romanesque, which she had in some degree imported to northern countries; and have I not shown that Pointed architecture was a natural and logical development from Romanesque? Why, then, should it be accounted foreign to the land from which Romanesque itself had sprung? And if the growth of Pointed architec-

ture was aided by ideas culled from Byzantium and the East, why should those ideas be less suited to Italy than to France or England, whose communications with the East were far less direct? Did she not take part in the same crusade,—nay, did not the Byzantine element in French art actually come there through the medium of Italy? Let us not, then, deny to her a fair participation in the architecture of the age. We had it before her, it is true; but let us not on that account say that it is none of hers.

The great fault in the Mediaeval architecture of Italy lies in its details, such as its mouldings, &c. which evince too much of their antique original: its great value lies in its use of materials of varied colour, of inlaying, mosaic work, and other decorative arts inherited also from the past. These arts ally themselves well to our style, though the classic mouldings do not so, and in our judgment of Italian work we should never lose sight of this: we may, otherwise, be led either to reject real merit from the offence which incongruous detail offers to our taste, or we may be led to accept what is bad and spurious because gilded over, and its demerits concealed by beautiful art which would appear to greater advantage if united with purer architecture.

Another point, however, which gives great value to the Mediaeval art of Italy, arises from the somewhat accidental circumstance that her internal position was such as to require town buildings very much of the kind which we want now. The consequence is, that Italy was, even in these early days, the land of street palaces, and that we find yet remaining there numberless buildings of a class which we find but rarely in other countries, and those treated in a manner very parallel with what we often require at the present day. Not, let it be borne in mind, that they are treated in a manner essentially different from the coeval works in more northern countries, but rather that there were more of them,—that these were on a larger scale, and that more of them have remained to our own day.

It is a mistake to suppose that the secular architecture of Italian cities essentially differed from that of the same period elsewhere. If you will carefully look through any book showing specimens of domestic architecture of France in the thirteenth century, you will find that it closely resembles that of Italy, except in having purer details. The same kind of window, for instance, which, from habit, people have got into the way of calling Italian or Venetian, prevailed in France and Germany, and is often found in England.

I could give you a series of Italian, French, German, and English windows of early date, where you could scarcely distinguish the one from the other. Indeed, you would seldom be able to detect an Italian window at all, if divested of the accidental clothing of its non-essential details. This establishes the unity of the style; yet the fact remains that works of the kind are more abundant, larger and more developed in Italy, and that they may consequently be studied there to great advantage as an aid and expletive to what we learn elsewhere.

This brings me to the concluding subject of my lecture—the question of what lessons we should learn from what has passed in array before us, and what effect it ought to have on our own artistic practice.

It would be hopeless to enter upon the general question of the revival of styles. I will suppose that question to have been disposed of for us, and limit myself to considering what is the most reasonable course to follow in conducting such a revival, or rather in carrying on the development of a style upon a revived basis, such as that of the architecture we have been considering.

Now, such a revival, to begin with, is hardly to be viewed as a deliberate act:—a man would scarcely be bold enough to make up his mind, *a priori*, to revive a style of architecture. Circumstances must have gradually led to such a course, and it must have been set about gradually and almost unconsciously, to give it a chance of success. We may, in looking back upon what has taken place, construct a very good theory for it all, but no such theory really led to it—it came about very much of itself. We may by thought and by studying our position, do a little in guiding an existing movement, but the movement itself must have arisen from some more hidden and deep-seated cause, or it would have died away long ago. What, then, does this deep-seated feeling demand, and with what will it be satisfied?

It craves spontaneously after a great style of art, which it sees to have been once the birth-right of our race. It demands that we should, I will not say simply *revive* that style of art, but

that we should *revivify* it,—not that it should be reproduced as a splendid pageant to be re-enacted for the sake of gratifying our romantic or antiquarian predilections, but that we should rekindle its actual life, and having done so, should not only think, and design, and invent, in that style, as the living medium for the expression of our artistic aspirations, but that we should cause it to take root, to spring forth, to germinate, and ramify; to shape itself to all the demands of our age, and to adapt itself to its materials, its discoveries, its inventions, and its science; in short, to become in every sense a living, a vigorous, a growing art.

Now, to further such an object, what is the best manner in which we can make use of the lessons to be learned from the past creations of that style?

One of the lessons I think we should learn is, to work in the same free and liberal spirit in which our forefathers worked; not to do *what* they did, but *as* they did. If we, on the one hand, shut ourselves up in our own country, and, reproducing the style we find to have prevailed here, sulkily reject the lessons to be learned from neighbouring lands, we may produce a servile reproduction of *what* was done by our predecessors, but shall be acting anything but *as* they acted. If, on the other hand, we travel widely, and, giving free license to our individual preferences or momentary fancies, we import now this style and *now* that—here building in a French, there in an Italian variety of our style,—we shall in each case be doing *what* was done in one or another province of Mediaeval art, but shall be equally far from doing *as* the old artists did: the one course involves servility, the other one adds to it frivolity.

The great principle on which the Mediaeval architects of each country instinctively acted was, while adhering, in the main, each to the dialect of the great art which happened to be current amongst them, to improve it by the free importation of ideas and adoption of hints from whence-soever they might be derived, but especially from the dialects of the same artistic language. Thus, for instance, the Pointed architecture of the royal domain of France is, as a whole, a logical sequence of the Romanesque of the same district, yet no scruple was felt at importing into it the Byzantine capitals and foliage which had come to them through the medium of Venice; and to this foreign importation they owed some of the greatest beauties of their architecture; nay, if the Oriental origin of the Pointed arch be true, they went further, and engrafted, upon their traditional art, a feature learned from the infidels they were combating. Again, the English Pointed may be traced step by step from the preceding style, yet they had no hesitation about introducing into it details developed by the French. The Germans carried the principle too far; for, giving up their own traditional variety of Pointed architecture, they adopted the French developments ready-made; yet, having done so, they worked them up in a manner quite their own, while in Italy the new style having been brought in upon the pre-existing Romanesque, they soon elaborated it into a dialect as distinctively characteristic as those of other European countries. Besides this, no nation had any scruples about employing artists belonging to another, so that the advancement made by each became in a degree the common property of all, and even the woven fabrics and other manufactures imported from the far East were allowed to offer suggestions to the European decorator.

To follow out the same principle we ought, while especially making ourselves masters of the architecture of our own country, and using it as the groundwork of our revival, nevertheless to view the style *as a whole*; and, while not forsaking our own provincial dialect, to make ourselves masters of the *entire language*. We should not wish our revived art to be undistinguishable from that of our forefathers. It should certainly reflect some of the characteristics of our own age, one of which is our enormously increased habits of locomotion; and, as we visit *all* the districts where our style prevailed, nothing can be more natural than that our revived art should show the effects of our more extended sphere. Knowing, as we do, that France was the central district, the very heart, of Mediaeval art, should we not be insane not to study well her glorious monuments; and, having studied them, to enrich our own style by the many lessons we may learn from them? It has been suggested that we should do this, especially as regards those of the provinces of France which were once subject to the English kings. I would not reject the historical interest which this connection naturally gives rise to, and I doubt not that these provinces are rich in instruction; but

I would not on that account neglect the fact, that it is the *royal domain* of France,—the district of which Paris is the centre,—which was the special focus of our art. Look again at the ancient cities of Germany,—perfect storehouses of old architecture: let us never be so suicidal as to reject the lessons they offer! "So far," some may, however, say, "is all very well; but, for goodness' sake, do not cross the Alps! Ruskin has driven you all mad about Venetian, Veronese, and Florentine architecture: be more of men than to be led astray by popular writings. You cannot but see that Italian Gothic is very corrupt, though, somehow or other, very captivating. Listen not, then, to the syren's song: reject the enticing bait, nor pollute the pure stream of Northern art with the corrupted waters of the South."

I admit that there is some ground for such a censure: there is a mysterious fascination about Italy, which has led astray many who have visited it before they had grounded themselves firmly upon a Northern foundation; but, is this a reason for rejecting all the lessons she offers? Was not Italy the land of ancient art, of painting, of sculpture, of mosaic work? Is she not the land of marbles and richly-coloured material, and the land of ancient municipal institutions, and of the edifices to which they gave birth? Her Romanesque architecture was the parent stock of our own; and if our Gothic was in its turn the stem from which hers sprang, surely its transplantation into so prolific a soil offers the greatest possible *prima facie* grounds for expecting a rich variety to spring from it,—and such has been the result. It is for us to use it with judgment; rejecting what is in its own nature defective; not bringing into the north any features which are the result of a southern climate; but judiciously culling such suggestions as will with advantage unite themselves to our English nucleus; and especially let us take advantage of the lessons it affords us in the use of rich materials of mosaic and fresco painting; and, in any suggestions it offers for the perfecting of our secular architecture, only let us do so with judgment,—never forgetting that it is in England that we are working, and that if we borrow ideas from France, from Germany, or from more southern lands, those ideas must be expressed in English—a language in art, as in literature, of whose antecedents we find abundant cause to be proud.

Let us also remember that, though we must be ever learning, it is not by this alone that an art is to be generated,—that we must act for ourselves as well as learn from others; and that it is to our own vigorous and manly exertions we must trust to make the art we are reviving shape itself to the necessities and the spirit of the age we live in.

MR. SMIRKE'S LECTURES AT THE ROYAL ACADEMY.*

INTERIOR ARCHITECTURE.

There are few subjects connected with our art that have been more frequently dwelt on, by those who have undertaken to be our guides and monitors, than the right proportions to be given to rooms. Vitruvius led the way, and subsequent theorists have laid down, sometimes very dogmatically, their views of just proportions. I find, however, in the actual practice of the ablest men, such extreme diversity of opinion, and such pleasing effects producible by the adoption of such widely different proportions, that I find myself, I confess, much inclined to be somewhat incredulous of all these theories. Certainly, if beauty could be thus reduced to a formula, and the proper relation indisputably established between the length, breadth, and height of every room, a royal road would be cleared for us, which would be at least very convenient both to those who teach and to those who learn. I fear I can scarcely hope to furnish you with such a desirable help in your studies. I find rooms of universally admitted beauty, yet of almost every geometrical figure. I have heard the room in the Museum of Florence, the Tribune it is called, which contains the Venus di Medici, spoken of in terms of rapturous approval for the beauty of its form and proportions. This saloon is an equilateral octagon on plan. I have known rooms of great beauty, such, for example, as the saloon in Cobham Hall, which is usually pointed to as one of the *chefs d'œuvre* of Inigo Jones. Who is there that is not charmed with the proportions of the saloon in the Palace of the Yorks, which is circular. The classical teacher of our art, Vitruvius, seems to contemplate only rectangular forms, and directs us to adopt the double cube and the cube and a half, whether for a Temple or a Triclinium. The Sistine Chapel, attached to the Papal Palace, upon which the best art of Italy in its best days was expended, is a triple cube, viz. 138 by 44. Whilst of modern French, Italian, and English teachers, each seems to have his own special favourite proportion. The truth I believe to be, that so bountifully have we been endowed, and so liberally have the laws of beauty in form and proportion been framed, that there exists in fact an endless variety of beautiful forms and proportions. My belief is to be that so bountifully have we been entrusted with lay down any one definite form or proportion as the best, as it is to extol any one particular curve as the line of beauty. I believe that there are as many pleasing proportions to be given to rooms as there are pleasing harmonies of colour and sound.

The purpose of a room must always be an important

guide in determining the form and proportions to be given to it. If planned so long in proportion to its width as to remind us of a passage, it loses its distinctive character, and creates a false impression, which it can never be good art to do. It is, indeed, obvious that a consideration of the special fitness of a room for its destined uses must always greatly influence its proportions. The octagon form, much affected by our ancestors in planning their chapter-houses, owes its origin, probably, far more to the propriety of that form, for a chamber intended for the convenient assemblage of the members of the chapter, than to any intrinsic architectural beauty, however unquestionable that beauty may be.

This fitness to its purpose should be among our very first objects of consideration in designing a room. But it is the diversity of those objects to be kept in view which complicate our art and render the task of an architect often very difficult. In a public hall, for example, he has to consider not only its agreeable proportions, but its acoustic properties; its aptness for seeing; its capacities for lighting and ventilation; the most serviceable distribution of its means of ingress and egress; and, indeed, many other considerations, among all which he has to attach to each its relative importance, to determine correctly and judiciously to what extent one object may give way to another, and where a sacrifice can best be made. Unfortunately for our art, whilst these conflicting considerations are taxing the judgment of an architect, the critic stands by, regardless of all these embarrassments, and tests the beauty of our work, perhaps by the inflexible rules of the dogmatist on whom he may have happened to pin his faith. I am, however, very far from being inclined to say that the proportions of a room are, aesthetically, arbitrary.

Were I myself disposed to dogmatise on this subject, I would say that, whatever form may be given to a room, it should be adapted to the same geometrical form, and there should be no doubt as to the nature of its apparent proportions. If square, it should be truly square; and if it depart from the square, that departure should be obvious and decided. For the sake of simplicity, I should consider slightly oval form, or an octagon with two parallel sides slightly elongated. It is obvious that for the same reason all rhomboidal plans and any other anomalous departure from regular rectangular figures offend the eye. In the latter case, however, and other ill-proportioned architecture (for, however good the plan, and however well adapted to the genius of the place, and submit to be overruled by necessity and expediency. In thus recommending symmetrical forms I must by no means be understood to urge on you the constant adoption of the same geometrical figure. Beauty and convenience alike suggest variety in the boundary lines of an apartment, especially an apartment adapted to social uses. The deeply-embowed recesses that occur so often in our domestic architecture (and, more so, indeed, than in continental architecture) are a source of great beauty, varying the lights and shadows, and breaking the monotony of parallel lines. The oriel windows of our old halls and mansions, wherever they have been its purpose, is always a pleasing feature, and the deep bays in the principal galleries of those picturesque mansions happily conceal their usual comparative narrowness. "These are pretty places for conferences," says Lord Bacon, and his remark, in a lively and agreeable way, truly indicates the commodiousness of these cheerful recesses. The Italian masters, with too sensitive an eye not to be struck with the hardness and dryness of an equilateral rectangle, of rooms adopted, not infrequently, a very happy and effectual mode of concealing or obviating it, by converting the upper part of the room into an octagon, supporting the walls at the angles either by arches or niches, without any material encroachment on the area of the rectangle. This contrivance is, in truth, of early date. In the Castello dell' Uovo, at Naples, is a very stately hall, of magnificent dimensions, where this expedient has been most effectively and strikingly carried out.

In ecclesiastical architecture this contrivance over is of frequent occurrence. Wherever, indeed, an octagon lantern or spire is placed on a square tower, a false bearing is produced that almost necessitates such a mode of construction. This mode of growing an octagon out of a square led to a variety of contrivances for the decoration of the conch or spandril space, formed by the overhanging of the four diagonals, in which contrivances, perhaps, the most ingenious and elaborate, if not the most beautiful, were the pendentives devised by Saracenic architects, whereby the soffit of the conch was sculptured into a multitude of very small and delicate figures, rising in a succession of tiers, corbeling over and forming those singular stalactite ceilings so characteristic of Moorish and Saracenic architecture. The most usual form of ceiling in the Christian churches, where the spans were great, continued for a long time to be the vault. The remains of Pompeii, and indeed of Roman art over all Europe, show that the semi-cylindrical vault was the customary mode of construction, often varied, however, by groining.

The diagonal lines of this cross vaulting were usually executed by Roman builders in a careful way with well-jointed masonry or brickwork, the spandrels being filled in with a more rudely worked and lighter material.

It was from this particular mode of workmanship, that Medieval vaulting was derived; the more solid diagonals becoming still more visibly and strongly pronounced, first appearing as square ribs, and ultimately assuming the more familiar shape of the cross, the space between the ribs being built, as in the Parthenon and other Roman buildings, with sometimes volcanic scoria and sometimes tufa; so in Medieval buildings, as at Glastonbury and elsewhere, a sort of calcareous tufa, and still more commonly chalk, was used.

It is not, however, to be forgotten that during the whole of these periods from the Greek era, and earlier, downwards, flat ceilings of timber may have never ceased to be used, although the noblest monuments destroyed us of existing examples. We read in Hæmic buildings of beams painted in bright colours, and even encased in plates of ornamental metal work; but we can now trace only and catch up of the evidence in the apertures left in the masonry for their reception. In later classic times representations of flat timber ceilings could not unfrequently be seen.

In the fifteenth century, by far the most attractive and inventive period of modern Italian architecture, contrived an entirely novel form of ceiling, for which architecture itself was indebted to the genius of the great painter. They reconciled the conchoid form of the flat ceiling to the much more familiar but more elegant form of the vaulted ceiling, by uniting with the former a deep cove, or half vault, springing from the walls.

This was first executed in wood, the earliest examples of which, so far as I know, occur at Venice, as at the

Academy; but afterwards these coves came to be formed in plaster, a mode of construction that can hardly date earlier than the beginning of the sixteenth century. It must be admitted that there is a want of truth in the coved form of ceiling, for which the only plea in justification is the very pleasing mode it affords of obviating the heavy, depressed appearance of a flat ceiling. Attempts were made, it is true, to obtain, in a more truthful mode of construction, somewhat the same effect by turning in masonry an extremely flat elliptical vault. But Sansovino, who ventured this expedient in the Libreria at Venice, was thrown into prison for a fine of 1,000 scudi for the failure; a fate which must have powerfully operated on the minds of his brother artists in overcoming their scruples about plaster coved ceilings.

Another mode of forming ceilings which was much practised by early Italian artists, was to frame them in deep coffers wholly of wood, often richly painted and gilt. There are few palatial apartments within my own knowledge, equal in grandeur of effect to the magnificent halls (now in a melancholy state of decay), of the palace built at Mantua, by Giulio Romano. The ceilings are, for the most part, so constructed; and the gigantic force of their coffer, relieved by the extreme richness of their carving, proclaims the master-hand of the great artists who designed them. At Venice and at the Farnese Palace in Rome, we have also very noble examples of this form of ceiling.

In the nearly contemporary flat coffered ceilings executed in England by Holbein, as in the Chapel Royal, St. James's, and probably by the same master in the Savoy Chapel, we have ceilings designed on the same principle, although but weak and faint imitations; yet even these are almost bold when compared with the ceilings lineally descended from them in later times. The Stucco ceiling of the last century discarded this coffered and traieated form of ceiling, and introduced a more playful fantastic style of decoration better suited to their special material; until towards the close of the century, their art in its turn succumbed, and gave way to plaster-casting of the feeblest kind.

Having now briefly touched on the subject of the forms and proportions of rooms, we will pass on to the equally important subject of giving light to them.

So much of the architectural effect of a building, for whatever purpose it may be destined, and so much of its aptness and convenience depends on the mode that may be adopted of lighting it, that it certainly deserves demanding your especial attention and study; the more so because no definite general rules can be laid down for the proportioning of windows to the area they have to light. It is a subject upon which the eye is almost always deceived, the room to be lighted; much also on the nature of the medium through which the light passes, and on the position of the windows; and above all, perhaps, on the degree of intensity of the light obtainable from without. The practice of Italy, for example, would be a very useful guide for us in our more uncertain climate and more sombre atmosphere. Here the most ample panes and the clearest glass will often hardly suffice, whilst in Italy such the penetrating fervour of the sun, that sometimes men are content, as at St. Miniato, near Florence, with the light that can make its way through slabs of alabaster. We know, indeed, that Lapis specularis was much used for the same purpose in classic times. Then, again, the light that is obtainable in an open country and in a crowded street requires totally different proportions; whilst a window filled with stained glass will need, in order to afford a given volume of light, an extent of perforated surface that would be altogether disproportionate where clear glass is used. In the absence, then, of any definite rule, it becomes especially necessary, by habitual observation and comparison, to learn our wants and our resources.

On a former occasion I adverted to the importance of the study of the effects of light and shadow in the design of exterior architecture. At least equal importance is to be attached to this consideration in interior design.

In the production of grand effects chiaroscuro plays an important part; for the quality of grandeur depends not only on largeness of dimensions, but on a proper treatment of lights and shadows. When the form of an apartment, or hall, is simple, the impression of grandeur can perhaps only be produced by real size; but when the form is complex, a new element of grandeur arises in the diversity and breadth of its light and dark parts. It is to this, far more than to any other cause, that we are to attribute the powerful mores, the noble style of the interior of a Gothic cathedral: the burst of light from the transept breaking the monotony of the nave; the light on the screen, brought out into prominence as seen from the dim haze of the choir; the splendour of the clerestory contrasted by the comparative gloom below; these are all effects wholly due to chiaroscuro, and constitute, perhaps, the chief charm of those fine architectural compositions.

It has always appeared to me a subject of deep regret that the undue interference of incompetent judges prevented Sir Christopher Wren from carrying out his first and perfectly original idea for St. Paul's Cathedral, where the effects produced by the double vaulted aisle surrounding the octagonal nave would have been truly surprising; my conviction is, that had that design been carried out, an interior architectural scene would have been the result wholly unparalleled in any building in Christendom.

The present is of course not a proper occasion for discussing the utilitarian requirements of a room. No doubt a room destined for pictures must have its light admitted far differently from a room where sculpture is to be exhibited; and both widely differ from the requirements of an ordinary living-room; but these considerations, although of the highest importance to every student, which must not now engage us. There are, however, purely aesthetic considerations connected with this subject of the admission of light which are, it appears to me, particularly to be obtained within these walls. Very forcible effects are produced by mere contrast in the degree of light admitted.

When an apartment is desired to be marked by a gay and festive character, the eye should be prepared by subjecting it to a comparatively dim light. If, on the other hand, a solemn effect is to be aimed at, then advantage is gained by previously subjecting the eye to strong light. I have been frequently struck by the far greater effect of solemnity produced on the mind by entering a cathedral direct from the clear air of the cathedral close, than when entered from the cloisters, where the eye has already got somewhat accustomed to a subdued and feeble light.

Indeed, for every great architectural scene, it is well that the eye should be duly prepared.

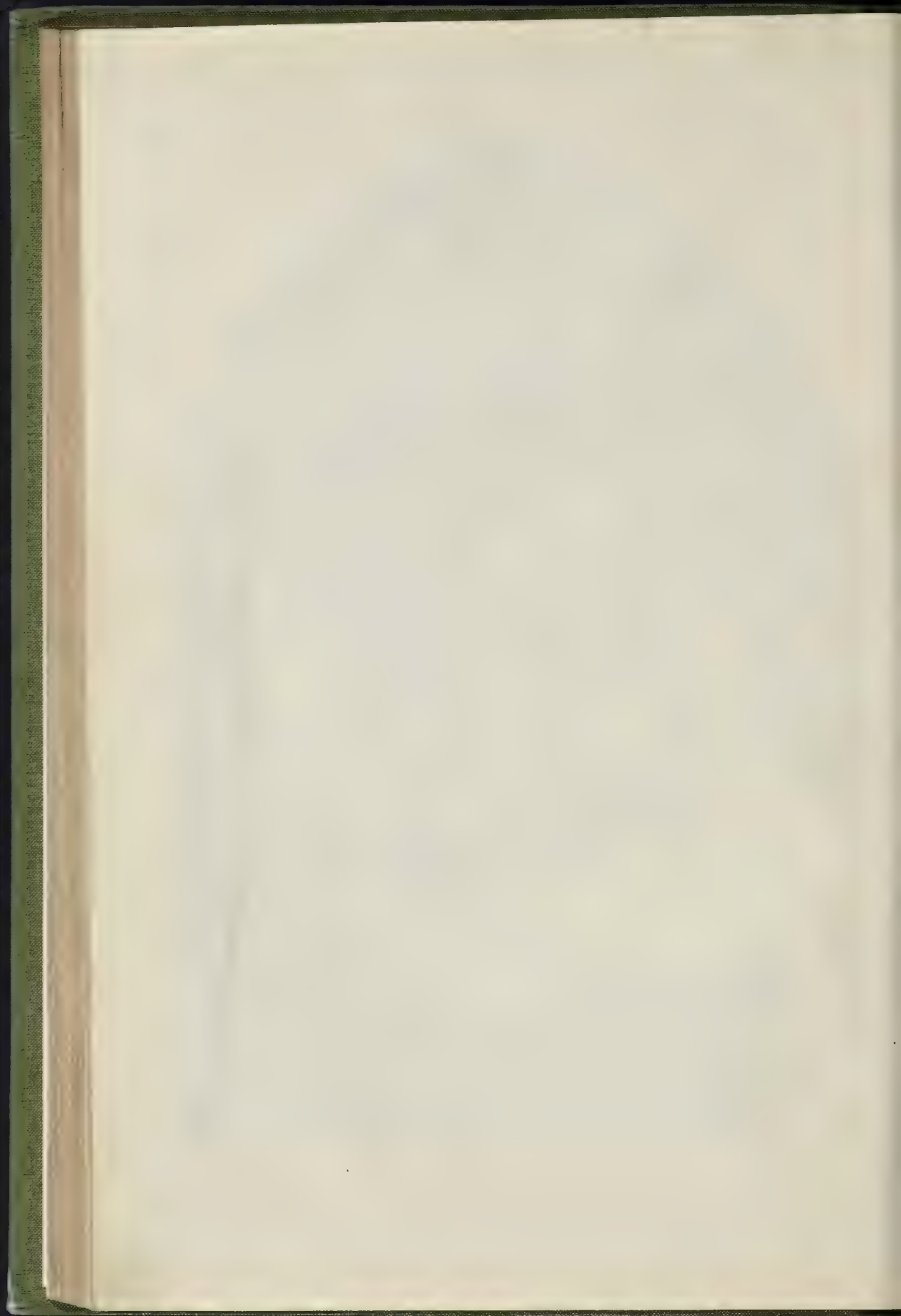
I think it may be broadly stated that a high light is, for almost every purpose of illumination, more pleasing than

* See p. 107, ante.



PART OF FOUNTAIN AT WITTY COURT, WORCESTERSHIRE.

Designed by Mr. W. A. Nisfield; Executed by Mr. Jas. Forsyth, and Others.



THE MEDALS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At a special meeting of the Institute, held on Monday evening last, the royal medal for the year 1858 was awarded to Mr. G. G. Scott, subject to the sanction of her Majesty being obtained.

The silver medal of the Institute was awarded to a critical essay on the Architecture and Genius of Sir Christopher Wren, under the motto "*In Memoriam*." This is at present anonymous, but will doubtless be acknowledged.

The Institute medal, with five guineas, for the best illustrations of a Mediaeval building in Ireland, Scotland, or Wales, was awarded to Mr. Edward Hughes, of Chester, motto, "Cæd Leon."—for a restoration of Kilmallock Abbey. To Mr. D. Paton Low, for restoration of Torphichin Queer, Linlithgowshire, honourable mention.

The Soane medallion, for a design for a circus for equestrian performances, to Mr. Thomas Vaughan, junior, motto, "Hope for the future gave energy to the past."

The student's prize (books) to Mr. W. T. Sams, for design for a riding-house.

M. Silvestre.—We have received a copy of a letter addressed by M. Silvestre to "the chairman of the Royal Institute of British Architects," in consequence of the observations made at the last meeting of the Institute, and reported in our journal of the 12th, with a request that we should publish it. It will suffice to give the concluding paragraphs:—

"My official character has for its object the study of art throughout Europe. I show the documents by which I am accredited to all those who have a right to inspect them. They have been seen by H.E. Marshal Duke of Malakoff, the French Ambassador; Sir Charles Eastlake, President of the Royal Academy; P. Le Neve Foster, esq. Secretary of the Society of Arts; and Digby Wyatt, esq. one of your secretaries.

Although my official titles have been mentioned by nearly every paper in London, I am still ready to submit them to the inspection of the Royal Institute of British Architects, to whom, I trust, Mr. Chairman, you will be good enough to communicate this letter."

ATTEMPT TO FIND BRAINS FOR A BUILDING COMMITTEE.

The following questions, lately sent to a committee affecting to choose designs for a religious edifice, may perhaps suggest a thought or two to others in a like predicament, if for the nonce they happen to become readers of the *Builder*:—

"To the Committee for erecting * * * *."

Gentlemen,—Plan and elevation are alike alterable in any design you may choose to execute. In very few indeed of our public buildings is there much resemblance, even of arrangement (to say nothing of dimensions, proportions, or ornament), to those originally projected in the prize designs for them.

But one thing, the *stamp of the author's mind* is not thus alterable.

Now, allow me to ask,—

1. Are you as sure that any one design before you excels another in any one respect, as you are that your house can never be nobler or finer than this builder—the work grander or truer than the mind creating it?

2. Does any designer show a quality of mind whereof you may reasonably look for what you want, who evades your regulation for concealing names, or advertises you how much and how popularly he has built?

3. Or does any, who, similarly counting on others' obedience to your rule, seeking uniformity of drawing, takes advantage of this to try if you are not after all like children in a toy-shop, and will give things attention in exact proportion to their conspicuousness by size, elaborate dress, vivid colours unlike any building material, or black in place of "light brown"?

4. Or does any who professes to give you an estimate, without the quantities of a single material or item of work?

5. Or any who, by a like omission in his sectional drawings of everything his plasterers are to hide (as a pitch of effrontery confined as yet, so far as I know, to *English* "architects"), proclaims his "art" to have just as much to do with architecture or building as a sugar confectioner's?

6. What kind of temple do you expect of minds that offer you the alternative of the same forms in stone for so much, or in cement for so much (one drawing to serve for either), or similarly with any two materials of such natures that no things made

in them could bear the slightest resemblance unless one were employed expressly to mimic the other, and be in short a mere theatre sham?

7. Or what from such proclama at once the whole work such a stage scene, by calling it Grecian or Italian, Byzantine or Norman, "Early," this, or "Late" that, or "Twelfth Century" the other?—Or, seeing that rotten communities have generally come in their last days to this extension of their theatre-work to everything, and after turning their streets and villas into masques, in the service of the "lust of the eye and the pride of life," to treat their very temples and senate-houses the same, have you studied "how these nations served their gods," that you may "do even so unto the LORD;" not knowing or not believing the word still true, that "every abomination" which He hates is done to the gods of the nations; for even their sons' and their daughters' minds and souls they degrade and burn up as engine-fuel, in sacrifice to these their gods; and, extending Wesley's sentiment against "the devil's monopoly of good music," do you think it equally a pity he should monopolise all the clever humbug, smart nonsense-art, and "Brummagem work" producible?

8. Or do you therefore look to those as congenial minds who specify, for instance, stone to be brought 100 miles, neither to be carved nor bear weight, but merely to hide other material, and (by the labour of men turned, for months more than was needed, into smoothing and shaming machines) to feed the purse-pride and lust of the eye with mock lordliness?

9. Or to those few who may naively state (what ten times as many will imply by their drawings, if you can give them a few moments' intelligent study) this or that erection or structure to be required "to hide" that other (*equally of their own designing!*)?

10. Looking at the proportionate numbers of projects displaying on the forefront these and other marks of mind, should any selections made by majorities of such projectors be held worth one moment's notice, or the shadow of a straw's weight, in your practical decision what to build?

[This was written without at all anticipating that the last question would be ludicrously answered by the selections in question giving the first place to a design by its obtaining *five* votes out of 120!]

That question, gentlemen, the first step in your real business, will, you must soon see, be totally distinct from those of awarding the three little sums you are pledged to throw away. That amusement over, you are not one step nearer your object, for what "design" to premitate is one question, and what to build is quite another; not necessarily or naturally so, but you made them so, gentlemen, by your first public step, which, like that of all recent committees of your class (and that of all possible ones, if they are to follow each other thus like sheep), made it commercially impossible any plan of use to you could be elicited. To obtain that, you should have offered but one prize, and for the very thing wanted—the *building completed*. Then the means and tools thereto would equally have offered themselves for your selection, but not for your purchase. A 50*l.* a 30*l.* and a 20*l.* "design" are worth to you nothing at all, whatever they might be to others; but in declaring you would buy three for these sums, you, in other words, required any one you might choose to be sold you for 20*l.* which was simply to warn anything really worth more than that to keep off your premises, and thus limit your choice to projects that, if containing 10*l.* worth of picture-making, cannot be presumed to have another 10*l.* worth of planning, or if 20*l.* worth of the former, then not one shillingworth of the latter,—the only labour that, *bestowed before your plan is settled*, can be worth any more to you than a picture of St. Peter's at Rome, or any other building.

Having thus spent a few pounds and a few weeks of your trust, like other fashionable expenditure, in wasting and rendering useless some ten times its amount of other men's labour, you will, I hope, have learnt that the very greatest bargain you can now make (and this is equally true of every other committee or body that has gone just as far in the stereotyped course of these blunders,—would be true of our governors, now waging that ludicrous "battle of the styles," if other than masquerade architecture were to be thought of in such high places), the very cheapest bargain, in money and in time, will now be to call a fresh competition, as open as the former, but with only one premium, I should say about eight times all those you have thrown away, and payable only as the actual building rises and is completed.

Moreover, you will obtain a wider choice, if you first turn the designs before you to the only account they can be turned, of aiding you to concentrate your thoughts on the settling of numerous questions with only one alternative, yes or no, which you must now see it is for you alone to settle; and must also see that you could have deliberated and settled just as well in an empty room as in one papered with designs. For instance, did you, or does any one, need 1,000*l.* worth of bad pictures painted, to enable them to decide whether they will project a fireproof or a timber-upheld building; whether its roof shall be ceiled or not; whether it shall be approached by straight stairs or winding, and wider or narrower than a certain number of feet, by equal flights or unequal, and of more or less than such a number of steps; whether any of an audience shall sit behind the speaker or no; whether the second principal room shall have daylight or no; or whether it shall be under the principal, or beside it? If you do not need such an apparatus before deciding, then your calling for it without having decided them,—setting men to works of which you knew the greater part must, by this neglect of yours, be useless, does not seem by any means an example of "doing unto others as you would they should do," or a very worthy mode of employing the first pounds of offerings professedly devoted to the service of God. Before you advertise again, this should be thought of.

Meanwhile, if I at all undertake the task you request, of selecting any present design, it will, for the reasons above given, be without the slightest reference to any point utilitarian or economic. Eliminating all that can be modified in execution, I shall vote, if at all, with sole reference to the *taste* or bent of mind apparent in the *decorative* or *unnecessary* works a designer proposes, as the only one in which the will and likings of the mind (the only thing unalterable by your orders) can appear.

"I am, gentlemen, your obedient servant,
"*** COMPETING ARCHITECT."

PARLIAMENT AND THE NEW PUBLIC OFFICES.

An important discussion in the House of Commons, on a motion by Mr. Tite, already referred to, has elicited the opinions of some of our leading public men on the question of Gothic *versus* Classic architecture.

Mr. Tite, in putting his question, said he ventured to think that the style designed by Mr. Scott was both inconvenient and expensive; and besides, the Duke of Buccleuch was about to rebuild his house according to the Italian style, and faced with stone. The building, therefore, of the proposed block of government offices could not harmonize with any one of the buildings near it or in front of it. Now, although he was sure that there was no intention to cast any reflection upon Messrs. Banks and Barry, it appeared to him somewhat strange that these honourable and able men, who had obtained the first premium, should have been passed over, and the next gentleman in succession be appointed to carry out the building. There appeared to him to be no difficulty in giving to Mr. Scott's design an Italian form. Apart from the merits of Messrs. Banks and Barry's case, he did not think that the Government could have made a better selection than that of Mr. Scott. In conclusion, he ventured to ask the noble lord, the Chief Commissioner of Works, what steps had been taken by the Government with reference to the rebuilding of the Foreign Office in Downing-street.

Lord John Manners said, in reply, that in consequence of a recommendation of the committee, he gave notice, in November last, that he would ask for powers to purchase the property between Downing-street and Charles-street, and that a bill for that purpose in a few days would be prepared. The committee had recommended, and he (the noble lord) agreed with them so far, that one of the successful competitors should be selected. They also came to the opinion that the three first prizes stood in a position nearly par. They decided, in respect to commodiousness and utility, that there was no difference between the contending designs. In that case he had to decide which of these three prizemen should be the architect appointed, and which of the styles should be selected. The decision was arrived at not by the Government, but from the sites. The selection of the architect, therefore, was ruled by that decision. In a few days after he had made these recommendations to the Government he received information that it was expedient ground should be found about Downing-street for the India Office. On the ground adjoining that por-

posed for the Foreign Office there was sufficient space, and his noble friend (Lord Stanley) decided that that ground should be purchased for the India Office, and that the arrangements should be confided to the same hands as those intrusted with the building of the Foreign Office. If the house should sanction the arrangements proposed, there would be uniformity of design, and the two great offices of the Government would make one grand whole. The India Office would occupy the place which, under a former system, was to be occupied by the War Office, with this agreeable difference, that the whole expense of the India Office would be defrayed out of the Indian revenue. It became then his duty to desire Mr. Scott to communicate with the Foreign Office authorities, and to draw up a plan in conformity with the requirements of the case. He (the noble lord) was in daily expectation of receiving the drawings and plans of the new building, and the course he proposed to adopt, with the sanction of the House, would tend, he thought, to promote the public convenience and to maintain a proper system of economy. As soon as these plans were approved by him he would submit the drawings and sections of elevations to the public competition of some of the most eminent contracting building firms of the metropolis. When their tenders were received it was his intention to place in the library of the House of Commons, where they would be open to the public inspection of every member, all the mature plans and designs of the architects, the various estimates, together with the guarantees of the contractors to complete the building in a given time, so far as the building part itself was concerned. He believed if the House would but co-operate with the Government they should soon see this long-vexed question solved in a way most satisfactory to the public. They would have a Foreign Office erected that would be worthy of the country, and at an expenditure by no means disproportioned to the importance of the office, and no way excessive.

Sir Benjamin Hall said he thought they ought to have an explanation why the Government passed over the parties who had received the first and second premiums, and appointed Mr. Scott, who had obtained the third. He admitted that if it were determined to have a Gothic building in the centre of a neighbourhood where there was nothing else of such a Gothic character, he could not have selected anybody better calculated to carry out his views than Mr. Gilbert Scott. At the same time he (Sir B. Hall) wanted to know why the other gentlemen were passed over? The noble lord ought to place the drawings and plans of the other two architects in the library alongside those of Mr. Scott.

Mr. B. Hope said that if hon. members looked to the tables at the end of the Blue-book they would see obvious reasons for the selection of Mr. Scott. According to the award of the professional gentlemen, the weight of merit lay with Mr. Scott, who stood second for each of two buildings, while the first prizeman for the War Office stood nowhere in the case of the Foreign Office, and the first prizeman for the Foreign Office was nowhere for the War Office. Under these circumstances, he (Mr. B. Hope) thought the Government were justified in their decision. The right hon. baronet (Sir B. Hall) complained that the Foreign Office would be incongruous with the Treasury, but forgot his own grand plan of a new block of public offices extending from Downing-street to George-street.

Mr. Conington expressed his sincere regret that the Gothic style of architecture had been decided on. The very building in which they were assembled was a strong exemplification of the fact that the Gothic style was not suited to our climate. What we wanted in our buildings were space, light, and air. Now, the maximum of accommodation in these respects afforded by a Gothic building was the minimum required by us in our public buildings. Gothic architecture was the most inconvenient of styles in London. Could it be said to be our national architecture, when the works of Wren and Inigo Jones were remembered? We do not live in an age of darkness; we want more light. He should record his solemn protest against the use of the Gothic architecture in our public edifices. The taste for this style was peculiar in this country to that sect of which the hon. member for Maidstone (Mr. B. Hope) was so eminent a member, but it was not the taste of the people of England, but quite repugnant to it.

Lord Palmerston had never heard a less satisfactory explanation than that of the noble lord (Lord J. Mansfield), and the hon. gentleman the member for Maidstone (Mr. B. Hope). It was unsatisfactory on two points, namely, the selection

of the architect, and the choice of a style. Mr. Scott had always been second, and therefore he ought to be first! He (Lord Palmerston) presumed that it was on the principle that two negatives made an affirmative. If that principle were applied to horse-racing the second horse should receive the cup. They were told that Gothic buildings were national, that we were of the Teutonic race, and all that sort of thing. Acting on this principle, he supposed nothing ought to satisfy the noble lord, the Secretary for India, but a pagoda in the India Office, and an architect from India. He thought that no satisfactory reason had been given for the decision arrived at, and he hoped it would be set aside. Congruity was spoken of. If they were to apply the principle of congruity to the future, why not apply it to the present? Let them look to the buildings at present standing in Whitehall and other parts of London. There was a State Paper Office, a fire-proof building, which cost 50,000*l.* at present standing, but he understood that it must be pulled down, in order that Mr. Scott's design might be carried out. In consequence of this Gothic mania, Mr. Scott proposed to Gothicise the Horse Guards by applying a Gothic exterior to that edifice. All the buildings in Downing-street were of a different character one from the other. So were almost all the great buildings in London. But even if Gothic were the national style of the country, these buildings were not to be in English-Gothic, but in Italian-Gothic—in Lombardo-Gothic. He thought Parliament had made a grand mistake in having their own houses built in the Gothic style. Because they had erected a magnificent building in that style, were they to be told that they must go on erecting building after building in a similar architecture, though it was, as he held it, was inapplicable to their purposes? He hoped the decision of the noble lord was not an irrevocable one. Mr. Scott seemed to be a monomaniac on the subject of Gothic architecture; but as he said he had also studied Grecian and Italian architecture, no doubt a man of his abilities would be able to erect a building in harmony with the other great edifices of the metropolis.

WORKS ABROAD.

MONSIEUR VIOLET LÉDUC, the architect, is working actively at the new vaults of the crypt of the church of St. Denis, near Paris. It is said that the steeple of the northern tower is to be reconstructed.

The Comte d'Espagnach has thrown open his superb picture-gallery to the Parisians, on Thursdays and Sundays, at one franc each, for the benefit of the Institution of Notre Dame des Arts. Tickets are given on entering at the Rue de Cléby, 27. Among the *chefs d'œuvre* in this grand collection, we may cite a full-size portrait of Oliver Cromwell, by Cuypp; that of Gerard Dow, by himself; and the first idea of Michelangelo's Moses—a drawing.

The Paris and Nevers line is in full execution. At both ends of the line, on the arrondissements of Nevers and Fontainebleau, the works are very far advanced. The company are making numerous purchases of land in the arrondissement of Cosne.

For some time past workmen have been engaged in boring for an artesian well at Ostend, at the seashore, only four metres above high-water mark. At length their labours have been crowned with success. The quantity of water is so great, that the inhabitants who, for many years past have bitterly complained of the want of good drinkable water, now will have an abundant supply.

On the 3rd of January last took place, at Beyrout, in Syria, the inauguration of the works commenced for a carriage road from the shores to the interior of Syria, to replace the dangerous pathways now in use. This highroad is undertaken by a French company, formed by the Comte de Perthuis, and authorized by the Sultan, and is to cross the Liban mountains. Immense crowds of Syrians of all tribes attended to witness the ceremony, forming a strange group—Arabs of the different villages, mountains and deserts, in their different costumes and characters; groups of women with long white veils, which contrasted singularly with the bright hues of the men's attire. Upwards of 1,000 mounted Arabs were on the ground, some immovable, others at full gallop, brandishing their spears. It was generally remarked that the Facha, the Turkish authorities, and nearly all the Mussulman Arabs, appeared to be in very bad humour: they seemed to assist at the ceremony merely as constrained and forced so to do: it was moreover plainly said that, had they their own will they would prefer shutting up the

road—the work of European will—of which they had at one time but a faint idea, but which they have dreaded ever since they saw its action at Constantinople and the Crimea.

OAK: TIME FOR FELLING IT.

SHOULD you not receive a more practical reply than the following, to the question asked by your correspondent, "W." perhaps this may be deemed worthy of inserting for his benefit. The quotations are taken from Hayes's "Practical Treatise on Planting," &c. Svo. Dublin, 1791; an author of some credit in his day:—

"The thinnings of our oak woods, though less durable than any of the preceding when cut young, and in full sap, which is always the case from the value of the bark at that time, are," &c. (p. 88.)

"I think it by no means improbable, that the superior density and closeness of grain which is the character of the Irish oak, particularly in high situations and a dry soil, as may appear by comparing its specific gravity with that of any other oak, added to the inattention of the Irish at that time to the article of bark, which permitted their oak to be felled in winter, when *free from sap*, might have induced the English architects to give it the preference in such material works" (p. 111).

A small oak tree having been stripped of its "bark nearly all round the stem," was allowed to stand for a year, and "it is worth observing, that the timber proved hard and solid, like that of a tree which had continued a considerable time at a stand, though it was in such vigour, and fine state of growing the year before it was felled: this is only to be accounted for from the sap having ceased to flow freely, from the time when the bark was stripped off; a circumstance much in favour of M. du Hamel's directions in his treatise, 'Des Arbres et Arbustes,' where he advises stripping the bark off all trees as they stand, the year previous to their fall. The superior goodness which I have always remarked in the timber of such *fir-trees* of different species as have appeared somewhat decayed at top, or *rampicked* before they were felled, is another proof in favour of M. du Hamel's method; but" the practice is not good when "we wish to preserve for future coppices" (p. 159).

"W." will herein perceive that his friend's opinion is supported by Hayes, and that oak is best when felled in winter.

W. P.
* * * We have no doubt about it.—Ed.

BIRMINGHAM ARCHITECTURAL SOCIETY.

At the last meeting of the Birmingham Architectural Society, a paper "On Taste," was read by Mr. T. Naden, jun. Mr. Naden defined taste to be one of those faculties possessed by man which gives an elevating influence to the mind, according to the degree in which they exist. It was a hopeless task to endeavour to set up any rule to guide taste, or produce beauty. Whoever would strive to form a correct taste, must so blend nature in all his thoughts as to avoid any extravagance into which he otherwise might fall. His imitation of natural objects must be thoroughly correct, introducing no so-called improvements of his own, and his constructive detail must be according to the true and strict principles of science. The professor of architectural design must not only possess all these qualities, but must so design his buildings as that they might be adapted in every way for their position, aspect, contrast, climate, and all other indispensable requirements. Of the qualities fine, handsome, pretty, and beautiful, the latter was the highest. Taking this quality in its noblest sense, three attributes, namely, perfection, harmony, and truth, might be ascribed to it. It was only by observation and practice that the man of taste so educated his eye as to be able to detect any error in his composition. A man's tastes were formed according to his education, the society in which he mixed, and the multifarious accidents and chances of life. The artistic feeling in a nation was tinged with the character of the national institutions, its philosophy, and laws. It was thus with the classic taste of Greece and Rome: that of the former so stamped its image on the whole nation, that severity, refinement, and purity in art were the result; while the Roman love of magnificence, boldness, and enterprise, gave its indelible impress to their public buildings. At the conclusion of the paper a brief discussion took place, in which Professor Chamberlain and Messrs. Bland, Harris, and Everitt took part.

SECURITY FOR STONE STAIRCASES.

I HAVE read with interest your description of the disaster occasioned by the breaking down of the stone staircase at the Polytechnic. This accident brought vividly to my mind an impression which I remember to have felt when very young, on ascending the stone staircase during the exhibition time at Somerset House, - that the great leverage acting on the short end let into the wall was, without some further support, a dangerous system, especially when adapted to buildings appropriated for the reception of large masses of people; and although experience has proved that such accidents are of extremely rare occurrence, yet it is evident that, especially in public buildings, something more is absolutely necessary for the general safety. A wall to support the outer end of the stair has been objected to, and I think with reason, as space is lost by so doing. Iron columns present merely a modification of the same evil; but it strikes me that something analogous to the system employed in bridge-building, where the parapet on either side answers the purpose of a trussed girder, might be used with advantage when applied to stairs; the landing let into the wall, and supported by cast-iron brackets, strong yet elegant; and the balustrade, not being fixed on the steps, but the lower part of the balustrade having a flange, upon which the free end of the stairs could lie. Between the iron flange and stone step a strip of lead or gutta-percha, to prevent vibration, should be introduced. The same system could be employed in staircases independent of any other support.

JOHN LEDGER.

Lille.

Having read the various accounts concerning the fall of the staircase at the Polytechnic Institution, I beg to submit the following suggestion for consideration, that is, to have an iron bar the whole length of the step (to go into the wall as far as the step, of course), triangular, and inserted into the step, so that the hypotenuse will be level with the sloping soffit of it. The bar may taper from the wall outward, to lessen the weight of the end of the step; and if an iron baluster were placed over (if they are not all iron ones), the baluster to go through the step and bar, and be secured by a nut underneath. It would be the means of stiffening the railing, and binding all in one mass, as well as keeping the bar from moving out of its place, which it might do by the vibration of the staircase. One could be fixed in every third, fourth, or fifth step, at the discretion of the architect, according to the traffic.

A WORKING STONEMASON.

THE INDISPENSABLE ISOLATION OF AN ARTIST'S LIFE.

MR. EDITOR.—As the *Builder* has ever been the advocate of "the fine arts," I trust it will not be inappropriate in requesting the insertion of the following remarks in reply to the slurs uttered in the *Quarterly*, 246, 1858, in commenting on the publication of Mr. J. S. Harford's "Michelangelo." He states that which would lead the public to believe that Stothard was illiterate. Those who adopt a profession of writing (as clergymen, who swear to thirty-nine articles) before knowing the difficulty of complying, or whether they can undergo the necessary fatigue without flying to stimulants (because they are working against their natural defects of volatility, which is, in intellect, abuse the artists, who know what they desire to be the soul of their own attainments. Besides, their attainments are so different to what they acquire at school, and so adverse to what they find in the world, that they must become isolated from it to achieve any accomplishment, or obtain any excellence above mediocrity amidst all who, from right of opinion, consider themselves idlers, and yet know not that which constitutes excellence, or the means of arriving at it. Were it the custom, as with the Greeks, to make youths draw eyes, noses, and mouths, as we do potatoes and hangers, and which up to a certain period was the case, literature, being thus ingrafted on the arts, instead of the arts ingrafted on literature, all classes would in this manufacturing country be benefited, as the difficulties above spoken of would no longer exist, and literary men would be more temperate in their observations, more alive to that adjunct, and more easily illustrating their studies, as reason is to their imagination what beauty, simplicity, and health are to the mind of an artist.

ROBERT T. STOTHARD.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

A WOODEN building was erected in December last in the forecourt of No. 1, Bentinck-terrace, Regent's-park. Mr. Barnett, the district surveyor, gave notice of irregularity, and, that not being attended to, obtained a summons against Mr. Joseph Way, of Bayswater, carpenter, who was executing the work under Mr. Stevens, builder, of Kentish-town, for Dr. Gourley. The first summons was dismissed on account of a technical objection to it. The surveyor then served another forty-eight hours' notice for irregularity, and took out two summonses against him, one for the penalty for neglect in not giving notice, and

another for irregularity, the shop being built of wood instead of as described in the first schedule, preliminary rule 1. This was argued four separate days, the defendant employing a solicitor practising in the police-courts, who took various objections, and succeeded (from pressure of business in court and other causes) in getting the case adjourned three times, till February 8th, when it was finally heard, and a mitigated fine of 40s. was imposed for not giving notice to district surveyor, with costs. On the second summons for an irregular building, the magistrate, Mr. Broughton, made an order to remove the building within forty-eight hours from the time of serving the order.

The builder ought also to have obtained the sanction of the Metropolitan Board of Works for the same as regards position.

Books Received.

Hints for the Table; or, the Economy of Good Living; with a few Words on Wines. London: Kent and Co. 1859.

THE main object of this little volume is, by a long series of extracts, to show that perfection of social enjoyment is neither so costly nor so difficult of attainment as is generally supposed; and that such pleasures ennoble rather than enervate the mind. The object is agreeably worked out; but is it so certain that costly entertainments have usually anything like social enjoyment as their main object in view at all? Self exaltation in the eyes of the entertained is sometimes the grand end aimed at in dinners that are really costly to the givers; and, in other cases, the desire to do honour to those invited, and a feeling that without an expensive dinner this will not be recognised. There was certainly much good sense in the rule, as to suppress, to which the Sketching Society restricted themselves in their rounds of visits to the homes of the members: feeling that a desire to show mutual respect (and a little self-display, perhaps) might interfere not only with economical principles, but with the main object of such visits, it was laid down as a rule that nothing but certain simple ingredients should constitute the supper to be partaken of on such occasions. Other clubs adopt the same principle, which is a good one; and if society at large were to lay down some such rules of restriction as to dinners, there would be much less uncharitable feeling and wasteful expenditure, and much more real social enjoyment and mutual good-fellowship and intercourse than there now are. But this we have before insisted on, and we only recur to it on the present occasion because the amusing little book before us suggests the opportunity, and because the same subject has recently been largely treated of in the *Times*, and other papers.

Let all men's dinners be according to their means. It does not require great cost to make dinners really good and palatable, and the occasion of giving pleasure. Whenever and wherever it is the host's real desire to do honour and promote social intercourse by hospitality, and not to gratify his pride or vanity by mere display, it is easy for him to do it, and to make his guests feel that this is his purpose. When Hogarth sent a letter of invitation to Dr. Arnold King, in shape of the sketch of a large trencher with a pie on it, flanked by a knife and fork, and graced by a free and easy pun upon three Greek letters asking him to come and "Eta Beta Py," there was no mistake as to Hogarth's purpose: he wished the Dr. to come and enjoy himself—not merely to come and see him grand at his dinner-table in the midst of costly dishes. A great expenditure is not essential to enjoyment: sometimes, indeed, it tends materially to prevent it.

Miscellanea.

INK AT THE BRITISH MUSEUM.—May I ask you to allow me, through your columns, to make a request to the authorities of the British Museum? It is to supply the inkstands in the reading-room with a cover. At present they are open to receive all the dust and dirt that may be floating about in the atmosphere, to say nothing of that raised when the room is swept in the morning. Perhaps it is on this account that the ink has a mysteriously glutinous character, which makes one page of manuscript adhere to another, and bears a strong affinity to the ink printed on those atrocious playbills, which soil one's gloves and hands in such an annoying manner. This note is written with the ink of the reading-room, so that you can judge whether there is not room for improvement.—A READER.

ROYAL VICTORIA THEATRE.—In consequence of the recent accident at this building, by which so many lives were lost, the proprietors have instructed their architect, Mr. Henry Baker, to erect an entirely new staircase in addition to the one already existing. It will, of course, be constructed of fire-proof material: the steps and landings will have a solid bearing on a wall at each end, and run in short flights round a central enclosed well hole, and without any winders. The plan has been approved by the inspector of theatres under the Lord Chamberlain, and is so arranged, as we understand, by landings and doorways at the several levels, as to afford ready egress, should it be required, alike from pit, boxes, and gallery. It is expected to be open for the public on Easter Monday.

BUNNETT'S FIRE-PROOF FLOORS.—Sir: Your correspondent, "J. B. W." does not seem to be quite aware of the principle of the floor represented in your journal, which is that of mutual support, by the bricks of which it is formed interlocking with, and giving and receiving support from, each other in every direction: the inclines at the ends of the bricks in the direction of the arch are reversed in each row, and are laid so as to make the heading joints in the centre of the bricks of the adjoining row: each brick is thus actually in contact with and supported by six surrounding ones. The tension-bars being tightened up before the centres are removed, the angle irons effectually prevent the arch from spreading, and the walls have no strain or lateral thrust whatever upon them. On our premises at Deptford, an arch of this construction, of about 16 feet span, is now loaded with pig iron to above 300 lbs. on the square foot.—BUNNETT AND CO.

THE SANITARY STATE OF LYNN.—Much un- easiness has recently been occasioned by the continued prevalence of fevers at Lynn, especially in the North-end yards. At a recent meeting of the local paving commissioners, the Mayor produced a letter from the Privy Council Office, addressed to the town clerk, stating that information had been received by the Lords of the Council that typhus in a very bad form prevailed, and was spreading at Lynn, and requesting that the Town Council would furnish their Lordships with information as to the measures which were being taken to prevent the spread of disease, and improvements made in the town, especially in regard to house-drainage and the removal of nuisances, since the inquiry held here in 1852 under the Public Health Act of 1848. To this an answer had been returned by the town-clerk. Eventually the meeting appointed a committee of five, headed by the Mayor, to make an immediate tour of inspection of the courts and yards, with power to order any works of cleansing or drainage which they might consider necessary.

CROLL'S GAS-METER MANUFACTORY.—A new factory for the manufacture of dry gas meters has been opened in the Kingsland-road. The main buildings have been carried out by Messrs. J. Lennan and Bird, builders, Osnastrug-street, New-road, under the superintendence of Mr. William Lee, architect, St. Michael's-house, Cornhill. The factory contains three floors, of an area of 8,000 superficial feet, each floor being supported by cast-iron columns. They are lighted by Rogers's patent wrought iron sashes, filled in with Hartley's patent glass, and are ventilated by flues formed in the external walls running up to the roof. The whole is divided into the several departments of case-constructing, leather-cutting, index-making, and brass-finishing, and completion, affording altogether sufficient accommodation for upwards of 200 workmen. The proving and experimenting room, 61 feet by 20 feet, is lighted by a lantern, is 20 feet high, and ventilated by a large number of ornamented cast-iron panels inserted in the sides of the lantern communicating with the roof. Adjoining the factory is the smithy and casting shop, advisedly separated therefrom, the fumes from the casting, as also the smoke from the forge, being carried into a shaft rising 40 feet above the roof of the factory. The offices are next Kingsland-road, and have a frontage of about 100 feet. The design is in the Italian style, executed with red and white Suffolk bricks, with stone dressings and ornaments. In the principal archway a head of Time forms the keystone, and a corbel for supporting a clock, on either side of which are life-sized figures of Morning and Night; and above the clock pedestal is a group of figures of Childhood, Manhood, and Age, the whole being symbolic of the lapse of time. These figures have been sculptured by Mr. Robert Jackson, Maida-hill, from the designs of the architect.

MONUMENT TO EBENEZER ERSKINE AT STIRLING.—Some time ago, a number of gentlemen connected with the United Presbyterian sect at Stirling made arrangements for the erection of a monument to Ebenezer Erskine, the "Father of the Secession." Mr. Erskine was interred at Stirling, and the monument is to be erected over his grave. The design has been prepared by Messrs. Peddie and Kinnear, architects, Edinburgh, and operations for its construction will shortly be commenced. Several designs, exhibiting different styles, were submitted by these gentlemen; and the one selected by the committee is of a pure Roman character, and will cost 400*l*.

GAS.—The Helston Gas Company, in Cornwall, has liberally promoted the early closing movement in that town by announcing a reduction of charge for gas twenty-five per cent. from Christmas last, to all acting in favour of that movement. —The Aberavon Gas Company have had announced to them, at their second ordinary meeting, a dividend of six per cent. The works are now in full operation, and the consumption on the increase. —The Brecon Company, at their annual meeting, were congratulated on its increasing prosperity, and a dividend of eight per cent. was announced. The price at present is 6*s*. 8*d*. which might well be farther reduced, to the still greater advantage of the company as well as of the public.

THE GLASS MAKERS AND THEIR LOCK-OUT.—A meeting, composed principally of working men, has been held at Preston, for the purpose of hearing the observations of a deputation from the glass-makers, who are still locked out of work by their employers. About 130 persons were present. The chairman introduced Mr. Woodhead, who stated that the origin of the lock-out was, that an employer, at Stourbridge, would not give proper wages—that the society refused to concede to or sanction his propositions—that he then gave his hands fourteen days' notice—that he sent a document to various masters in the trade, desiring them not to employ the men whom he had discharged—and that, in a short time after, a general lock-out was the result. He then commented on the injustice of the matter, contended that it was tyranny on the part of the masters, that the society would never give way to such oppression, and that, if the present meeting considered the claims of the men just, they ought, and he trusted they would, sympathise with them, and lend their best assistance. This the meeting resolved to do. A similar meeting has been held at Blackburn.

FALL OF THREE RAILWAY ARCHES AT SWANSEA.—The construction of the branch line of railway to the new docks at Swansea has necessitated the erection of arches along the Strand; and the work, says the *Camdenian* of last week, was proceeding vigorously and satisfactorily, when suddenly three of the arches fell down, killing one poor fellow on the spot and seriously injuring another. "We are glad," it adds, "to be able to state (although rumour authenticated the cause to negligence) that the accident arose entirely from circumstances beyond human control, namely, the sinking of the foundation of one of the pillars, although a layer of concrete 4 feet thick had been made, and which apparently was sufficient to sustain almost any weight that might be thrown upon the arches." At the coroner's inquest, amongst the evidence was that of Mr. O. J. Schenk, C.E. of Swansea, who stated that he was acting engineer for Mr. Brunel, the engineer-in-chief to the Harbour Trustees, and that he superintended the construction of the railway on the Strand, the plans and specifications of which were furnished by Mr. Brunel. He, himself, was nowise responsible for the plans, but he attributed the fall to the sinking of the concrete. The jury returned a verdict of accidental death.

THE PROPOSED FLOATING DOCK-GATE AT DUNDEE.—The design of a new dock-gate, invented by Mr. Ower, the engineer to the Dundee Harbour Trustees, and already noticed in our columns, has been submitted to Mr. Fairbairn, of Manchester, C.E., who has forwarded a favourable report on the subject to the Harbour Board, with a few suggestions for further improvement. After reading the report the trustees present congratulated the board and the public, as well as Mr. Ower, on the subject. One of them, Mr. W. Clark, remarked that in the report Mr. Fairbairn says he had invented one somewhat similar, but that it slid back into a recess, while Mr. Ower's revolved on a pivot, which Mr. Fairbairn regarded as an improvement. Mr. Clark felt satisfied that Mr. Ower's plans would be largely adopted in the construction of dock-gates, not only in this country, but in other countries. He thought all who took an interest in harbour matters in the town should be invited to see the model.

SINKING A WELL AT LITTLE HAMPTON.—A contract with the Board of Ordnance is being carried out by Mr. Edward Conroy for the supply of spring water to the military fort at Little Hampton. Seven iron caissons, of 3 feet 6 inches diameter, and 5 feet lengths, are being sunk, from which boring will be adopted, to receive 12-inch tubular iron, to the depth of 71 feet 6 inches, and, if necessary, to be carried lower. At the depth already penetrated, to the 9th inst. viz. 26 feet, the indication is promising.

THE DUKE OF NORFOLK'S MANSION AT SHEFFIELD.—The Farm at Sheffield-park, heretofore the residence of an agent of the Duke of Norfolk, has been made the basis of an extended edifice suitable for the occasional residence of the ducal family. The style of the architecture generally is that of the "Tudor age," with, however, such deviations from any actual type as, still in keeping with the Gothic element, were conceived to be more in harmony with present notions of comfort and convenience. The most striking feature of the pile is a quadrangular tower, between 70 and 80 feet high, and surmounted at one corner by a conspicuous octagon turret, with gargoyle ornaments at each angle. It comprises, in the upper stories, mostly a series of lodging-rooms, with closets, &c.; and over the whole a "smoking-room." Messrs. Weightman, Hadfield, and Goldie were the architects employed.

THE IMPROVEMENT COMMISSION, SCARBOROUGH. The quarterly general meeting of the commissioners for the improvement of this town was held on the 1st instant. It appeared that the north sands main outlet sewer and branches are completed, and that the works are now in full operation, and that the outlay upon their construction will not exceed the surveyor's estimate. By this improvement the sewage of the north side of the town and the water of Peasholm beck and its tributaries, which flowed across the north sands, have been removed, and are now conveyed in a covered tube leading northwards in the direction of Scalby-mill to the rocks beyond low water, entirely clear of the bathing-ground. The works were designed and carried out by Mr. Alex. Taylor, the surveyor to the commissioners; and in consequence of the manner in which he has discharged his duties, it was resolved by the meeting to increase Mr. Taylor's salary.

OUTBREAK OF THE CRINAN CANAL.—On the 2nd instant the principal reservoir supplying this canal with water burst, and the body of water, which covered about 70 or 80 acres, of an average depth of 20 feet, gushed down the hill, carrying every barrier and impediment before it, tearing the rocks asunder, and, dividing above Cairnban, one-half poured westward into the sea at Crinan, and the other eastward into Lochgilg. The traffic through the Crinan Canal is now at an end, and there appears to be no chance of its being resumed for a long time to come. The cause of the accident is unknown, but there was no indication of danger, it is said, or of insufficiency in the works. The highest reservoir appears to have given way first, and having overflowed the second, both were emptied into the third and largest, which also gave way. The unbankment of this one was about 200 yards long by about 10 feet in height, with a broad base built upon either side with masonry. Several houses were carried away, but so far as yet known no lives have been lost.

ELECTRIC TELEGRAPHIC PROGRESS.—Mr. Charles Hancock proposes to protect the insulating wire or wires of submarine or other telegraph cables, by encircling or encasing the same in a rope or other covering, manufactured from animal hair—generally giving the preference to horse-hair. This rope or covering may be made either by twisting or braiding, or by any of the means ordinarily adopted in the manufacture of such or similar ropes or coverings. The principal advantages resulting from the use of hair for this purpose are said to arise from the peculiar properties of being impervious to water, secure from the ravages of the worm, free from the rust and decay incidental to metal wires, very light in weight, and having great strength and toughness. —It is estimated that to work 12,000 miles of telegraph (the American system is here in question) about 3,000 zinc cups are used to hold the acid. These weigh about 9,000 lbs. and are decomposed by galvanic action in about six months, so that 18,000 lbs. of zinc are consumed in a year. About 3,600 porcelain cups are used to contain nitric acid, requiring 450 lbs. of acid to charge them once, and the charge is renewed every fortnight, making about 12,000 lbs. of nitric acid in a year.

NEW HALL, ST. ANDREW'S.—This building, says a Scottish contemporary, is progressing, but it is with a feeling of regret that we have to state that the west front wall is likely to give serious annoyance, by the bad construction of the roof pushing it several inches out of plumb. We forebore, it adds, to take any notice of it before, thinking it would be no detriment to the building, and not wishing to make bad worse; but it continues to grow worse. Those in power should look the matter boldly in the face, and take it down at once; for, besides being a lasting eyesore, it may ultimately be truly dangerous. But judgment and caution should be first consulted.

LONDON AND MIDDLESEX ARCHEOLOGICAL SOCIETY.—A general meeting of this society was held at the Marylebone Literary and Scientific Institution on the evening of Wednesday, the 9th instant. The chair was taken by Mr. John Gough Nichols, F.S.A. The hon. secretary, Mr. Henry W. Saxe, read some observations on "the Roman Camp of Suetonius at Islington," by Mr. George Mackenzie, which caused considerable discussion. The Rev. Thomas Hugo read a paper on "the Frauds of Antiquity Dealers, and especially of Dealers in so-called London Antiquities," in the course of which the rev. gentleman gave many hints to the student of archaeology as to the mode of judging of and selecting specimens. Mr. Taylor, Dr. Purland, the Chairman, and other members, gave instances of the frauds that had come under their notice. Mr. William Taylor then read a paper on the "Borough of Marylebone, Past and Present," which induced various observations on the position of Tyburn, and of the bournes—West-bourne, Ty-bourne, and Mary-bourne.

BAIRNE'S PATENT "HOIST-GOVERNOR."—The primary object of the inventor of this has been to render the lifting apparatus, used in mills, warehouses, and mines, known as the "hoist-box," its own governor or regulator; thereby securing the impossibility of a recurrence of those accidents which have from time to time resulted in coal pits and factories, from negligence of the attendant, or weakness of the materials. Attached to the top of the "hoist-box" is a governor or speed-regulator, precisely like that used in the ordinary steam-engine. The balls of the regulator acquire centrifugal force through the momentum imparted by a driving band, which is passed over a friction-shaft that constantly rests against the side of the shaft or well-hole to be ascended or descended. At each corner of the "hoist-box" is a cam, or eccentric, keyed in pairs upon the shafts, to which instantaneous motion is given by the governor should a rope break or any other accident whatever occur. The consequence is, that these cams are made to clutch the sides or guides of the well-hole with such tremendous force that the box, however heavily loaded, is brought to an immediate stand-still; and even if the speed to which the governor has been adjusted should be exceeded, the friction-roller immediately imparts an accelerated motion to the governing apparatus, which disengages a trigger and prevents the box from descending—let what will occur to engines, ropes, wheels, or gearing—at a quicker speed than that to which the box has been restricted by the application of this ingenious "hoist-governor."

THE BRISTOL TIMBER TRADE.—The following is from Messrs. F. K. Barnes and Sons' annual report of the timber trade for the year 1858.—On the 1st February, 1858, a report of the timber trade of Bristol was, for the first time published, and has since been continued monthly. This port now rivals other large timber markets, and it is evident that Bristol must ultimately prove very important among them, that importers will find a large demand for their goods, and that the old city will regain her former prestige. This, the past year has done much to substantiate, as a considerable business has been transacted here, notwithstanding the depressed state of trade throughout the country during the whole year.

Importation, Consumption, and Stock for 1858.

	Importation.	Consumption.	Stock.
Colonial Timber.....	1,625,500	1,675,000	329,000
Colonial Deals.....	1,693,000	2,462,500	324,000
Total in cubic feet..	3,185,000	3,939,500	653,000
Foreign Timber.....	419,000	608,500	101,500
Foreign Deals.....	812,500	916,000	113,000
Total in cubic feet..	1,231,000	1,584,500	204,500

The apparent large stock of colonial timber, when compared with the importation and consumption, is owing to the large supply during the month of December, when it amounted to upwards of 400,000 cubic feet.

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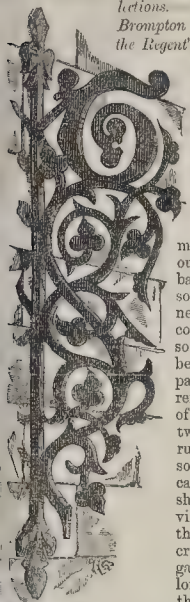
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The Builder.

VOL. XVII.—No. 838.

The Building for the Vernon and Turner Collections. Iron-work in the Brompton Museum.—House in the Regent's-park.



HE Chancellor of the Exchequer having drawn attention to the temporary home of the Vernon and Turner Collections of Pictures, in preparation for them at Brompton, as mentioned last week, our readers will probably be glad to know something about the new building. It is of considerable size, very soundly built, and has been carried up, and part of it finished, in a remarkably short space of time. It consists of two blocks: the first running north and south, and communicating with the Sheepshanks Gallery, is divided, by a wall down the middle, and two cross walls, into six galleries, each 50 feet long by 25 feet wide; the second, at the

northern end of the first, running east and west, and forming one large gallery, 110 feet long, 30 feet wide, and 30 feet in height up to the light. The first-mentioned galleries are 24 feet in height up to the light. The whole have been built and covered in, and the first six smaller galleries rendered fit for occupation, with the exception of the hot-water pipes, in eight weeks. Confining ourselves for the present to the latter;—the roof is very light, and has a somewhat temporary aspect: skylights occupy the apex of it the whole length of the galleries; and, at the foot of these, hang flaps for ventilation, opened by a set of levers and a rope in each apartment. These flaps are found to have advantages over louvres: there are fewer joints to keep water-tight, and they do not get out of order so soon. Near the floor there are small openings to admit fresh air, regulatable by a screw. The floors are formed on Fox and Barrett's principle, with rolled iron joists, 4 inches deep, 24 lbs. to the foot, tiled on the top, and seem exceedingly sound and efficient. There is no good reason why this principle should not be applied in the construction of private houses more often than it is, so as to lessen the chances of fire, and to limit its ravages when it does occur. Partitions of brick or other incombustible material should of course take the place of the fire-conducting timbered and plastered quarter-partitions; and stone, iron, or terra-cotta stairs should be used to complete the safety of the arrangement.

A dado is formed round all the galleries, of Captain Scott's cement, of which a very good character is given by those who have used it. The great secret of its successful use is the employment of plenty of water. It is a thirsty cement, and without water can do nothing. In the buildings here the fire-engine has been kept at work wetting the bricks and watering the cement. We may digress an instant to mention this little workshop erected in the grounds by the sappers, whereof the walls are formed of gravel, dug on the spot, and mixed with the cement of which we are speaking in the proportion of ten of gravel and one of cement, a material which costs 1d. per bushel, if we say nothing of the digging of the gravel. It was narrower in between two old doors, kept 5 inches

or 6 inches apart (*pié* work), and has made a sound hut.

The walls of the galleries are battened, canvassed, papered, and coloured. We have said that the new galleries communicate with the Sheepshanks Gallery, but there are boiler-plate iron doors in the openings, and it is as yet a question whether or not the trustees of the Vernon and Turner collections will keep them separate from the rest of the Museum, or allow them to be entered from it. A separate entrance from the grounds, leading up into the centre of the great gallery (as at the British Institution) is provided.

Round this staircase, below the great gallery, a mezzanine floor is introduced, containing seven small rooms for the students, the attendants, and for easels, and under the remainder of it are two lofty apartments, 40 feet by 30 feet each, to be used as the art-library of the Department. Beneath the other galleries there are six apartments nearly of the size of those above, and 18 feet 6 inches high, which will also be used for the purposes of the Department. The walls here take the shape of narrow piers, 3 feet 9 inches in thickness, so as to afford as much light as possible: in each bay of 10 feet there is an opening 7 feet wide. The walls of the story above are 14 inches thick, with 14-inch piers under the principals of roof, which are 10 feet apart.

All the works have been conscientiously performed by Mr. Kelk, Mr. Barrett working under him in his department, and the cost, exclusive of fitting up the apartments beneath, will probably be about 7,000*l.*, namely 4,000*l.* (including the hot-water pipes) for the galleries already finished, and 3,000*l.* for the large gallery. To sum up the accommodation, we may note that there are 410 feet of gallery, affording 14,000 square feet of available space, without hanging high. While noting with satisfaction and praise the good accommodation likely to be provided for the works munificently left by Mr. Vernon and our great landscape painter, we are forced to express regret that Captain Fowke, under whose direction the whole has been erected, has not found himself at liberty to devote thought or money to the exterior, the aspect of which is singularly disagreeable. The Department of Art, expressly formed to aid the union between Venus and Vulcan, to wed art to industry throughout the country, should manifest this in their own buildings,—should illustrate their own teaching. What they are doing in the schools and by the exhibition of their collections will affect the architecture of the day: they have formed, by the way, a valuable collection of building materials and architectural accessories; but they do not seem to listen to their own teaching.

As we are in the Museum, we may as well run away with a sketch or two; so we will take a couple of specimens of hand-wrought iron.* The lower one is a grille or window-grating of German work, dating about 1650: the one above is the upper part of a gate, also German, dating a little later, perhaps 1700. There is a return on each side of the first of about a foot. The busts, interspersed, are rude, but the leafage, flowing and twisted, displays remarkable handwork.

Architects should look to the collection of building materials here to which we have referred, the tiles, the terra cotta, and the porcelain wares. The illustration and notice we gave the other day of a painter's house in Paris have led to observations in the provincial press affecting our domestic architecture. M. Jollivet, the owner, writes us, in his own language, to this effect:—

"In constructing a house for my own occupation, I availed myself of the occasion to give an example of the decorative resources that the use of enamel on terra-cotta and on lava affords to architects, and to this I without doubt owe the interest with which you have regarded my construction. The decoration of architectural works is liable to rapid change in our climate, so different from that of Italy, which does not allow the artist to rely on the brilliant opposition of light and shade enjoyed by monuments in more privileged countries. In substituting for this effect the charm of unchangeable colour, enamels offer resources which, so far as regards the ornamentation of buildings, leave nothing to be desired. I thank you again for contributing to spread abroad in your country, so devoted to progress in all ways, an idea truly profitable to art in connection with building, and I will gladly afford any further information that may seem desirable or likely to aid in rendering the employment of enamel more general."

It is probably unnecessary for us to tell M. Jollivet that encaustic tiles, enamelled surfaces of numerous kinds, terra-cotta, and other means of permanent external decoration, are at the disposal of our architects, and have long been used more or less, but not so systematically or to such an extent as they might advantageously be: our manufacturers only need a sufficient demand to produce materials of the highest class.

In a house recently completed in the Avenue-road, Regent's-park, of which illustrations will be found in our present number,* Mr. Hector Horeau has called into requisition some of these adjuncts. Without being able to admire the forms employed, we may say that this structure presents many points of pleasing novelty. The frieze and the panels between the windows are of Majolica ware from Minton's: the ornaments round the upper part of the house and on the pediment are of terra-cotta, from Blanchard's. Messrs. Brown and Robinson have executed the works very well, and the total cost, including greenhouse and stable, has been 1,200*l.* The plan presents a departure from ordinary arrangement, and shows some ingenuity. The kitchen and its dependencies are in the basement, and the second floor is appropriated to the servants and the linen.

It is to be hoped that the time is coming when few houses will be built without the assistance of a competent architect; but to bring this about, architects must make it clear to the public that the houses will be all the better for their interference, and that they, the British public, will be benefited by expenditure in that direction.

OUR REMARKS TOUCHING THE POLICY OF RAILWAY COMPANIES.

We have received a letter from the general manager of the South-Eastern Railway in reference to our remarks on the anomalous system of fares adopted by the Company, and what we regarded as in point of fact a deception on the public by the advertised scale of charges,—a system which must operate to the disadvantage of the South-Eastern, and that of railway property generally, or of other companies where a similar arrangement prevails. Mr. Eborall, courteously thanking us for "former friendly notices," and regretting that we should have reason to complain of fares charged on the South-Eastern, states that, in general, the fares on that railway "contrast favourably with the fares on any other metropolitan line,"—as the London and Brighton, which we happened to mention,—that the return-fare between London and Blackwater is "a special cheap rate to encourage the London traffic," the "intermediate fares" being "on the ordinary scale;" that it "would be impossible to make the local fares as low as the fares from London," and that if the gentleman referred to, on our staff, "was returning the same day, and had taken a return-ticket at London for Blackwater, he would have been allowed to retain his ticket on alighting at Redhill on paying the single fare, 4*s.* from London to Redhill, the entire journey thus costing him 13*s.*"—that is to say, instead of the 18*s.* which was the actual cost by alighting at Reigate-town, making use of a Reigate-town return-ticket, and paying the charge demanded between Reigate and Blackwater; whilst 9*s.* or little over, was the charge presumed from the Company's table. The difference between 13*s.* and 18*s.* Mr. Eborall offers to return, by favour, should the return from Blackwater have been made on the day on which he supposes the ticket was taken "at Redhill." Also, he shows that whilst the distance between London and Blackwater is slightly in excess of that between London and Brighton, the return-ticket rate, not breaking the journey, is greatly less by the South-Eastern line; and that, breaking the journey, the single rate likewise is less, that is to say, slightly.

Now, in all this, there is complete misconception of the point at issue with the company, and of

* See p. 154.

* See p. 155.

the question raised as to the practice of railway companies in general. Passing over the circumstance that in our former article we did not name Redhill, but a different station,—though perhaps Mr. Eborall has said Redhill only for convenience of argument, he knowing best whether the case is the same,—we did not complain of the adoption of any understood rate of fares, or care pointedly to contrast the fares of one line with those of another. We, however, do observe that, whilst the South-Eastern manager gives us the single fares between Redhill and Brighton by one line, and Blackwater by the other, as slightly in favour of his case, he wholly omits mention of the fact that, at the time of the visit spoken of, the return fares over the contrasted ground were otherwise, or 2s. 6d. less on the Brighton line than the other.

We wrote, not to procure the return of any number of shillings, whether by courtesy or by right, but to expose what seemed to us, as we have said, practically speaking, a deception,—inasmuch as the South-Eastern company advertised to carry passengers between London and Blackwater (return fare, first class) for 9s.; inducing the presumption on which the journey was undertaken in the manner described (namely, that the expense could be but little more than such amount), and then charged just double, or more than would have been the whole rate between London and Blackwater added to a distinct charge between London and Reigate.

If Mr. Eborall will read the article again, he will understand that the journeys all were made within the time allotted for the use of return-tickets; and that the Reigate-town return-ticket, and the Blackwater and Reigate ticket, were delivered together at London, on the through-journey return from Blackwater, when asked for; and of course, as in such cases, were found to be *en règle*. That a return-ticket between Reigate and Blackwater was not procurable may be the very point in the question. However, whether the South-Eastern Company are peculiar in their system of charges or fines, or whether, as we believe is the case, the same deception is practised on other lines by tables of fares, we are quite sure that the system is opposed to the interests of companies, as it is to the feeling of the public, and indeed to things moral, sanitary, and intellectual, as well as national, of far greater moment. Are the companies to omit information as to fares between intermediate stations, and to publish other rates which must necessarily mislead? By their course they induce deceptions on themselves, which, in whatever way to be reprobated, are constantly practised, and are not to be wondered at. In short, the companies do not in this way help to the growth of honour and principle as an element of the English character.

Apart from the immediate question, we much doubt whether the system of exceptional rates is sound in principle, and conducive to the advantages of the companies and their constituency. What it may lead to, we have perhaps shown, and could add instances on some lines, of tickets sent by post, and used for several journeys, and other instances of tickets taken at a distant though cheap-fare station, for use instead, at a station at which the carriages were entered, whence the fares were more expensive: indeed, the courts of law are sufficiently familiar with such matters. As to excursion trains, these are too often left under great laxity of regulations for the comfort of the better portion of the passengers. We have known scenes of drunkenness and uproar: and the danger occasioned by any *irregularity* in the traffic, often resulting from them, has been too frequently referred to, to need further allusion. We conclude, then,—let the companies modify their system as to intermediate stations, and reduce the amount of all their fares with those of the ordinary return-tickets, promote the comfort of their passengers in the trains, and at the refreshment stations (still needing improvement and more moderate charges), as well as at hotels, and they will develop a greatly multiplied quantity of traffic; and will even thus, raise the intellectual calibre of men and women in these isles, and will bring the national interests, and their own, to a point which they have now, perhaps, no conception of. But no great work was ever accomplished without considering minutely details.

BURSTING OF A CANAL.—The Dearne and Dove Canal has burst its embankment below the level of its bed, at a point near Barnsley, the water running with terrific force into the valley below, carrying away walls, trees, and every obstacle in its track, till about $\frac{1}{4}$ miles of the canal were almost drained.

VENICE.*

THE collection of photographs of Mediæval buildings in Venice, which the Architectural Photographic Society have, is large enough to be of excessive interest, though hardly so large as is requisite for their complete illustration. This is, of course, unavoidable: last year we had a different selection of views, and in future years we shall, no doubt, be provided with illustrations of everything attainable at all bearing on the subject. To some extent, therefore, I shall be unable to avoid referring to buildings of which I have here no illustrations; and, with this explanation, I must beg you to pardon my doing so when I find it necessary. It will be the most convenient course to describe the more prominent buildings somewhat in the order of their date, and as I go on to point out in what respect the photographs which we have on this wall illustrate their peculiarities. You all know something of the situation of this glorious city in the sea, whose walls are all washed by the waters of the Adriatic, and whose pavements echo no sound of carriage or four-footed beasts of burthen,—a city of silent streets of water, with but one grand open space for meeting or promenade, the great square of S. Mark's, one end of which is filled by the west front of the church and its campanile, just where the smaller place—the Piazzetta—affords an opening to the sea at right angles with it.

It is here, in the centre of the city, that her earliest art can best be studied. The church of S. Mark, which has but very recently supplanted the ancient cathedral, the church of San Pietro di Castello, and become the cathedral of Venice, is, probably, on the whole, the most interesting church in Europe, as it is also one of the most striking.

Its architecture is purely Byzantine, and whether it was derived from Constantinople, or (which is equally probable) from Alexandria, it presents us with an almost unique example of the architecture of the Eastern Church transplanted to the domains of her rival of the West. Nor is this all: for looking to the commercial vigour of the Venetians in their best days, it is hard to disbelieve the evidence which has been brought forward to show that they influenced, to some extent, the architecture of France. At Périgueux, for instance, there is a church which, in shape, general design, and dimensions, is almost a copy of S. Mark's; and from thence a well-defined line of examples may be traced stretching on as far as the province of Anjou. Then, again, though the special peculiarities of S. Mark's are not traceable farther northward than this, there can be no doubt that the influence of the Byzantine school of sculpture was felt, even in our country. Nothing can be more clear than the evidence of this influence in much of the architecture of Champagne, Picardy, and the Isle de France; and we need not be ashamed when we see the same thing here and there even in England.

Byzantine architecture was the development which Greek and Roman art took naturally in the hands of the vigorous and active Eastern church. It was not, therefore, a direct reproduction of, or deduction from Classic which was produced in the church of S. Mark, but one stage of a long and interesting development, the influence of which was largely felt down to the latest days of Venetian life, and which has been well described in the "Stones of Venice" (vol. 1, p. 13): "All European architecture, bad and good, old and new, is derived from Greece through Rome, and coloured and perfected from the East. The Doric and Corinthian orders are the roots, the one of all Romanesque buildings,—Norman, Lombard, Byzantine; the other of all Gothic,—Early English, French, German, and Tuscan. The old Greeks gave the shaft—Rome gave the arch. The Arabs pointed and foliated the arch."

Of Byzantine and Romanesque architecture Venice still possesses several examples, the church of S. Mark being first in interest as it is in extent and preservation; whilst among the domestic buildings are the Palazzo dei Turchi, on the Grand Canal, well illustrated by this photograph (No. 126), and several other palaces of the same date, and for which an illustration of this example may serve our purpose. One of these palaces, indeed, is so far from being a ruin, that it is at the present moment doing duty, encumbered with Renaissance additions, as the principal hotel in Venice. Then, just out of Venice, on the island of Murano, is a church of rare interest and singular magnificence; and a few miles farther across the lagoon bring us to the dreary and desolate island of Torcello, with a cathedral of the Basilican

type, and earlier in date than S. Mark's, and a smaller church, dedicated to Sta. Fosca, by its side, founded at a rather later date, though probably the oldest of the two, as being unaltered; and there are, again, here and there in Venice, small portions of details—here a sculptured well in the centre of a court, and there a delicate inlaid ornament,—which serve to illustrate the minor peculiarities of the style. The photographs which we have here will enable you to understand very fairly the main features of the Byzantine style as applied to churches. The plan of S. Mark's is, as you know, a Greek cross, crowned with five domes, whilst a cloister or atrium surrounds the walls of the nave. It is, therefore, in plan, a distinct reproduction of an Eastern church. Take, for instance, Mr. Hope's description of Grecian or Byzantine churches. He says, "There are four pillars at the angles of a vast square; four equal projections from this; a dome over the centre, and domes or semi-domes over the other compartments; a narthex or porch at the west end; a sanctuary at the east; circular windows at the base of the apse, and an iconostasis or screen, with doors across the choir." Here we have an exact description of the plan and minutest point of S. Mark's, even to the minutest altered; for, though the domes were no doubt, originally visible, they have been in modern times surmounted with cupolas covered with metal, whilst in the west front the peculiarly Greek or Eastern termination of the building is a series of semi-circular arches (in place of gables), forming the terminations of so many barrel-vaults, has been altered in the fourteenth century by the addition of the ogee crocketing, and the delicate niches which now give the whole front so picturesque and unusual an effect.

The main thing which every one would first of all remark is, that the architecture is one of shafts. There they stand, one over the other, in endless number, and beautiful gradations of colour, proving this, at least, that so beautiful is the effect of a detached shaft that, when of good material, it may be almost left to itself. Here this was to some extent necessary, for there is no doubt that many of these columns came from older buildings, and were imported to Venice in their present state.

You can hardly conceive anything more lovely in its effect than the marble work of this front. Every variety has been gathered together there to do honour to the shrine of S. Mark; and, beautiful as these photographs are, they convey a very small portion only of the sentiment of the building. To those who have seen it for themselves they are invaluable, for they reproduce every vein of the marble, but it is necessary to have seen, in order to believe altogether in the beauty of colour, of which no photograph gives any idea whatever.

Next to the multitude of shafts, the most noticeable feature is the incrustation which, as you will see, is a covering of the whole surface of the wall with thin slabs of marble. These are generally arranged in vertical lines, with the advantageous result of at once showing that they are not part of the fabric of the wall, and thus their extreme slowness and thinness are in no sense a sham. Finally, there is the exquisite sculpture of the capitals, some of which are so delicately beautiful that perhaps no work of later days has ever surpassed them in point of execution. They have not the freedom or vigour of Northern sculpture, but deserve not the less most careful study. I know few directions in which the energies of the Venetian photographers would be more usefully directed than in the reproduction of a variety of these exquisite examples. You will see, also, if you look closely at the photographs of the fronts, some very lovely work in the detail of doorways and ornamental moldings. The peculiarly Eastern-looking doorway on the right-hand is very beautiful, as also the detail of the filling-in of the large arches in the return front facing the piazzetta on the south.

The balcony across the front over the door is one of the best examples of early date left to us. It is simple, but fine; and it is astonishing how little in the way of improvement was obtainable in 400 years of active imitation of this one feature. You should also notice the window behind the bronze horses, which retains its old shafted monials, though the arches which they carried have been destroyed.

In buildings like S. Mark's, which were intended to be covered or veneered with marble, the body of the structure was usually of brick, and no one who has travelled in Italy can fail to remember the rough ungainly west fronts of many of the churches prepared for marble, but never com-

* The following is the paper read by Mr. G. E. Street, mentioned in our last number.

pleted. The very interesting church at Murano (an excursion to which is one of the works of every tourist to Venice) presents a rare and very interesting example of the combination of brickwork and marble. I have here a copy of the very beautiful photograph by Ponti of its east end, and Mr. Ruskin has given a drawing in detail of a portion of it. One feature worthy of record is, that though it is built with a brick in no way superior either in texture or colour to our commonest brick, yet by the elaborate care which has been lavished on its design, its effect is rich and beautiful beyond almost any other building of its style.

The bronze horses, of which we have a very striking photograph (No. 133), are among the most peculiar features of the west front. They are four in number, and you will see that they stand balanced, as it were, upon shafts. Extremes meet; and I really think that this extraordinary position is better than that of most equestrian statues where the plinth on which the horse stands is always uncomfortably high, and sometimes, as in the Duke of Wellington's statue on the arch at Hyde-park corner, dangerously so. Here, however, there is no attempt to delude; and if horses are to be taken out of their natural position near the ground, I really think they are as well placed at S. Mark's as they can be. The horses are executed in bronze, and were brought from Constantinople by the Venetians after the city was plundered in the fourth crusade (circa A.D. 1203). Their origin is doubtful, and I will not pretend to say whether they are Roman or Greek. Like everything moveable, and worth moving, which came in the way of the French during the last war, they made a journey to Paris, but were returned in 1815.

In the centre of the west front there are some mosaics, but the greater portion of these is comparatively modern; and it is only on entering the church that the full value of this gorgeous system of decoration is appreciated. The floors are covered with a mosaic pavement of varied and beautiful design, laid in undulating lines in imitation of the waves of the sea, just as in the very similar pavement of Sta. Sophia, at Constantinople, where the pavement was laid, as we have documentary evidence, with this symbolical intention. And it is this same symbolical intention in every feature of the decorative portion of the work which aids materially in giving the interior of S. Mark's its unquestionable position among the very finest interiors in the world. Take the eastern dome, for instance, and in it we see a vast figure of our Lord, surrounded by thirteen prophets and the Blessed Virgin. The pendentives under the dome have the four evangelistic symbols, whilst below them are the four Rivers of Paradise. In the central dome is a majestic figure of our Lord, with the twelve apostles and the Blessed Virgin again, whilst the pendentives have figures in place of the symbols of the four evangelists. It would take a long time to describe the whole of these mosaics, and as perhaps the interior of the church, not being at all represented by photographs, is hardly within my province, I will say no more than that the significance of the subjects is only surpassed by the fine effect of their execution. The mosaics are all on a gold ground, and this in the upper part of the church is carried even over and round the angles, to the too great obliteration, perhaps, of the architectural lines of the building. The mosaic is in small pieces of glass, of unequal size and irregular shape, set in a fine plaster, which leaves a white line of division between each piece of the mosaic. There is not that exactness of size, and fitting together of the pieces of mosaic to which we are accustomed in later works, as also in all modern imitations; and no doubt the defect is much enhanced by their apparent rudeness. This, at least, is one mark of difference, that whereas mosaic, of bad and neat execution, has a tinseley and gaudy effect, one of the most noticeable facts about S. Mark's is, that its interior, with all its gorgeousness, is yet full of sobriety, dignity, and repose.

You must not imagine that all these mosaics are of the same date. The contrary is the case, but I think the earliest are the most effective; inasmuch as in them the main effort has been to obtain distinct outlines and brilliant effects of colour. These are what mosaic affords the best opportunities for; and the earlier artists in this, as in other things, showed their real art in confining themselves always to that effect which their materials fairly allowed them to maintain.

I need hardly tell you that much of this decoration was, more or less Eastern in its origin. The pavements, indeed, were often executed by foreign

workmen, and called "opus Græcum," or "opus Alexandrinum." And there is one feature which I do not know that I have ever noticed, and which, nevertheless, is one which to my mind shows something of the influence of the East in this building. This is the complete absence in the interior of sculptured representations of the human figure, and their great subordination in the exterior. It was not until (as the inscription still tells us) the year 1394, that the screen across the entrance to the choir was introduced, with its fine figures of the Apostles on either side of the Rood, to supply a want which I should think must have often been felt before it was gratified. About the same time, two figures were added in niches round the gables of the exterior, but even now they form a very small and insignificant portion of the whole scheme of the church. It is difficult to pronounce decidedly; but my impression is, that many of the figures in the front are later insertions.

A few dimensions will show you that it is not by reason of its size that this building is so impressive. Its internal length is 215 feet; width of transept, 201 feet; internal height of dome, 90 feet; width of west front, 170 feet; and height, 72 feet. Compared to many of our Northern churches, the dimensions are insignificant. And the building is to be regarded, therefore, as an example of the effect to be obtained by the free use of beautiful materials and gorgeous colour. Let me not be misunderstood, however; for though I admire S. Mark's immensely, I believe that such a cathedral as that of Chartres is worth ten S. Marks', just as our Northern art is more vigorous, grand, and perfect than this Italian illustration of Byzantine art.

I should have said that S. Mark's was commenced in the year 976, and dedicated about 1081.

I have detained you here sufficiently long; and now, though we have no photographs of the churches at Murano or Torcello, it is impossible to omit all reference to them.

In S. Mark's we have, as I have endeavoured to explain, a perfect reproduction of a Greek church. In these other churches we have equally perfect reproductions of a Roman basilica. And the Duomo of Torcello, with its marble columns and capitals, freely and beautifully derived from the Corinthian, its marble pavements and its grand mosaics in the east and west end, as well as all its old choir arrangements, inlaid marble screens and ambons, with the seat for the bishop at the east behind the altar, elevated so as to overlook the whole church, with seats for the clergy to the right and left, rising in tiers in semicircular form, is of an interest hardly second to that of S. Mark. To the west it has a passage, and beyond that a very small octagonal baptistery. The original foundation of the church was in the seventh century, but the present building is, probably, so far as we see it, of the date of A.D. 1008, though parts of the original walls may very probably still remain.

Within a few yards of the cathedral, and connected with it by a cloister, stands the small church of Sta. Fosca, built in the tenth century probably, and, like S. Mark's, a distinct reproduction of a Byzantine work.

The church at Murano is, again, like the cathedral at Torcello, a grand basilica, dating from the eleventh or twelfth century, and of infinite interest. But it has been so elaborately and faithfully described by Mr. Ruskin in the second volume of the "Stones of Venice," that it is unnecessary for me to attempt a description of it.

The interesting fact in relation to these churches is, that we have here two very distinct types, brought, as it were, into collision. From these it was that much of the art of the North borrowed its inspiration. It was the Basilica from which most was borrowed, but the Greek architects gave the cruciform arrangement, and we see the combined influence throughout Lombardy and down the Rhine, at Worms, Spire, Mayence, Andernach, Boppard, Bonn, Gelnhausen, and Cologne, whilst, as I have already noticed, the Byzantine influence made itself felt alone (just as in S. Mark's) in the south-western provinces of France. These Venetian churches have, therefore, a very great claim on the attentive study of all who desire to understand fully the history of our Northern architecture, though none of us would wish that study to be so little intelligent as to result in the mere imitation of their peculiarities.

I told you, in speaking of St. Mark's, that it was veneered with marble on a brick wall; and if we go from the ecclesiastical buildings to the civil, we shall find that this construction is well given in the photograph of the Fondaco dei

Turchi (No. 126), where most of the lovely covering or facing has perished, and a brick ruin is almost all that remains. In this building, too, you should notice the perfection of the sculpture of the capitals, and the beauty of the ornaments inlaid in the spandrels of the arches and under the cornices. You will see here the ordinary arrangement of a Byzantine palace in Venice, a building of two stages in height, supported and divided by shafts, and with a centre and two wings distinctly marked in the elevation. In some respects this arrangement obtained throughout the whole of the Gothic period, and was perpetuated in the Renaissance.

In the photograph, No. 121, a view of the Palazzo Passi, you will find on the right an early campanile of some interest, and belonging to the church of S. Samuele. This fairly illustrates one of the types of the Italian campaniles, reproduced again in the church of San Zenone, at Verona; and at a later date, and with great modifications, in the campanile of S. Mark's. This last is interesting, owing to the ingenious construction of the ascent to it, an inclined plane, winding up the tower from side to side, in the thickness of the walls. The same scheme was also adopted by Giotto in his famous campanile at Florence. The dimensions of this campanile, as given by Wicbecking, are rather grand, being 350 feet high, of which the square part is three-fourths. The campanile at Cremona is almost the only loftier example than this in Italy, being 396 feet high; whilst Giotto's campanile at Florence is only about 270 feet.

The low spires which surmount these Italian towers are very characteristic. That of San Samuele is covered with copper.

From these early buildings let us now turn to those of the Gothic class. Of these, two of the most important are the churches of the Frari and of SS. Giovanni and Paolo; the former built by Niccolò Pisano, for the Franciscans, in 1234; the latter by the Dominicans, in 1246. They are noble buildings in their way, though very far inferior to our Northern churches of the same scale, and of value as being entirely unaffected by the Byzantine influences, which were at work before them, and fine specimens of genuine Italian Gothic, wrought out carefully and well in brick, with but a sparing use of stone.

Most of the Gothic churches of Venice are to some extent founded on the same type as that which distinguishes these two, of which the church of the Frari is the grandest example. Among them I may mention the desecrated churches of San Gregorio and La Carità, the church of the Madonna dell' Orto, San Stefano, the church of l'Abbazia, and some of the campaniles, of which that of S. Giacomo del Rialto is perhaps the finest.

The west front of the church of the Madonna dell' Orto, is the only one of which we have here any sufficient illustration. It is perhaps the best example of the kind in Venice, for though the churches of SS. Giovanni and Paolo, and the Frari are very much finer, their fronts have been much modernized, as you may judge by the photograph No. 136.

The front of the church of the Convent of La Carità is curious, as being finished somewhat as the west front of S. Mark's, with three arched gables. One of the views of Venice, in the *Nuremberg Chronicle*, shows that this was the original finish of this peculiar west front. To return to the church of the Madonna dell' Orto. The windows in the front are fair examples of Venetian traceries, where, as in the domestic buildings, shafts take the place of moulded moldings; and in this case, the glass being fixed to a wooden frame, placed behind the tracery, is very damaging to the internal effect. This peculiar arrangement is seen well in the clerestory of the very fine Church of Sta. Anastasia, at Verona, where the good traceries of the circular clerestory windows are entirely concealed by plain circular wooden glazed frames placed inside.

In this photograph you have an illustration of the transome of tracery, which is so frequent in Venice, and of the elaborate treatment of the eaves—cornices, and niches up the gable. The rose-window is of red and white marble, and has a course of good dog-tooth enrichment in its moulding. The material of this front is red brick; but this is now concealed with plaster washed over with a light red wash.

And here I may warn you that Italians revel in whitewash almost beyond any other people. Everything that can be reached is covered with the abominable mixture, and San Zenone, at Verona, is almost the only interior in the north of Italy in which the red brick is allowed to show how fine its effect is in the interior of a building, whilst

the Venetians, when they have well whitewashed the interiors of their churches, proceed next to cover their columns with pinkish red damask, with the most vile effect.*

THE WINDSOR EPIDEMIC AND SANITARY ARRANGEMENTS.

At a recent meeting of the Epidemiological Society (Dr. Babington in the chair), a paper, "On the Causes of Continued Fevers, with special Reference to the recent Windsor Epidemic," was read by Dr. Charles Murchison, assistant physician to King's College Hospital and the London Fever Hospital.

The author commenced by making a few general observations on the necessity for devoting increased attention to the causes of disease, and expressed his conviction that in time the whole class of continued fevers would be as completely eradicated from this country as agues and other malarious fevers now are. The difference was pointed out between preventable and non-preventable diseases, and an opinion was expressed that the causes might yet be discovered of many diseases at present considered as non-preventable.

He described the epidemic, said it was not a new disease there, but had been more fatal than usual. The mortality in 1858 was 375, or 29.36 per 1,000. This great mortality, in 1858 was attributable to two diseases—scarlet fever and pythogenic or typhoid fever. The author then pointed out the causes of this pythogenic fever, which he divided into predisposing and exciting.

Under the second head, Dr. Murchison said, although a general impression had existed that the fever was eminently contagious, a great deal of the evidence adduced upon the point had been fallacious. The most of the cases could not be attributed to contagion, and could only be explained by the putrid emanations from the sewage in the drains. The author divided the town into three districts:—1. A low-level district, comprising Gloucester-place, Adelaide-terrace, Sheet-street, &c.; 2. A high-level district, containing the Castle, Royal Mews, &c.; and 3. Another low-level district, nearest to the river, and consisting of Beer-lane, Charles-street, and the surrounding courts and alleys. The sanitary arrangements, including the drainage and water supply, characterising each of these districts, were pointed out; and it was shown that almost all the cases of fever occurred in the first two of these districts. In the third division,—in fact, in all that part of the town to the north-west of Peasod-street, which comprised the worst and most crowded houses, there had been scarcely any cases, and not a single death. Bad smells from the drains had been complained of in the first two districts, but scarcely at all in the third. Moreover, the third district differed from the other two in the circumstance that the waterclosets were for the most part situated outside the houses, and consequently there was no communication between the drains and the interior of the houses. In the principal part of the Castle, which had a separate drain of its own, not at all connected with the town drainage, as also an independent system of flushing, which was had recourse to every morning, there had not been a single case of the fever. Again, of the Royal Mews, one portion drained into the town sewers; another, separated from the former merely by a roadway, drained into the private sewer from the Castle. In the latter no cases of fever had occurred; in the former there had been about thirty cases and three deaths. The reasons assigned for the fever being so much more prevalent in 1858 than in previous years were that, properly flushed, and accumulations of sewage in them resulted. The high temperature favoured the fermentation of this sewage and the formation of noxious gases, which escaped into the houses. The author concluded by giving ten very remarkable instances of houses in which several cases of fever had occurred, and into which there had been an obvious escape of fœtid gases from the drains.

We have not yet received the apology we have been looking for from the Windsor Board of Health.

SUDDEN DEATH OF MR. JOHN PEEBLES, C.E.—It is our (*Nearly Telegraph's*) painful duty to announce the sudden death of Mr. John Peebles, C.E., *Nearly Navigation Company*, at his residence, Canal-street.

* To be continued.

ARCHITECTURE IN THE SUBURBS. HORNSEY.

WHEN, giving attention to the architecture of the London suburbs, we regretted a prevalence of deformity, as of bad construction, which testified to no use made of the improved qualifications of architects, we were not forgetful of exceptions, in some detached houses, and even in certain districts of limited area where appearances more favourable in their character and tendency might be observed. If the suburban wanderer would like to test the architectural worth of one of such districts, he may find one, not unremarkable also for sylvan beauty, within easy walk of the stopping-place of the Holloway and Hornsey-road omnibus. Here, in a small space, near to what is marked on the map as Hornsey-rise, between Hornsey-wood and Highgate, are a greater number of houses than are generally found together, in which taste is displayed. There is pleasing variety also in them; and in some of them the combination of the architecture with the natural objects, has those particular advantages on which we have dwelt heretofore, as deserving consideration of architects, and as perhaps essential to complete architectural effect. The main drawback to the entire satisfaction is, that the designs, or some of them, are slightly imitative, as of Venetian Gothic, and of Moorish architecture, rather than altogether works of our day,—the particular character being attained, as generally happens, through forms, some of which are of questionable relation to purpose,—in short, to internal convenience,—as in the case of windows smaller than might have been thought desirable regarding one of the objects. In other cases cement is used,—still in those cases, with some originality rather than in mere imitation of mouldings, or other forms of masonry.

In the houses spoken of as having the Venetian Gothic character,—having, however, also details of original design—two pairs of houses, close together,—grey, red, and white bricks, tiles, and stone, are the materials used. The general work is of brick, as also are the *voussoirs* of window-arches, and some of the more ornamental features; tiles being added in the strings. The enclosing wall to the garden is also of brickwork, perforated in design, and has a peculiar but good effect. The windows are coupled and tripled, and have stone shafts, and semicircular and stilted-segmental arches. Balconies project on stone corbels; and the porches, coupled, preserve the general character.

Near these, is a house chiefly cemented, and having a peculiar, but not unplesing, effect, arising from the treatment of the wall-surfaces in large panels, or with broad angle piers, and from the other details, which include a low-pitched and coped gable; a door arch-headed to the porch, with ornament in the hollow of the jambs, and a console-head supporting a balcony semicircular on plan, for the window above; balconies to all the windows of the chamber story; and jambs to these windows chamfered and moulded.

Opposite to this house, is another detached, of simple Italian character, built of grey bricks, with stone for the dressings of the porch and windows. A bold cantilever cornice in stone projects from a brick-string; the chimneys are quaint in appearance; the windows have segmental arches, chamfers and labels; and some of the lower part are of plain brick; and the porch has an arch-headed doorway, having a label and corbels, richly carved roll-moulding, and cornucopie, and a shield at the top.

The houses of Moorish character are two, detached, but grouped near each other with happy effect. In both, chromatic effect is studied in the use of bricks of different colours—though those not so glaring in appearance as in many buildings elsewhere, affecting a similar character. In one of the houses, the chief feature is a square entrance-tower, with small windows at the top; and having a horse-shoe arch to the porch, with pointed extrados, built in red and white bricks. The plan generally is irregular. The windows are mostly small, and have red brick arches and slate eills; and part of the effect of the design is produced by some courses of red bricks or tiles. The roofs are gabled and overhanging. The other house is remarkable for a large octagonal feature in the plan, and for an angle porch, the angle of the upper story being carried by a square shaft. The windows are in this house small, but are generally coupled; and sometimes the lights are divided by a stone shaft. The care of the designer, as in all good architectural productions, has extended to the ground-enclosures and the

plain unvarnished gates—all which, with the surrounding trees, assist the general effect.

Though these works are not everything that could be desired in suburban houses, they are worth looking at as exemplificative of the character of art, different from what is general, that may be produced by some slight regard for the beautiful in building.

RECENT IMPROVEMENTS IN PARIS, AND THEIR COST.

We mentioned some time since a paper on this subject by Mr. Edward P'Anson, read at the Royal Institute of British Architects. We now give that portion of the paper which shows the cost of the various improvements.

The remarkable building called the Halle Centrale deserves a special notice. It comprises ten different compartments in two sections, separated by a boulevard 30 mètres wide, the first section occupying 20,000, and the second 10,000 superficial mètres.* Cellars extend under the whole, which it was intended should be connected with the railways entering Paris by means of underground railways on the line of Boulevard de Strasbourg and du Centre; but this project has been abandoned. Iron, cast and wrought, glass, and brick, are the materials used. The arcades of the front measure 6 mètres in width: the lower part is enclosed with brickwork; above is open glass work, and the upper part has fixed glass work. The employment of cast iron is here quite legitimate, and pleasing in effect. The columns are light and elegant, interfering neither with space, light, nor air, more than is consistent with solidity, in which respect the whole composition is wanting neither in reality nor in appearance. In November, 1857, the works of the first part were on the point of being completed, the large tables of white marble being placed in the fish market. The expense of obtaining the land and houses for the Halle Centrale was estimated at 9,141,020 francs, and it required the demolition of 106 properties, occupying a space of 13,262 mètres. The construction, with the compensation, and the enlargement of the adjoining streets, cost 1,572,000L; of which the houses pulled down cost 1,080,000L.

Having given a sketch of the several buildings erected of late years in Paris, it may be interesting to record the cost of some of them: this I have already done to some extent; but I will now quote the following:—

	Francs.
The Jewish Church, by M. Thierry	234,294
Jews' Hospital, same architect	
Ground	65,000
Building	96,492
Cost of building about 80 francs the square metre	161,492
Mairie 3rd Arrondissement	389,379
New Fourrière, or Pound for the Police	207,752
140 francs the metre.	
No. 60, Boulevard de Strasbourg, private house	293,332
651 francs the metre, probably including land.	
New Wing, Lunatic Asylum, Charenton	3,350,000

As more detailed examples, I give the expenses of three buildings, namely, the Circus, by Hittorf; the Colonne de Juillet; and a house, Place St. George.

The Circus built by M. Hittorf, on the Boulevard des Filles du Calvaire:—

	Francs.	Painted windows.	Francs.
Masonry	194,000	Furniture	2,500
Carpentry	88,000	Lustres and gas	20,000
Ironmongery	62,500	Decorative painting	6,500
Founder	15,000	Historical painting	10,000
Joiner	93,000	Statuary	20,000
Carving	37,500		
Stoves	8,000		
Paving and asphalté	16,500		
Stucco work	2,000	Design and direction	32,000
Painting and gilding	24,500		
Ornamental sculpture	16,000		
Bronze ornaments	10,000		
		Total	676,000
			or £27,040

The total surface covered by construction being about 1,900 metres, the cost per metre amounts to about 350 francs.

The Colonne de Juillet was estimated to cost 1,172,000 francs, nearly 17,000L. The heavier parts of the bronze work was paid for at the rate of 3 francs 75 cents, the kilogramme (2.2 avoirdupois), and the lighter parts at the rate of 4 fr. 25 c.

The house No. 26, Place St. George, built in 1853, and occupying a space of 1,307 square metres, cost 564,000 francs, being at the rate of 418 francs 80 cents a metre for the ground. The building covers 823 square metres, being at the

* The French metre = 3.28 English feet. The Paris foot = 1.066 English foot. 1,000,000 francs = 40,000L English money.

rate of 237 francs, 35 cents a mètre. The cost of the works under the several heads was as follows:—

	Francs.		Francs.
Masonry	150,000	Sculptor	13,000
Carpentry	40,000	Carton pierre	3,500
Joinery	50,000	Pavement	4,000
Ironmonger, smith, and founder	33,000		
Covering & glazing	16,000	Interest on outlay, and architect's commission	534,000
Gilding	8,000		
Paper-hanging	2,500		
Internal mirrors	11,000	Total	564,000
Plate glass, externally	7,000		
Stoves	4,000	or £22,550	

The income is said, on a moderate scale of letting, varying from 900 francs for a fourth floor towards the Rue Laferrière, to 6,200 francs for a first floor on the Place Saint George, with stabling for two horses, to have realized 39,500 francs, or at about the rate of 7 per cent. on the outlay.

Up to the end of the year 1857 the works on the Rue de Rivoli had cost 4,800,000, and caused the demolition of 800 houses. As part of this work may be also mentioned the Square of St. Jacques, and the Avenue Victoria in front of the Hôtel de Ville, at the back of which is now being built, as a pendant to St. Germain l'Auxerrois, a Mairie for the fourth arrondissement. This square occupies a superficies of 6,000 mètres. The trees and shrubs are of new, rare, and valuable kinds, and were obtained from the first nurseries of Paris, Angers, and Nantes. After the Rue de Rivoli, the most important new street is the Boulevard de Sevastopol, commencing at the Strasburg Station and extending thence to the Boulevard St. Denis; and passing between the Rue St. Martin and the Rue St. Denis; it then assumes the distinctive name of Boulevard de Sevastopol, and continues until it reaches the Seine at the Place du Châtelet. Up to this point the expense is said to have been about 320,000.

In order to form new streets, the law under which expropriation, that is compulsory sale, takes place was passed as it now stands on the 3rd of May, 1841. It has been completed or supplemented by several regulative ordinances and by a decree of the Pouvoir Exécutif, having all the force of law. The expropriation takes place on the report of local commissioners, and the compensation is assessed by a jury, who sit as judges of the value. The whole of this subject will be found fully treated of in the 198th and 199th numbers of the "Journal of the Society of Arts," for the year 1856; but the fullest particulars will be found in the "Revue de l'Architecture," by C. Daly.

As examples of the compensations paid in the formation of new streets, the following instances may be given:—

	Price offered.	Price asked.	Price taken.
Francs.	Francs.	Francs.	Francs.
12, Rue du Louvre, and 1, Rue des Fossés St. Germain l'Auxerrois	444,500	611,000	500,000
Place du Louvre, No. 20, and Rue Jean Tisson, No. 9	326,000	312,000	260,000
Rue des Prêtres St. Germain l'Auxerrois	192,000	346,114	250,000
Place du Louvre, No. 18, and Rue Jean Tisson, 5 and 7	136,000	224,065	155,000
Place du Louvre, No. 16	116,000	184,514	126,000
Rue des Fossés St. Germain, No. 1	47,000	80,000	60,000
8, Place du Louvre	25,000	75,000	49,000
Same house, a librarian	15,000	33,000	20,000
12, Place du Louvre	14,000	33,000	20,000
Ditto, a wine merchant	15,000	20,000	20,000
14, Rue des Frères, a notary	8,000	25,000	16,000

As to the selling value of the land, I can offer you the following illustrations:—On the 26th of February, 1856, the City submitted twenty-eight lots of ground for sale, situated, Place Hôtel de Ville, Avenue Victoria, Rue de la Coutellerie, Rue de la Tacherie, Quai Pelletier, and Rue St. Martin. Of these eight lots only one was sold, that of Rue de la Tacherie, containing 166 mètres, which put up at the rate of 300 francs, sold at an increase of 100 francs. On the 7th of August, 1855, the same lots were put up at prices varying from 450 to 500 francs the mètre. Four houses put up at the reserved price of 95,000 francs, sold for 152,000; three others, put up at 90,000 francs, sold for 151,400 francs. Land in the old Park at Neuilly sold at prices ranging from 20 to 28 francs the mètre. For the land on the Boulevard des Capucines, one lot of 762 mètres sold for 456,000 francs; the sixth lot sold for 263,000 francs, and another lot sold for 272,000 francs; but of the last two I cannot give the superficial area. Several lots of ground on the line of road from the Champs

Elysées to the Pont de Neuilly sold for 20, 25, and 28 francs the mètre.

	Francs.
The formation of the Rue Rambuteau cost	5,259,793
Deduct for re-sale of land	963,863
	4,355,930

This street is 13 mètres wide and 818 long, making the cost for each superficial mètre 530 francs.

The Rue de la Banque, 23 m. 50 c. wide, length 228 m.; cost 930,882 francs, equal to 312 francs the mètre. The Rue Constantine, 13 m. 50 c. wide, length 257 m.; cost 1,329,946 francs. The land for the extension of the Rue de Rivoli, estimated to cost 770 francs the square mètre, actually cost 818 francs:—6, Rue Montmartre, 74 m. price 85,000 francs, per mètre 1,148 francs; 10, same street, 118 m. price 105,000 francs, per mètre, 890 francs; Rue de Joinville, 1 m. 20 c. price 240 francs, price per mètre 200 francs; Rue de l'Orillon, 7 m. 58 c. price 113 f. 70 c. per mètre 15 francs. Rue du Temple:—Rue Saint Pierre Popincourt, 1 m. 15c. price 74 f. 75 c. per mètre 65 francs; Rue des Chantres, 1 m. 04 c. price 26 francs, per mètre 25 francs; Rue de Jena, 4 m. 08 c. price 163 f. 30 c. per mètre 40 francs.

The demolitions carried out in Paris, by the Prefecture of the Seine, have been, according to the *Moniteur*,—*

	Francs.
In 1852 .. 250 houses .. Compensation paid ..	27,319,210
1853 .. 515 ditto .. ditto ..	24,756,121
1854 .. 399 ditto .. ditto ..	19,709,765
1855 .. 320 ditto .. ditto ..	29,953,329
1856 .. 181 ditto .. ditto ..	24,463,040
	126,211,559

The value of new buildings and enlargements was as follows:—

	Letting value.	Selling value.
	Francs.	Francs.
1852 .. 638 .. 1,100,000 ..	25,000,000	94,000,000
1853 .. 1,095 .. 4,700,000 ..	100,000,000	140,000,000
1854 .. 1,205 .. 7,000,000 ..	300,000,000	250,000,000
1855 .. 1,514 .. 10,000,000 ..	250,000,000	250,000,000
1856 .. 2,000 .. 12,500,000 ..	712,000,000	
	6,552 .. 35,000,000	

Showing that the value of the buildings erected in 1850 amounted to 22,000,000 francs; in 1851 to 26,000,000 francs; in 1852 to 28,000,000 francs; and eventually in 1856 reached the enormous amount of 250,000,000 francs (10,000,000l.).

I have heard it said that in Paris the municipality has accomplished these works of street improvement with profit; and so in one sense, at least in one case, they have. I particularly allude to the case of the Rue de Rivoli. But here it must be observed, that when the Imperial Government, having decided on the work, applied to the municipality for its co-operation, it agreed to pay one-half the sum necessary to form the street running along the Tuilleries and Louvre, and one-third the expense of the remainder of the street. When the municipality commenced the work, they had contracted a loan of 50,000,000, which sum was at a premium, and actually realised 62,000,000.

They had then to begin with this borrowed fund of 62,000,000 || A fund in reserve of | 50,000,000 |
| And a part paid by Government of | 50,000,000 |

162,000,000 = £6,480,000

With this sum in hand, the re-sale of the land and the value of the old materials, it is not marvellous that there was no loss to the municipality. This you will, however, perceive is a case where the Government contributed largely to the work, and is no proof that the improvements are self-paying. They are, on the other hand, I believe, quite as costly in Paris as they are in London. The length of this paper prevents me at present noting the subject of the statistics of the town, its population, area, the number of building operatives employed, and the estimated product of their labour, with some other points which appear to me interesting to us as architects. I might also have alluded more particularly to the careful restorations which have been going on in the very interesting Medieval buildings, of which there are many examples in Paris.

The works in the city of Paris are paid for chiefly by duties levied within the town, or by proceeds of institutions belonging to the city, such as cemeteries, markets, abattoirs, water-supply, &c. In 1855 the budget provided for the expenses of *grands travaux* for the town, including works of architecture, ponts et chaussées, travaux hydrauliques, la grande voirie, the sum of 7,810,000 francs, amongst which were the following items:—

Expenses of Agency	120,000
Sainte Clotilde	400,000
Different religious buildings	400,000
School establishments	300,000
Institut de l'Impératrice	300,000
Cemeteries	100,000
Barrières, entrepôts, and abattoirs	100,000
New Prefecture of police	500,000
Caserne des Petits Pères	300,000
	2,520,000 f.

The actual total of work was nine millions of francs. In this are not included the works of Notre Dame and the Sainte Chapelle, the continuation of the Boulevard de Sevastopol, nor the paving undertaken at the joint charge of the town and the state. The receipts of the City of Paris for the year ending the 31st March, 1856, amounted to 89,579,287 fr. besides 25,808,454 fr. raised by loan for public works. The expenditure was 63,385,214 fr. of which new buildings and the repairs of the old cost 17,421,477 fr. The receipts for the year 1856 are stated to be 50,311,001 fr. Amongst the items of expenditure are:—

Interest of debt	12,185,493
Expenses of collection, salaries, &c. ..	3,709,700
Primary instruction	1,557,764
Public worship	98,789
National guard and military service ..	717,330
Repairs of public buildings	4,244,372
Hospices and charitable establishments ..	6,478,651
Libraries, promenades, and works of art ..	297,454
Public festivals	902,829
Expenses of Prefecture of Police	9,624,323
New public works	13,177,105 fr.

I have purposely avoided drawing any comparison between our own proceedings in this metropolis and those in Paris. We have not certainly amongst us for the last two centuries seen anything like the same display of civic splendour as our neighbours in Paris: neither our tastes nor our institutions tend to it. And it is not only in Paris, but in the provincial towns of France, that the same spirit of improvement prevails; nevertheless, we are also certainly on the move; and although we have not yet arrived at the time when great schemes for the improvement of our crowded city are to be carried out as they have been in Paris, still I cannot but think that we are beginning to be aware of the real necessity which exists for making our London of the nineteenth century as convenient as it is rich and populous, and when those most pressing works of sanitary improvement, the construction of the great sewers, shall have been carried out—when London shall be really one great municipality, and some national plan devised of creating that reasonable amount of revenue which may be sufficient for the purpose—that then our chairman of the Metropolitan Board of Works may, like the Prefect of the Seine, with the help of a willing government, carry out in London works worthy of the greatness of the city and the empire.

IMPORTANCE OF A STUDY OF THE ARTS SUBSIDIARY TO ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

WHEN I placed upon the lecture programme the subject for this paper, "The importance of a study of the arts subsidiary to architecture," I inadvertently proposed to myself far more than I find myself able to accomplish; for, on the very threshold of such a subject, one is bewildered by its magnitude and its endless ramifications; and the further the consideration is carried, the more impossible does it appear that a single lecture can do the faintest justice to a subject which, indeed, embraces every art: for all arts will be found more or less to subserve that which it is our immediate province to follow, and to mix themselves up more or less intimately with its history or its practice.

I propose, then, to consider the subject under two general heads: 1. The relative importance to architecture of the arts of painting and colouring; 2. The connection which should always subsist between architecture and the sculptural arts; and will devote the short time allotted to me to the first question.

Taking then the subject of painting, or the art of representing to the eye by means of colours, or figures on plane surfaces, all objects the eye can discern in nature,—or, in the more confined sense in which I desire to treat it, the application of colour artistically to the various parts of buildings, whether to walls, ceilings, panels, or plastered surfaces, and in such a manner that the beauty and dignity of the architectural members are enhanced thereby,—it is necessary I should preface my remarks by telling you, that the subject, even reduced within these narrow limits, is capable of

* Read at a meeting of the Association, on Friday, the 18th, by Mr. John Norton, president.

* *Moniteur des Architectes.*

time by succeeding popes. It covers about the same ground as our St. Paul's; but the front is about 30 feet wider and 20 feet higher. The interior, however, contains more objects of interest and beauty than all the churches in London put together. The whole is a mass of varied coloured marble and gilding, and is filled with sculpture, frescoes, mosaics, and paintings in profusion. In the latter we have some of the finest specimens, from Giotto downwards. Some of the mosaics are by Gaddo Gaddi. The chapels are very beautiful, particularly that of the Corsini family. But the most interesting feature is the curious octagonal building in which the first Christian emperor received the rite of baptism. To describe this would be to exceed the limits of the lecture, which ought mainly to be confined to those buildings represented by the photographs themselves.

The first, however, in rank, though not in antiquity, is the great basilica of St. Peter's, originally built by Constantine, A.D. 306; the re-building of which was commenced in 1450. The photographs show the main front from various points of view. This is more than double that of our St. Paul's in width, and nearly double in height. The facade, therefore, may be said to be four times the size of that of our metropolitan cathedral. The colonnade shown in the photograph is a long ellipse, 738 feet by 588; its height is about that of the Royal Exchange. It contains 284 columns, in four rows, under which carriages drive: above this stand 140 statues, each 12 feet high. The obelisk is of Egyptian granite, 72 feet high, in one piece of stone; and, including the base it is about 15 feet higher than the Duke of York's Column. From the piazza in front to the great door is very nearly a quarter of a mile; so that if the audience could fancy they stand at the end of Fleet-street; that all the houses on Ludgate-hill were to be swept away to as far as about half way down Bridge-street, and the same distance up Farringdon-street: that first a magnificent quadruple colonnade, and then another atrium, led to the steps of a mighty front four times as large as that we see, they may form some idea of St. Peter's, at Rome. Not, as has been observed before, that size implies beauty, or is to be admired for itself alone; but that ideas of size and magnificence are so combined that it is difficult to separate them.

The building covers about three times the ground our St. Paul's stands on; and, though not strictly within his province, the lecturer begged to make a few remarks on the interior. The first coup d'œil disappointed many persons. Vastness cannot be understood at one view, unless something stands by of known dimensions which can form a scale. The first impression, however, is, it is very large; the second, how harmonious the parts are. The architect would next admire the reality of the construction: nothing is false, nothing unnecessary about the fabric. Every part has its use; its work to do; its weight to sustain. But the next impression is the marvellous costliness of the materials, and of their colour. The eye sees nothing but the richest marbles, even on the pavement, except the gilded coffers of the ceiling. The sculpture is by every great master from Michelangelo to Teneranni, and what appear to be pictures are really exquisite mosaics. Days might be spent in describing the edifice and its contents, and a passing allusion while on such a subject may be tolerated.

But to return to the photographs before us. The next to be noticed is that of the third of those celebrated basilicas, St. Maria Maggiore, which, though not so large as our St. Paul's, is double the size of Westminster Abbey. It was built by Pope Liberius, in 352, in consequence of a dream, on the site of a temple to Juno Lucina, from whence the thirty-six columns of exquisite white marble which form the aisles were probably taken. Here are the celebrated Borgia and Sforza chapels, second only to the famous Corsini before alluded to. The time is now so short, that only a passing allusion can be made to the church seen by the side of the great basilica: it is that of San Antonio, where the curious custom of annually blessing the horses obtains to this day.

Of the other churches of Rome, in number about 360, there are but few photographs. Attention, however, is requested to that called S. Trinità ai Monti, on account of the magnificent flight of steps which leads to its facade. Of the seventy great palaces, we also have very few photographs,—in fact, none of any note, except that of the Medici, now the French Academy; and that of Caprarola, at some distance from Rome, remarkable for being partly a fortress and partly a palace. Rome justly boasts of her fountains: for these there are about 100 public, and 150 in private possession. The photographs show that of Trevi, which occupies the

whole end of the great Pallazzo Conti; the Barberian Triton, designed by Bernini; the Tarantughe, in the Piazza Mattei; that in the Piazza della Bocca di Verità; the central fountain of the Piazza Navona, the basin of which is 70 feet across, though it does not appear so in the photograph. The figures are of colossal proportion. Of the thirty piazze, or public squares, but three are given, that Del Popolo, and those above named, so that there is ample material for the photographer in Rome for a long time to come. The beautiful palaces will be the most difficult to take, as they are so large, and the streets being rather narrow, the lens will not include them. A passing notice was then taken of the photographs of the statues, and the lecture, which was listened to with the deepest attention, then concluded.

THE COMPETITION FOR THE REV. MR. SPURGEON'S CHAPEL.

THE committee have received fourteen designs in addition to those to which premiums were awarded by the competitors, and have already recorded votes, without, however, having made their final choice of the design which will receive the second premium. The selection has evidently been made on principles different from those which may have governed the voting of the competitors; and designs which were not greatly in favour with the competitors now stand first for selection. *Plan*, apparently, has been considered rather than decorative character; and, amongst the fourteen, are designs which adopt the circular or oval arrangement of the seats, rather than the oblong plan of the Surrey Music-hall. There are also designs with more than one perspective view.*

MONUMENTS AND MEMORIALS.

OUR curt notification of the interim result of the Wallace Monument competition has assisted in producing the effect intended, in calling forth opinions from the press as to the merits, or rather the demerits, of the selected design. The *Gateshead Observer* urges "*Punch* to the rescue," and, indeed, *Punch* is the proper personage to deal with it. The people of Stirling themselves, however, have risen in protest against the design; and we can scarcely believe that the artist could have had any very sanguine expectation of its adoption, especially as it was not the only design he had suggested to the acting committee.

The two Wedgwood projects are now fairly before the public. The subscriptions to the Institute scheme now amount to upwards of 1,900*l*. The subscription list towards the statue amounts to about 2,000*l*. A model of the proposed statue was placed in the vestibule of the Railway Hotel, at Stoke-upon-Trent, on the day of inaugurating the North Staffordshire Exchange.

Noble's statue of Captain Pechell has arrived at Brighton, and has been placed in the Pavilion vestibule. The material is Cœn stone.

In reply to Mr. Laurie, who asked when the lions were expected to be placed on the Nelson Column, and why the execution of them was intrusted to Sir Edwin Landseer, instead of Mr. Lough, the sculptor originally appointed by the committee, Lord J. Manners said that Sir Edwin Landseer was at present engaged in modelling the lions, and it was hoped that they would be placed in their position at no distant day. Sir Edwin Landseer had been chosen because her Majesty's Government were convinced that the task could not be intrusted to more skilful hands.

On Saturday the pedestal for the memorial to the memory of the Guards who perished during the Russian war in the Crimea was placed in position at the end of Waterloo-place, facing St. James's-park, on the north side of Pall-mall, and exactly midway between the Senior United Service and the Athenæum Club-houses. The memorial is about to be cast in bronze, from designs by M. J. Bell, the sculptor. It is altogether 17 feet in height. It represents three guardsmen, one in the uniform of each regiment, surmounted by a female figure of Mercy.

The American papers say, that Power's bronze statue of Webster is now completed, and is not satisfactory. "The statue is colossal, but distance will not obviate or overcome the objectionable features; viewed from any point, the same faults are manifest; and it never can be received by the people as the representative of one whom Boston delighted to honour."

* A correspondent directs attention to the fact, that the design "*Mea Gloria Fides*" has not open well-holes to the staircases, but brickwork carrying the steps, inclosing a ventilating shaft.

PIT BURIAL.

At a recent meeting in connection with Woking Cemetery, the Hon. Mr. Berkeley made some remarks on the impropriety of continuing the evil practice of pit burial in the cemeteries surrounding the metropolis, and offered to bring the matter under the consideration of the Government. It is most important that this should be attended to, for London is rapidly encroaching on some of the suburban cemeteries, which, if care be not taken, will, before long, be in as bad a condition as St. Pancras, and other metropolitan graveyards. It is time that such an objectionable arrangement as that of burying numbers of bodies in one grave should be stopped, and we trust that careful inquiry will be made into the management at Finchley, and the cemeteries in the east of London.

We were glad to notice that the Odd Fellows, and the members of some other societies, have entered into arrangements for plots of land at Woking, as resting-places for the brethren of their fraternities. In this extensive burial-place there will be no need to disturb a grave for centuries to come.

While mentioning this, we would notice that, in certain metropolitan parishes, the authorities, in order to save the cost of burial fees, take the bodies of the unfortunate paupers to unconsecrated ground, and bury them without ceremony in pits such as those mentioned. The unfortunates to whom in many instances the close of life must have proved a relief, will not know the difference; but we have heard bitter complaints from those tottering on the brink of the grave, of the dread they have of being "buried like dogs," as they call it. They prize the church ceremonial over them as much as that of baptism and of marriage. Surely the feeling of such should be respected, and their last hours allowed to be undisturbed by ideas which distract many thoughts. At the meeting of the board of one parish, a benevolent individual suggested, that it would be more seemly, instead of numbering each coffin with a piece of chalk, to paint on it the name of the deceased. It was shown, however, that, if this were done, the cemetery charges would be increased!

PARIS.

THE surprising facts revealed to the scientific world by M. Niepce de St. Victor in February last, concerning the photographic effects of absorbed light, must still be fresh in the minds of our readers. The same philosopher has now communicated to the Academy of Sciences some further results of a similar nature. If a sheet of paper sized with starch be exposed to the sun for the space of about three hours, it will not only acquire the property of turning litmus from blue to red (the common test for ascertaining the presence of an acid), but will also become bibulous, notwithstanding the size. If a portion of the sheet be protected from the rays of the sun by a screen, and the paper be then dipped for a minute or two into a vessel containing a solution of indigo, and afterwards into pure water, the isolated portion will, on being taken out of the latter, assume a blue colour under the influence of the oxygen contained in the atmosphere, while the other portion remains white. If cotton or linen stuff previously dipped into water be exposed for the space of two hours to the rays of the sun, its whiteness will be impaired, and still more so if it has been impregnated with a little potash or soda. This accounts for the fact, that body-linen loses its whiteness after being kept a certain time. This would not have been the case had it been left to dry in the dark. If earth dug up from a depth of 3 feet be impregnated with water, then spread out on a glass or metal plate, and allowed to dry, it will, if subsequently exposed to the sun (a portion being, as usual, covered with a screen), leave an impression on a sheet of sensible paper laid upon it in the dark; this impression ending distinctly at the line where the solar rays, interrupted by the screen, could not be absorbed by the layer of earth. All kinds of earth and plaster are capable of absorbing light in the same manner.

A few days ago, at four a.m. the theatre of the Marionettes, in the *Pré Catelan*, took fire, and was utterly consumed, in spite of the aid of all the *garçons* of the Restaurant Goussert, who roused M. Grenet, and gave the alarm. In an incredibly short space of time, the theatre was reduced to ashes. Loss about 40,000 francs; insured for 25,000 francs.

The fourth and last room of the Assyrian Museum, at the Louvre, has just been opened to the public. It is well provided with statues,

lasci rilievi, and inscriptions, from the palaces of Sardanapalus, at Nineveh, and from those of Nimrod, Tannanasser, and Jehu.

In the Rue St. Honoré has been commenced the planting of the trees destined to adorn this magnificent thoroughfare. The tree chosen is the *acer negundo*, or ash-leaved maple, from North America, a large tree, of very rapid growth, remarkable for the verdure of its branches, and its noble bearing.

M. Percey has just inaugurated the salons of his splendid mansion, in the Faubourg St. Honoré, by a grand concert, at which about 1,500 persons were present, and among them the ministers of State.

The new bridge, which is to form a communication between the Quartier St. Honoré and the Faubourg St. Germain, in Paris, by the Rue de Bellechasse, will, it is said, be inaugurated in May next. A decree in the *Bulletin des Lois* gives it the name of the Pont des Tuileries.

The Minister of Agriculture, Commerce, and Public Works has just informed the Chambers of Commerce of the principal towns of France that the Minister of War has succeeded in the fabrication of gunpowder, for exportation, of a better quality than that hitherto in use, "at a price which will permit," to use the words of the official report, "our shippers to compete with foreign countries in the market."

THE VOTING FOR THE SPURGEON TABERNACLE.

SIR.—It will be no more than fulfilling your wish, that all had been obliged to state reasons for their votes, if each of those twenty figures of "1" in your list on page 129 should elicit a letter explaining why the writer stood in that "honourable" but not very pleasant minority. The way you single out the only one of us you have named really imposes this task on me, whether any of the nineteen unnamed undertake it or not. The reason for selecting from the fifty-eight designs then open to my choice (for though you speak of sixty-two, I only saw, including my own, fifty-nine) the two that would, I suppose, be stigmatised as the "least artistic," lies in a nut-shell, being simply this, that regarding the "art" of the whole fifty-eight as false and bad art,—and *bad*, in my language, meaning not merely worse than *good*, but worse than *none*,—regarding all of it as a pure and simple evil, and that in every way, an engine of bodily evil, as I believe I have shown, in many ways; of mental degradation, as Mr. Ruskin has shown much better; even of some moral evil, and a great deal of politico-economic (which is social) evil,—regarding thus all the "art" in the things I had to choose from as their chief blamish, and a far worse objection in the best of them than any possible constructive blunder (even the blunder of turning the roof inside outward, after the example of the Paddington terminus engineers, as the author of "Ubique" did, or of putting the pulpit in the middle of the length as the other design I voted for did), because all such mere blunders are easily corrigible, but no committee can alter the quality of their architect's mind,—regarding, I say, all the "art" as something of which the less done the better, I held it a plain duty to vote for such designs as proposed the *least* of this evil, even they having too much.

Of course this may be all "weakness and whim," but it astonishes me to hear it called an "intercal" of either, when I have scarcely written a word on the matter, since and including those letters of which you speak in 1851, without trying as clearly as I could to say the same—to insist on this, which I also till now supposed to be also the *Builder's* doctrine, and to combat the opposite most wide-spread and pestilent error, that bad art is better than none. Indeed, this question, whether false art, whether such art, namely, as nineteenth-century architecture, and all *outlay-paid design* (all in which the design is from one hand, the executive work from another, and the former paid in proportion to the latter's work), must of necessity be, no matter where or in what century, the question whether such art is better or worse than none, a good or a bane, seems to me so fundamental, that to talk of progress or reform the next minute, while this is an open question, or among any that hold it to be open, seems the merest farce.

All this you will see, then, is quite independent of any opinions one may "for the moment have on what constitutes good architecture." Our business was not with good architecture, but bad, being from bad to choose the least bad. I took

care to qualify my first vote with a warning that no design of the fifty-eight was fit for execution; the only one I could possibly recommend for *that* being my own; which I offered gratis, and to be carried out by another architect, on the sole condition that I should have a veto on the choice of him. Moreover, my own was not set forth as "good architecture" in the abstract, or good relatively to the average architecture of mankind, but only as good among the very worst mankind ever yet perpetrated, that, namely, of English-speakers in the nineteenth century.

Of course I shall be told voting for "Ubique" implies one to have just arrived at the discovery made by the Royal Commissioners and Mr. Fergusson in 1851. Now is it so? First, when in that wonderful year the first living architectural writer in the land addressed you to announce that Paxton had done just what the architects ought to have done, and I straightway undertook to contradict him, was the choice then, as now, between much false art and little, or between pseudo-architecture and Paxton? Were there no designs before the commissioners as devoid of brick and stone and architects' nonsense as the gardener's, being by practical engineers, iron-masters, and the like, as easy also to be understood by them with the slightest effort, as quickly to be executed, with the slight advantage of admitting execution without the complete re-design of everything in them, and, if having the same "absence of art" in your technical sense of the term, having a presence of some reason, common sense, contrivance, thought, and adaptation to their purpose? Again, suppose there had been none, and the choice as limited between pseudo-art and Paxton's no-art as mine between pseudo-art and "Ubique," is any comparison possible, or was it fair, by naming them in the same sentence, to suggest any between "Ubique" and the Crystal Palace version of building? Can you think of comparing the amount of thought and contrivance in any Crystal Palace, past, present, or projected (at least in this country), with that required for any solution of the Spurgeon committee's rather complex problem, or that given in the roughest or worst of the answers it elicited? Ubique had a few great blunders: the putting roof-framing outside, the lighting from the sides instead of above; and, were I to descend to the third greatest, it would be one common to every single design except my own, as I may take another occasion to show. But it was not *all* blunders,—one congeries of them,—not a Crystal Palace, though capable of as rapid erection as one (a quality, let me observe, necessarily more to be sought after in communities and churches of a totally different economy, because different religious code, from that of the middle ages, or rather the fifteen centuries of Christian infancy, in such as had we existed alongside of them, they would have known only as the church of usurers), and also as void of imagination and of "art" in your technical sense.

On my scale or gauge of designs, then, there lies between the two infinite ranges of these irreconcilable claimants to the same name "art," between that art of which the more we have the better, and that of which the less we have the better, a line of absolute zero, in which you may place the bubble of 1851 and its children, if anywhere, if effluences of folly and chance, not works of *design* in any sense, can be classed among *designs*. But the true types and giants of this art-zero line are those of Roman engineering; would we could add any of English; but I have sought them in vain, alike in town or country, in the dock warehouse or the loneliest mountain viaduct,—nowhere can the shopkeeper hand leave anything unsophisticated, or tolerate a particle of dignity. John Bull must make his work trumpery, though he had Pelion and Ossa to build with. He cannot give up his darling little bits of shamming, though but the clouds and the crows be looking on.

Now the designs I voted for were what seemed to me nearest this zero, still a little beyond it on the side of false art, the same side as the rest; my own pretending only to be, perhaps, even a shorter step from it on the side of truth, the occasion had, therefore, no resemblance to that of 1851, when many admirable rejected designs were on this side, or the Westminster-hall competition, when still a few were so, as those of Mr. Street, Mr. Woodward, "Semper Eadem" (No. 106), and others as nameless and unnoticed. As those, indeed, were all Gothic, the only style, as I then insisted, whose imitation by us is anywise reconcilable with real architecture, it may be very probable that our Baptist neighbours' interdiction of Gothic is what has deprived them of real designs. Yet I say that interdiction was a most

admirable step, and one to be followed, the mistake being in not extending it to Classicisms, and so excluding all style-mimicry. This was the first step towards the recognition by the public that their architects must be driven into the right road and kept there by fences on every side,—that public by whom Mr. Scott tells us the question of style-revival has been "settled for us!" Save the mark! Yes, it will be settled for him yet.

E. L. GARBETT.

INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the members was held on Monday evening, Mr. R. C. Hussey, V.P., in the chair.

The minutes having been read and confirmed, donations were announced, including, from Mr. Bell, a photograph of place of the Guards' Memorial for Waterloo-park, now at the founder's.

Prof. Donaldson said he had to exhibit some plans on the part of Mr. Henriquez, who would be remembered as having made a communication with regard to the colony of Victoria, some time ago. That gentleman had now been kind enough to bring under the notice of the Institute two projects, one of which was selected for the new post-office at Melbourne. These would, no doubt, be interesting to the members, as an illustration of what was being done at the other side of the globe. Whatever might be the judgment of the members with regard to those projects in an architectural point of view, it was gratifying to observe that, at all events, a feeling for art existed at the antipodes, and that the inhabitants were anxious to emulate and endow their adopted country with monuments which were certainly worthy of the generosity of a rich and prosperous country. The same gentleman had further contributed a sketch showing the Bank of Victoria, at Geelong, which exhibited the same ambitious desire to cope with the mother country in noble monuments.

Mr. Digby Wyatt said, before the meeting proceeded to the business of the evening, he would ask permission to make one or two remarks relative to some discussion which had taken place in his absence at the last meeting, on that night fortnight. It was particularly unfortunate that he should have been prevented from attending on that occasion, for he believed that, had he been present at the time, some observations which were then made, and which had given considerable pain to a distinguished foreigner, whom he had the pleasure of introducing, might, and most probably would, have been avoided. He was afraid that, in introducing M. Silvestre, he had not stated with sufficient distinctness that he was delegated by a Minister of State and of the household of the Emperor of the French to visit this country for the purpose of studying the fine arts in England, and more particularly the works of living British artists. If he had stated this clearly at the time, he believed there could have been no ambiguity at all about the mission of M. Silvestre; and it was a statement which he certainly should not have ventured upon, unless he himself had examined the papers in which the position of that gentleman, and his object in coming over, were very clearly stated. He hoped that the meeting would see fit on the present occasion, either by resolution or some few kind words, to express to M. Silvestre that they had not the slightest intention of doubting his real position, but that they merely wanted some further explanation on matters of detail connected with it.

Mr. Kerr said nothing could be more satisfactory than the explanation of Mr. Digby Wyatt with regard to the circumstances under which he had introduced M. Silvestre to the Institute. His only reason for asking the question with regard to M. Silvestre's position in this country was simply for the purpose of obtaining information; and it was a mistake to suppose that he had any intention of throwing discredit on him or his mission. But when they heard of a gentleman who was commissioned by a Minister of State and of the household of the Emperor, in the absence of any defined information as to the position of that minister, and the degree of rule and authority which he possessed over art, they were at a loss to know the exact object with which the gentleman had come to this country; and he, for one, should like very much to know, as a matter of fact, what the actual mission of that gentleman was.

Mr. Wyatt said it was only necessary for him to offer a few more words in reply. With respect to the exact functions of the Minister of State in France, so far as painting was concerned, all the commissions in France were given by his authority.

There, not as with us, the Government was the great support and stronghold of the arts, and the minister, therefore, at the head of this department occupied a very responsible and important position. The minister acted in the same way with the art of sculpture; he awarded the medals to all the pensionnaires in France, and it was likewise he who managed the affairs of the French Academy of Arts in Rome, to which pupils were sent from that country, and which was consequently a highly important and influential position. All the monuments in France were under his charge, and no restoration of any of these could be effected except by the officers who were in his department. For the last fifteen years this subject had been constantly occupying the attention of successive Ministers of State, who had repeatedly issued commissions to artists of merit in France, to make most beautiful and accurately measured drawings of the existing monuments; and in many cases they had been required to draw up and complete designs for their restoration. These archives, collected by the Minister of State, were of the utmost importance, as would be seen from a work brought out under authority, in which they were published. M. Fould, this very minister, had taken a distinguished part in bringing out the work which preserved in their best and most lasting form these noble monuments; and copies of it had been forwarded to many of the most celebrated archaeologists throughout Europe. The Institute should not forget that it was to the liberality and high spirit of the minister in question that they were indebted for a book of such a valuable nature; and consequently when a gentleman came from abroad, connected however remotely with M. Fould, in whose hands the reins guiding the state-coach of art in France might be said to be held, he thought it was his duty to receive him with as much sympathy as they possibly could, and that they would do well not even to inquire too minutely into the nature of the mission which he bore. But that this mission would bear any amount of scrutiny, he was perfectly prepared to believe.

Professor Donaldson was at a loss to understand what was meant by a "real mission." If a gentleman came to this country to know what our artists had done, and what the state of art was, that appeared to be enough; and if a gentleman went to his house, and said, "I want to ascertain the state of art in this country; I want to know the artists themselves," he would say at once, "Welcome; and he would give him all the information in his power, and introduce him to any gentlemen that he knew. When a person went abroad to make inquiries, relying upon his own position, he was received with the utmost cordiality. He had often been abroad for the purpose of acquiring information, and he had never yet been asked for his mission, on what authority he came, or to show his documents; it was enough that he was an Englishman and an English artist, that wanted information, and he always received the utmost attention and sympathy that he could desire. He would say that our own Government were very remiss in publishing works with regard to the fine arts; the French Government, on the contrary, were most liberal and even profuse in this respect; and when they published their work on the Archives, copies were sent to Mr. Digby Wyatt, to himself, and to the other gentlemen who had been previously honoured with medals. It occurred to him at once to apply for a copy on behalf of the Institute; and as soon as the application reached, the French minister had forwarded a copy of that superb work, which frequently ornamented their table, and reflected honour on the position of the fine arts in France. The same thing held good with regard to our public institutions. A foreigner, perhaps, would be commissioned to make a collection from the antique; he went to the British Museum, where there was a superb series of works in plaster, copies from the original marble; he applied for copies of these, and was told, "Certainly, you can have them, but you must pay for them." But if they went abroad bearing these things in mind, they should never be backward in giving information to foreign artists, so long as they came with a *bona fide* intention of studying the arts, of communicating and receiving information, and of interchanging ideas.

Mr. Rickman then read a long and elaborate paper on the improvements effected and proposed to be accomplished in the city of London, especially as to those now in hand, and new termini for railways before the House of Commons. The reading did not terminate until past ten o'clock.

The chairman said the subject of that evening's paper was most interesting, and one to which they all had more or less turned their thoughts. He felt sure that many gentlemen would like to speak on the subject, but the lateness of the hour precluded any very lengthened observations.

Mr. Marrable said, as he might not have another opportunity, he should wish to lay before the meeting the designs which he had brought under the notice of the Metropolitan Board of Works, and which presented a means of getting over the difficulty created by Holborn-hill. The designs had been most favourably received by the Board of Works, and he hoped at no distant day they would be carried out. The object was to combine the northern and southern traffic, as well as the nature of the circumstances would admit, with that from the east and west by means of a viaduct. He believed that his was the only design yet proposed that would effect the object. Another viaduct had been suggested on the southern side of Holborn-hill, but this would cut off the traffic running north and south, and be only available for foot-passengers. According to his plan, however, the side traffic would not be cut off; Hatton-garden and Ely-place would come onto the viaduct, and Snow-hill would be swept away altogether; King-street would come on to it; and the gradient by which he proposed to effect these improvements would not have a decline of more than 1 in 40. By his plan also, in the event of the central railway-station being carried out in Victoria-street, the south traffic could go down the incline, and so into Farringdon-street, whilst that going east and west could go up the other side of the incline and so on to the viaduct. The station would then be on a level halfway up the height of the arch. All the other schemes for viaducts, he believed, only contemplated the traffic which went right through, and so would almost cut off any from the side, passing through the narrow streets. Mr. Bunning's plan had been for raising the ground at the lowest point in Farringdon-street, so as to reach the acclivity in Holborn-hill; but in doing so he was of opinion that a great deal of property would be destroyed, and a cost of at least one-third more involved than according to his designs. With regard to two or three of the streets which Mr. Rickman had mentioned, he could state that the intention had been by no means abandoned. That, for instance, passing through Hart-street and Bloomsbury was under the serious consideration of the Metropolitan Board; plans and estimates had been prepared, and want of funds alone impeded its execution till they got something better than direct taxation. The new street to Covent-garden was now in hand, and purchases were going on as rapidly as possible. The short street at the end of Commercial-street, together with two or three others, were under consideration, and would be brought forward as soon as the Board were in a position to carry out these projects.

After some conversation, it was arranged that the discussion of the paper should be taken at the next meeting, and that if it did not occupy the entire evening, the paper on Paris Improvements (part of which we print in our present number) should be considered also.

Mr. Nelson said he should have announced at an earlier period of the evening that he had received, through Earl de Grey, her Majesty's sanction for awarding the royal gold medal to Mr. Scott. He might also mention that the author of the essay "On Wren," which had the other evening been anonymously decided on by the Council, was Mr. Geo. Wightwick, a name which was well known to the members of the Institute.

SPENSER'S CASTLE.

On a gentle slope, overlooking a small lake, about two miles from Buttevant, stands the old castle of Killeoleman, now fast hastening to decay. From the unfrequented locality in which this castle is situated, the wild fowl that float on the lake are seldom disturbed, and the owls that flit at night around the ivy-covered walls of the castle enjoy their solitary reign unmolested by strangers, as few ever visit that lonely place. Had any want existed in the neighbourhood for building materials, this castle would in all probability have shared the fate of the neighbouring Abbey of Ballybeg, the tower of which was pulled down a few years ago by a farmer, for the purpose of building a hovel or barn, and who desisted only when he found the mortar so extremely hard as to defy his exertions in removing the stones without being broken; and as the old walls afford shelter to sheep and cattle from the storms of

winter, and in summer from the heat of the sun, in the open and unsheltered plain, where no trees enliven the scene or obstruct the view, they are permitted to stand, but no care is bestowed on their preservation. This old ruin is interesting not only from its romantic and lovely scenery, but from the fact that it was within its walls the poet Spenser composed his "Faery Queen;" and here he met his friend Sir Walter Raleigh, the "Shepherd of the Ocean," as described by him in the pastoral manner:—

"I sat as was my trade,
Under the foot of Mole, that mountain bore,
Keeping my sleep amongst the eury-asle,
Or the green alders by the Mullia's shore,
There a strange shepherd chanced to find me out,
Whether allured with my pipe's delight,
Whose pleasing sound ychanted far about,
Or thither led by chance, I know not right;
Whom, when I ask'd from what place he came,
And how he light? himself he did yceep
The Shepherd of the Ocean by name,
And said he came far from the main sea deep."

Often in my youthful days I went to visit this old castle, and sat in the deeply-recessed window, where it is said the poet sat when composing his immortal poem; and, as I gazed on the "green alders" growing on the shore of the lake, when the setting sun lit with gold the rich valleys and plains far extending to the east, whilst the mountains of Mole gloomily arose behind, I thought of the happiness the poet must have felt in the possession of those beautiful plains and uplands then richly wooded, and from which he drew the bright scenery of his poem.

Having returned to the country after a long absence, I once more, and probably for the last time, visited the place; and, whilst sketching the old ruin, the gentleman who owns the property, accompanied by his steward, came up and spoke to me, saying it was seldom a stranger came to look at the old castle. I said had this castle been in Scotland or England, it would have been protected, and not permitted to fall into decay. I then remarked that as the old circular staircase was completely undermined, and likely to fall, it was a pity a trifle was not expended on its repair. He observed to his steward, "You should get something done to prevent it from falling," and bidding me "Good evening," both passed on.

It is much to be regretted that little or no care is bestowed on the preservation of most of the old castles in Ireland; and, had it not been for the extraordinary strength of the mortar used in their construction, many of them would now be level with the ground.

It may happen that, through the great circulation of your useful journal, the proprietor alluded to may become aware of this notice, and be induced to preserve from destruction this very interesting old castle, and thereby entitle himself to the esteem of all persons who revere the memory of one of England's greatest poets, who ranks with Chaucer, Shakespeare, and Milton, and of whom the *Guardian* (No. 33) says,—"The generation of pastoral writers are very long lived, there having been (says he) but four descents in above 2,000 years,—*Theocritus*, who left his dominion to *Virgil*; *Virgil* bequeathed his to his son *Spenser*, who was succeeded by his eldest-born, *Philips*." C. L.

THE MEDALS OF THE INSTITUTE OF ARCHITECTS, FOR 1860.

Her Majesty having been pleased to grant her permission that the royal medal be conferred on such distinguished architect or man of science, of any country, as may have designed or executed any building of a high merit, or produced a work tending to promote or facilitate the knowledge of architecture, or the various branches of science connected therewith, it has been resolved.

That the Council do proceed, in January, 1860, to take into consideration the appropriation of the royal medal. The silver medal of the Institute will be awarded to the author of the best essay on,—

The application of wrought iron to structural purposes. The application of wood in England, constructively and artistically, up to the year 1850.

A critical essay on the architectural genius of Sir John Vanbrugh.

The silver medal of the Institute, with five guineas, will be awarded for the best illustrations, together with descriptive particulars, of a Medieval building in Ireland, seen and of which, hitherto unpublished in that manner.

The same medalion will be awarded for the best design, well illustrated by a sufficient number of drawings, for,—

A café restaurant, placed in an acre of ornamental garden, suitable for a suburban situation.

The success of the author, if he go abroad within three years after receiving the medalion, will be entitled to the sum of £100, at the end of one year's absence, on sending satisfactory evidence of his progress and his studies.

A THEATRE IN ST. PETERSBURG DESTROYED BY FIRE.—The Théâtre du Cirque in St. Petersburg has been destroyed by fire. Nothing remains of this splendid building but the bare walls.

WROUGHT IRONWORK IN THE BROMPTON MUSEUM.*



Gt. Peirce's.



Grille.

SOCIETY OF FEMALE ARTISTS.

The third exhibition of works by female artists, now open at No. 7, Haymarket, is an improvement on its predecessors, and the public have acknowledged it by a good attendance, and the purchase of nearly 400l. worth of pictures already, including a copy of Turner's "Childe Harold"

* See p. 145, ante.

(1057) by Mrs. Needham. The society, as likely to open a wider field for the independent strivings of women, demands our best support. The most remarkable work is "A Study from Nature" (68), by Florence Peel, consisting of a lump of weather-worn rock, ivy, grass, and a daisy, successfully proving that "while working chiefly with a view to detail, it is not absolutely necessary, as frequently asserted, to lose sight of general effect." Mrs.

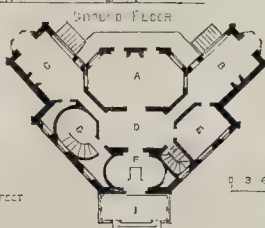
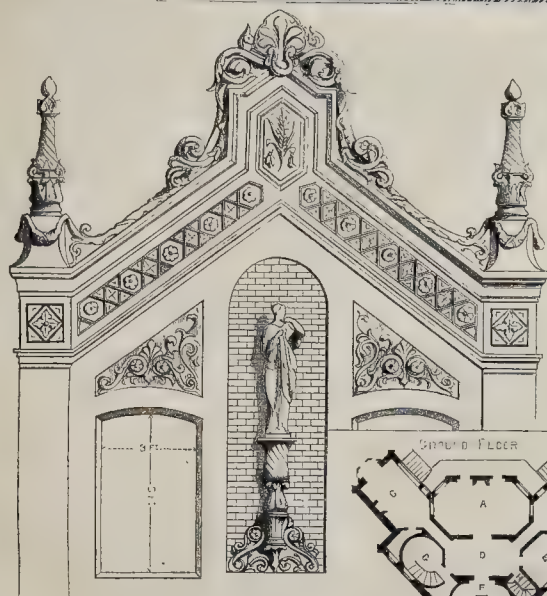
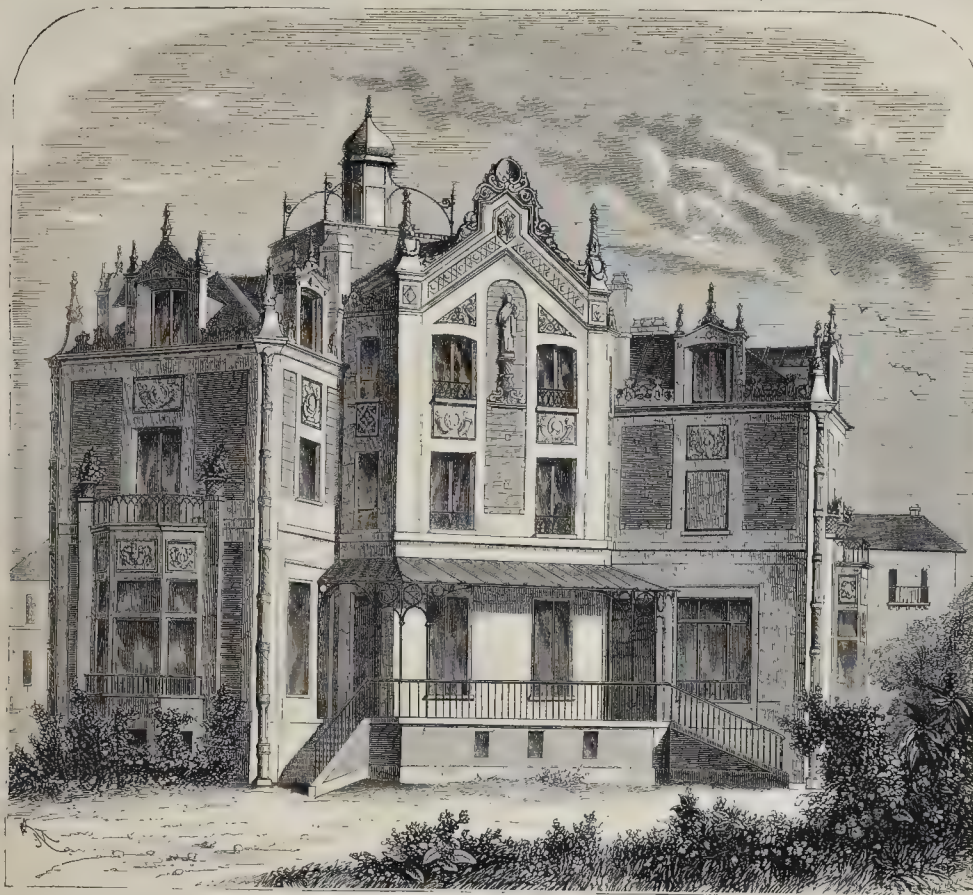
Elizabeth Murray is scarcely so successful as on a former occasion, but has nevertheless some brilliant works; for example (24) "An Italian Goatherd," Mrs. V. Bartholomew, Mrs. Withers, Miss M. Gillies (a beautiful work previously exhibited), Mrs. E. M. Ward, and other known artists, maintain their position. Mrs. Robertson Blaine's principal work is a picture of the "Colossi at Sunrise, Thebes" (181), the effect of which is truthful; and Mrs. Higford Burr has some excellent architectural details. The active secretary, Mrs. Eliza Murray, has a bold representation, from the spot, of "Holy Island, early morning" (72); Miss Blake, "The Glacier of the Rosenlani" (clever), and another. Mrs. Spencer Lewin sends a view of an old favourite of ours, "St. Sauveur, Caen" (163); and Florence Claxton, two sets of sketches, "Scenes from the Life of an old Maid," and "Scenes from the Life of an old Bachelor," the latter of which are the better, and are good. Mrs. Swift and her daughters are valuable contributors; and we would particularly point out 136 and 164, by Miss Kate Swift.

A CHANCE FOR ST. THOMAS'S HOSPITAL.

A RAILWAY is projected for connecting the South-eastern Station at London Bridge with the railways to the west of the metropolis. It will pass through the property of St. Thomas's Hospital, close to the wards, so close indeed that the hospital will have to be removed from its present site. A public necessity has thus opened the prospect of two great public improvements, namely, the extension of the London Bridge Station, to make it commensurate with the requirements of the vast traffic which passes through it, and the possibility of rebuilding the noble charity, which the station would supplant, on a better site out of the noise and traffic and foul air of London. It is to be hoped that the managers of St. Thomas's Hospital, who have done so much for the relief of human suffering, will see it to be their duty to remove the hospital to a healthy, dry, suburban or rural site, where they will be able to supply the sick poor committed to them with pure air, the most important of all the elements of recovery from disease, and one which cannot be obtained anywhere within the limits of this great metropolis. Here, then, is likely to be a great opportunity of performing a great duty, the good example of which would do more to improve our hospitals than all that could be said or written on the subject. A magnificent occasion offers itself to the managers of St. Thomas's Hospital, and it is to be hoped they will avail themselves of it.

TO ART WORKMEN.—At the Architectural Museum on Wednesday next, March 2nd, an address will be made to art workmen on the Application of Ornament, by Mr. Joseph Clarke, F.S.A. The committee are anxious to see a good attendance of art workmen on this occasion, and we would therefore draw attention to this particular lecture, and urge that they should come early, and so secure seats from which they may see any illustrations of the subject that may be presented. Cards may be obtained by letter to the assistant secretary, at the Architectural Museum, Brompton, on or before Monday night.

HOUSE IN AVENUE-ROAD, REGENT'S-PARK.*—M. HECTOR HOREAU, ARCHITECT.



A. Drawing-room.
B. Dining-room.
C. Billiard-room.

D. Vestibule.
E. Small drawing-room.
F. Entrance.

G. Staircase.
H. Servants' staircase.
I. Glass Marquee.

K. Children's Chamber.
L. Chambers.
M. Bath-room.

N. Dressing-room.
O. Children's work-room.
P. Water-closet.

* See p. 145, ante.

THE EQUALIZATION OF POOR-RATES.

It is a circumstance demanding the consideration of those dwelling in the metropolis, that although pauperism has considerably decreased as a whole, in some of the metropolitan districts a great increase has been made in the poor-rates.

In some parts of the East, we are told that the increase in the cost of the poor has been upwards of 10 per cent. in the last six months. In some instances there are such causes as the defalcation of rate collectors; the necessary extension of buildings in consequence of the growth of population, &c.; but the chief cause of the increase of the rates in some localities is undoubtedly the driving away, from the City and other parts, of large masses of the poor, who, unfortunately, find dwellings in neighbourhoods in which the tradespeople are but little better off than the struggling poor; and who every day are becoming less able to pay the greatly increased rates which are thus required from them. The police of the City of London may be seen driving most wretched-looking objects beyond the barriers; and although experience has shown us that some who are most miserable in appearance, are the least deserving, it would seem that, in the centre of the most wealthy and important city of the world, there is not due provision made for those who are in an abject state of poverty, or due thought given to the provision of dwellings in lieu of those taken down. Year after year, as the dwellings of the poor are removed in parts, the rates for the support of the poor will decrease, while in less opulent parts the inhabitants will be further charged. The consequence is, as we have before remarked, that the houses of the poor are deteriorated, and pauperism greatly increased. We have thought long, and inquired carefully, respecting this matter, and feel convinced that the present unequal rating for the support of the poor cannot be continued without serious effects. All who have had opportunities of judging, and form unbiassed opinions, have fears of the complete bankruptcy of large neighbourhoods, which are at present sadly depressed.

The rates for metropolitan improvements—draining, lighting, water, &c.—are very heavy; but these are tolerably equally divided over the whole population. In the other case it is different; and it seems clear, that if the poor-rates were divided equally, the cost would not press to a ruinous extent upon any parish. The appointment of a congress of intelligent representatives from all the metropolitan parishes, for the purpose of discussing the desirability of an equal metropolitan poor-rate, would be advantageous.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting of this society held on Wednesday, February 9th, the Rev. S. W. Wayte, B.D. Trinity College, in the chair.

Mr. James Parker read a paper on the "Study of English Domestic Architecture." He pointed out the great attention which had been paid to ecclesiastical architecture, while domestic architecture had been neglected, and referred to the mistake which many made in supposing Gothic to be an ecclesiastical and not a national style; as if, during the Middle Ages, there were two styles, one for churches and another for houses. He contended that the Gothic of the fourteenth and fifteenth century, in England, more completely met the requirements of that age, than the architecture of the nineteenth century meets those of our own. He insisted on the necessity of careful study of old examples to understand the perfection of the Gothic as applied to our manor-houses and castles,—not simply as regards form and detail, but also plan and purpose, and especially in connection with the history of our country,—and he showed how the student might fill in from other sources the bare outline, which is all that the ruined walls of our Middle Age mansions afford us. He referred to the success which had attended church restoration and church building through understanding the principles on which they were constructed, and maintained that the same result would follow as regards domestic buildings. He admitted the paucity of our domestic remains, when compared with ecclesiastical, and explained the reason why England possesses so little town architecture in comparison with foreign countries; but he protested against this being made the plea for the importation of foreign designs. He said "Because we have no town architecture to speak of remaining, we are apt to argue as if we never had any; while, by adapting the country architecture to town purposes, which, without doubt, as it was given up the Mediaeval architects did, we arrive at what was probably our town architecture: by running over

to Italy or other foreign countries, we can only have what it was simply impossible for our town architecture ever to have been." He illustrated his proposition by supposing that Walter de Merton had brought a design from Paris, on the plea that there was already a university there, or that William of Wykeham, instead of New College Cloister had sent for the plans of the Venetian palaces, which were then building on the edge of the Lagoon, or that William of Waynflete had copied the leaning tower of Pisa at the end of Magdalen-bridge; and, in concluding, he said,—Popularity may be gained for the moment by the architect who brings over a new design, as some speculator who imports some novelty, but whether our art will be beautified by the bare importation of foreign forms remains to be seen; and although, like the modern drama, which has now almost lost its nationality by the introduction of everything French, for a time draws large houses, and the successful translator is welcomed as the great author of an original play, English art will never be really advanced one jot by the swamping of all national beauty in the gaudy display and meretricious colours of some Venetian beauty, and no architect's name will be honoured by posterity who, despising his own country's treasures because of the labour required in searching for them, goes to a foreign market, and comes back laden with tinsel, and dazzles for a moment the eyes of the admiring and flattering crowd around him.

Mr. Lowder drew attention to a portion of the paper where he believed Mr. Parker had not, in his opinion, sufficiently distinguished between the ability of studying ancient houses for the purpose of embodying the principles of their erection in modern work, and the mere copying of plans and details. He felt sure that the nineteenth century must have its own peculiar arrangements, and that any attempt simply to reproduce houses of the Middle Ages would lead to no beneficial result.

Mr. Parker agreed with these sentiments, but nevertheless thought that we might gain some advantage even from the old arrangements, such as the large central hall. Mr. Bruton urged as a plea the unwillingness now shown to go to any expense by persons who build houses, and the small proportion of houses built by architects to those erected by builders, and the difficulties which an architect who wished to employ the old English type had to undergo from the caprice of employers.

LEEDS.

The School of Arts at Leeds is at present burdened with a debt of about 120*l*. In its aid two conversations have been held at the Town-hall; but more benefit was expected from opening the exhibition at the *conversations* to the public, in connection with a concert. The Rev. A. Barry read an interesting paper at one of the *conversations* on "Art viewed as an Interpreter of Nature." In the course of his able address the lecturer said:—

Nature has her two interpreters, Science and Art—the one dealing with the material, diving into the dark abyss of cause—the other seizing on the immaterial, tracing the perfectness of form, bathing itself in the richness of colour. The progressiveness of the human race, the high destinies of its future, depend on this, that each generation learns from the great men of the past to understand better what is around them in the present, that each man by the torch of science is lighted in the perception of truth,—by the torch of art is kindled to the feeling of beauty; but how does art interpret nature? We shall best see by considering what is the chief difficulty in our appreciation of nature, in our entering into and feeling the tones of her divine voice? It lies in the multitudinousness of impression, with which we are overwhelmed as with a flood,—the voice is as the voice heard in heaven, a sound as of many waters. We know not how to distinguish what is accidental from what is essential: we know not in what consists the essence of the beauty which strikes us. Is it in the form? is it in the colour? is it a simple melody, or a full harmony of various beauties? We know not, and till we know we feel dazzled and bewildered as soon as the first novelty has passed away. We hear a voice, but do not understand the word. Now, the full infinity of Nature's voice none can comprehend, for is it not the voice of God? It is but in degree that the soul of Raffaele or Michelangelo differs from ours in its grasp of things divine. But it is the special, the highest gift of genius to idealize, that is, to enter into the unity which lies at the root of all this infinite variety, and to be able to present it to others. This is what science does to natural objects. What is the great delight of the lecture of a Davy or a Faraday, even on a subject of which we are ignorant? It is that they can give us the main outlines, the great principles of a subject: thus can they lead us into a realm which else would be closed against us for ever."

The Leeds Town Council have voted a sum not

exceeding 400*l*. to the new Town-hall committee, for furnishing and fitting up the kitchens in that building, to provide a dinner for 300 persons. When the 20,000*l*. were granted a short time ago, it was understood that that sum would complete the building; but the furnishing of these kitchens, the fitting up of the prison cells, and some other things were not included in the estimates then laid before the council. After a little grumbling, the council, having doubtless a vision of hospitalities to the success of which the kitchens would materially contribute, agreed to the vote.

The rough bosses on various parts of the town-hall building are now being carved in pretty floriated designs. The pedestals adorning the Calverley-street entrance are intended, says the *Intelligencer*, to be occupied by sculptured work, probably lions couchant. A large bell for the tower, of the weight of four tons, is now manufacturing by Messrs. Warner, London, and is to be called the Victoria bell. It is expected to be heard all over the borough, as it strikes each hour. The organ is intended to be completed by March.

The Leeds Waterworks are about to be extended. Some lands and hereditaments have been purchased from Sir Thomas Beckett, Bart. at Chapel Allerton, for this purpose; and an arrangement has been entered into by the council with Messrs. Robert Wood and Son for supplying the pumping-engine and boiler in Contract No. 1 Extension Works. The price of the land was 210*l*. and of the steam engine 600*l*.

A meeting of gentlemen desirous of having a new hotel established in Leeds have resolved to form a company for that purpose, and to issue shares to the extent of 50,000*l*. The Midland Railway Company have agreed to take shares to the extent of 25,000*l*. It has been determined to build the hotel near the Wellington station, on a site now occupied by warehouses.

ALUMINIUM.

At the Society of Arts, on Wednesday, the 2nd instant, the paper read was "On Aluminium," by Mr. P. Le Nove Foster, secretary of the society. The author began by giving a history of the first discovery of this metal, drawing particular attention to the circumstances which led to the idea of its being ultimately found useful as an article of commerce. He reviewed the researches of Davy, Oersted, Wöhler, Dr. Percy, and Rose, as well as those lately carried on by M. Deville, in France, aided by funds from the emperor; and spoke of the labours of Mr. Gerhard, an Englishman, who had for some time past been endeavouring to introduce the manufacture into this country. The applicability of some of the alloys of this metal were then pointed out, as well as some of the difficulties which were for a time likely to retard its more general use, the most important being that hitherto no effectual solder had been discovered suitable for it. The valuable qualities it possessed, viz. extreme lightness, capability of resisting atmospheric action, malleability and ductility superior to those of silver, with a power of conducting electricity, and other important advantages, tended to show that though possibly its susceptibility to the action of moisture might render it unfit for some of the purposes to which in the early stages of its discovery it had been hoped to apply it, yet that if produced at a moderate price it would be found a most valuable addition to our list of practically useful metals. The author drew attention to the advantages that it seemed to offer as a substitute for copper in the lower classes of coinage, for which it appeared in every way adapted, when produced at a sufficiently low cost.

A discussion ensued, in which Professor Tennant, Messrs. Elliott, Hawes, Laurence, May, Newton, Palmer, Smith, Streat, Thomson, the chairman (Mr. Graham), and others, took part.

HOUSES ON STOUR VALLEY RAILWAY.—The directors have erected blocks of houses along the Stour Valley branch, near to each or most of the stations, as residences for the several station-masters, and other servants of the company. Thirty-one of these houses are completed, and possession of them given to those for whose use they were intended. It is proposed in the spring to considerably increase this number until the wants of all the employés on the Stour Valley line shall be supplied. The erections are close to the line at each of the stations from Wolverhampton to Dudley Port. All have a public road frontage, and a convenient path on to the line.

PUBLIC BUILDINGS IN THE PROVINCES.

Hereford.—The Corn Exchange Committee of the local Council have presented the following summary of the expenses connected with the Corn Exchange, which is now completed:—Norris (builder), 1,444*l.* 17*s.* 4*d.*; figures, 109*l.* 10*s.*; architect, 105*l.*; clerk of the works, 58*l.* 8*s.*; legal expenses of mortgages, 42*l.* 5*s.* 5*d.*; legal expenses of the lease of the ground behind the Corn Exchange, 15*l.* 1*s.*; making a total of 1,775*l.* 1*s.* 9*d.*

Witney.—The new County Court at Witney, nearly ready for use, stands on the left hand of Bridge-street, entering Witney from Oxford. The architect was Mr. Charles Reeves, of London; the builder, Mr. James Long, of Witney; and the clerk of the works, Mr. Sheppard, of London. The building is in the Italian style of architecture; the front of Bath stone, lined with brickwork; the dressings of the flank windows also of Bath stone. It contains a public office, with a strong fireproof room attached; a waiting-room; a court-room, more than 40 feet long by 27 feet in width, lighted with seven windows on each side, and a lantern light placed about 30 feet from the floor. There are also rooms for the judge and the registrar, and an office for the bailiff. The public entrance faces Bridge-street.

St. Alban's.—Professor Donaldson has made a report to the council of St. Alban's on the proposed restoration of the old clock-tower. In his report Mr. Donaldson said he had confined himself strictly to the original style of the edifice, which he proposed simply to restore. At the close of it he says:—"I think that the indications still existing about the clock justify the restoration which I have given for that object, and the canopy at the top is justified by precedents at home and abroad, as it seems to protect the clock-face, and relieves the general monotony of the tower front. Upon consideration, I arrived at the conclusion that the tower had originally a turret for access to the lead flat at top, and I have introduced one analogous to those found at the east end of the abbey. There are sufficient indications to show that the stone steps went the full height, and I know no other appropriate mode of continuing the enclosure, so as to deliver the visitor on the flat." The thanks of the council were given to Professor Donaldson, and a committee appointed to solicit subscriptions, and ascertain the best mode of carrying the report into effect.

Weston-super-Mare.—Two buildings are nearly completed, which this town has long felt the want of, viz. a new townhall and an assembly-room—the latter having been erected by a company under the Limited Liability Act. The Townhall comprises a room on the ground-floor, for concerts, meetings, &c. 80 feet long by 35 feet wide, and 25 feet high, capable of accommodating upwards of 600 persons. There is also a room, about 50 feet long by 18 feet wide, for commissioners' meetings, rooms for magistrates, and clerks' offices. The building has been erected from plans made by Mr. Wilson, of Bath.

Newport.—That portion of the proposed Newport Market scheme which comprises the cattle-market is already completed. The covered markets and townhall are to be commenced forthwith; and it is expected that the whole will be completed by Christmas next. The total cost of the entire undertaking will be about 13,500*l.* to be subscribed in shares: nearly all the shares have been taken up. The site is immediately in front of the old Townhall, in the High-street. The land is of an irregular oblong form, containing an area of 1½ acre, and extends backwards from High-street, having Stafford-street at its south-eastern boundary. It is supposed that, when the new buildings are finished, the present old and rather dilapidated Townhall will be demolished; and the width of street thus obtained will afford a frontage to its successor. At the angle formed by High-street and Stafford-street will be erected a tower 90 feet in height, or 20 feet higher than the old church tower. On the left of the tower, and having a frontage to High-street of 90 feet, will be a portico entrance to the covered markets, and over the entrance a ball-room; on the other side of the tower, and extending 260 feet down Stafford-street, will be a corn-exchange and magistrates' offices. Over the Exchange will be several large rooms (one 18½ feet by 16 feet), to be used for the purpose of a Mechanics' Institute, &c. The height of the wings will be 50 feet. The ball-room and the Corn Exchange will be each 65 feet by 28 feet. The building will be in the Italian style, brick built, with white stone dressings and rustie quoins. Near the base of the tower will be two niches for drinking-fountains.

The general basket-market, and for earthenware and potatoes, will be 170 feet long by 88 feet wide. Within it will be two drinking-fountains. The shambles will run round the market, and the centre will afford 372 sittings. A road will divide the buildings already described from the cattle-market; to which the descent is by a broad flight of steps. This market is 402 feet by 153 feet, and it is estimated will afford accommodation for about 1,700 sheep and pigs, 100 horses, and 700 "beasts." There are three large entrances to the cattle-market—two in Stafford-street, and one in Water-lane. Thirty or forty old houses and out-buildings have been cleared away from the site, and Stafford-street has been widened from 13 feet to 40 feet. The designs and specifications were prepared by Mr. Danby, of London.

Leighton-Buzzard.—A new first-class station on the London and North-Western Railway has been opened at Leighton. Mr. Rowe, of London, was the contractor, at the sum of 6,000*l.* we hear. The main line has a platform 320 feet in length, with waiting-rooms and other necessary offices. The Leighton, Luton, and Dunstable line has a platform of 180 feet in length, with waiting-rooms and offices similar to those on the main line. An arch or tunnel leads from one line to the other: it is 150 feet in length, and is ascended and descended by flights of stone steps, of rubbed York granite. The tunnel is 8 feet in height, and 10 feet in width.

Accrington.—The Peel Institution, erected to the memory of the late Sir Robert Peel, was lately inaugurated. The building is in the Modern Italian style, the principal front having a projecting arcade, under cover of which carriages can put down or take up for the principal entrance. The arcade has recessed and moulded semicircular arches with rusticated quoins and vousoirs; the central archway having a head of Minerva on the key-stone. The arcade forms the base of a portico of ten Corinthian columns, surmounted by medallion cornice and pediment. The wings are lighted by windows on the ground story, having rusticated arches and quoins, and on the second story by moulded windows having carved trusses and segmental cornices, the whole being surmounted by a cornice and balustrade. The ground story is approached by an entrance-hall, 24 feet square, from which is the principal staircase to the second story. It also comprises rooms for the accommodation of the Mechanics' Institution, consisting of reading-room, 32 feet by 25 feet, class-rooms, &c.; a meeting-room, 45 feet by 26 feet, and other rooms intended to be used as town's offices, &c. The second or principal story is devoted entirely to a public hall or assembly-room, 120 feet long, 45 feet wide, and 30 feet high, having ante and retiring rooms with gallery over. The interior decorations of the assembly-room comprise panelled wall pilasters, filled in with festoons and wreaths of fruit and flowers, from which spring brackets for side gas-lights; a medallion cornice and frieze runs round the entire room, from which springs a coved and panelled ceiling. The room is lighted by three bronzed chandeliers, supplied by Messinger, of Birmingham, and is ventilated through the ceiling and roof. The building is heated by Haden's system of hot air and water combined. The entire cost of the building, exclusive of land, will be, when completed, about 9,000*l.* The architect was Mr. J. Green, of Todmorden; assisted by Mr. Thomas Birtwistle, of Blackburn, clerk of the works. The contractors for the masons' works were Messrs. Smith and Watson, of Burnley; Mr. James Hindle, of Accrington, for the joiners' work; Mr. Hodgson, of Oswaldtwistle, for the plasterers' work; Messrs. J. Holden, for the slaters' work; Mr. Carter, of Accrington, for plumbing and glazing; and Mr. Threlfall, of Accrington, for painting.

Halifax.—The work of excavating for the new Townhall here has been commenced. The site is on a portion of ground between Broad-street and Crossley-street, and on which, until recently, stood the Excise Office. The merits and demerits of that site are being discussed through the columns of the local newspapers by the borough engineer, to whom the preparation of plans has been intrusted, and others.

NOTTINGHAM LODGE COMPETITION.—Numerous designs were received by the Inebriety Committee in answer to advertisements inviting architects to compete for the erection of a lodge, with clock-tower and drinking-fountain. The committee, after consideration, agreed to adopt the designs with the motto, "I take aim for the mark," the author being Mr. Charles H. Edwards, of London.

CHURCH-BUILDING NEWS.

Heigham.—The numerous packages containing designs from architects from all parts of the kingdom for the Heigham new church, says the *Norfolk Chronicle*, have been opened, the committee having obtained the use of the picture gallery at the Bazaar, St. Andrew's, which large space, we understand, is completely filled, though placed in double line round the gallery. The committee came to the conclusion at their last meeting that not even their own personal friends should be allowed to inspect them till after the most approved design is selected. Some weeks must probably elapse before the committee can finally make their decision.

Lynn.—The foundation-stone of a new chapel for the "Independent Baptists" (formed from the Independents and Baptists), has been laid. The style is Gothic, of the Middle Pointed era, and it is to be constructed of white brick, with bands of red and dressings of stone. The area is cruciform, consisting of a nave and transepts, with an apse, adjoining which is to be a square tower and spire 80 feet high. The length of building is about 60 feet, breadth 40 feet, transepts 47 feet. The roof will be of open timber, and the sittings (not pews) will be also open. The site is at the corner of Market-street, and opposite the wide opening at the Athenaeum.

Colchester.—St. Peter's Church, Colchester, has been re-opened for divine service. The alterations consist of the entire removal of the old tall and unsightly pews, and the substitution of plain benches, stained and varnished. The stone pillars and arches running along the northern aisle consequently present a more imposing appearance. The carved oak octagon pulpit, of the period of Charles I., has been restored and placed on a new pedestal, with new pulpit stairs and ornamental balusters to carry out the general design. The whole of the carving and enrichments were entrusted to Mr. Richard Ellisdon, cabinet-maker, of Colchester. The middle and chancel aisles are paved with tessellated pavements, from the works of Messrs. Maw and Co. of Broseley, Staffordshire. The antique vault, at the east of the chancel end of the church, formerly used as mortuary chapel, is occupied by a furnace and hot-water apparatus, supplied by Mr. Evans, ironmonger. The general alterations were carried out under the direction of Mr. Charles Foster Hayward, architect, Colchester; and Messrs. Grimes and Scott, builders, were the contractors. The cost of the present alterations amounted to about 1,000*l.*

Fownhope.—The ancient parochial chapel of Fawley, distant about a mile from the Fawley station of the Hereford, Ross, and Gloucester Railway, has recently undergone a partial restoration. Low and open seats (four-fifths of which will be unappropriated) have been substituted for the former high, irregular, and, to a great extent, decayed pews; and a new pulpit, two new windows on the south side of the nave, &c. have been erected. The work has been executed by Mr. Bevan, of Hereford, according to plans prepared by Mr. Nicholson, the diocesan architect. There are other alterations which it would be desirable to carry out, but the cost of the improvements already effected has considerably exceeded the amount of the subscriptions. In addition to the mentioned alterations, within the last twelve months the roof of the nave has been recovered at the expense of certain ratepayers, and the chapel-yard, the greater part of which had been open for many years to an adjoining field, has been enclosed with a stone wall at the sole cost of Mrs. Powell, of Fawley Court.

Chester.—The restoration of St. Olave's Church, Chester, has been carried out, after the designs of Mr. James Harrison, by Mr. Hitchin. It would add much to the picturesque effect of the structure, remarks the *Chester Chronicle*, if the heavy wall in front were sufficiently lowered to admit of a good view from the street, and surmounted with iron railings.

Liverpool.—The foundation-stone of a new Roman Catholic church, to be called "The New Church of Our Lady of Reconciliation," in Eldon-street, Vauxhall-road, has been laid by the Right Rev. Dr. Goss, the Roman Catholic bishop at Liverpool. The locality is one of the poorest and most densely populated in the town, and the new church is intended to supplant the temporary place of worship formed out of an old warehouse in Blackstock-street. It will also be a companion to large schools adjacent to the site. The new church is to be a plain structure, in the Early French style of Gothic, but it will probably be the most spacious Catholic chapel in the town. The

bishop has had the immediate direction of the plans, his desire being to afford as much accommodation as possible at an economical sum. It will be 150 feet in length, by 6½ feet in width, and 78 feet high. The walls of the aisles are to be arranged in panels, in which will be frescoes illustrative of passages in the life of Christ, by a Belgian artist. The contract has been taken by Mr. Yates—the successful tenderer for the new public museum—at a cost of about 4,000l. It is anticipated that the church will be opened before the end of the year.—A numerously-attended meeting of Roman Catholics has been held, to take steps for providing a more suitable church for the district of Holy Cross. The present condition of Holy Cross, it was said, is positively a disgrace to the Roman Catholics of the town, and "not fit for the abode of God or man."

SCHOOL-BUILDING NEWS.

Brailes.—The new schools in this village have been inaugurated. These schools, which are capable of containing 100 infants and 80 girls, with a teacher's residence, have been erected at an expense of rather more than 850l, made up by a grant of 400l from the Committee of Council on Education, 330l contributed by the proprietors and inhabitants of the parish, and the remainder from other sources. The site is in a central position, and was given by Mr. H. J. Sheldon, of Brailes House. The building is of brick, with Bath stone dressings. The architect is Mr. W. Smith, of London; and the builders, Messrs. H. Attwood and W. Pickering, of Brailes.

Cheltenham.—The British Schools, which have been some time in course of erection in Henrietta-street, Cheltenham, have been opened. The building is in the Medieval style of architecture. The architect was Mr. H. Dangerfield, the borough surveyor. Mr. Taylor was the builder.

Middleborough.—It is proposed immediately to commence the erection of Church of England schools for girls and boys near the populous part of this town. The cost is estimated at about 1,800l.

COUNTY-COURT FEES TO ARCHITECTS.

A SUBPENA to the Clerkenwell County Court was left for me one Saturday evening. The handsome sum of 5s. was left with it. I attended at the Court on the Monday morning following (greatly to my inconvenience, for I had an engagement in the country for the day), and did not leave till nearly one o'clock: I gave evidence, which evidence procured a verdict in favour of the defendant. I applied to the defendant for my fee of one guinea, which he refused to pay, and being determined to try the question, I summoned him to the County Court, and the judge, upon hearing the case (after an expression made use of by the clerk or registrar of the court, who seems to be judge as well as clerk), said, "As far as I am concerned, you will get no more here," meaning the 5s. left with the subpoena, and decided he had no power to award me any more than the 5s. He said I should have asked for my fee previously to giving evidence. I hope you will insert this to put my professional brethren on their guard, and inform them if they attend at any county court they will be liberally awarded the magnificent sum of 5s. the price of a day's work for a journeyman bricklayer. Surely the legislators of the country never intended that professional men should thus sacrifice their time.

C. F., Architect.

THE NEW FOREIGN OFFICE.

THE Chief Commissioner of Works has undertaken to exhibit to the public Mr. Scott's revised design, together with the working drawings and builders' tenders, before asking for a vote of approval from the House of Commons. As regards working drawings, they are *caviare* to the million, and as regards estimates, the amount of expenditure has never yet been made a question of discussion. The Chief Commissioner would give our senators a much better chance of coming to a right decision, as regards the architecture of the proposed buildings, if he ordered a model of the design to be made, on a large scale. Few but professional persons understand or can give due attention to plans and elevations, and even perspectives fail to make the connection of parts and the effect of the whole, as a mass, clear to their comprehension. Too many are also misled by beauties of drawing and striking effects of impossible light and shade, but every one can understand a model, and we have many artistic architectural modellers, who could give the fullest life

and character to the minutest detail of ornamental design. A model of Mr. Scott's design would probably remove many erroneous impressions, and would certainly enable the non-professional judges, by whom the questions in dispute will evidently be decided, a much better means of arriving at that decision than by plans, elevations, and working drawings.

I need not refer to the practice of our great master, Sir Christopher Wren. The large models at Brompton, not only for St. Paul's, but for many of his churches, and the models at Hampton Court, show the importance he attached to the system. It is the ancient practice, and if adopted in present times we should not hear so frequent complaints of disappointed expectations when our buildings are finished.

T. L.

MR. SPURGEON'S TABERNACLE COMPETITION.

THE RESOLUTION OF THE COMPETING ARCHITECTS.

I AM not an architect, but taking as I do a great interest in all matters relating to the profession, I beg to call your attention to a resolution passed (by a majority of three) at a meeting of the competing architects, who were appointed by the committee to award the first and third premiums, held at Rea's Repository, which excluded all those designs which were accompanied by more than one perspective drawing, although several architects then present produced letters they had received from the secretary to the committee, informing them, in reply to their inquiries, that they were invited to send in one interior, and one exterior view, of each design, if they felt so disposed.

This resolution, then, was manifestly unjust towards those competitors who had acted upon the written instructions of the secretary.

This resolution was also unjust to those competitors who, knowing by experience how little committees in general were acquainted with plans and sections (and having no assurance that this committee were more competent than others), took the trouble to prepare a drawing of the interior of the chapel, which would give them a better idea of the internal arrangements in ten minutes, than they would derive by puzzling over a section a whole day. Is it not unfair, then, to exclude a design on this account? I have no doubt you will lend your powerful aid to expose this too successful ruse of a certain clique, to rid themselves of some dangerous rivals.

The committee, in awarding "the prize," the carrying out of the building, have, however, nothing to do with this resolution of the competitors; and I trust, that if the designs with more than one perspective, are rejected by them, it will be for some better reason than that given by the competing architects.

NOT AN ARCHITECT.

* * The obviously proper course in this case, was simply to put aside all the perspectives beyond one.

BUILDERS' FOREMEN.

IF we were to judge from the number of letters we receive from time to time, complaining of the inefficiency of builders' foremen, we should conclude that masters are not sufficiently careful in their selections. Our own experience, however, we are bound to say, does not confirm this view. One of our last correspondents on the subject says:—"Foremen are generally chosen by the masters and by the foremen: the men, unhappily, have no voice in the matter. The first, who, in nine cases out of ten, are not practical men, and hence are almost totally unable to judge who are the most fit for foremen, generally choose the man who has been longest employed, and the best to keep time, and the most cunning; and the second generally choose some better filled with coin than his brain is with intelligence. What is the consequence of this state of things? Why, that there are more inefficient than efficient foremen; that good workmen are discouraged; and English workmen are losing their proverbial character for good, sound workmanship, and are becoming Americanized. But the employer is the principal sufferer, and many are made bankrupt solely through the inefficiency of their foremen. In the present day—thanks to modern architects—it is necessary for foremen to be thoroughly acquainted with what is commonly called "lines;" and if they are not, a vast amount of time and material is wasted, of which the master has not the slightest knowledge. I have seen pounds wasted in this manner; and, of course, masters are thus rendered unable to make their tenders out to great nicety. A certificate of efficiency from a society of foremen, or from a body of men, would be an excellent addition to the usual certificates.—T. J. S.

THE GREAT CLOCK AT WESTMINSTER.—Lord Campbell last week gave notice in the House of Lords that he should take an early opportunity of asking the Government if there was any likelihood of the clock in the clock-tower of the Houses of Parliament being put into a working condition within a reasonable time, so that persons frequenting the courts at Westminster should receive some benefit from it. He thought the clock a standing reproach; though not a striking one.

Correspondence.

THE BUILDING TRADES.

SIR,—On a careful consideration of the whole question of the present unsatisfactory state of the building trades, I am decidedly of opinion that it has mainly arisen from the repeal, about 1816, of that portion of the Act of the 5th Elizabeth, which forbade *all exercise of trades by persons not having served their time*. Its abolition was conducive to unfettering the hands of the skilled mechanic, by allowing him to embrace the advantages of any other trade to which his mind may have had greater bent than the one in which he had been brought up; but, at the same time, it has permitted the entrance into the ranks of the trades of a large class of persons who have not gone through a proper course of education. The seven years' apprenticeship is now almost a dead letter, not only in these trades, but in nearly all others. This term of years under a master-workman enabled the apprentice to learn his business fully, so as at the end of the time to be enabled to take his place as a respectable journeyman and a worthy member of society, looking forward to one day setting up in business for himself by his own exertions. These men were often educated, not only in their business, but in the literature of the day,—frequently self-taught during over-hours. Numerous examples could be given of the position and fortune to which such men attained. There were temptations then, no doubt, quite equal to the beer-shop of the present day; but the workman appears to have had a greater respect for himself and for his talents, enabling him, on most occasions, to claim a fair day's pay for a fair day's work.

Where is now the clever staircase hand-rail maker, who used to be found in the workshop of every master? Where is the good grainer to be seen amongst the every-day decorators? The mason often is a bungler, and the bricklayer no better than his hodman was formerly; whilst the hodman of the present day is amongst the most ignorant of the ignorant. The work of earlier days is unsurpassed, although executed during longer hours of labour, less pay, and with provisions and dress at a higher rate.

It was the repeal of this clause of the Act to which I have referred that has caused the great change in the position of the City Companies. Many have become almost nonentities, as far as regards their connection with the trades from which they were named. The mechanics have thus given their birthright away. Why should the Carpenters' Company have found it beneficial to let their fine old hall to a printer? The trade has not decreased in numbers, but the interest with it has, by the abrogation of the term of apprenticeship. Why should the masons have let their hall and premises to an hotel-keeper, but for the same reasons? Great benefit would arise to all parties by a recovery of these waste places. They are good and proper houses for meetings to be held, where master and man could assemble, and by the display of the liberal feelings of humanity, promote that goodwill between them, the absence of which by these present separations tends to harden the minds and better dispositions of both parties.

I would urge the trades forming themselves into societies for self-improvement, and most material benefits will result from the course. Emulate the architects, the geologists, the antiquaries, and a host of other professions, whose scientific meetings are only so many places for mutual improvement and associatiship. What is there to hinder the future masons' society from being incorporated by royal charter, and taking its place with the highest in the land for intelligence and good management; in time emulating and ranking in estimation with the "Freemasons," their predecessors? The carpenters, the joiners, and, in fact, all the other trades, need only pursue the same system, each having their society or societies. With such intentions, the several assemblies would soon find a room for meetings, and other means would be at their disposal. There is quite a sufficient number of intelligent men in each trade to discuss a subject of practical importance, and they would be readily assisted by the builders and architects. The hearers would get interested: questions would be put and deliberated upon; and each man would leave wiser and better for an evening so spent, in place of one at the beer-shop, or at the Union club-room, listening to grievances he cannot remove; quarrelling with his mates about trifles; uncomfortable, discontented, and discouraged for the next day's work.

But these societies must originate with the trades themselves. Let them show themselves earnest in

the matter, and, helping themselves, they will soon obtain help. They will then perceive the value of knowledge, even amongst themselves: an emulation would arise, and then we should soon hear of "pay us according to our work," or "a fair day's pay for a fair day's work," instead of as now, "all shall be paid alike."

Keep your burial funds, sick funds, and as many more of such means of accumulation and relief as you please: they would form part and parcel of each society; and one paid person to each society, acting as librarian (for you would soon find the necessity of a library), and so forth, would undertake the whole easily and inexpensively.

Again I urge a reconsideration of the movement. I urge the classification of the men in the proposed societies. Thus—men of the first class to receive so much per day; men of the second class, so much; labourers, who would be the junior members, to receive so much; while the so-called apprentices would represent the students of other older societies. Lay claim to your "freedoms of the City companies." Liberal views are now being held in the City, and a proper movement for resuscitating these receptacles of former trade charities would materially benefit your own position. How few have retained their right of voting as their birthright; and yet the presumed right to a vote is one of the popular clamours of the day. Show your self-reliance and self-respect, and, being self-reliant, the home will become a matter of greater consideration than is now generally the case.

AN ARCHITECT AND A WELL-WISHER TO
THE BODY OF WORKMEN.

Books Received.

The People in the Cathedral: a Letter to Dr. Milman, Dean of St. Paul's. By JOSIAH PITTMAN, Chapel Master and Organist, at Lincoln's-inn. Bell and Daldy, Fleet-street, 1859.

Hymns and Canticles used at Morning and Evening Prayer, plainly noted as a Chant Service. By JOSIAH PITTMAN. Bell and Daldy, 1858.

The purpose of these two pamphlets will be readily inferred, from the following quotation from the letter to Dean Milman:—

"No one can enter a cathedral, and view the long-drawn aisle, the cross-shaped transept, the lofty roof, and the processional nave, without recalling to mind the fact that these magnificent edifices were built for the musical service of the church, and wherein quires, worthy of the name,

With such sweet accord and harmony,
Took up the song of praise, as none can probe,
Save where is joy to all eternity."

Herein was present everything that could animate and lift the heart and prepare it for its duties of thank and prayer. But whilst indulging in such memories, should he witness an ordinary quire service of the present day, these emotions would be exchanged for those of regret and solicitude. The broad and spacious area of the nave seems desolate and waste: the distant roof reverberates with the thin echoes of a scanty quire: and the general appointments of the service appear altogether out of proportion with the magnitude and glories of the place. Every one would naturally, therefore, look forward to the time when that portion of these edifices called the nave should exhibit the sublime spectacle of the life and breath of humanity offering, in simple and appropriate strains, to the Divine Being, the beautiful responses of our Liturgy, the prayers and praises of the Psalms and Canticles; and then would innumerable voices,—

'—In solemn chant
With organ mingle, and now high and clear,
Come swelling, now faint indistinct away.'

That time seems now to have arrived, and I take this opportunity of congratulating you, very reverend sir, on the fact that an event of so much importance as the opening of the Metropolitan Cathedral should have taken place whilst you are the honoured head of the collegiate body.

The leading feature of this great movement is, the participation of the people with that portion of the service which, for these centuries past, has been almost confined to the expression of the quire, or left to the direction of a celebrant and his clerk."

VARIORUM.

"FRAUDS and FOLLIES in Picture-Dealing," a poem by George William Novice, artist (Edinburgh: Grant and Son), contains more truth than poetry, and would have been more useful in

straightforward prose. It traces the doings of one who is thus described,—

"Barnish Oily, a name well known
Among the wealthy of the land,
Who were not backward him to own,
And shake with kindness by the hand,
Was a great dealer in the picture trade,
And most considerable profit made."

—A second edition of the "Discourse on the Study of Science in its relations to Individuals and Society," delivered by Mr. Henry Hennessy, F.R.S. at the inauguration of the Faculty of Science of the Roman Catholic University of Ireland, has been published (Kelly, Dublin). The author is hard upon men of small knowledge (which is much better by the way, than no knowledge at all). He properly urges that the cultivation of literature and art, far from impeding science, must promote its advancement; and that the study of letters is not at all hampered by some attention to scientific pursuits. An interesting sketch is given of Bacon's "New Atlantis,"—suggested, as is well known, by an episode in the writings of Plato.—"The Dictionary of Daily Wants" (Houlston and Wright, Paternoster-row), which had been issued in a serial shape, has now appeared as the first of three volumes. It contains a great deal of information on every-day matters, and a few others besides, and cannot but be highly useful in most families. Many of its articles are illustrated by woodcuts.—"Half-hours with the Microscope; by Tuffen West" (Hardwicke, Piccadilly), is a very interesting popular guide to the use of the microscope, as a means of amusement and instruction. It is illustrated from nature, the plates being not the least engaging portion of the little volume.—Dr. Lardner is one of our most indefatigable book-makers. One of his last productions is "Chemistry for Schools," with 170 illustrations (Walton and Maberly, Paternoster-row). This is a somewhat more comprehensive and advanced treatise, as regards most of those prepared for use in schools; and, indeed, it comprises instructions, like those in respect to various poisonous agencies, such as chloroform and prussic acid, which are rather too much in advance of school teaching, and particularly where no cautionary remarks are appended, as in the case of chloroform. Otherwise such a work cannot be any the worse for doing a little more even than its title promises or demands.—Many years since a book "By a Clergyman" on Epitaphs was published. This volume has now been re-issued by Seeley, Jackson, and Halliday, of 54, Fleet-street, under the following title: "Voices from the Tombs; or, Epitaphs, original and selected; with a large Selection of appropriate Texts of Scripture and an Historical and Moral Essay on Sepulchral Customs and Monumental Inscriptions. By the Rev. B. Richings, M.A. Vicar of Manchester, Warwickshire." This is a somewhat different sort of work from that of Mr. Pettigrew. Its purpose is to form a kind of text-book, whence sculptors, clergymen, and others may extract suitable inscriptions for the tombstones of the dead of all ages and conditions of life. Consequently it contains nothing like archaeological interest, but aims at the observance of that solemnity and propriety which befit the narrow house of the departed and respect for their memories. The preliminary essay contains a good deal of interesting matter, as also does the Appendix, on Sepulchral Rites and Customs.—Two very useful "Handy Books," as they are called, have been issued by E. F. Wilson of the Royal Exchange, London. One of them is titled, "A Handy Book of the Law of Bills, Cheques, Notes, and I.O.U.s." The other is "A Handy Book of the Law of Private Trading Partnership."

Dr. J. W. Smith, of the Inner Temple, barrister-at-law, is the author of both.—"The Midland Counties' Almanac and Rural Hand-book," for 1859 (Simpkin, Marshall, and Co.), is an enlarged and improved issue of a sixpenny serial, containing many useful hints on various subjects, chiefly rural, such as on bees, on gardens, flowers, hot-beds, kitchen gardens, farms, fairs, and markets, &c.; but also much general information, on sanitary and other subjects, some of it gleaned from our own compilers, as is honourably acknowledged by the compiler.

ROME.—A letter from Rome says, the excavations on the Latin Way are not being proceeded with, but that it is hoped they may be proceeded with before long. The idea of a new theatre has been abandoned. The Prince of Wales is making good use of his time. A few days ago he made a long examination of St. Peter's, from the ball to the subterranean church. Before he left, a marble tablet, commemorating the visit, had been fixed, and was pointed out to him!

Miscellaneous.

THE ROYAL SOCIETY.—The new President of the Royal Society has issued cards for two *conversazioni*,—Saturday, April 9th; and Saturday, May 14th.

BEST MODE OF REPAIRING FRACTURED SEPULCHRAL URNS.—A correspondent of *Notes and Queries* gives the following as the recipe of the late John M. Kemble:—"Put the pieces together with best cabinetmaker's glue, then glue thin calico inside the urn. Mix equal parts of rye meal (or, if that is not at hand, oatmeal), and plaster of Paris, and moisten: with this fill up cracks and breaches. Dry perfectly in the sun, or by slow heat: when dry, dab over the mended parts with linseed oil."

NORWICH IMPROVEMENTS.—During the last year there was a great extent of employment in this city in the erection or extension of public buildings, especially by the enlargement of the Asylum at Thorpe, and of the Bishop's Palace, and the rapid erection of the new workhouse, the outlay for the whole not being less than 60,000*l*. There have also been some improvements by the widening of streets, as in London-street; the opening of new streets, as that out of London-street and Bank-place, as well as by the contemplated erection of a new fish-market. The market-place itself is beginning to present a more imposing appearance, and the most remarkable feature, says the *Norfolk Chronicle*, in allusion to these improvements, is Mr. Chamberlin's new establishment, lately completed. The style of architecture adopted is a somewhat free rendering of the Italian. Mr. Clements, of London, was the architect. The façade towards the market-place is divided into three parts, the upper part towards St. Giles-street, comprising the entrance to the wholesale department; and at the Dove-street end the entrance to the retail department, opening into the warehouse. The central portion presents a range of three large windows. The corner in Dove-street has been cut off to allow more room for pedestrians, and the whole line of front has been set back for that purpose. The lower portion of the façade is constructed of Portland stone, the divisions between the windows having columns of a composite order, the capitals decorated with the cotton and flax plants alternating with the mulberry-leaf. Above the shop-front, the elevation is faced with red brick, pointed with a tack point in Portland cement, and all the dressings to the windows, string-courses, and cornice, are of red brick. Amongst the accommodations provided for, there is a library and reading-room; baths supplied with hot and cold water, lavatories, &c.; also thirty bed-rooms. The kitchen department communicates with the dining-rooms by means of a lift, similar to those used in the London club-houses.

THE OXFORD GYMNASIUM.—A building to be devoted to all sorts of gymnastics has been erected for a Mr. McLaren, in Alfred-street, which leads from the High-street to the back of Christ Church College, and is nearly in the centre of the city. It is built of grey bricks, with semicircular headed doors and windows having deep reveals. A splayed and dentilled string course marks the line of the first floor, and is an important feature in the elevation. The upper floor windows stand in semicircular headed recesses springing from corbels, and above these is a moulded cornice in brick-work, finishing about 33 feet from the ground. The roof is divided into three divisions, the centre being a dome, square at the base, and diverging to an octagonal form at the top, which is surmounted by a lantern and ornamented vane. The interior is divided in the height by one floor, consisting of two large rooms, one at each end, connected by side galleries, which thus inclose a large quadrangular central space open from the ground to the roof, a height of 60 feet, and is protected by a moulded handrail, with ornamental newals and wooden trellis-work balustrade. The timbers, which are varnished, interlace each other in the roofs and ceilings to form panels. The principal girders are fitted with iron, to prevent vibration, and supported by eight cast-iron columns, 12 inches in diameter, four of which, on each side, extend from the floor to the roof. The building is 84 feet long, 45 feet wide, and to the highest part of the dome 60 feet. In the centre, a Norwegian pole, 60 feet high, has been fixed, for climbing exercises. The timbers of the roof and ceilings afford facilities for fixing the numerous machines for gymnastic purposes. There are exercises suited to pupils of all ages and conditions of health. The architect was Mr. Wilkinson, and the builders were Messrs. Joseph Castle and Co.; all of Oxford.

DR. NEWMAN AND GOTHIC ARCHITECTURE.—Dr. Newman has been building a Roman Catholic church in Dublin, which, from its ignoring all principles of Gothic art, has excited the indignation of Father Thomas, of St. George's, Southwark, and others. The former denounces it as "a horrid monster of a building," and "a horrid thing that frightens all the world." Some one has replied in a pamphlet entitled, "A word to the Goths," ridiculing Gothic architecture. This has been charged on Dr. Newman, who, however, repudiates the authorship in a letter to the *Tablet*, "with extreme surprise," adding,—"For myself I have never set myself against the adoption of Gothic architecture in ecclesiastical structures. For a while I thought of adopting it for the church which I have built in Dublin; but I cannot approve of the intolerance of some of its admirers. I think it the most beautiful of architectural styles; but I claim the liberty of preferring, for the purposes of worship and devotion, a description of building which, though not so beautiful in outline, is more in accordance with the ritual of the present day, which is more cheerful in its interior, and which admits more naturally of rich materials, of large pictures or mosaics, and of mural decoration."

PLUVIAL COLONNADES.—A correspondent, "M. T. W.," suggests the formation of porticos or colonnades for shelter during rain, and points attention to that side of the Bank of England which abuts on Princess-street as a desirable site for one. There crowds are often drenched while waiting for room in the omnibuses, which are in such cases so rapidly crowded. Our correspondent thinks some of our City worthies could not make a better use of their spare cash than in realizing such a public benefit. Let us not forget, however, that one of the very few colonnades we ever had—almost the only one, indeed—that at the Quadrant, Regent-street,—had to be removed in consequence of its becoming in itself a nuisance. Abutting upon a dead wall, to be sure, there would be no shopkeepers to complain of annoyance or damage; but assuredly such a colonnade would not be long in being infested like the Quadrant by disreputable characters.

LIEBIG ON SEWERAGE.—In a letter to an English correspondent, from Liebig, the celebrated chemist, dated Munich, January 9th, he says, "I have been lecturing on sewage; and I am firmly of opinion that if England wishes to remain an agricultural country she must use as manure the nightsoil and similar residues produced in large cities. This necessity would be increased in the event of a war with America, when the supplies of guano would cease. The price of corn depends upon that of guano, and it is most unnatural that, in a country like England, the production of corn and meat should be so dependent on the supplies of foreign manure. The heads of even the most enlightened agriculturists have been turned by a theory propounded by Mr. Lawe—viz. that nitrogen or ammonia are the most necessary ingredients in manure, and that consequently solid excrements are valueless, the urine alone being of use."

THE CRYPT BUILDINGS AT CHESTER.—We have more than once called attention to the new pile of buildings lately erected by Messrs. W. and C. Brown, in Eastgate-street, says the *Chester Chronicle*. Although they have been the subject of severe criticism and very conflicting opinions, we must still, without hesitation, rank ourselves among those who regard them with favour, as the result of a spirited and successful effort to restore, in a city to which the style is so peculiarly appropriate, a very happy style of mediæval architecture. We cannot agree with those who withhold commendation because the crypt buildings are supposed to be out of character, simply because they are not timber buildings. The remains of ancient buildings in Chester are mostly so, but they are of later date; and the very crypt from which the edifice takes its name, and which is the only part of the original building yet remaining, indicates a style and date to which a timber superstructure could not be appropriate, but with which the present building strictly harmonizes. In no way are Messrs. Brown more deserving of praise than for the care and good taste with which they have preserved and restored the original crypt, and encouraged Mr. Penson to carry out the idea which its arches suggested. We think it is a vulgar error, very commonly entertained, that this and other ancient crypts in Chester were originally intended for ecclesiastical purposes. Their style, which now remains only in ecclesiastical buildings, may naturally lead to such a mistake with a superficial observer, but the archaeologist has no such opinion. The crypt was probably, as it now again is, a place for merchandize.

WITTY COURT, WORCESTERSHIRE.—We were misled into naming wrongly the destination of the fountain of which we gave a view last week (p. 134). It is Witley Court, Worcestershire, not "Witty" Court. A correspondent signing himself "A Lover of Justice," objects that the fountain is "taken from the French," and says:—"I cannot refrain from referring those who may desire to see the original to Le Brun's work on fountains, where the design will be found under the title 'Fontaine de Persée et d'Andromède.'"

THE CATTLE-SHOW.—It will be seen from our advertising columns that the Smithfield Cattle Club is anxious to ascertain whether more spacious and commodious premises can be obtained for the Christmas shows than those hitherto used by it in Baker-street. Mr. Brandreth Gibbs, of Half-moon-street, will give any information that may be needed. We hope the result of the appeal will be the provision of a proper building for the purpose, with a fair amount of fitting adornment.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—A meeting of the Architectural Institute of Scotland was held on Wednesday night in George-street Hall, Edinburgh, when, says the *Edinburgh Courier*, a paper on "The Triumphal Arches and Pillars of Ancient Rome," was read by Mr. Thomson, of Banchory, in which he gave a minute description of the more important of these monuments of ancient skill and art: he suggested the peculiar adaptation of the arch to form the basis for designs for public and national monuments in modern times. A cordial vote of thanks was passed to Mr. Thomson for his interesting paper.

HAWICK. NEW ROYAL BANK.—The building intended for the Hawick branch of the Royal Bank, and which is situated in High-street, is now nearly ready for occupation. It is a large structure, with an elevation of three stories, and a frontage of nearly fifty feet to the street, in the Italian style, and has been erected from designs by Messrs. Peddie and Kinnear, Edinburgh. The building comprises bank offices and officers' apartments. There are two entrances, one at each extremity. Between the entrances is an arcade of three arches, the openings of which form the telling-room windows. This story is surmounted by a cornice and enriched string-course. In each of the succeeding stories there are five arch-headed window openings, and the whole is surmounted by a cornice carried upon modillions.

TEMPLE BAR.—SIR.—As there is so much divided opinion as to whether to pull down the city gate or let it remain, I would propose, in carrying out Sir Richard Bethell's excellent project of connecting the Temple with the proposed law courts, to widen the road, improve and extend the old gateway, keeping the centre arch closed with a pair of handsome iron gates, only to be used on public occasions, and a bold pair of arches on either side for ordinary traffic, and form a footway above, to be enclosed on each side by piers and columns, with a roof and two pediments, bearing suitable emblems. I venture to express a belief that the idea, if carried out, would be both ornamental and useful, as well as retain the associations which are attached to the spot.—CAREY STREET.

THE POTTERIES AND THE SMOKE NUISANCE.—In reference to the "Wedgwood Memorial" question, a correspondent of the *Times*, in a slashing and perhaps a somewhat indiscriminate article, calls attention to the state of the Potteries, sanitary and moral, and the necessity of diminishing the smoke nuisance in the district, and of erecting almshouses therein. The state of the Potteries, we believe, is very bad, and the smoke nuisance there stands much in need of amendment; but the precise bearing which the writer intends these facts to have upon the "Wedgwood Memorial" question, he does not make very plain or distinct, farther than that he considers almshouses to be a fitting memorial of Wedgwood, or leads to the inference that the subscription-money ought to be devoted to the benefit of the smoke-producers, by saving them the expense of consuming their own smoke. Scarcely more discriminate or sequential is Mr. Ricardo, M.P., in his reply to this article, wherein he upholds things as they are in the Potteries through thick and thin, through smoke and dissipation, a purpose in which he is supported, in a like spirit of deference to constituents, by his colleague Alderman Copeland, one of the smoke-producers of the district. The Potteries ought to be sanitariously, morally, and intellectually improved, and much they require it. But that is no reason why some useful memorial, such as the projected Institute, should not be erected in honour of Wedgwood, who certainly did much for the ceramic manufacture of this country during a long life of industry.

THE GLASS TRADE DISPUTES.—The lock-out of the flint-glass manufacturers is expected to continue for at least two months longer. Meanwhile the following address has been issued to "masters and men":—"While you are fighting it out between you, the German manufacturer is rapidly but quietly getting hold of the export trade in glass; and depend upon it, when he once gets his article introduced, you will never again recover your standing. It is a very easy thing to drive away a trade. Two months' negligence, or 5 per cent. in price will do this; but every one who has heard it knows how difficult it is to recover a trade once lost. If you wish to know something of the difficulty, ask the Willenhall lockmakers or the Coventry watchmakers, and, if you are wise, take warning in time."

THE INVENTION OF THE LOCOMOTIVE.—A correspondent, "Robus," who appears to have read only a portion of what has been said of late in the *Builder* on this subject, writes us to point attention to the fact that a locomotive, patented by John Blenkinsop, was at work in 1812 between Middleton and Leeds, as appears from a paragraph in the *Liverpool Mercury* of 3rd July, 1812. We had already not only alluded to Blenkinsop's locomotive, however, as precedent to Stephenson's, but to Trevithick's (or Trevithick's), which was still earlier than Blenkinsop's; but it must be noted that in neither of these did the locomotive progress by the mere adhesion or bite of the two plain surfaces of the wheel and the rail, as did those of Hedley and of Stephenson. Our correspondent speaks of "A Geographical Plan of a New Iron Railway (General) for Great Britain in 1822."

THE DRAINAGE OF CALCUTTA.—The delay in commencing the proposed new system of drainage and sewerage begins at last to attract attention in high quarters. Sir Arthur Buller, at a recent meeting of the Legislative Council, took up the subject warmly, and pointed out the very important fact, that, although the Legislature had, in December, 1856, passed an Act for the special purpose of enabling the Municipal Commissioners to carry out the contemplated improved drainage of the town, matters were, in December, 1858, almost precisely in the same state as in December, 1855. The local press has joined in the outcry, the *Englishman* blaming the Legislative Council, the *Hurkaru* finding fault with the Municipal Commissioners, whilst the *Phoenix* restricts his remarks to a general complaint about the delay. The *Indian Field* explains various causes of delay, without by any means defending them; the principal points relating to what took place as to the plans prepared by Mr. Clark, C.E. The *Field* is inclined, on the whole, to think the delay is of much less consequence than at first sight would appear. The final plan, it states, is not even yet definitely settled. Considering the offensive state of the drains in Calcutta, however, it is to be hoped there will not be much further delay.

LECTURES ON HEALTH AT EDINBURGH.—The first of two lectures on "The Public Health of Great Cities," by Dr. W. T. Gairdner, F.R.C.P., has been delivered at the hall of the Philosophical Institution, in Edinburgh, to a large audience. Amongst other statistics of life and death the lecturer gave a summary, which showed that the highest proportion of births to deaths in any part of the country was in Glendale and Rothbury, in Northumberland, where the rate was 201 births to every 100 deaths—an almost incredible result. The next healthiest district showed a proportion of 131 births to every 100 deaths. Referring to Liverpool—to which, in other points of view, Dr. Gairdner said he should have occasion unfavourably to advert—he showed that the proportion of births scarcely exceeded the number of deaths—the number in 1855 being 101 births to 100 deaths. One other singular fact (frequently adverted to) was the much larger proportion of male children than female born everywhere: in England there were 105 male children born to every 100 females, but this was more than made up by the greater mortality amongst male children. As a result of these statistics, cities, notwithstanding all that could be said against them, were constantly increasing in the number of their population, and at a much greater rate than in the country; and further, cities were increasing not in consequence merely of the influx of population from without, but as a result of their own productive energy, and they were at this moment furnishing more inhabitants directly to the urban population of the next generation, and even to the rural population of the country and the colonies, than they drew from every source. This looked as though cities were in a healthy position, but there were important and ugly facts on the other side of the scale.

TO BUILDERS AND DECORATORS
WANTED, by a Young Man, a SITUATION. Can do writing and gilding, and writing and embossing in gold. Will fill up the time of printing and make himself generally useful. London preferred, but no objection to the country address, W. S. Bloomsbury-Managers, George-street, Oxford-street, Bloomsbury.

THE UNIVERSITY OF CHICAGO

The Builder.

VOL. XVII.—No. 839.

Metropolitan Bridge-Communications.



WHEN Mr. Laurie gave notice that he would bring before the House of Commons "the subject of the toll-paying bridges in and near the metropolis, which so interfere with the public traffic, and occasion great inconvenience by the dead-locks in the streets," we were led to hope that the whole question of the routes across the Thames was about to receive that attention which it calls for in the general subject of metropolitan communications. However, the only reference

to the question that appears from the newspaper reports, is that comprised in the conversation in the House, last week, when Mr. Alcock was desirous to refer the subject to the commission now sitting on the question of metropolitan tolls, and when Mr.

Walpole procured the postponement of the question on the ground that the Commission had already sufficient on their hands, and that any additional labour would prevent the appearance of a report on the particular subject consigned to them, in the present session. As we have long had the question of Thames bridges under consideration, and have already interfered as we believe with good effect, we may be allowed to say that these proceedings in Parliament do not convey to us that there is the proper impression of the magnitude of the interests which are at stake. The removal of tolls at present remaining within what have become thickly-populated parts of the metropolis, is certainly an object of very great importance; but, even it sinks in importance when compared with needed increase in the number of the routes themselves, and especially those in the heart of London, a subject which has been considered chiefly in its mercantile aspects, but has relations of a different character,—that is to say, those intimately connected with the social and sanitary condition of the people in London generally, and of all classes.

It has been remarked that there is not that knowledge of one another by different classes, which alone can lead to proper sympathy and mutual good offices. When cases are recorded in the newspapers, the current of charity flows in ample stream; but, for all that, families may die of want or of typhus, in the metropolis, within stone's-throw of any mansion of the west-end—in habitations, once new, built without the appliances now thought essential for the health of horses; and misery and crime may exist in quarters of the town unknown to the remaining portion. It should, therefore, be one object in metropolitan improvements, to equalize as nearly as may be, the condition of the several parts of London,—so that every good influence could radiate unchecked, and that facts as to any vice and crime existing, amongst any class of the people should be incapable of remaining concealed from the other classes, as well as to find space for the habitations of those whose employment lies in the centre of London—if not in that quarter itself, with the best provision of route to it.

In an article, in our volume for 1856, towards the close of that year, when we were advocating the prosecution of the works of the new Westminster bridge, then in abeyance, and when we slightly adverted to some of the arguments which we shall again allude to, we urged that not merely should existing routes be preserved, and that every thing in the shape of a tax was

prejudicial to the social and sanitary welfare of London, but that an increase in the number of toll-free bridges, and a considerable increase, was required for the various objects, as well as to place the transfluvial communications of this metropolis on a par with those of Dublin and the French capital. We showed that the schemes of a low-level bridge for carriage traffic from Charing-cross or Whitehall, and of one at the Horseferry, or elsewhere south of the Houses of Parliament, deserved to be pursued, and not as antagonistic propositions to a present route, but as each of them needed, with the Westminster bridge, for the wants and the amelioration of London. We should have been equally prepared to advocate the construction of the bridge proposed from the locality of St. Paul's churchyard, and that of other bridges. Our view of the question was very generally followed in the plans for the improvement of the quarter adjacent to the Government offices, in the competition of 1857, subsequent to which it was decided that the works at Westminster-bridge should be resumed.

The argument for number of bridges, and removal of restrictions upon communication between different parts of a town, could hardly be stronger in any case than in that of London. There exists in the very centre of the metropolitan area, a district of considerable extent which is now occupied by property and houses of an inferior class, and which not merely is unutilized in comparison with the use which might be made of it, but has become by the circumstances of its unimproved position, a lair for the vicious and the dangerous classes. It is the constant tendency of portions of towns situated similarly, with inconveniences of access, or a little out of observation, to become populated in the like manner. The examples are numerous. In London, the area generally on the Lambeth side, lying between the bend of the river and the New-cut, with the whole line of the Waterloo-road to the Obelisk, is of this character; and it is impossible to pass that way without noticing the inferiority of the district, as compared with most of the districts on the Middlesex side. The Blackfriars-road, and the Westminster-bridge-road, on the same side of the river, are even worse supplied than the Waterloo-road by number of bridges; but, because there is no toll for those particular quarters, the property with the industrial character is greatly in advance of that of the Waterloo-road—though to be improved by further facilities of communication. Houses—those of the larger class—let to tenants of the worst character; trades of an equivocal kind, and shops dealing in articles of an inferior sort; property in every stage of dilapidation; and dirtiness of the dwellings and their inhabitants, are apparent in the Waterloo-road, to every one passing by day, and are in intimate relation with the vice which pours into the Strand, and the crime, of whatever sort, committed throughout London by night. Just for the same reasons that there are the Transeverii at Rome, and the differences spoken of in our former article, in some cases, between people dwelling on opposite sides of a river; that there are lairs of crime in districts in the East of London; and that Battersea-fields formerly, and the dry arches of new streets in Pinco and Clerkenwell have given trouble to the police; so, on a larger scale, there are such localities as those across the Thames, produced simply because disadvantages of their position, as regards the industrial part of the community, have never been removed. As a measure of police, then, we advocate the removal of all restrictions of tolls, and a considerable addition to the number of London bridges. The new routes across the river would be so many lanterns turned on to the darker parts of London. Not merely would the value of property be raised, but we believe that, co-existently with that result, buildings of a larger class might be erected with advantage, appropriated as dwellings for the working-classes, as well as that the facilities for suburban residence, reached by railway or by road, would be increased. Thus the improved communications across the river, which have results very different from those which have accrued from the formation of certain lines of street which were proposed partly

with an object of police similar to that adverted to as an argument in the present case. Those street-improvements brought light into rookeries; but, making no provision for the inhabitants who were ejected, only increased the misery in other quarters; and so in some respects, did evil rather than good.

The conclusion at which we arrive is, that if vast improvements, and ultimately ample street communications, are required throughout Westminster and the City, and every part of the metropolis where the population is great, or the demands of locomotion and traffic are now felt to be pressing, double the proportion of improvement and communication is required in the case of the routes across the river, to negative the disadvantages of the natural obstacle, and to effect those objects, mercantile, social, and cosmopolitan, sanitary, and moral, shown to be quite within the sphere of influence of such improvements. As to tolls, those at Kennington or Clapton, or any part of the outskirts of London, though obstructions themselves, of the character we have spoken of, to better condition of the people, affect districts, rather than, as do the tolls on the bridges, London at its centre and heart. However slight the tax to one who passes the bridge only occasionally, the toll is just so much of a tax to the industrious artisan with a family (the very man who is at the same time an economist, and a supporter of order and morals), that he will necessarily prefer to avoid such tax; and thus the district is resigned to those who are less industrious or economical—the "classes dangereuses," to whom, as we said before, "there is no particular commercial or financial argument for the saving of time;" and who therefore may walk round by Westminster, or Blackfriars, "or who will afford the time for the sake of a little freedom from observation."

As regards other portions of the metropolis, our present remarks would in some degree apply to the case of London and Southwark bridges,—as ordinary arguments obviously would. The restriction, practically, of the traffic to one of these bridges, with all regulation of the vehicles so as to diminish the inconvenience on London-bridge, tends to retard improvements of many kinds for the borough; and the mode of serving the objects, is not by adding to the width of London-bridge, overhanging footpaths, but through the purchase of Southwark-bridge, the improvement of the approaches to it, and through the construction of the new bridge between that site and Blackfriars. The expense estimated by Mr. Bunning (25,000*l.*), for the widening of London-bridge, is no very inconsiderable portion of what would be the expense of a new bridge, now that the system of constructing foundations has been so much improved.

DOMESTIC ARCHITECTURE OF SCOTLAND.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

At a meeting of the Architectural Institute of Scotland, held the 21st of February, Mr. Francis T. Dollman read a paper on the above subject.

After a few introductory remarks, Mr. Dollman proceeded to state what he termed "An Englishman's Impressions, from an English Point of View," of the leading features of contrast between the ancient domestic architecture of Scotland and that of England, as regards, first, general character of the edifices; secondly, the material employed in their construction; thirdly, the dates of the architectural remains, and the peculiarities of detail. The reader briefly enumerated the principal buildings which he had visited in Scotland, and then, with reference to the first division of the subject, namely, the general character of the edifices, proceeded to remark on what he considered cannot fail to strike every one who has had the opportunity of examining both types, namely, the far greater massiveness and solidity of the Scottish examples, the real dignity, aided by exceedingly simple means, of the general grouping, the bold, expressive outline which almost universally presents itself, and its adaptation to the local requirements of climate, as some of the chief characteristics of the buildings. He alluded to the crow-stepped gables, the outside turret staircases, the chimney shafts, the dormer windows, the all but universal avoidance of valleys in the roofs, and the peculiarity of the adoption of oriel windows in ecclesiastical buildings no less than in those of domestic character. Mr. Dollman also

contrasted the purposes to which the buildings themselves were devoted, stating, that while in England so many structures devoted to charitable purposes existed, namely, hospitals, almshouses, &c.,—in Scotland, on the contrary, these buildings were scarcely to be met with (Trinity College Hospital, Edinburgh, lately pulled down, and Heriot's Hospital, being striking exceptions), the buildings generally being of a military or baronial character.

2nd. *Contrast in Material.*—Stone, in Scotland, is the material most generally obtainable, while in England, brick, flint, and timber, are no less generally used than stone: brick, and flint especially, are of rare occurrence in Scotland. There is, however, a marked contrast between the timber houses of Scotland and those of England, namely, that while in the former the stone wall will generally be found behind the timber framing, which projects a few feet, and forms a species of casing to the wall within; in England, the timber framing with its interstitial plaster is, as it were, constructional, and forms the sole enclosure of the front of the buildings, e.g. the houses in Coventry, Chester, Shrewsbury, &c.

3rd. *The Dates of the Architectural Remains.*—In England many buildings exist of as early a period as the thirteenth and fourteenth centuries, e.g. the Bishop's Palace at Wells, Somerset; the deaneries of Ely and Winchester; Sutton Courtenay and Chisleney, Berks; and the existing remains of the fifteenth and sixteenth centuries are everywhere numerous. In Scotland, however, few if any remains exist anterior to the fifteenth century, the very earliest of the timber houses in Edinburgh not dating earlier than 1479. There are two characteristics in Scottish architecture specially observable,—first, the almost complete absence of the Perpendicular; and secondly, the equally general adherence to French peculiarities, the style of the sixteenth and seventeenth centuries in Scotland differing altogether from that of England, the four-centred depressed arch being, in particular, entirely foreign to Scotland, and the wiry and meagre character of the late Perpendicular mouldings equally unknown. Differing, also, from England, is the longer-continued prevalence of one style in Scotland; for, whereas general forms and details were ever varying in England during the fourteenth, fifteenth, and sixteenth centuries, the Medieval type in Scotland would seem to have remained without sensible variation in its general features for a much longer period, and all the several phases of the style were much later in date than in England; and the localism, so to speak, of the peculiarities of many of the English examples is less observable in Scotland, a more general amalgamation of characteristics appearing to have obtained. The carved exterior woodwork, ornamental bargeboards, &c. of England, are of very rare occurrence in Scotland.

4th. *The Contrast of Detail.*—First, as to form of arch in England, the pointed arch, in all its varieties, from acute lancet to depressed four-centred, held undisputed sway from the thirteenth to the sixteenth century; whereas in Scotland the reverse appears to have been the case; and in domestic buildings any form but the pointed appears to have been adopted. Mr. Dollman referred to the drawings exhibited, where examples were to be found of semicircular-headed, segmental, ogee-headed, square-headed, and even semi-octagonal-headed doorways, but not one pointed example. The use of tracery in windows was but sparing, compared with England, and the employment of soft cusping continued to a later period in Scotland than in England. The employment of wooden sashers without glass in the lower lights of transomed windows is a feature peculiarly Scottish. The magnificent hooded fire-places of Scotland are a peculiar feature in their Medieval buildings, different from many in England (reference made to the drawings of those at Linlithgow, Borthwick, Dirlerton, &c.)—and the position of the Scotch examples, viz. at the end of the room, is different from the general custom, viz. at the side of the room, as in England.

5th. *The Contrast of Ornament.*—The iron work, too, exhibits a species of alternating interlacement (so to speak) of the stanchions and saddle bars,—a marked distinction from English work, and for strength and security apparently superior to the latter. In the profile mouldings, also, a great difference is observable, viz. while in England the working of the mouldings is the rectangular and chamfer planes of the buildings was chiefly to be found in Early English and Decorated, while in Perpendicular there was great preponderance of concave surfaces, the Scottish Medieval architects appear to have adhered to the convex treatment throughout the style; and the mouldings, less intricate and complex than in England, are generally bolder in execution, fewer in number, and simpler in treatment, and consist principally of bowtells, or alternate rolls and fillets and hollows.

In ornamental details the ball-flower is scarcely to be met with in Scotland,—a kind of approach to it, however, being observable in some of the hollows of the arch mouldings in Holyrood Chapel,—the ornaments more sparing than in England, and sometimes rather coarse in execution, the material, more especially in the north of Scotland, being unfavourable to minute decoration of this kind.

As inferior to English examples are to be noticed, first, the buttresses, which are generally heavy and inelegant, the sets-off or water tables being really all of one height and projection, and that very inconsiderable as contrasted with the exceedingly elegant and graceful forms so often to be met with in England. Secondly, the niches, in which there are often a squareness and heaviness in the canopies, altogether differing from the lightness and elegance of English examples. Thirdly, the adoption of a species of sham groining, occasionally to be met with where the ceiling consists merely of a continuous barrel vault with ribs laid aimlessly on, imitative of groining.

The reader also referred to the fragments of the ancient castle chapel of Edinburgh (not Queen Margaret's chapel, which was a distinct and isolated building), recently discovered among the walling of one of the barrack buildings, consisting of tracery, string courses, with ornamental carving, and a bonnet or stoup, all of which were clearly of ecclesiastical character, of the end of the fourteenth or beginning of the fifteenth century, and establishing beyond doubt the former existence of such a building, and setting at nought the conjecture advanced by Maitland the historian, as to the original chapel having been a parallelogram of no architectural pretensions; and even that of Daniel Wilson, the author of "Memorials of Edinburgh in the Olden Time," who assumes that, like Queen Margaret's chapel, it may have been of Norman design. He also proceeded to state the reasons of his conjecture that the barrack buildings where these remains were discovered were the original site of the chapel; and, in the event of any future restoration, he hoped the discovery of the remains might prove suggestive.

In conclusion, an opinion was expressed that Scottish architecture deserved far more investigation than had hitherto been devoted to the subject; and it was hoped that the increased and still increasing intercommunication between the two countries might tend to more enlarged and detailed study of the existing remains of Medieval Scottish architecture; in which hope we fully concur.

"TAYLOR AND CRESY."

In the paper recently read at the Institute of Architects on Roman antiquities, Mr. G. L. Taylor introduced some particulars, as we noted at the time, of his friend Mr. Cresy, with whom he had "walked" for above half a century. We have already printed a memoir of Mr. Cresy, to which Mr. Taylor referred; but our readers will not object to a few additional particulars:—

"My acquaintance with Edward Cresy," said Mr. Taylor, "commenced in 1808 by being school-fellows at Bromley in Kent, his native county (he having been born at Dartford, 7th May, 1792), since which time I have been in continual communion and fellowship with him, and therefore probably there are few, if any, who have known him better. I wish I were more competent to do justice to his memory. We then found ourselves together as fellow apprentices with Mr. Parkinson, architect, Ely-place, who, in addition to a general practice, was entrusted at that time with the laying out of the Portman estate.

While together in that capacity, I can vouch for his ardent desire to acquire a full knowledge of his profession. He was particularly fond of reading, and every shilling he could save from the liberal allowance of his parents was spent in books, and in that vein he continued till his death, when he had accumulated a very extensive and valuable library, especially in works of architecture and the fine arts; and a fine collection of drawings and models.

He not only possessed this library, but had read, and retained in his memory to the very last every line of every book, so that he might be called a walking dictionary of general information, and to be in his society was truly a great pleasure to those who could appreciate it.

His habit has been through life to illustrate

and explain every work, so that all his books are full of interleave annotations and illustrations, and all to the purpose.

After his apprenticeship he served other two years with Mr. G. Smith, of Mercers' Hall, and then undertook (in 1816) a walking tour of England, with his knapsack on his shoulders, for the purpose of studying his profession, by examining, drawing, and measuring the architectural edifices with which our own country abounds, and visited the greater part of the counties, east, north, midland, and west; he studied and drew every building of note that lies in a wide course, embracing, indeed, nearly the whole kingdom.* In this journey I accompanied him.

In 1817, 1818, and 1819, he undertook a tour, principally walking, of a more extensive character, viz. what is generally called 'The Grand Tour,' through France, Switzerland, Italy, and Greece, to Malta and Sicily, and back again by Italy and France home. He visited Beauvais, Amiens, Rheims, Paris, St. Denis, Chartres, Rouen, Caen, and other towns of Normandy; then down the Rhone to Lyons, Avignon, Nismes, Arles, Orange, &c. to Marseilles, on to Nice and Genoa, where he measured and drew several of the palaces; to the Gulf of Spezia on to Pisa, where he was specially attracted by the sister buildings, the Cathedral, Baptistery, Campanile, and Campo Santo, of which full measurements and drawings, 'en grès et en détail,' were made and published on his return to England.

He took a run to Florence, back to Pisa, and on to Rome. Arrived in Rome, he sallied forth, Desgodetz in hand, to feast his eye on the antiquities of the 'Eternal City.' He had pretty well read up his author, who tells us of the beauty of the Corinthian capitals, and that 'all are composed of acanthus leaves, &c. &c.' For 'acanthus leaves' he sought in vain, but found such variety and beauty in the foliage and ornament of the buildings, that at once he determined to give them all to the world in English measurements, and the foliage and ornament, in all their varieties, one-quarter of their real size! For this purpose the necessary permissions were obtained, and scaffolds erected in rotation to all the buildings, and taking Stuart as a guide, the folio work on the 'Antiquities of Rome' was produced, a work known to most architects.

On the arrival of the unhealthy season at Rome he left it for Naples, and proceeded on through Apulia to Bari and Otranto, across to Corfu, through Albania and Thessaly, and on to Athens, and visited the various remains of architecture in Greece and the Morea, returning by Malta to Sicily.

I need hardly say that in the whole of this tour I accompanied my friend, and we walked almost entirely.

In part we had the advantage of the company of the late John Saunders, a retired architect, and his artist Mr. Purser, and while in quarantine at Malta together, we mutually copied each other's drawings, as arranged.

From Sicily we returned to Rome to finish our labours. After completing the study of the antiquities, that of the revived architecture of Italy was undertaken, and among other buildings, St. Peter's was thoroughly measured and drawn, some of the plates were engraved, and two numbers of the 'Revived Architecture' were published, containing palaces, &c. in Genoa; but from want of encouragement, and occupations of a more business-like nature, it was discontinued.

Arrived again in England, we set ourselves to arrange the drawings, engravings, and descriptions for the work on Rome, and any one who has engaged in such a work will know that to produce 130 engravings, and the necessary letterpress for a folio work in two volumes, is no small task.

Soon after our return our friend John Britton was about commencing his 'History and Illustrations of Canterbury Cathedral.' We urged him to make the work more useful and interesting by engraving most of the plates from geometrical and architectural drawings, and made him the offer to devote, *con amore*, three or four weeks to the purpose, which offer was accepted, and the plates of that work will be found all from drawings and measurements by us, and Mr. Cattermole, the artist he employed."

* Cambridge, Ely, Peterborough, Stamford, Spalding, Crowland, Boston, Norwich, Lincoln, York, Sturteley Royal, Duncombe Park, Newcastle, Scarborough, Durham, Carlisle, The Lakes (Pleasure), Preston, Liverpool, Chester, Chepstow, Monmouth, Gloucester, Bristol, Bath, Exeter, Launceston, Truro, Salisbury, Winchester, and afterwards Canterbury and Rochester.



FORMATION AND ARRANGEMENT OF THE LIBRARY.

MR. JOHN LEIGHTON read a paper last week, at the Society of Arts, on the Library, books, and bindings, particularly with regard to their preservation. We avail ourselves of as much of it as space at command will permit. The library, said the reader, ought to be of good proportions—lofty, fire-proof, wellaired, lighted, and warmed, being furnished with due regard to the protection and preservation of its contents. The room best suited for this purpose is one on the first-floor, or above a vaulted chamber, having but one external wall, with windows facing the north, imparting an even steady light, without the glare of sunshine or heat, which parches and fades the colours of bindings and other contents.

The library should be surrounded by shelves, and if lofty, also by a gallery, for convenience of access; though, on no account, should the cases approach the ceiling, where in most rooms the air is hot and vitiated, as this tends to destroy, or rather impoverish, leather and other materials. The best and oldest plan of decoration above shelves is by busts, portraits of worthies, or trophies, agreeable to the eye and mind.

Mottoes and quotations, either upon cornices or entablatures, are pleasing incentives to study; as—

A WISE BOOK IS A TRUE FRIEND. ITS AUTHOR A PUBLIC BENEFACTOR.

BOOKS TEACH VS. TO REFINEMENT OVER PLEASURES WHEN YOUNG AND TO RECALL THEM WITH SATISFACTION WHEN OLD.

BOOKS ARE THE CHEAPEST ENTERTAINMENT AND THE MOST LASTING PLEASURES.

BOOKS ARE KIND FRIENDS. WE BENEFIT BY THEIR ADVICE AND THEY EXACT NO CONFESSIONS.

L'UNIVERS EST GOVERNÉ PAR LES LIVRES.

ANIMI PABULUM. ANIMI MEDICINA.

VN VOMO LETTERATO NE VAL DVE

CHI PIU SA E PADRON DEGLI ALTRI.

The lower or floor shelves of the library, next the ground, should contain folios and other large works, and may project rather more than 18 inches into the apartment, affording a ledge, about the height of an ordinary sideboard, on which to rest with comfort such quarto and octavo volumes as are in use—the space above which, under the gallery, being appropriated to quartos and works of every-day use, which it is well to have within reach of the hand,* or at least from the dwarf steps (contrivances that should be light, strong, and easily moved about, having the wheels or castors under the step portion alone, to prevent accident). The upper or gallery shelves would hold octavos and smaller works, of less frequent reference than the lower cases, the gallery being sufficiently wide to permit two persons to pass, having a light ledge or over-hanging desk on

* Shelves can easily be constructed within reach of the hand, about 7 feet from the floor; though in the British Museum and some other new libraries they are more than that. If the steps are to be used at all, then it is judicious to have the cases 9 or 10 feet high (as in the engraved elevation). If possible the shelves in every part of the library ought to be of one width, that the books, when necessary, may be transposed *en masse*.

which to rest the volumes, the floor being covered with felt, or some such substance, to deaden the sound in walking thereon.

In great public or private libraries most convenient and commodious cases may be erected, abutting into the apartment from the piers of windows, as they do not obstruct the light or air, and afford pleasant bays in which to study in quiet: at the Bodleian Library these compartments have gates, forming snug reading-rooms, from which the public are excluded. The library should be furnished with tables, covered with leather or cloth, having convenient drawers, also chairs—easy, without being luxurious,—portable desks and reading-cushions for heavy books, with metal mountings or bindings, that should never be introduced into the shelves with other volumes, as they would, by their protuberances, be likely to injure them: they may be put in the drawers of library tables, with thick glass tops, and thus be seen, whilst the tables afford space on which to place things in general. To complete the furniture, a few presses with sliding trays (somewhat as a wardrobe) for folios of prints, an ample screen or two, and a light waggon for transporting volumes, will be useful.

In constructing bookcases it is always well to think of the growth of a library, its ever-increasing population that must have lodgment, the time when increased accommodation must be obtained. In bookcases it is perhaps not well to have them in divisions of more than 4 feet wide, or deeper than royal quarto, on the upper tier; as small compartments are more compact, fewer volumes being disturbed when in use. "The Delphin Classics" is, perhaps, as long a set of books as we may have to legislate for, and these would only occupy about five shelves: the rack-work at the sides, for elevation and depression, ought to be sunk within the cheeks—so as not to encroach upon the book-space to their injury in sliding in and out; nor should the cheeks be so made that a volume may become hidden behind the pilasters



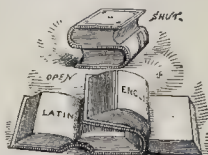
or heavy framing, as is sometimes the case, for then volumes get out of sight and out of mind. It is well to have shelves covered with leather, being rounded at the edge to prevent sharp scraping angles, and also strong enough to bear the weight imposed upon them. Strips of wood are sometimes inserted at the back of shelves, forming ledges to receive the volumes, making them range evenly. Blocks somewhat resembling thick volumes are useful for insertion to prevent the books falling on the sides, as they are apt to do when a few are subtracted.* The great difficulty of definitely stating the height of the shelves in all libraries, comes of the variety of sizes of printed books, from the ponderous folio of our forefathers to the pocket diamond classic that so persecuted the eyes of our fathers.

The covering of books in the library from dust, light, and intrusion, is somewhat difficult; for whilst that old-fashioned protector, chequered wire, kept out idle hands, it afforded no defence against bleaching, dirt, or vermin; and, moreover, was unsightly, rendering the titles on

the backs not easily read. The most economical method of partially defending books from dust, is by the affixing of small leather falls (some say cloth is the best) to come down over the heads of the books as they stand upon the shelves, and when the works fit their compartments this does pretty well, though a still better way is to have tannery or silken blinds, hung upon spring rollers, to draw down over the books during such periods as the library is not in use, or whilst cleaning.

A gentle hand in using a book will do it good, whilst a rough one is sure to do it harm. The library requires similar attention to the greenhouse—light, air, and equal moisture ought to be imparted to the leaves in either case—light without injury to colour, moisture without mildew, and air without soot. These things are as necessary to the librarian's as to the gardener's charge. Whilst upon the subject of dust, I would advise that the library carpet be swept there as little as possible. The best covering for a library-floor is a rich, but not bright, Turkey, that should in no case reach to the wall, but leave a margin round the room, on which the furniture may be placed whilst the carpet is removed entirely to be purified, a thing one would like to do with the chimney: great care should be taken in sweeping, and that smoke never be allowed to escape into the apartment.

The next important enemy to literature is damp—that great decomposer and discomposor of all things. Now, though a certain amount of humidity is necessary (as much as may be contained in a pleasant atmosphere), absolute damp is destruction. Rot! Damp, even from soft stone and ivy-coloured walls, is very injurious—especially where book-cases are placed against such external walls—and more particularly in closed cases, as the damp then has no such opportunities of escape. A library should never be constructed upon the ground-floor for that reason; and it is better, as I before mentioned, to have your library



enclosed upon three sides by offices or apartments; that is to say, upon such sides as the cases are placed, for paper is most susceptible of damp, particularly, as I am informed, when made with putrid size, and emits a mouldy smell long before

* There is always a difficulty in bookshelves, namely, that the books fit them either too tightly or too loosely: if tightly, the friction is great; if loosely, the volumes are apt to become soft—dust and bookworms finding freer entrance. What is wanted here is some sort of wedge to press them up compactly together.

decay or mildew is perceptible: when it is, the best method to avert ruin is to have every volume opened (where affected), leaf by leaf, in a warm dry room, page after page being wiped with a clean cloth.

Mr. Leighton spoke at some length on the modes of binding, and the most appropriate materials.

Dictionaries in two languages may be bound on the plan of "twin-binding"—the uniting of the two parts, back to fore-edge, in such a manner as to expose the page of English-Latin and Latin-English at the same moment. [See last sketch.]

Before taking leave of the library, a few remarks on sham doors may not be out of place,—those false contrivances that so delighted our forefathers, and without which at one time no library was thought complete, making the place a sort of man-trap in which to catch the unwary. Like all shams, dummy-doors are to be deprecated—unless, perhaps, if be in out-of-the-way corners, as coverings for closets; and then the titles of the works selected ought at once to indicate the fictitious nature of the spot. In the collections of the Duke of Devonshire, at Chatsworth, and the late Samuel Rogers, in London, these false backs were made the medium of much wit: instead of mock Miltons and spurious Shakespeares, tall Thompsons and short Spencers, fat Bacons and thin Longfellows, were to be found such books as "The Circle Squared," "Nebuchadnezzar on Grasses," "The Babylon Court Guide," "Sir C. Hutton on Dancing," "Canute on Tidal Waves," "Photographs of the Antients," &c.: these, with the titles of unwritten works of great authors, affording matter for thought.

The discussion which followed the reading of the paper, turned chiefly on the effects of the combustion of gas on the leather coverings of books. An enormous amount of injury has been done by it.

MR. SMIRKE'S LECTURES AT THE ROYAL ACADEMY.*

ORNAMENT.

I THINK I may advantageously use the present opportunity in laying before you some considerations on the subject of ornament, in its use and application to the purposes of architecture. It is very possible that there may be some who will count this a trivial subject, not calling for serious consideration or careful study. We, Englishmen, are, by the common admission of all Europe, a practical people: we not only admit this ourselves, but we glory in the character which that admission implies. It is our boast that we are a practical nation. This practical tendency is evident in all that pertains to us: it is evident in our legislation; in our political opinions; in our habits and mode of life: with us, it is the practical philosopher who ever finds the readiest sympathy and the loudest applause; nor is any purely scientific discovery ever duly appreciated in this country until its actual or probable application to some purpose of general utility has been clearly established.

It seems therefore natural, that in art, also, the same tendency should be found to distinguish us as a nation: we ever lean towards the useful in art; and in proportion as we so lean we feel an indifference towards, if not a positive distaste for, that which is purely ornamental; and I am afraid that I am too well justified in the suspicion, that to endeavour to cultivate a love of pure æsthetics among my countrymen would be in truth to strive against the stream,—a hopeless attempt to effect a revolution in what is fundamentally our national character.

It is true that there may prevail among us that variety of tastes which is common to all mankind; and many, no doubt, may be met with whose natural tendencies are not only favourable to ornament, but who have a passion for it, and are even ready to accept it in its most meretricious forms; but speaking of our average countrymen, I am satisfied that comparative simplicity—a very moderate indulgence in mere ornament—is that which is most in conformity with the mind and temperament of Englishmen. The consciousness of this disposition on the part of his spectators, and the sensibility of an architect to the shafts of a disparaging criticism, make him often timid in resorting to any decorative appliances which are not familiar to the public eye. Hence it is that the principles of design in ornament, which should regulate its use in our art, deserve your serious study, and demand the exercise of a nice judgment; for that which is used sparingly must needs be used rightly.

When simplicity generally prevails, every touch

* See pp. 107 and 133, ante.

of mere ornament becomes a marked and conspicuous object. It solicits notice, and is worse than worthless, unless it satisfies the eye. Certainly mere dexterity of design or facility of execution will never reconcile the ordinary English critic to what appears to him an excess in its use.

But a question here presents itself in *limine*.—What is ornament?

I have, on a former occasion, denied the dogma,—specious, indeed, but false,—that nothing can be beautiful that is not essentially and palpably useful. If it were so, we should be driven to admit that nothing can be ornamental that is not useful; for beauty is of the essence of ornament.

I think that, strictly speaking, ornament is specially contradistinguished from, though not repugnant to, the simple idea of utility. We have it, from an authority which within these walls must be received by all with respect, that art may be said to begin where utility ends. I think we may adopt that sentence with the change of a single word, and say that ornament begins where utility ends. Ornament seems to be something over and above and besides usefulness. Let me take a familiar illustration.

An ordinary pin will hold together effectually the folds of a garment, but it has no merit or claim beyond that of mere adequacy to its object. Place a diamond on the head of that pin, and at once, without diminishing its utility, you, by that simple addition, render it a brilliant and beautiful object,—in short, an ornament.

I shall, therefore, consider myself at liberty on the present occasion to dismiss all reference to utility, and regard ornament solely as something intended to give pleasure to the eye, without offending the dominant sense of usefulness.

I formerly took occasion to say that the pursuit of beauty in ornament is a dangerous pursuit, for it is too apt to lead to the serious error of regarding the study of ornament as a principal rather than as a subordinate and subsidiary study.

It would seem almost needless to point out so obvious an error; and yet, surely, when we read some modern disquisitions on architecture, we might readily be led to suppose that in acanthus leaves and trefoils, in crockets and in finials, lie the chief glory and value of our art, as if it were enough to "pay tythe of mint and anise and cummin, and have omitted the weightier matters of the law."

Still we must all be ready to admit the charm and value of ornament; and, to neglect the study of it, on the ground of its subordinate position when compared with the primary, more absolutely essential, objects in an architectural education, would be to commit as grave an error as that which I have just pointed out, of viewing ornament itself as of primary importance. Not only does it demand our own serious study, but it becomes us, as architects, to encourage the cultivation of the taste and knowledge of those who execute ornamental works. A great source of difficulty, practically felt in our art, is the comparative rudeness of any great ability, or of any artistic education, in that class. Much, I am aware, is being done to remedy this defect, and to place English art-workmen in a better relative position; and certainly it behoves us to promote these efforts by all the means in our power.

No such difficulties existed in the best days of art in Italy. The most accomplished artists readily lent their chisels or pencils to the execution of works that are now abandoned to far ruder and less skilled hands. Vasari relates of Donatello, the sculptor, whose works, in the estimation of his distinguished benefactor, and of the eminent critics of his age, resembled in grace and correctness the admirable works of the Greeks, more closely than the works of any other master;—Vasari relates, that whilst exercising his wonderful powers in works of highest importance, Donatello never hesitated to bestow his attention, when required, on works of even the smallest moment. He frequently, for example, executed armorial shields on chimney-pieces, and the like.

So far from having degraded his art by this condescension, it is said of him that he was the first, in modern times, who, by his knowledge, judgment, and practice, rendered the art of sculpture illustrious.

I need hardly remind you, upon what small objects the colossal genius of Benvenuto Cellini shed its lustre.

Numerous similar examples in that bright period of art, might be cited of men of highest professional rank, thus permitting the most humble objects of design to come within the scope of their genius; and I would respectfully invite—I would earnestly urge—the attention of our own eminent sculptors to the glorious example thus

set. Let them be assured that their art is rendered illustrious—not humbled—by such acts of condescension. They will thus follow in the path of those lights, in the literary world, who do not consider themselves ill-employed in diffusing their taste and knowledge among the humbler ranks of their hearers or readers.

The simplest forms to which the term ornament can be properly applied, are mouldings; but, simple as they are, they are of vital importance to architecture.

By a careful regard to their contour,—by their breadth or minuteness,—by their multiplicity or by the sparing use of them,—by their boldness or their flatness, mouldings go far to mark and determine the character of a work. They are of highest value, by their unobtrusive yet clearly defined lines, in emphasizing any portion of a design. The history of our art may almost be said to be read in its mouldings. In its infancy the builders of the East knew hardly more than the bead, the hollow, and the fillet. It was reserved for the Greeks to refine upon these simple and rude elements. As in the highest efforts of sculpture, so in these subordinate Masonic details, a refinement was by them attained, which no succeeding age has ever reached, or been capable, I might truly say, of fully appreciating. Perhaps it would be difficult to point to a more striking evidence of the wonderful æsthetic cultivation of the Greek mind than the exquisite delicacy of their mouldings. Roman masons multiplied forms, but were indifferent to, perhaps wholly unacquainted with, the niceties of their far more fastidious teachers.

Then succeeded the metempsychosis of art: in its new birth architecture reverted to a few rude forms of mouldings: as it had been 1,000 years before, so now the torus or bead, the hollow, and the fillet, with a few rude notches and plays, almost sufficed for the simple wants of earliest Mediæval art. As that art advanced, however, the chiroscuro of its mouldings seems to have commanded great attention; but the very forcible effect that was so studiously sought was attained in the Early Pointed era, without any great multiplicity or variety of contours. The wonderful facility of execution attained by the masons of the following epoch led them rather to luxuriate in carving than in the simpler effects obtainable by mere plain mouldings. There was, however, far more refinement in their outlines than previously, such as the slight hollowing of the flat faces of their fillets, in order to produce more strongly pronounced lines and sharper angles. The curve of double flexure, or ogee, was also at this period revived, and it added greatly to the variety and delicacy of shadows, although not to their force. As Mediæval architecture waned, its mouldings lost their vigour,—became thinner and poorer in effect. I feel, however, bound to admit my belief that this decadence is more observable in England than on the Continent. A comparison of the French with the English mouldings of the fifteenth century would, I fear, be very much to the disparagement of our own work. Besides varying the contour of mouldings, architecture soon found her account in calling in the aid of the sister arts, in giving force and interest to mouldings: first they were painted, and then builders learnt to carve them.

I do not know that there are any examples remaining, in early Egyptian and Assyrian buildings, of carved or enriched mouldings; but it is very certain that they were abundantly painted. Both modes of enrichment were resorted to by the Greeks, but probably it was only in the more advanced state of the art that mouldings became habitually enriched. Nor was it till the period of Roman ascendancy that mouldings were carved with enrichments, otherwise than tenderly, and as it were timidly. A reference to the numerous examples of Greek mouldings contained in the British Museum will satisfy you that mouldings, remote even from the eye, were carved with slight emboss, and generally with very moderate under-cutting.

This forbearance, however, arose—not from timidity, but rather from refinement, and from that ardent attention ever paid by Greek sculptors to breadth—a quality which, perhaps, more than any other, distinguishes true Greek art in all its phases.

No such fastidiousness restrained the Roman carver. Extreme boldness and forcible expression characterize all their carved mouldings. A depth of under-cutting, and a vigorous chiroscuro, which to earlier classical times were wholly unknown, became the distinguishing feature of Roman carved mouldings.

It is curious, but scarcely profitable, to mark

the attempts at enriched mouldings during the ignorant ages that succeeded. As I have said, the history of our art may be read in its mouldings, and this truth strikes one with great force when examining the enrichments of that singular monument—the tomb of Theodorici. If all history were lost, we should still be able, in the mouldings of this powerful monarch's age, to infer the ravages of barbarian hordes, and the extinction of the civilizing arts.

As time wore on, mouldings came gradually to be enriched with somewhat more intelligence, and better effect, although still very sparingly, at Ravenna, in Lombardy, and subsequently on the banks of the Rhine, surviving examples show that mouldings continued comparatively simple, and moderately enriched. The string-courses were usually flat faces, retaining a strong savour of the classic type, and the jambs of openings were most commonly relieved rather by square rebates than by carved enrichments. At San Ambrogio, at Milan, much remains of this early age, and of all the arches forming the atrium of that basilica: that, only, has carvings on its jambs which forms the central, principal entrance.

It appears to have been chiefly in the north of France, and in England, where the masonic art distinguished itself with renovated force and vigour. There, rudely but boldly, the inventive talent of the carvers showed itself in an infinite variety of ornament, with which they overlaid all their mouldings. This exuberance seems to have been checked and refined as art improved, and in the best Medieval times emphasis was sought to be given to mouldings rather by forcible light and shadow than by excessive carving.

This comparative plainness of mouldings may, however, have been much promoted by the growing fashion of painting them, which culminated in those gorgeous displays of colour and gilding,—displays that shone out so resplendently in our own St. Stephen's Chapel, and previously at Assisi, and at the Ste. Chapelle, in Paris, where, although probably not one moulding was superficially carved, yet all were certainly stencilled and painted over in gold and colours.

On looking back upon the successive attempts to add ornament to architectural details, we shall perceive that, of enriched mouldings, those usually are the most successful which best retain their original motif or contour.

In this respect a marked difference exists between carved mouldings and most other kinds of carving. In the latter case one of the greatest faults that a carver can commit is to betray the form of the original block or log out of which his work is carved. If we can trace the outline of the parent stock, then a stiff, restrained, artificial character is sure to be impressed upon the object, which is destructive of freedom and grace, and of the higher qualities of the sculptor's art. On the contrary, when mere mouldings are carved (and perhaps we may hereafter have occasion to see that the remark applies to some few other architectural features), the eye is best pleased when the traces of their construction, as it were, remains unobliterated.

It is time that I should quit this subject of mouldings: to pursue it further would, perhaps, be more suitable for the schools than for the present occasion. I would, therefore, conclude these remarks by warning you of the very great importance of these apparently trifling details, as affording a very significant means of expression, and as being, in some sort, the language of architecture.

Let us now rise to the more conspicuous objects of ornamentation. I have, on a former occasion, submitted my views as to the application of natural forms to the purpose of architectural embellishment. Whether nature is to be literally and exactly copied, or whether the artist is to be permitted to conventionalize, that is, to depart from truth, in order to attain certain artistic effects, has been a fruitful subject of literary litigation: some idealists will claim the highest rank for those whose departure from nature is the widest, and who have adopted conventional forms for natural objects, until scarcely a trace of organic existence remains; whilst others uphold nature as their sole divinity, and would have us literally to repeat her exact forms as we see them expanding under the influence of the sun; and, if the leaves and blossoms look like real leaves and blossoms, they seem to regard the sculptor as having best fulfilled his mission. The question is too large a question to be gone into here: it is, I must say, one that has ever appeared to me to be by no means easy of solution.

There is, however, an argument against the doctrine of a strict reproduction of nature, which

seems to me sufficient of itself to dispose of the question, so far as regards architectural ornament; namely, that such really and strictly exact reproduction is never practically possible, even supposing it to be desirable. The ability of the sculptor to represent foliage is in truth very limited. It is obviously quite beyond his power to represent the minute subtleties of Nature; her downy, her pulpy, or her glossy surfaces; those filaments, and spicula, and silken cords, with which Nature dresses out her commonest productions, and without which she is most inadequately represented. These are all niceties, quite inaccessible to the carver's or the modeller's art; yet half the beauty of the vegetable world, exclusive of colour, lies in these attributes. It is clear, therefore, that, strictly speaking, some departure from exact resemblance, and, *pro tanto*, a conventional treatment of nature, is a practical necessity. I would venture to add, that were it even possible to realize in stone all these subtleties of shape and texture, it would be but an imperfect and impotent attempt. It would be but an imitation in form and not substance. The want of the transparency of nature, and above all the want of the colour of nature, would still leave the sculptor's art immeasurably behind her.

We must then be satisfied to follow at a respectful distance, and retire from the attempt to conceal the fact that we are working, not in vegetable tissues, but in marble, stone, or clay; and when we desire to represent the vegetable world, let us honestly adapt the beautiful shapes that Nature so lavishly spreads before us, to the gross materials we work in.

Such was the aim of the great artists of antiquity, and such was the aim, too, in Medieval art, in what I believe to have been its best days. No doubt it must be broadly admitted that Classic artists conventionalised their foliage more boldly than those of later times have done.

The Medieval artist did not, it is true, hesitate to depart from natural types when the exigencies of his art called for it; but he certainly showed a greater desire to imitate nature when he could; and this he often did with admirable effect.

The Greek appears indeed to have studiously avoided a naturalistic treatment of his subject; whilst the so-called Goth rather cultivated it. We can hardly find in the thirteenth century so wide a departure from any known natural production as the volute of an Ionic capital. On the other hand, in no work of high classic art can we find those trivial or grotesque sallies into which the naturalistic tendencies of the Middle Ages were apt to lead their sculptors; such as lively squirrels nibbling the nuts of a very conscientiously copied hazel tree, or a monk in his cowl, baggiping amidst the foliage that adorns the capital or the corbel of some solemn sanctuary. The Greeks outraged nature, it is true, by introducing in their designs strange mythic beings, some monstrous compound of man, beast, bird, or vegetable (which indeed was warranted to some extent by the current mythology); but the builders of our ecclesiastical structures would often profane the temple of the true God by the capricious introduction of buffoonery and bêtises, for which no rational excuse can be found. It may be urged, perhaps, that these were but the *jeux d'esprit* of mechanical skill; but, speaking in the interest of architecture, it is certainly the clear duty of the architect to exclude from his decorative details all those ebullitions of fancy which are alike offensive to taste and at variance with the general tone and specific purpose of the building. Nor do we consult the dignity or support the unsullied character of our art in screening from blame, still more in imitating, that which is mean, or ludicrous, or not seldom worse. Let it be the aim and honour of the nineteenth century, when we are searching so diligently amidst the relics of past times, whether of heathendom or Christendom, to exercise a sound judgment in rejecting every ignoble or vicious habit or attribute of antiquity, seeking out and selecting that which is pure, and wholesome, and of good report, as alone worthy to be the object of our study.

I think that on a retrospect of the progress of decorative art, we shall perceive very plainly that it has ever followed the fate of high art. The age of the Elgin marbles is the age of the best Greek foliage, and the same period that was distinguished by the grandest productions of the sculptor's genius was also the period when mouldings were best carved, and when frets were most artistically designed. As sculptors became less fastidious, and innumerable statues and busts were executed in a less refined, or more mechanical spirit, the architectural carver, *pari passu*, followed with a careless, undiscriminating facility,

over-abundant in quantity, but destitute of delicacy or refinement. In the public buildings of the empire the eye is fatigued by the exuberance of ornament, yet seeks in vain for the beauty of previous ages. So, in the other great epoch of art, the sculpture which was pronounced by Flaxman (in this Academy) as vying with the best ages of antique art, was accompanied by architectural ornament which by common consent is pronounced the best and purest of Medieval work. The age of the Cinque Centists still illustrates this correspondence. Michelangelo and Benvenuto Cellini were contemporaries; the one the prince of sculptors, the other an unequalled genius in the invention and execution of ornament.

In the course of the observations which it remains for me to make to you on this subject, I shall refer to various prominent examples afforded by each of these epochs. In doing so, I think it will be most convenient to class ornament under three different heads.

1st. Ornamental subjects that have, or appear to have, a direct practical utility.

2nd. Purely æsthetic ornament, laying no claim to any practical character.

3rd. Ornaments designed with a view to impress a particular specific character on the work so ornamented.

Prominently among those architectural features that are at once an ornament, and of direct practical utility, we certainly are justified in classing columns. They are least entitled to claim the character of practical usefulness when placed, as they are wont to be in Medieval architecture, as slender cylinders inserted into the angles or rebates of a pier; for certainly the ribs that spring from them are usually found to stand just as well after these shafts are decayed or removed, as before; but they have at least apparent utility, and perhaps that should suffice for an artist, although it may not satisfy the hypercritical utilitarian. There is a well-known (although not very intelligible) passage in Cassiodorus,* which has led many to surmise that the extravagantly slender shafts, so essentially Medieval in their character, had previously found their origin in those quasi-classic times.

It is true, also, that we see, even so far back as in the frescoes of Pompeii and Herculaneum, pillars depicted of an excessive tenacity; and it is certainly possible that such pillars may have existed, notwithstanding the total absence of any surviving remains, for such absence might obviously be accounted for by the perishable nature of such works. It is, however, more probable, I think, that these fantastic pieces of fairy architecture were but the *jeux d'esprit* of the painter; and that the words of Cassiodorus somewhat loosely express the general resemblance of classical fluted shafts to clusters of spears; that, in fact, these words were but a rhetorical flourish, expressive generally of his admiration of the wonderful works he had witnessed at Rome, and little anticipating that many centuries later his extravagant description would be literally realized.

To discuss the proportions that various masters have at various periods given to this important feature in the architecture of all styles, would be to enter upon a subject that might well occupy a whole evening; but a methodical study of these proportions, although very essential for the young architect, seems scarcely suited for these brief lectures.

The aim of builders in primitive times seems to have been to see how they could form their work so as to give it the greatest possible durability; whilst their aim in subsequent ages was to determine how far they might venture to sacrifice power to grace, and ultimately, in still later times, by the use of harder and stronger materials, for their shafts, than that used in the rest of the building (sometimes, too, relieving them of their burthen, by building the capitals into the adjacent masonry, so making them act as corbels rather than as capitals). Medieval masons succeeded in giving to their columns the reed-like proportions described in anticipation by the Gothic historian.

It was then that the novel and artistic device suggested itself of concealing, as it were, the extreme tenacity of these shafts by interrupting them at intervals on their height by bands, which, whilst they deceived the eye, and ren-

* "Need I speak of those lofty, reed-like columns? of these massive, sublime structures, supported, as it were, upon erect spears (or shafts of spears); and by the quality of the material, and hollowed out in channels, so that you would suppose them to be rather cast in moulds; and would think that to be modelled in wax which you find on inspection to be formed of the hardest materials, and would say that the joints of the blocks of marble were natural veins in them," &c.

dered their extreme slenderness less obvious, were also capable of giving real stability to the pillars; for these bands are, like the capitals, often, perhaps usually, tailed into the adjacent masonry, thus tying them to the pier or wall behind them, and so giving them a stability which they otherwise would not possess.

At all periods of our art the capital of these pillars has ever been an especial object of design. Into a consideration of the Classic types, we will not now go; the field, perhaps, is well nigh exhausted. But it may be profitable to inquire into the causes of those changes that from time to time have taken place in the column capital.*

POLYCHROMY IN SCULPTURE, OR COLOURING STATUES.

PROFESSOR WESTMACOTT, R.A. read a paper on this subject at the Society of Arts, on Wednesday evening last, wherein he reiterated the views he has before expressed, on more occasions than one, on the subject; the objections he entertains to the modern revival of the practice; and his doubts that it was usual in the best period of sculpture. The lecturer inquired,—“What are the objects proposed to be attained by painting or colouring sculpture?”

1. Is it to render the imitation more close to nature?
2. Is it to attract attention?
3. Is it to gratify the sense by adventitious decoration?
4. Is it to give distinctness to the parts of a work when viewed from a distance?

All these several questions deserve our attention. First, with respect to close imitation.

It scarcely can be necessary to state, to persons of any intelligence in art, that it is a radical error to suppose that it is in the province of the painter or the sculptor to effect an exact imitation; that is, such imitation as shall produce illusion. All know that, in many respects, this is impossible in sculpture. In others, where it is possible, the *fac simile* representation of inferior objects, such as veils, napkins, the stuffs and materials of drapery, is, as all practical sculptors know, simply the work of a careful carver.

It may not be out of place to state the principle by which the sculptor is, or should be governed in this respect. It has been stated that there are certain objects in nature which do not admit of being exactly imitated in sculpture. This is undeniable; but even if it were possible to carry the imitation of that which is the highest object of the artist's study, namely, the human figure, to such perfection as to induce the belief that it was real, that, to any one entering a sculpture gallery, the figures should so closely resemble nature that, at first sight, they should appear to be living men and women standing on pedestals, would not the achievement cause a very disagreeable impression? Undoubtedly it would. At present, the lover and admirer of art is gratified by the contemplation of a fine and successful work of art, as a work of art. His imagination supplies all that is wanting, and he does not ask or expect that his senses shall be deceived. Nay, the moment he could bring himself to look at it as a positive and exact imitation of a human figure, the hair, the eyes, the lips, the nails, every part coloured and tinted like life, but without life, he would be more disposed to shrink from than admire it. It is easy to imagine the feeling with which we should contemplate such well-known works as the Apollo, the group of Laocoon and his Sons, the Farnese Hercules, the Fighting or Dying Gladiator, and other admired statues so treated. Even such a near approximation to reality as is afforded by wax-work exhibitions, is anything but pleasing to the generality of people, and especially persons of taste in art, though they may be amused by the talent and ingenuity shown in thus producing resemblances. It is not intended to insult legitimate sculpture by a comparison with bad common-place wax-work figures, but, in all fairness, to take the best that could be produced. Even if they could be the productions of first-rate artists, the argument would equally apply. The dissatisfaction felt in this case is to be accounted for on a perfectly intelligible principle. The reason for it is, that wax-work approaches too near to nature to be agreeable as art; and yet it is not near enough, or true enough, to nature—nor can it ever be so—to make us forget it is art. There is no reason to believe that true Greek sculpture of a good period ever fell so low in taste as to have a school of close imitators of

the kind alluded to, or that the introduction of colour on marble statues had any such object.”

He then alluded to the painted monumental figures still existing in many of our churches. They are chiefly of the sixteenth and seventeenth centuries, though the practice prevailed in the earliest period of such monuments. “Probably, as they are of modern date, no value whatever will be allowed them; but had any figures or fragments resembling them been dug up in Greece or Asia Minor, there can be little doubt, judging from the examples that have been quoted, they would have been hailed by the Polychromists as invaluable specimens of the practice, and triumphantly adduced as authority for its reintroduction. And how do these affect us considered as works of art? Are not the best of them more suggestive of the toy-shop than the sculptor's studio? Among our obligations to the committee of artists who have so carefully arranged the various courts at the Crystal Palace at Sydenham must be noted, especially, the opportunity they have afforded the public of judging of the effect of the employment of colour in sculpture and architecture respectively. Upon its applicability to the latter art it is not necessary here to offer any remark. Polychromy in architecture has received full attention, and has been most ably discussed by many eminent writers. But where painting has been applied to insulated sculpture (for the frieze of the Parthenon must be so considered as it is here presented to us), it surely is not asserting too much to say the bad effect it produces is quite enough to insure its unqualified condemnation. The experiment here made of the light blue background only, with the *relievi* left in raw white upon them, is sufficiently unsatisfactory; but the grey, white, black, and brown hues, and their flesh-coloured riders, with their gilded heads of hair, all so admirable and so perfect in their simple art, are here degraded into tawdry toys. It is remarkable, also, that the figures appear now to have lost their symmetry, and the composition its unity, while all the finer qualities of detail in which they abound are entirely obscured. By far the most successful works of the kind are to be met with in Spain, where statues, as large as life and represented in action, are to be seen painted with the utmost care and finish. It is known that, while this taste prevailed, sculptors laboured to acquire all the skill of the best painters, that they might themselves execute this adventitious work, and thus insure all the pictorial effect possible to their statues. As the artists of the time, the sixteenth century, were amongst the most able that Spain has produced—as Cano, Montanes, Hernandez—these performances far surpass anything of the kind found in other countries, and the effect they produce at first sight is described by those who have seen them as perfectly startling. But, while giving them all due credit for the peculiar excellence they exhibit, several accomplished writers on Spanish art have not hesitated to record their unqualified condemnation of the practice, as opposed to all true principles of sculpture. But, to show the extent to which the enthusiasm and the determination to support any favourite theory may be carried, the ingenious author of a well-known treatise on Polychromy says,—“Si une figure coloriée avec art et avec goût ne fait pas bien, c'est la sculpture qui en défaut et non pas la polychromie.” This is taking a somewhat unusual view of the position that sculpture might be supposed to hold in the question.”

He believed that sculpture coloured lost its distinctive or special character. “It was a portion of an architectural effect. Colouring, we know, was extensively employed in architectural decoration, and when the sculptor was called upon to act in combination with the architect, his work, no doubt, was subject to the same laws of treatment as other parts of the composition. He placed his groups in the pediment with its enriched coloured mouldings against a background, sometimes painted blue—perhaps to imitate the sky, but quite as likely merely to give increased distinctness and relief to his figures. He further increased their effect, as portions of a general design, with gilding and other accessories, and, no doubt, also sometimes with colour. But in all this, his object was to make his sculpture assist the whole effect. In short, it became necessary to adapt the sculptures, in colour and in finery, to the objects around them; so that in fact, as we are now considering it, instead of a principal it became a subordinate and only ministerial accessory.”

As additional grounds for discountenancing the practice, Mr. Westmacott urged that it would prevent the multiplication of favourite works by casting, and, further, would tend to a senuous treatment of subjects calculated to be injurious,

“The lessons of history should not be read in vain. Sculptors should strive not to allow their art to degenerate into a possible means of corruption. They must know how very few who contemplate undraped statues can have the necessary knowledge to form anything like an accurate judgment upon their merit, their truth, and the higher technical qualities of the art, and, consequently, that such works can usually only address the sense, and not the understanding. They, as guardians of, and caterers to, the public taste, should avoid and protest against any innovations which, by possibility, may have a tendency to deprave that taste, or to lower the high standard of art.”

In the discussion which followed the reading of the paper,—Mr. John Bell concurred in Mr. Westmacott's views, with an evidence, drawn from the well-known story of the Venus of Cnidus by Praxiteles, that, at any rate, all the finest statues of antiquity were not painted. The Dean of Westminster (who was in the chair) also agreed with the lecturer, and urged that the remains of statues with paint upon them, found by the moderns, were those that had formed part of the architecture, and afforded no proof that sculpture, *per se*, was painted by the ancient masters. Professor Donaldson differed altogether from Mr. Westmacott, maintaining not simply that the evidence in favour of the belief that the ancients painted their finest work was clear, but that sculpture was greatly improved by colours,—was made a closer representation of what it professed to be, and that a revival of the practice was desirable. With which view Mr. J. G. Grace coincided, and made some remarks on the way in which colour should be applied. It was admitted that the frieze of the Parthenon, as painted at the Crystal Palace, was a failure through being of plaster; and that before long a work in marble would probably be subjected to the process. Mr. Westmacott, in reply to a vote of thanks moved by the Dean, maintained that nothing had been said to touch his argument, and the meeting, which was a very full one, broke up. Should an opportunity occur, we shall return to that part of the subject which more concerns us to-day than any further discussion of the meaning of *circumlatio*, viz. the desirability, or otherwise, of the practice now. That the Greeks did paint some of their statues is undeniable, and not worth further talk. The statue painters are distinctly spoken of by Plato and by Plutarch. What we have yet to settle is, ought we to follow their example?

VENICE.*

THE photograph 128, the canopy over the door of S. Stefano, will enable you to understand the detail of this Venetian Gothic. This is said to have been built in 1325; but I doubt its being so early in date, and can see but little to admire in it, and nothing to imitate. The enormously exaggerated crockets are very characteristic, and the details will show you by how very little this work is removed from Renaissance.

In the absence of any illustrations of other churches, I must omit all further reference to their peculiarities, and to the general condition of the Gothic domestic remains, which are, after all, by far the most numerous and valuable relics in Venice, and of so much importance that they ought not to be left to the rag end of a hurried lecture.

It is almost impossible to exaggerate the interest which any one who cares about Gothic architecture must feel in this part of his recollections of Venice. I know no other large city which is so full of Medieval remains. Nuremberg, Lubeck, Rouen, and Cologne are full of interest for the examples of domestic architecture which they contain; but they have generally some two or three examples only remaining in each of real architectural value, the remainder being mainly picturesque fragments, very pretty ornaments for a sketch-book, but of small value for architectural study. In Venice, on the contrary, if you go quietly in and out, following the many windings of the canals, you find the Medieval palaces occurring so often, that you almost cease to count them, and without a long acquaintance with them you are quite unable to recollect the particular family names by which they are all distinguished from one another. Then, if you leave the gondola and tread your way through the narrow passages between the houses, you come now upon an old window, then on a perfect old house, and frequently on the side of some small piazza, upon a group of three or four together; and every one of these many examples has its separate and peculiar value.

The ducal palace is, of course, first in interest, as in scale, of all the buildings of its class in Venice. The photographs which we have here explain all its prominent features, but I trust fully that in future years we shall have on these walls illustrations of the sculpture which adorns the capitals throughout the buildings.

The palace forms three sides of a square; but the portions of most interest, and of which we have the fullest illustration, are the two external fronts facing respectively towards the water and towards the piazza of S. Mark. I need not describe what you already all know so well: suffice it to say that the whole of the lower order of capitals are sculptured with foliage and figures, illustrative of the lives, vices, animals, lions, emperors, planets, and other subjects, which have been elaborately described by Mr. Ruskin, and again by M. Didron and Mr. Burges, in the “*Annales Archéologiques*,” and that the sculpture of the ten or eleven nearest S. Mark's in the front towards the Piazzetta, appears to be, to a considerable

* To be continued.

* See p. 146, ante.

extent, a repetition of that in the water front, and executed at a somewhat later date. The three angels are decorated by additional sculpture above the capitals, illustrating respectively the three archangels, and below them three objects, "The Drunkenness of Noah," "The Fall," and "The Judgment of Solomon." The latter shows evidence, in its detail, that it is not far removed in date from the time of such a man as Donatello, whilst we know that the work at the opposite angle must have been completed, to say the least, a great many years earlier.

There are certain dates of parts of the work so far fixed that we may depend upon them. The building was commenced about 1301, and probably near the south-east angle. The capital next to the south-west angle still bears the date 1344. The large window in the sea façade bears the date 1404, and the council sat in their great council chamber for the first time in 1423; whilst the *Porta della Corte* (photograph 146) was built in 1430-41.

You will notice in the sea façade that two windows to the right differ from the others, and that the five arches below them are blocked up, and on the piazzetta façade you will find that the seventh column from the angle is longer than the others, and about as large as the other angle shafts. These peculiarities mark on the outside the position of the internal walls, and at the same time the points of junction of the work of different years, and serve, too, to diversify the front in an agreeable manner.

There is another authority on the subject of the palace in the fourteenth century, which cannot be overlooked: this is a view in an illuminated MS. in the Bodleian Library—"The Romance of Alexander." The view was, no doubt, drawn by some one who had been at Venice, and represents the church, palace, sea, and the two columns of the Piazza San Marco as they might be expected. The important fact is, that he represents the ducal palace as a building of two stages in height, the lower a simple arcade, and the upper an arcade of cusped arches, and that he represents a greater number of these arches in the piazza front than on the side front, while he ignores altogether the upper stage of the whole building.

Finally, there was a great fire in 1419, which damaged the old portion of the building so much, that a decree was passed to rebuild it in conformity with the rest, and this work was commenced in A.D. 1424.

With these authorities, which I obtain mainly from the "Stones of Venice," I should arrange the dates of the building in this way.

The whole of the two lower stages of the sea front, and the first six arches of the Piazzetta, were probably built between 1309 and 1350; and the building was in this state when, some time in the fourteenth century, the Bodleian illuminator saw it.

In 1340 a decree was passed, commanding a new council chamber to be built. And I have no doubt that it was between this period and 1423, in which year the council-chamber was first used, that the whole of the upper stage was added, as far as the centre of the Piazzetta front; whilst the rest was completed in imitation of the earlier work, between the years 1424 and 1439. We may be sure of this, that the whole of the palace, we now see, must have been completed before the Porta della Carta (i.e. before 1439), with which, in some points, such as the diapering of the upper surface with marbles, and the quaint ornament it exactly coincides.

The sculpture would all agree very well with these dates, for though that on the north-west angle is no doubt later than the rest, it is impossible to say, from its style of execution and from the character of the armour and draperies, that it is later than the first quarter of the fifteenth century.

I am inclined also to think that the whole exterior of the upper portion of the building was cased with marble, and furnished with its windows just about the last thing of all.

I trust I have now made the dates of this noble building clear. I ought to apologize for detaining you upon them, when our business is rather with the work itself than with the dates. I have no instance any building which, from the simple reiteration of a single type, has produced, and over again in successive bays, produces a more grand architectural effect. The Townhall at Ypres comes nearer to this than any other I know; and though it is not so vast, it wants very much the fine open space which the Cathedral has, and altogether the sculptured enrichments, it has the great advantage of a vast and very steep expanse of sky, which is a thing of itself. The sculpture of the capitals must be studied in detail and appreciated: much of it is very fine, but not equal in architectural excellence to the earlier sculpture of the Cathedral. The columns are not so well suffered somewhat by time. The bases of the columns are obscured by the gradual rise of the soil, and the suffered sculpture marbles in geometrical patterns which probably fill the mind with a sense of the great arcade, and I think two eyes are now lost on the sea front.

The marble face to the upper stage is not thoroughly pleasing. It looks too much like brickwork; but it has the advantage of being part of the structure of the wall, and not, as at St. Mark's, a mere veneering. The only other palace in which I remember the same pattern being used is one of very late Gothic date.

The photographs 138, 139, 140, 145, 148, 151, 154, give the different portions of this building with such accuracy as to make further description superfluous. We have, in addition, photographs of some of the most noteworthy of the other palaces.

Such a large space, are the Focareai and Giustiniani palaces (Photograph, 146). The latter shows the brick face of the wall. These form part of the largest Gothic group on the Grand Canal, consisting of three palaces of the same general type, with, as you will see, a water door, and a small central window. The latter is a central window with smaller windows on either side very regularly planned. This arrangement was directly derived from that of the Romanesque palaces, in which the central window is invariably marked, but, on the other hand, the increase in height, the absence of the open arcade on the ground or water-stage, are Gothic variations from the older type. The front of S. Maria della Salute is a good example here, in the fourteenth century, almost the only difference is, that the shafts have small trefoiled openings instead of them in a place of simple round arches, whilst their upper part is carved in a way, which was reserved for the architect of the houses of the Ca' Fasan, to introduce traceries into balconies in the end of the fifteenth century. His device was an emblem of the Venetian Republic, and for the place shafts are fitted. These houses extend for the place as shafts in the court, in the staircase, whilst the ceilings consist

of moulded beams, supported where necessary by shafts. The Ca' d'Oro (No. 148) is another house of great interest, though it has been damaged by alterations. In one other palace you may have seen that each window was placed within a square line of dentil moulding, which separated it from the field of brickwork, the space enclosed being generally filled in with marble. Here, however, every portion of the wall is faced with marble, whilst the lower stage imitates the earlier buildings, in that it opens to the water with an arcade of five arches. It is difficult to assign any date to the dates of these buildings; but the arcade certainly looks to be like a Venetian work, and, whilst the rest is probably circa 1350-1400. The parapet is very picturesque, but it has been greatly damaged in restoration.

It may give you some idea of the number of Gothic houses here when I tell you that to the right of the Ca' d'Oro the next three houses are Gothic,—that next to it having, however, been spolied by a very recent restoration, which dealt largely in green paint. The parapet of the Palazzo Foscari is a very regularly raised brick, but the usual finish of Venetian walls—the moulded eaves cornice (often adorned with dog-tooth), supported on corbels; and the roofs are almost always of flat pitch, and hipped. Another feature of many of the Venetian palaces is the angle shaft. You see this treated quite differently in the Palazzo Foscari and the Palazzo next to the Ca' Grimani (No. 19), which, however, is of the 16th century, and in the Foscari and Giustiniani palaces (146). It is generally quinned regularly into the building with long and short quins. Later examples usually have detached shafts, twisted and held to the wall by occasional spiral bands. You see the angles of the upper stage of the Ducal Palace (No. 139) the same. In the Palazzo, you see another Palazzo Cavalli. In No. 365 (on screen), the same palace is given, and this photograph is valuable, as giving the traceries of the windows unobscured by some abominable blinds which have been put across them just

where they do most damage, as you will see on the other photographs. The photographs of the lions from the entrance to the Arsenal ought not to be forgotten. I saw them at their date, but they have inscriptions on them which I do not like. Their characters, I need hardly say more of them than that they are certainly savagely quiet dignity, which is refreshing when compared with some modern beasts. It is true they are not too much like lions; but if you were to put them alongside of some lions not long ago placed to keep guard on a sloping coping on each side of the cathedral steps at Genoa, I think you would prefer the quaint magnificence of these to the miserable modernism of the others.

I believe I have now said something of all the photographs which we have here at all illustrative of Veretian Gothic or Mediaeval architecture. But before I finish, I may venture to tax your patience any longer, it may be as well to say a few words as to the special value of these photographs, and the things they represent. This consists mainly in the fact that they are photographs adapted to serve as the foundations on which to build our nineteenth-century style of domestic architecture for such cities as this. You must, I think, see how completely such façades as theirs lend themselves to all our requirements. The windows are large, wide, and numerous. The fronts are regular if it be necessary, and, with equally good results, irregular.

its irregularities that was the more convenient course. In no way un-English, as those who have been to the museum at Oxford will at once allow. Nor can I refrain from expressing my astonishment that some members of the Society, who are not only men of letters but architects, should have ventured to rise a few nights ago, and to discuss and assert that in advocating the use of Medieval architecture for the new Foreign and other Government buildings, the Government had introduced "features unsuited to the common wants of life," and "involved" "complicated arrangements, in place of sash windows," and other barbarisms, as they were called. Either they had not read the *Notes*, or they had not read the designs for those buildings, and ought not, therefore, to have expressed an opinion; or, having examined the plans, they misrepresented the facts, in order to serve some purpose of their own. I am glad to find, however, that authors of most of the Gothic designs had followed the Venetian examples, and had provided sashes opening inwards, and, in a larger amount, than is now the case for their more vulgar rivals.

The next point of value in these buildings is the free use of the detached shaft,—a noble feature in almost all Italian architecture in the Middle Ages, but one which, after the thirteenth century, was strangely neglected in England. We should be blind, indeed, if we maintained our insular traditions herein. But it is, I hope, unnecessary to urge the adoption of such a feature as this.

Other points which we may well derive information from Venetian buildings are the introduction of colour, either with mosaic or coloured marbles, and the use of black and white. I have latter hand more information, no doubt, but may be obtained from the Venetian work we may learn that it is possible to produce a good effect with black and white, which is not so common, whilst the fine churches of the Frari and S. Giovanni e Paolo show what may be produced with the best materials. In all of them the roughness of the work, the unevenness of the surface, is very noticeable, as well as the width of the mortar joint. This is very much in size sometimes in the same building, as they do also in their bond. I need hardly say that the best ancient brickwork in Europe is to be found in the north of Italy. I have seen some in the neighbourhood of Verona, Mantua, Bologna, and in Brescia, that I think is as well not to say very much on this point now.

The use of marble is still more deserving of notice. In the west front of St. Mark's, for instance, there are archivolte enrichments formed with delicate sculpture on a mosaic ground of gold, which are singularly effective; and in the case of the Venetian Republic, where the law essential it is if we wish to introduce external colour decorations to it with permanent colour. The portico of the British Museum is a fair example of what any other style of colouring soon comes to. And even when the mosaic is not used, and pure blue is used, it would be no slight advantage to have our decorations executed in a material which would suffer nothing by an occasional application of a scrubbing-brush. Now, this Venetian combination of sculpture and mosaic, which is a useful system of enrichment as seems beyond all other subjects, is not to be confined to the beyond. There is no under-cutting in the sculpture. The rain of heaven would keep it free from dirt; and the golden blue green or red ground of mosaic would make the sculpture stand out with a brilliancy of colouring force. But the sculpture is not to be made of a material designed—nor left to haphazard, and the chance of

finding a carver capable of saving the architect the trouble of thinking. This work at S. Mark's is full of thought, power, and happiness.

Then, finally, in the use of coloured marbles, no city is more full of instruction than Venice. In the Piazzetta, façade of S. Mark's, there are some very lovely examples of medallions arranged in geometrical patterns. The same kind of decoration is seen in the Ducal Palace, whilst throughout the city house after house has the spandrels of its windows adorned with medallions of marble, often containing, by a room projecting below, a marble in the centre and every Renaissance house here imitates its predecessors in this matter.

I confess my own feeling is entirely against any general imitation of the veneering system of S. Mark's. Do what you will, it looks unconstructional, and deprives your work of most of its nerve and power. When marbles of great beauty are to be used, it seems to me that they but introduce here and there as medallions, in some spondril where their very rarity makes them the more precious, and where they do not conceal the constructional features of the building.

If we want to colour the whole of our walls, the Broletto of Como, of which there is a photograph on the screen (351), or Giotto's campanile at Florence, of which there ought to be a coloured drawing perpetually before the eyes of all architects, will show us how this may be accomplished without any sacrifice of structural truth.

I have now said more than enough upon my subject; and I must, in conclusion, tell you, that if you wish to understand Venetian art thoroughly, you can only do so by examining the buildings for yourselves. Next to such an examination, the photographs which this society enables you to obtain so cheaply are the best means of appreciating Venetian art. None of us wish to ignore our national art, but we are bound, when we can, to develop from and improve upon it; and for this Venice affords, as you will see, an excellent opportunity.

And of all the cities to which one's mind reverts with pleasant recollections of days well spent, I have none

pleasant recollections of days well spent, I know none so
 eminently delightful as Venice. Its peculiarities are all
 pleasurable; and if the few hints I have been able to give
 have induced the inspection of the photographs which we
 have here, I induce an interest in Italy and Venice, and
 opportunity of making his way to Venice and studying
 in the right way on the spot all her Medieval beauties. I
 am confident he will not be inclined to blame me for
 having spoken warmly and enthusiastically of that which
 I, believe—after our own well-loved architecture of
 the North—the most lovable architecture in the world.

G. E. STREET.

ENGINEERING WORKS ABROAD.

THE railway works from Toulon to Marseilles continue to be pushed forward with the greatest vigour, and will be very soon terminated throughout the line.

The manufacture of coke, which was at one time carried on to a great extent at Charleroi, but had lately become very much restricted, has again acquired considerable activity.

It appears, from official returns, that the quantity of foreign coal imported into France by the ports of Dieppe, Fécamp, Havre, and Rouen, during the year 1858, amounted to 4,946,058 metric quintals (221½ lbs. each), being 1,090,046 by Rouen, 1,846,881 by Havre, 134,148 by Fécamp, and 1,875,480 by Dieppe.

The Western Railway of France has introduced another improvement on its lines, namely the establishment of a saloon carriage to every train. A change has also been made in the goods traffic of the same line. After the 15th February all merchandize coming from or going to the Brittany lines is not in future to be received or deposited at the Batignoles station. Such goods are to be sent to the Vaugirard station, which will be specially reserved.

An experiment has been just made on the Vincennes Railway upon a new buffer (*para-choc*), calculated to neutralize, or lessen in a considerable degree, the effects of a collision between two trains, by means of leaden disks of a certain thickness. Six trucks, with loads of 7,000 kilogrammes of sand and balk, were placed on the line: three were left stationary, at a certain point, and the others were driven into the former by a locomotive, at the rate of 30 to 40 kilometres per hour, which stopped on the line after it had given the necessary impulse. The shock was terrible: the loads of sand and timbers were in some measure scattered about, but not as much as was expected: five of the waggons were fractured, got off the rails, and came to a stand-still almost immediately: the sixth ran on by itself for about 100 metres, and did not appear to be much injured. Some of the persons present were of opinion that the passengers in the third waggon of the train run into would have received only a severe shock, without serious consequences. We think, however, that, in order to have a more correct idea of the efficacy of M. Guerinot's *para-choc*, one experiment is not sufficient. Let him make a series of trials with real carriages—not with real people, of course.

The Nantes papers state that in their town several vast iron bridges can be seen in course of construction for the Russian railways.

The finishing and opening of the line from Koblenz to Mayence, before the end of the year, is looked upon as a matter of certainty. The works of the Saint Goar tunnel are carried on so

rapidly, that it will be terminated at the end of summer, though the heaviest work and the greatest difficulty on the line. The Nahe bridge is shortly to be let in contract.

The General Roman Railway Company (*Pio centrale*), have issued an invitation to contractors of public works that, after the 15th inst. they will receive, at the offices of the company, in Paris, Rue Richelieu, No. 99, and at Rome, Piazza de la Pilota Palais Filippini, tenders for the construction of a tunnel, 1,600 metres long, at Baldinini, between Terni and Spoleto, and that of a tunnel, 1,950 metres, at Fossato, between Foligno and Fabriano, on the line from Rome to the Adriatic. At the above offices the specifications, schedules of prices, plans, &c. can be consulted, and forms of tender obtained, which are to be sent there, separately for each tunnel, before 31st March inst.

REPLY TO QUERIES ON CHURCH ROOFS.

"AN CLERGYMAN" asks, at page 111,—"1. Is an open roof really adverse to the transmission of sound?" If it makes any difference whether the large portion of a speaker's voice intercepted by the roof of a low-walled building, like our churches, be reflected to the audience, or lost, or frittered up into unmeaning vibration, then no proposition in modern science is more demonstrable than that any high-pitched open roof (say any that fashion would at present allow to be "Gothic") must be acoustically the worst covering contrivable. It combines two faults that otherwise would hardly seem compatible: 1, the timbers intercepting and breaking up as much as possible of the sound-waves on their way either to or from the reflecting surface; and 2, the surface reflecting those that do reach it into none but useless directions, that can bring none of them to any of the audience till after a second rebound. A low, obtuse-ridged, or, as builders call it, "pediment-pitched" open roof has the former fault, but not the latter; and a flat ceiling the latter without the former; and a flat ceiling observed in Mr. T. R. Smith's lectures (*Builder* for 1858, p. 773, &c.). The only ceilings that can reflect usefully are such as rise in the centre, but only moderately—say from one-third down to a quarter the span.* If the rise be in both direc-

* If it be required to find the acoustically best ceiling on given walls, namely, that which not only reflects all the sound it receives to some part of the audience, but spreads it most equally over them all; then, for every auditory without aisles or side galleries, there are always two depths for a segmental ceiling that will do this very nearly: for though the elliptic curves would in one be parabolic, and in the other elliptic, their deviations from circularity (may, even from a three-plane ceiling, as that of the House of Commons) are not worth attending to. But though both these depths are equally good for a simple room, with only an end gallery, when there are either side galleries, or aisles (with or without galleries), the deeper of the two depths for the nave ceiling becomes the only one unwasteful of sound. 1. Given, in a simple room or chapel, the levels of the speaker's mouth and the wall tops, find the *flatter* of the two acoustically best forms of ceiling. Take a point as far below the speaker's mouth as this is below the top of walls, and this lower point will be the centre for your ceiling's curvature. It is independent of the level of floor. 2. Given, the level of the highest side-gallery; or if there be no side galleries, then of the sides of floor; the width of same from side to side; the tops of nave walls; and the level of speaker's mouth, to find the deeper of the two acoustically best forms of nave ceiling (but which, in the case of there being aisles or side galleries, become the *only* best form), join, by lines like a St. Andrew's cross, the tops of nave walls to the opposite extremities of the whole floor, or highest gallery, if any, and call the intersection of these lines X. Take a point half-way between the level of X and that of the speaker's mouth, and from this point, as a centre, describe an arch which will be very nearly the best to which the ceiling surface or surfaces may approximate. Observe, that these two forms of ceiling are not merely the limiting, or *deepest* and *flatter* forms consistent with economy of the voice, so that (in a simple room) you might take any intermediate curve to be better than either extreme. On the contrary, each of these extremes is positively better than any intermediate form; though even the worst of intermediate forms, namely, that half-way between them, would be better than any beyond these extremes, as a flat ceiling or a Gothic open roof. It will be found that both forms become flatter the loftier the proportion of the nave, a most fortunate coincidence with the requirements of architectural dignity, which (as I think) call for more curvature in a ceiling the nearer it is to our head. Imagine *interchanged*, the ceiling of any English cloister or crypt, and that of the nave of St. Alban's or Peterborough, and you will understand I know. Again, it will be found the *flatter* acoustic form can in no case rise a quarter of the span; while even the *deeper* one can in no practically possible case rise a half, though approaching this when both speaker and audience galleries are near the ceiling. Thus all semi-circular nave-ceilings are too deep; but the Surrey Music Hall (especially if the speaker in it spoke from an upper gallery) would approach more than any building I know to the *exquisite* most nearly-spherical (see note on quite suit) the semi-circular ceiling it has. And its acoustic superiority to other wood-ceiled rooms (for all with wooden, or rather, with smooth-boarded ceilings, must have a great advantage) I attribute partly to this above coincidence, but much more to the presence of the semi-dome end farthest from the speaker. Semi-domes at either end are demonstrably of great acoustic value, but not so much at the speaker's end, where churches often have them, as at the other end, where they never have.

E. L. G.

tions, as in groined and domed ceilings, so much the better than when it is in the width only. But whether it be by curved or plane surfaces (and, if the latter, by two, three, or more) is quite immaterial. Moreover, the loss of sound will be less, the less timber is exposed below, and especially the less depth or prominence any ribs may have that cross the direction of the voice.

"2. Is there any good example of ceiling roofs in Gothic churches?"—Yes, but I shall not say where, because I will help no one to degrade a sacred edifice with monkey-art, which "a clergyman" must do if he makes it the *first* essential of his church to be Gothic or any-ic. Whatever science and reason may show to be physically best, that any true designer can do gracefully from his own resources, and without a true designer, you cannot have it done at all, by help of all the "examples" in Goth-dom.

All the above acoustic desiderata, except the rise in two directions, seem to have been fulfilled (I do not say designedly), in the wood-ceiled roofs of the great times in France, which are also (except a few of Anglicising character, said by M. Viollet le Duc to exist in Normandy), as truly refined, both in engineering and in taste, as those on the English (or as he calls it, Anglo-Norman) system were and are barbarous and frivolous. I must premise that the French had retained, from Roman times, or else re-invented before their earliest extant works of this kind, the whole true system of timber-roofing, by ties and suspenders, of which our architects had no idea till since the fall of the arts, and which they have scarce fully learnt yet; such tentatives as that which nearly demolished the King's-cross terminus being still possible, which in France were too antiquated for repetition even in the twelfth century, if ever made at all. I doubt if history will be found to yield such another instance,—a useful art remaining, on one side of a strait, seven full centuries in arrears of its established condition on the other side. Well, then, in these *really* Gothic examples (for the English substitutes being a mere freak of local fashion, cannot rightly be reckoned any part of the great Gothic system, using that term for the last real and rational architecture), the ceilings form two cylindrical surfaces, each frequently near a quarter cylinder, but sometimes much less, rising from the wall-plates, and meeting at a keel or spine, but with no ridge, at about the mid-height of the king-post. Any other ribs, if appearing at all beneath the boarding, project very little; and the timbers seen below it (which are never any others than those wanted, namely, the tie and king-post foot), are lightened to the utmost by reducing them, except at their ends and junction, to octagon shafts, often under 4 inches diameter, in works larger than any modern church-roof. So far science. Now for art, the first parts to decorate were those by which the square ends of the timbers diminish to the octagon body, and, at the same time, the wooden stirrup by which the king-post suspends the tie (for any use of iron to save design was justly esteemed a barbarism). Next, if they could decorate any more, it was the wall-plate and corbels, if any, whether of stone or wood. Then they moulded the spine and the ribs, if any. Next to this you must come to the boarded ground (*plat fond*) of the ceiling; but not to bedizen it with that trash called tracery,—mimic architecture in relief, the "last refuge of the destitute," as Mr. Burgess calls it, but pure surface colouring,—work whose design may be worth fifty times its execution, instead of a fiftieth part thereof; and let the colour be concentrated mainly into fringes to the spine and wall-plates, these fringes being connected, if the intermediate space be plain, by parallel lines running down it like ribs, (especially if they be of two or three sizes regularly subordinated) will enable the eye to appreciate the building's length. The next step would be either to powder your still plain *platfond* with objects of any degree of elaboration, from stars to angels, or else to return your fringes up the ribs or rib-like lines, so as to make oblong bordered panels, or subdivide these into square ones, so that less than half, or even a quarter, of the surface 'need remain plain. But I think any panels completely bordered should be left to secular buildings, the more solemn and sacred mood of treatment being powdering. Lastly, the only remaining ornament I can think I should approve, and this not till all the above are afforded (as, indeed, I know no example of it), would be decorating the octagon bodies of the timbers somewhat like the shafts in the House of Commons; only, if this be done at all, it should involve, even in the smallest church, about a dozen times as many designs as the Palace of Westminster

will afford, because its designer, being outlay-paid (i.e. according to the outlay of others' work, not of his own), has done just as you or I, or a Clergyman" would in like circumstances,—made as few designs as possible do for as many thousand shafts as possible.

Thus, as above said, whether by design or unwittingly I know not, all the best acoustic conditions but one have been fulfilled; indeed, I constantly find that after reasoning out at some pains how a thing should be done in a pure original "architecture of the future," I am startled by encountering in some archaeological page or some old building (but never in any modern one—never in any of outlay-paid design you may be sure, Gothic or un-Gothic)—my invention forestalled six centuries in every particular of it; and finding that, ere the tribes of the outlay-paid arose, the problem, whenever occurring, was solved in no other way,—that my bit of advanced ultra-modernism is but orthodox Gothic after all! So that, were I an outlay-paid designer, I should certainly adopt the method of the Scott school, and save all this reasoning, by assuming, once for all, that to Gothicism after genuine models will be the same thing,—that as my rationalizing turns out to be always some Gothifying step, Gothifying will do for rationalizing; and thus we might come to rejoice in more such "works of art" as St. Giles's, Camberwell; St. Thomas's, Winchester; or the "Broad Phylactery" buildings, Westminster.

"3. What is the best specimen of such a church?"—It was great waste of life to inquire, because it is certain that a title of the time needed to discover the best would, if rightly spent, suffice to design a better than that best, wherever it may be. * * * E. L. G.

PROPOSED ENLARGEMENT OF PARIS.

An imperial decree of the 9th February, adopting the report of the Minister of the Interior, orders the accomplishment of all the formalities enumerated in the first article of the law of the 18th July, 1837, on the subject of the projected extension of the limits of Paris to the fortified boundary. Thus a question of important interest has at length been solved—interesting to the public, since it has occupied their minds for some years past.

Paragraph 1, of Article 1, describes the basis of the measure. The limits of Paris are to extend to the fortifications; they are to embrace all the military works of the circular line, and the zone of 250 metres already devoted to the purposes of defence. In consequence, the "*communes*" of Passy, Auteuil, Batignolles-Monceau, Montmartre, La Chapelle, La Villette, Belleville, Charonne, Bercy, Vaugirard, and Grenelle, will be suppressed. The territories, or portions of territory of these communes, and those of Neuilly, Clichy, Saint Ouen, Aubervilliers, Pantin, Pré-Saint Germain, Saint-Mandé, Bagnolet, Ivry, Gentilly, Montrouge, Vanves, and Issy, as far as the extreme line of the fortifications, will be annexed to Paris. The portions of the communes of Auteuil, Passy, Batignolles-Monceau, Montmartre, La Chapelle, Charonne, and Bercy, which remain outside the new line, will be thus united.

Paragraph 2 divides the new commune of Paris into twenty municipal arrondissements, forming as many cantons of justice of the peace.

Paragraph 3 advances the number of municipal councillors of Paris to sixty. Each of the arrondissements is bound to furnish no less than two members of the town-council, and is to be provided with a mayor and two adjoints.

Paragraph 4 orders that from the 1st January, 1860, the line of the Paris *octroi* will be extended to the "*mur d'escarpe*" of the circular fortification. The rest of the paragraphs contain matter solely relative to modifications in the conditions of the *octroi* for the benefit of factories that use coal, to the direct taxation by contribution, and to the investigations to be opened in order that committees might receive, within a stated time, any objections or remarks to the present law, and report thereon. Thus Paris is about to become a colossal city. In its actual limits there are at present 1,171,316 souls; the suburbs contain 351,189 inhabitants; so that the future population, when Paris is extended, is at once raised to 1,525,505. Paris was already the most populous city on the continent. Vienna has only 475,000; St. Petersburg, 550,000; Berlin, 430,000; Madrid, 260,000; Lisbon, 284,000; Naples, 480,000; Constantinople, 630,000; Milan, 160,000. London is the only European city more populous than Paris will be when the change of limit is effected.—*ut* London is nearly doubly so.

REDUCTION OF THE HOURS OF LABOUR.

THE members of the Conference of the Building Trades having offered a premium for the best essay on the "Reduction of the Hours of Labour," the adjudicators, Messrs. R. W. Grey, George Potter, W. Hanton, Edwin Freeman, and James Brown, have awarded it to one with the motto "Live and Let Live," and written by Mr. Evan Daniel, of Philadelphia-terrace, Westminster-road. The essay* has since been published. Speaking of the physical evils which artisans "suffer from the ten-hour system," the writer says:—

"Health is, of all blessings, the first which should engage our attention in every effort for the amelioration of the working classes. Wealth, rank, and honours are subordinate to it, and valueless without it. To the working man it is almost indispensable, for upon it depends his own subsistence and that of his family. It is the capital which, with his abilities as a craftsman, he has to invest, and on which he has solely to depend. When that fails, he is left 'at the mercy of the rude waves' of fortune to close his life in misery and indigence. Seldom is it the case that he has been enabled to lay by, when in health, sufficient to preserve him from becoming a burden on the public when life begins to decline. His wages are not high, and the fluctuations of trade, the loss of time from unfavourable weather, and the accidents to which artisans in these trades are especially liable, render it almost an impossibility to make a provision for old age. All that he can hope for, when in health, is a continuation of it that blessing, whereby he may preserve his independence as long as possible, and prolong the opportunity which it affords of preparing for the advance of infirmity and the necessities of old age. It is evident, therefore, that no efforts should be spared by which his life may be lengthened and the attacks of disease warded off, if we would have our working-classes self-reliant, frugal, and provident; if he believes us to take some measures by which this spirit may be fostered, which will induce them to strive every nerve in maintaining their independence throughout life, and which will preserve their helpless families from the miseries of penury. The man who has no resources to fall back upon when illness overtakes him—who feels life a perpetual struggle between slavery and starvation—whose present affords him little or no enjoyment, and whose future is one of blank despair, is a miserable creature, whose mind is degraded, and who becomes the tool of demagogue leaders, or the victim of morbid discontentment."

After urging that the mechanic who works till half-past five, and has then a walk before him, has no opportunity to study the beauties of art and nature, the writer proceeds:—

"Next to bodily health, the artisan stands most in need of intellectual culture and mental recreation. It is not sufficient that he should possess mere corporeal health and strength, for his labour requires something above these. It is not, like that of the irrational brute, mere mechanical plodding; but in many cases it involves the unceasing exercise of the highest powers of his mind. *His inventive powers* are perpetually tasked, and his scientific attainments brought into play. He is not always an *imitator*, for occasions continually arise when he must rely on his own independent genius, when he has to depart from the usual routine, when he has no plan to guide him, and no more intelligent person by to direct him. He has to apply science to art and theory to practice, and in proportion to his capability of so doing is his worth as a craftsman. As art progresses, the greater will be the demand for this intellectual property; but how is the artisan to keep pace with this demand as long as the present system continues? Can he devote those few hours to study which remain at his disposal when his daily labour is over? No, he is least reasonable to expect this from him? No, no. The man who works hard all day, and has, very frequently, miles to travel when his ordinary labour is over, reaches his home at night in no mood for study. He may have the wish, but physical exhaustion renders the realisation of it with an impossibility. When the body is overtasked, it is utterly absurd to expect that the mind should retain its vigour and freshness. It is equally absurd to expect that the tired mechanic should then quit the concerns of his household, or deprive himself of 'the needful hours of rest,' to attend those institutions from which, if the hours of labour were shortened, he might derive so much practical benefit."

Workmen, he remarks, are unable to read a work on their own trade so as to understand it:—

"How many can take up a simple scientific treatise, and read it with any degree of ease or pleasure? The technical phraseology is different from that to which the mechanic has been accustomed, and problems are introduced which involve a mathematical knowledge he has never had an opportunity to acquire. Let us suppose an ordinary mason takes up Nicholson's 'Operative Mechanics,' Gwilt's 'Theory of Architecture,' or any other practical work on Building, for the purpose of acquiring some knowledge of groin vaults. He meets, almost on the first page, such a sentence as this:—'The intrados of a simple vault is a portion of a paraboloid of a cylinder, cylindroid, sphere, or spheroid, that is, never greater than the half of the solid; and the springing-lines which terminate the walls, or when the vault begins to rise, are generally straight lines, parallel to the axis of the cylinder or cylindroid,'—or, perhaps, something of this kind:—'If a cylinder pierces a cone, so as to make a complete perforation through the cone, two complete arches will be formed, called cono-cylindric arches; but, on the contrary, if a cone pierces a cylinder, so that the concavity made by the cone is a conic surface, the arch is called cylindro-conic arch.' Now, it is very

* A Prize Essay on the Reduction of the Hours of Labour, as proposed by the Nine Hours Movement. London: Sampson Low, Son, and Co. 47, Ludgate-hill, 1859.

† Nicholson's "Operative Mechanic," p. 340. Ed. 4th, 1823.

‡ *Ibid.* p. 341. Our space will not allow of further extracts, but we would refer the reader to any of the works we have mentioned, which, be it remembered, are all supposed to be written for the working-man.

probable that the author's meaning could not have been so well expressed had he not used this scientific language; but how many working-men could read it without continual reference to a dictionary or glossary? The majority of the most valuable works on building are now sealed books, which the artisan is unable to open. To illustrate this remark, I cannot do better than quote the following passage from the preface to Buck's 'Essay on Oblique Bridges.' He says his Essay 'was not designed for the uneducated workman; the subject cannot be reduced to his level and treated properly at the same time.' Does not this show that if treatises can *not* be reduced to the level of the working man, it is our duty to elevate him to that level which will enable him to understand them and perseute them with ease and profit?"

The writer views the abuse of the system of competition as the curse of English trade, and maintains that it has now reached such a climax, "we dare not cloak it, we dare not palter with it."

COTTAGE IMPROVEMENT.

BELIEVING that the subject of providing a third sleeping-room to cottages of the lower orders will be considered by you worthy of notice, I enclose one of the circulars sent to influential persons in the county of Hants in particular, and if you illustrate the plans (should you ever do it), it will be of great service to the cause; in which, however, I have no personal interest beyond that of myself and the whole nation. The feeling of approbation is universally expressed, more especially by the Bishop of Winchester, who has strongly urged us to persevere; Judge Byles, at the last winter assizes, after seeing the long list of hideous crimes, in his address to the grand jury, stated that in great measure he attributed these crimes to the want of accommodation in the cottages of the poor, where whole families of both sexes are huddled together in one or two sleeping-rooms. We hear much of education, but the first step to virtuous education should be under the maternal roof, where the young first imbibe principles either good or bad; if the latter, they become callous as to principles, and do not hesitate to commit any crimes in after life. Great care has been taken to ascertain the lowest cost at which a cottage, with three bed-rooms, can be built, and No. 1 in the circulars is like one built near this for 65*l*. and the builder is willing to build others at that cost. I state this, as the object is to provide as many cottages with three bed-rooms as possible, where two can be built at the cost of one model cottage, at 120*l*. and probably containing as much comfort within; nor is it necessary for them to appear almost like Italian villas. HANTS.

* We have already alluded to the society, objecting to their proposition to *assist owners of cottages* to add a third room by a money grant. The object of the society of course has our fullest approval, and we may find another opportunity to refer to their cottage plans.

THE CONDITION OF LONDON.

THE *Clerkenwell News*—a paper which we have often read with pleasure—has denied the statements which have lately been made as to the neglected condition of large numbers of persons in this metropolis. It is to be regretted that, in making an effort to prove that the houses of the poor in Clerkenwell are not in the condition which has been described, an impression will be conveyed throughout the populous district referred to that there is no necessity for improvement. It is, however, unfortunately certain that not only in Clerkenwell, but in twenty other London parishes, the particulars which have been given barely show the terrible condition of many parts of the metropolis, although the guardians of the parishes are slow to understand it.

In inquiring into the affairs of the destitute poor it requires care, in order that the truth may be arrived at, for, in most instances, those least deserving intrude themselves upon notice instead of those who most need it. There are thousands of persons in this vast city who have been driven into the condition described, by circumstances which could not be avoided; and so sad is their state that it is not possible to give a sufficiently clear idea of it, either by pen or pencil, to those who have not witnessed it.

Some years since we mentioned a house which formerly stood in the "Sand-yard," near Clerkenwell-green; the person who rented it was, doubtless, an impostor, who sent out his children to "worry for their bread," as he called it; but in that very house there were cases of human misery which it was dreadful to contemplate.

Many of the most wretched houses of Clerkenwell have been removed; but still in this parish there are dwellings totally unfit for human occupation; and the same evil exists in other districts,

and the matters complained of require speedy remedy and the most earnest efforts of right-meaning persons in every direction. It is, therefore, an evil that attempts should be made to deny the truth of the pictures which have been painted, and have been the means of causing such a strong expression of public feeling. Instead of those interested in one parish endeavouring to conceal imperfections, it would be better for all to unite and endeavour to find a remedy for those evils which are a chief cause of pauperism and crime.

The parish doctors,—the missionaries so much needed in wide masses of human beings—neglected, ignorant, and often vicious,—the right-intentioned curates, and the sanitary police, well know that it is impossible to convey an idea of the scenes which come under their daily notice. Look amongst the starving population of Spitalfields, Bethnal-green, a large portion of Lambeth, St. George's, Southwark, Bermondsey, and many other places, and such scenes of neglect will be discovered as will make evident the necessity of change.

NOTES IN IRELAND.

A HOUSE fell in Grafton-street, Dublin, not long ago, just as a crowded omnibus had passed; but notwithstanding the narrowness of the street, and the usual complement of vehicles and pedestrians passing, no loss of life occurred. An old man and woman in care of the premises fortunately succeeded in making their escape at the rear. The fall is said to have been occasioned by the removal of adjoining houses, recently pulled down, having weakened the stability of this, but we apprehend that, had proper shorings been used, an accident ought not to have resulted from that cause.

A Roman Catholic Church is about to be erected at the new town of Ardagh; where also have been recently built a police-barrack and other buildings, besides model cottage residences. Near this town are the ruins of one of the most ancient cathedrals in Ireland, St. Mel.

A new chapel and schools have been built at Tournafulla, but are as yet incomplete.

A new church is to be built at Mount Charles, county Donegal, by the Ecclesiastical Commissioners of Ireland.

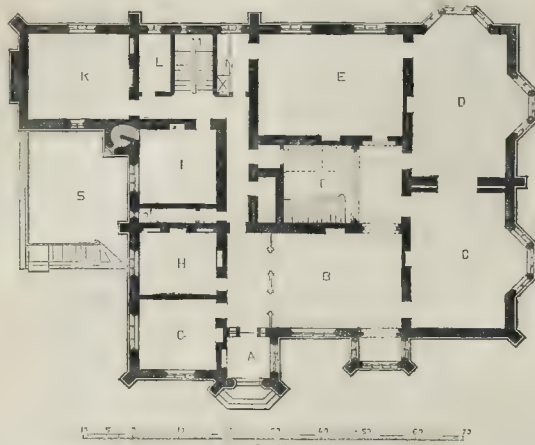
The *Cork Constitution* speaks of a new bridge proposed to be erected in lieu of that destroyed by the flood of November, 1853. Sir John Benson has laid before a meeting plans and estimates for a stone structure of three arches, adequate to the increasing traffic of the city. The carriage-way of the proposed bridge will be equal to the entire width of the present temporary bridge, and the footpaths will afford ample accommodation. It is stated that the moveable barrier will be placed in the centre of the carriage-way to divide the traffic, and prevent crowding. The estimated cost of the three-arched stone structure is understood to be 16,000*l*. It is intended to advertise immediately for tenders for its construction.

The new church of St. Couleith, at Newbridge, Kildare, is nearly completed. The foundation-stone was laid by the late bishop, Dr. Haly, in 1847; and it was dedicated while in a very unfinished state, in the summer of 1851. It is in the Early Norman style, and consists of nave, choir, sanctuary, and a tower at northern end; has a roof of open woodwork, stained and varnished, with the cross timbers highly carved. A lofty arch, springing from clustered columns, separates the sanctuary from the choir; and the walls of the former are ornamented with carved screen woodwork. The body of the structure is lighted by ten double lancet windows; and above the altar is a great window, with stone mullions and stained glass, the gift of Mr. J. O'Donohue; the surrounding stucco work being highly decorated. In the stained glass are represented full-length figures of St. Bridget and St. Couleith; and in the upper section, a figure of Our Lord, with emblematical devices in the smaller compartments. The altar, which is of varied coloured marbles, was manufactured by Mr. Kirwan, of Dublin.

A new school-house is to be erected at Balbriggan, according to plans by Mr. S. Symes, architect.

A portion of Lisadian-bridge, on the Monaghan and Armagh Railway, has fallen, in consequence of the sinking of the foundation; and it is believed the whole will have to come down.

The works on the Tullamore and Athlone branch line of the Great Southern and Western Railway Company are now in a forward state, and those on the line from Mallow to Fermoy are in progress likewise, but being of a difficult character, may prove tedious. The Tralee and Killarney Railway is expected to be open the entire length in May.



OLD CONNAUGHT; NEAR BRAY, COUNTY WICKLOW.—Plan of Ground floor.

The rails have been laid on the bridge which conveys the Belfast and Downpatrick line over the Annacloy river, and a steam-engine passed over it. The new station, it is said, will be an important building, but a temporary one will be erected likewise.

Glencree barracks, county Wicklow, are proposed to be converted into a reformatory. The attention of the people of Ireland to the desirability of such establishments has been lately awakened in a special manner by an eminently learned and philanthropic judge, and it is to be hoped that advantage will be taken of his suggestions.

Works are to be executed at the churches of Errislaunon and Lickmalash, county Galway, according to plans by the architect to Ecclesiastical Commissioners.

The new church of Arklow will be 120 feet long, 80 feet wide in the transept, 40 feet in the nave, and 40 feet high to the wall plate. It is in the shape of a Latin cross, has bell-tower and lateral porches, and a cupola rising to a height of 100 feet. The style is Italian, and externally will be a chiselled granite pilastered front, and internally a panelled ceiling, with other decorations to match. Mr. Patrick Byrne is the architect.

The third Presbyterian church of Ballymena having resolved on enlarging their meeting-house, have employed Mr. J. Boyd, architect, to furnish them with plans for that purpose. Besides an apse at rear, in which will be placed a choir gallery, and a new gallery and ornamenting the ceiling, the chief work will be the new addition in front. This will consist of three stories, the first containing the vestibule, the second a large classroom, and the third a gallery. There will be a tower and spire at one corner, the extreme height of which will be 110 feet. The work will be done with basalt stone for the plain work, and Cookstown stone for the dressings. The style is Lombardo-Gothic.

THE ARCHITECTURAL MUSEUM.

IN consequence of the illness of Mr. Joseph Clarke, the Honorary Secretary, who was to have read an address to art-workmen, there was no lecture on Wednesday evening last.

Mr. Beresford Hope, M.P. on the part of the Committee, communicated the information to the meeting, which was not a large one, means having been taken to apprise as many of the employers as possible, and said that an extra night would probably be fixed to receive Mr. Clarke's observations, matured as they would be by the opportunity for reflection unfortunately afforded him. Mr. Hope pointed the attention of those who were present to some new specimens in the rooms especially appropriated to decorative art, and the audience, who received the disappointment with perfect good temper, dispersed to examine them.

ON READING A LATE DISCUSSION ON THE NEW GOVERNMENT OFFICES.

Scott's windows may give us abundance of light, But 'tis clear that Scott's windows will never fit Tite.

THE "ADAMANTINE CLINKER."

DURING the construction of the Great Northern Railway, in making a deep cutting just beyond the Little Bytham station, the excavators found an extensive body of clay, containing Roman coins and numerous fragments of pottery and relics, which prove that this identical spot is the site of an old Roman pottery. The clay was carefully analyzed, and it was found to possess, we are told, the extraordinary amount of 69 per cent. of silica, a much larger portion, it is asserted, than can be detected in any other clay in the United Kingdom. The proprietor, the Hon. A. D. Willoughby, has spared neither pains nor money in rendering this clay available for building purposes, and he has succeeded in producing a clinker which has been called "Adamantine," from its durability and impenetrable hardness. It is superior to the "Dutch" in shape and colour, absorbs less than half the quantity of water, and, if we may judge from the appearance presented by a specimen of it after five years' wear, we should say a better clinker need not be desired.

THE GUARDS' MEMORIAL, LONDON.

ANOTHER erroneous report has, I believe, been going the round of the papers, as to the "Guards' Memorial," which I see copied inadvertently last week into your journal, usually so correct. Instead of the memorial to be erected in Waterloo-place being of the dimensions mentioned, it will be some 37 or 38 feet high. The front of the pedestal, at some 11 feet from the ground, will be occupied by three soldiers—a Grenadier, a Fusilier, and a Coldstream of her Majesty's brigade of Guards, in their full marching costume as they fought at Inkerman. These figures will be about 8 feet 6 in. in height. Their respective flags will be behind them: thus altogether forming a pyramidal group. These flags rest against a second granite pedestal, on which, and above the flags, will stand a figure of Honour, with her arms extended wide, and in her hands and on her arms will be wreaths of honour. This figure will be 10 feet high. The inscription beneath her will be, "Honour to the Brave," and beneath the Guards, "*Tria juncta in uno*," the motto of the brigade. The four figures will be cast out of brass cannon taken at Sebastopol, and given by Government. Behind, on the rear face, will be a pile of actual broken Russian guns, burst and mutilated, as they were found in Sebastopol, which, I believe, is a new feature in a monument. These are the general characteristics of the memorial; but on the sides will be introduced a slight degree of decoration in the sorts of sunk reliefs used by the Egyptians, who were so accustomed to deal with large surfaces of granite; and which, with due attention, might, I fancy, be introduced, with good effect, occasionally into our own granitic treatment. The foundation is in, up to the ground line, and is a mass of concrete some 17 feet by 15, by 10 feet deep. No portion of the granite pedestal has yet been placed; nor will any portion of the work be hurried. The memorial is favoured with a most conspicuous place

in the metropolis, and, of course, every possible care must be taken to render it in some degree worthy of the site.

JOHN BELL.

FRANCE AND BELGIUM.

THE works undertaken for the restoration of the tower of the Brussels Hôtel de Ville will be shortly brought to a close by the completion of the restoring of the entrance-porch, a difficult and intricate piece of work, except the statues in the niches of this portion of the façade. The fifteen statues of the upper range, some in course of execution, others already finished, will be placed next spring. Six of them have been confided to the sculptor, M. Franklin; three to the chisel of M. Puyenbroeck: the six others are to be executed by Messrs. Leemans, Detrabut, and Catton, pupils of M. Simonneau, who has promised the aid of his counsels to these young artists. The interior of the building alone remains to be restored, and the whole of the works are to be pushed forward, so that it shall be ready for occupation in 1860.

The city of Orleans being, more than any other place, interested in preserving anything connected with the history of Joan of Arc, lately wrote to the Marquis d'Azeglio, the Sardinian ambassador, offering him 600*fr.* for the piece of tapestry, representing the arrival of the heroine in Orleans, which he purchased last year at Lucerne. The Marquis has replied to the application, by accepting the sum specified, which he requests may be distributed to the poor of Orleans. He adds, that he will give orders that the object in question, now in the Museum of Cluny, shall be delivered over to the authorities of Orleans.

Correspondence from Tury (Haute Loire), announces that the colossal statue of Notre Dame de France has been successfully cast at Givors. It is to be shortly transported to Puy, and for its inauguration have been invited all the bishops of France and all the superiors of the monasteries.

EXCESSIVE MORTALITY IN THE METROPOLITAN WORKHOUSES.

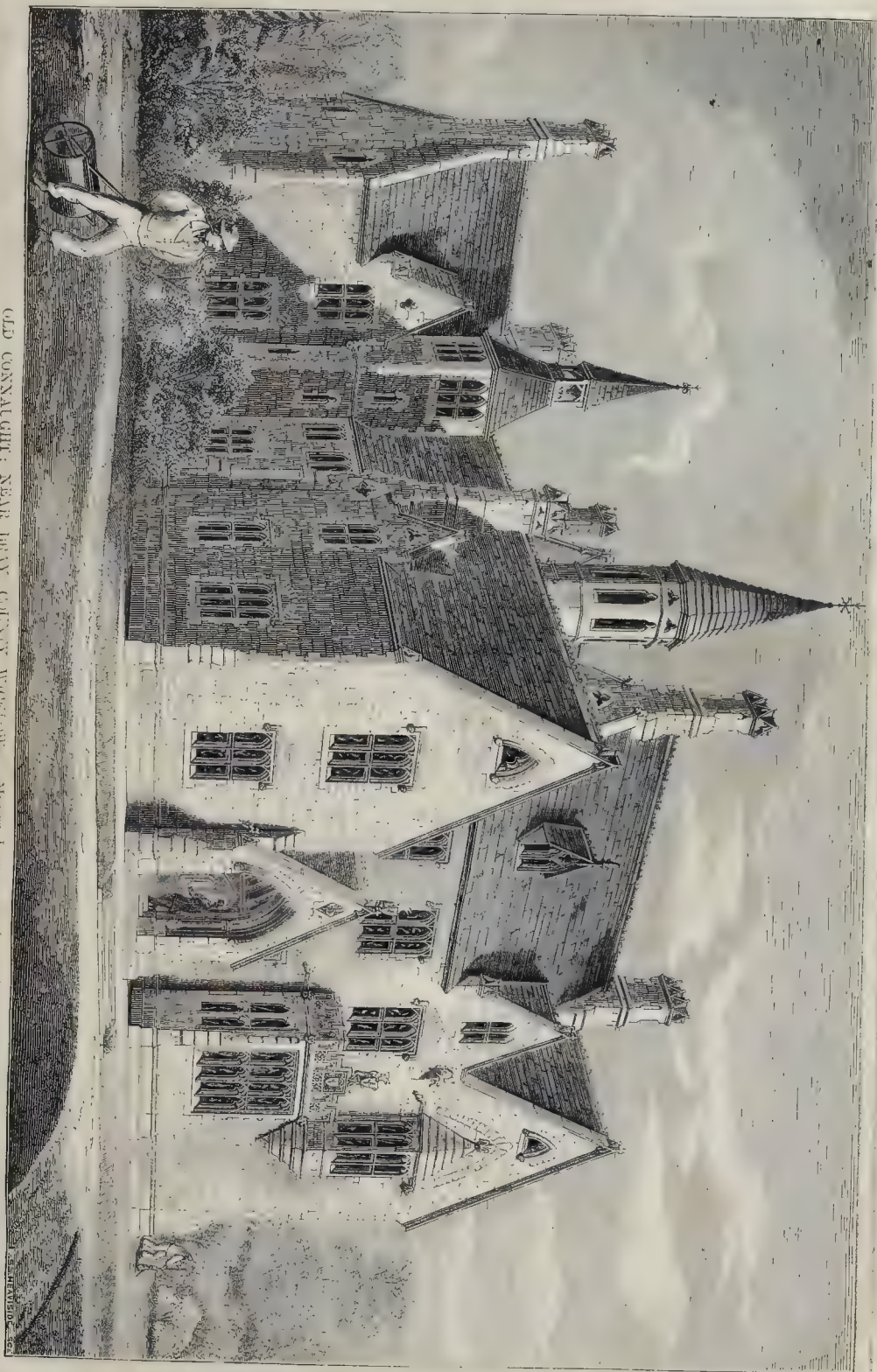
ON a recent occasion the Registrar-General remarked upon the large number of deaths which occur in the metropolitan workhouses, and suggested that inquiry should be made in consequence. The presence of aged persons, and young children born in many instances in sickly condition, with other circumstances, will account to some extent for the excessive mortality; but when the bleached countenances of both the old and young paupers are noticed, it would seem likely that, besides the evils which too often arise for want of ventilation and other sanitary arrangements, the quality and quantity of the food supplied require looking to. Luxuries are not expected, but particularly as regards the young, it is a question worthy of consideration, if a more generous diet would not only be the means of saving many lives, but also enable the young reared here to have increased stamina, and be better able in after life to battle with the world. As we have before said, the workhouse system altogether demands revision. Woe to those subjected to its degenerating influence!

OLD CONNAUGHT, NEAR BRAY, COUNTY WICKLOW.

THIS mansion is being erected for P. Riall, esq., in the demesne of Old Connaught-hill, near Bray. The site is most picturesque, commanding beautiful views of the bay of Dublin, and the mountains of Wicklow. The materials used for the facing of the whole of the exterior consist of Wicklow granite, with Portland stone for the dressings of the doors and windows. The architects are Messrs. Lanyon and Lynn, of Belfast; and the builders, Messrs. Cockburn and Sons, of Dublin.

References.

- A. Open porch.
- B. Hall.
- C. Library or morning-room.
- D. Drawing-room.
- E. Dining-room.
- F. Principal staircase.
- G. Own room.
- H. Cloak-room.
- I. Butler's pantry.
- K. Housekeeper's room.
- L. Store.
- M. Back staircase.
- N. Serving-room or lift.
- S. Kitchen court on basement level.



OLD CONNALGHIE; NEAR BALLY COCKNEY WOODHILL. — Messrs. LANTON AND JONES, ARCHITECTS.

BLASTING ROCK.

SOME very interesting experiments have been made, attended, it is said, with perfect success, at Fécamp, in blasting rock under water for the harbour piers. In order to deepen the channel it was necessary to clear away a portion of excessively hard rock, upon which ordinary implements had but little effect; moreover, the sea never receding entirely from the rock, the means resorted to at first were attended with extreme difficulty, while the operations proved a great impediment to the navigation. At present, with the aid of an electric battery, the rock is being removed with comparative ease, by a contrivance as follows:—Glass jars, containing each fifty kilogrammes of blasting powder, are made watertight by means of corks, through which insulated wires are passed and put in communication with the powder. These vessels are well caulked or sealed, and packed in a basket, with hay, to prevent their being broken against the rock when they are let down. At the moment of high water these "cartouches" are cast into the water, and kept in communication with the electric battery, by means of wires covered with gutta-percha in the usual manner. On the circuit being completed by joining the wires on shore at the northern jetty, the powder ignites, and the elastic gases, finding such enormous resistance in the weight of the water above, strike upon the rock and shiver it to atoms. At each explosion the water rises in a conical form of greater or less height, according to the effect produced on the rock, boils up for a few moments, and in five minutes resumes its usual undulations, leaving no visible traces of the agency exerted below. The debris of rock will have to be removed afterwards by dragging, &c. at a slight cost.

SCHOOLS OF ART.

The Manchester School.—The annual meeting of this school, was held at the Royal Institution, Moseley-street Manchester, on the 22nd February. There was a full attendance. The galleries were filled with the national medallion drawings from all the Schools of Art in Great Britain. The mayor presided, and the secretary read the usual report, which congratulated the subscribers on the progress of the school. The debt of three years since (1807) was now almost extinguished, chiefly by the educational progress of the school; for the subscriptions had fallen from 255*l.* to 255*l.*, while the fees from students had risen from 313*l.* to 513*l.* Mr. Hammersley, the head master's report showed that 549 pupils had attended the school during the year. Art pupil teachers had taught 800 pupils of parochial schools, and certificated teachers, 2,451 other pupils. This gave a total of 3,800.

Mr. Ruskin addressed the meeting. In course of an eloquent discourse, he drew the following broad distinction:—Art whose end was only pleasure, was pre-eminently the gift of cruel and savage nations—cruel in temper, savage in habits; they were pre-eminently in everything merely relating to line and colour, which, in fact, seemed to be the inheritance of ignorance and cruelty. Englishmen could not produce such pretty shawls as the Sepoys; for really beautiful stained glass we must go back to the thirteenth or fourteenth century, when the Black Prince killed 2,000 or 3,000 people before breakfast because he got into a passion. On the other hand, it would be found by research that art which was especially dedicated to natural effect, always indicated gentleness and tenderness in its producers; and that if it were successful and great, it was the work of thoughtful, earnest, kind men, large in their views of life, and full of intellectual power. Sir Joshua Reynolds and Velasquez were striking proofs of this. He did not say that in order to be a good painter one must be a good man; but he did say one must be so in order to be a good natural painter—this true perception of nature was never given except under certain moral conditions. There were but three schools of noble conventional decoration—that of the Greeks, which they applied to their pottery; that of the Early Gothic school; and that of the great Italian school. All these were reached from above—all by stooping from a knowledge of the human form. He would say to students, "To whatever branch of study you may incline, however you are to earn your bread, in whatever part of the country you may be employed, so far as you have time, make yourself first a noble and accomplished artist—understand, at least, what noble and accomplished art is; get first a pure, deep, and exalted knowledge of the human form, and of all natural beauty; and you will then be able to apply your knowledge to whatever services may be required from your art."

The Newcastle-under-Lyne School.—The annual meeting of the friends and supporters of this school was held in the Institution Assembly-rooms, also on the 22nd ult.; Mr. Jackson, M.P. in the chair. The room was crowded. From the report it appears that the total number of pupils receiving instruction at and in connection with the central school was 300, and that the number of students at the central school was 58—an advance of 11 upon the previous year. Mr. Jackson, in his address on moving the adoption of the report, congratulated the meeting on the steady progress of the school. He made some special reference to the education of females in art. To take one illustration, he remarked,—one of the most fashionable milliners of Regent-street told him that any girl who understood the elements of drawing was able to obtain much higher wages under her than a girl who had not that knowledge, and that five or six young women whom she had in her employ, and who had some knowledge of the art of design, were of the greatest possible assistance to her. The subject of the employment of females was full of perplexity to political economists, and had often troubled his mind very much, but here there appeared to be a fresh source of employment opening up for them. He and his partner had in their employ some 2,000 persons, and in the education of their children there was no difficulty, but there was great difficulty in finding employment for the young women whose ages ranged from fourteen to eighteen. He had determined upon endeavouring to establish a school of art amongst them, believing it would tend greatly to their advantage, and enable them to obtain employment for themselves in some branch or other of art industry.

The Hanley School.—On the 21st ult. the annual meeting of this school also took place. The Town-hall was crowded on the occasion. The mayor presided. The report was satisfactory. Workmen had come forward with subscriptions, which proved their interest in the school. The progress of the pupils was regarded as satisfactory, and a report thereon by Mr. Hodder, the master, was read.

CHURCH-BUILDING NEWS.

Sudbury.—Alterations have lately been made in St. Gregory's Church, Sudbury. The roof of the south aisle is now completed, the wood being stained, and the roof of the north aisle is undergoing a similar transformation. The gallery in front of the arch, between the nave and tower, is about to be pulled down, and some of the pews in the aisles have been removed.

Mear's Ashby.—The old church at Mear's Ashby, which had been closed for six months, whilst an extensive work of restoration was proceeding with, has been re-opened. The repairs and additions are as follows:—Nave and south aisles new roofed, in oak, of the old pattern; tower-arch opened, and new oak belfry floor; gallery removed from west end, and church reseated in oak, unstained; a vestry built on the north-east, and the chancel rebuilt; the tower, which was in a dilapidated state, repaired. The work was entrusted to the care of Mr. Buckenidge, architect, Oxford, and Mr. Parker, of Thrapston, builder. The total cost, exclusive of rebuilding the chancel, is about 1,200*l.*

Shipton-under-Wychwood.—The church here has been restored and repaired at a cost estimated at 1,600*l.* Mr. Street was the architect employed, and Mr. Groves the builder. The west doorway has been restored, the tower repaired and strengthened by iron bands and by the erection of a new buttress on the west side; and tracery has been introduced in the old square-headed clerestory windows. The tower itself was considered to be too insecure to allow of its peal of five bells to remain in their former position, or to be rung. As the peal was of too musical a character to be sacrificed, Mr. Street adopted the expedient of having framework erected within the tower, but, at the same time, independent of it, so that there should be no strain or weight upon the walls, and upon this framework the bells are hung. The north aisle has been entirely rebuilt, as well as the end of the chancel, which has a ribbed roof. The lath and plaster ceiling in the nave has been removed, and the old roof brought to light. All the old pews have been removed, and open seats substituted. In the chancel there are stalls of English oak, with carved heads. The chancel, as well as the church, is paved with tiles. The doors to the church are new, and of oak. The church is heated with hot air, by Hayden's heating apparatus. The porch has been restored, and a new cross substituted for its former mutilated one, and a new window introduced. A new buttress has

been added to "The Reade Aisle," and another to the south aisle of the chancel.

Corfe Castle.—It is decided to restore the ancient church of Corfe Castle, which, perhaps, is coeval with the old castle. The building has been pronounced unsafe for public worship, the outer walls projecting nearly 1 foot beyond the perpendicular.

Bridgnorth.—The restoration of St. Leonard's Church, Bridgnorth, will probably be commenced in the spring, as 1,200*l.* of the 3,000*l.* required has already been collected, and the two borough members have subscribed 500*l.* each.

Yeovil.—It is proposed to scrape and repair all the pillars in the chancel and nave of St. John's Church, Yeovil, paint the ribs of the ceiling and the bosses, and stucco the walls. The contractors are Mr. Joseph Staple, builder, of Stoke sub-Hamdon; Mr. Harwood, and Mr. Foot, of Yeovil. Their men have commenced operations.

Walsall.—The new Independent "Ephratah" Chapel, the foundation-stone of which was laid on the 15th of last March, has been opened and dedicated to the worship of God. The style is Decorated Gothic. Three stained-glass windows have been presented respectively by Mrs. G. Neal, Mrs. Jerome, and Mrs. E. Holden. On one there are portrayed the three Church reformers, Luther, Melancthon, and Wickliffe; on another, "The Annunciation to the Shepherds;" and on the third, "Jacob's Vision." The entire cost of the building, including land, has been 2,800*l.*; but there remains a debt upon the structure of 1,600*l.*—The trustees of the Wesleyan New Chapel have accepted the tender of Messrs. William Trow and Sons, builders, of Wednesbury, for that building, which is to be erected in Ablewell-street, and for converting the old chapel into day schools for the district, with class-rooms, master's house, out-offices, &c. Amount of contract, 3,927*l.* 18*s.* Messrs. William and Samuel Horton, of Wednesbury, are the architects.

Birmingham.—Mr. Peter Hollins has undertaken, at his own cost, to restore the whole of the stone-work of St. Peter's Church, between the tower and the south-western corner, including of course the carved work of the doorway; and this work of restoration he is desirous should be understood as a memorial of his father. The stone to be used for the restoration is that obtained at Ketton, near Stamford, and of which King's College Chapel, Cambridge, is built. The *Birmingham Journal* suggests, that this would be an excellent opportunity for a few gentlemen who have the means and the will, to combine for the purpose of carrying out Mr. Hollins's work along the south side of the church, the part most affected by the weather, and fast losing all trace of architectural ornament.

Malton.—At a recent meeting of the local Burial Board, as to the plans for the new cemetery for Malton, after considerable discussion the plans sent in by Mr. Slater were chosen for the grounds, and the plan of Mr. Gibson, architect, for the building.

Coventry.—The restoration of St. John's church is to be immediately proceeded with under the direction of Mr. G. G. Scott, and the contract of Messrs. Ruddle and Thompson, of Peterborough, has been accepted for the work.

SCHOOL-BUILDING NEWS.

Kimberworth.—The foundation-stone of a new building intended for National Schools for the parish of Kimberworth was laid lately by Mrs. Hoyle, of Ferham House. The schools will be Gothic in style, and accommodate 250 scholars. There will also be two class-rooms and teacher's residence attached. The architect is Mr. Wm. Blackmoor, of Rotherham, and the builder Mr. George Chadwick, of Masbro'. The expense of the erection, including the ground, will be about 1,500*l.*, nearly all already raised.

Rotherham.—The new infants' school, built in Henry-street, upon land given for the purpose by the Earl of Effingham, has been opened. The school will accommodate 150 infants, with classroom attached. The style of architecture is Gothic. The cost of the building is 600*l.*, inclusive of fittings, a portion of which amount has been granted by the Committee of Council on Education, and the remainder has been raised by subscription. The architect is Mr. W. Blackmoor, of Rotherham, and the builder Mr. George Chadwick, of Masbro'.

Bristol.—After certain law proceedings, it has been finally decided that Colston's School is to be removed to Stapleton.

Mansfield.—The Duke of Portland has given

the sum of 500*l.* and a suitable piece of ground for the purpose of erecting some schools in connection with the parish church of Mansfield. To St. John's Church he has also given the sum of 1,000*l.* to be used for a similar purpose. The only stipulation made is, that the Bishop of Lincoln decide as to the plan of the buildings. The probability is said to be, that the schools attached to St. John's Church will be built and carried on as national schools.

STAINED GLASS.

Blackburn.—St. James's Church, Blackburn, has just received a gift of three stained-glass windows, presented by the Messrs. Radcliffe, of Lower House. They are uniform in size and architectural design, each consisting of two lights, surmounted with tracery; and they occupy three sides of the semi-octagonal chancel, or sacristy. The central window, immediately over the reredos, contains pictures of "The Crucifixion" and "The Resurrection." The side windows are filled with figures of the four evangelists, standing in niches, and reposing against embroidered dorsal curtains, relieved with a background of purified deep blue glass. These pictures, which occupy the central portion of each light, are surmounted by the archings and groinings of the canopies in gold and silver, rising in pinnacles, flying buttresses, angels, crosses, and finials, until they die away in the deep ruby of the background; the whole being surrounded by a border of interlacing stems and white lilacs, set in ruby. The tracery above is filled with angels, bearing scrolls, inscribed with mottoes; and the apex of each window contains a ruby cross on a blue background. At the base of the windows are the memorial inscriptions, with the shields of arms of the family and their connections, set in Geometrical Medieval devices. The windows are said to have been executed by Mr. G. Shaw, architect, of Saddleworth.

Aylsham.—A memorial window has been erected in Aylsham Church to the late Wm. Repton, esq. It is placed in the south side of the chancel, and is the production of Mr. Charles Clutterbuck, of Stratford-le-Bow. The window, which has three compartments, is wholly occupied with "The Raising the Brazen Serpent in the Wilderness," from the picture by Rubens, "with trifling alterations."

Saffron Walden.—A subscription has been set on foot to raise funds to defray the cost of a new east window in the parish church in this place, Lord Braybrooke having headed the subscription list with 500*l.* It is also proposed to repave the chancel. About 3,000*l.* in all will be required.

Lilleshall (Salop).—The new east window, the gift of the Duke of Sutherland, has been put up in the chancel of the church here. Messrs. O'Connor, of London, were the artists. The window represents, in the centre compartment, the Saviour as "Lord of all," sitting on His throne of glory, with His feet resting on the blue arc of the heavens. In His left hand he is holding the "earth ball" as emblem of His kingly authority and power, both in Heaven and on earth; while His right hand is lifted up in blessing. On His right hand stands St. Paul, as the apostle of faith, with a sword in one hand, "the sword of the Spirit," which is the "Word of God," the volume of which he holds in the other. On the left of the Saviour stands St. John the Evangelist, as the apostle of love, with the volume of his writings in the one hand, and a pen in the other: thus, while St. Paul and St. John represent Faith and Love, the figure of our Lord is intended to represent Hope, at the same time that He is the source of all love, and end of all faith. The old emblems of Faith, Hope, and Love, that is the Cross, the Anchor, and the Heart, form the centres of the compartments beneath the three figures. The tone of colouring throughout is in keeping with the dignity of the subject. The stone tracery of the window was executed from the drawings of Mr. Norton, by Mr. Yates, builder, of Shifnal.

Flixton.—Two stained glass memorial windows have just been put up in the parish church of Flixton, by Messrs. R. B. Edmundson and Son, of Manchester. One of the windows is to the memory of Mr. Thomas Rogers, late of Liverpool, and has been executed for his sons. The subject is, "The Ascension," and is surrounded with a deep rich border, so arranged as to form niches, in which are figures of the four evangelists. The second window has been executed for Mr. William Wright Worthington Wright, a magistrate of the county, and is to the memory of his three children. The principal subject is "Christ blessing little Children." Three children only are introduced, and represent the ages of the deceased

little ones. Above this is a representation of "The Resurrection;" this is also surrounded with a deep border, and at the top is the armorial bearings of the Wright family.

SPURGEON COMPETITION.

SIR,—Whatever may be thought of Mr. Garbett's letter in your last week's number, in many respects, it is calculated to cause to those who enter into competitions similar to that for Mr. Spurgeon's chapel, serious misgivings as to the propriety of entrusting to the competitors the task of selecting the best designs, making the choice of designs a kind of architectural blind-man's-buff.

Mr. Garbett's principles are possibly intelligible to himself, and he is no doubt ready to prove that any others are bad, base, dishonest, moral evils, &c. according to the long list of vituperatives to which we are now getting accustomed whenever art-matters are discussed; but it may be doubted whether the competitors as a body, can be satisfied with an adjudication such as that in which Mr. Garbett glories.

If I understand your correspondent rightly, he voted for a design which he considers possesses *no art at all* in accordance with his principle, that "bad art is not merely worse than good, but worse than none" (an abstract statement which few will care to dispute). He also stated at the same time, that he did not consider the design he voted for, nor indeed any design but one, fit for execution.

It would be interesting to know whether the design, which was the only one Mr. Garbett could possibly recommend for execution, was conceived in the no art-theory; and it would be very satisfactory if one of the approaching exhibitions should furnish an opportunity of testing the question, which may involve matters of interest to all those who at any time enter into competition.

NOT A COMPETITOR.

CLERKS AND CLERKS OF WORKS IN THE ROYAL ENGINEER DEPARTMENT.

SIR,—As your columns are open to all topics connected with architecture and civil engineering, and are regarded as an authority in such matters, permit me to solicit your insertion of, and comments on, the following case of an important branch of the civil service.

There exists in all parts of the world, scattered here and there, a class of the civil service designated the Royal Engineer Department, consisting of two distinct branches, professional and non-professional. The former are named *clerks of works*, the latter *clerks*. These two branches have recently required the attention of those whose duty it is to see into these matters, on account of the manifest insufficiency of their remuneration. The result is, that both branches are prospectively considerably benefited. Yet there appears to have been some misunderstanding as to the duties and responsibilities of the professional branch; for, by the new royal warrant, a clerk of works will enter the service at 110*l.* per annum, and rise 5*l.* a year, until he arrives at 140*l.*; whereas a clerk enters at 80*l.* and rises 10*l.* a year, until he has 140*l.* a year, so that in six years' time they are on an equality. Again, if promoted to the second class, they both commence at 150*l.* and rise by annual instalments of 10*l.* to 220*l.* for clerks of works, and to 200*l.* for clerks, until promoted to the first class, when the clerks commence at 210*l.* and the clerks of works at 230*l.* until they arrive at the maximum,—the former at 270*l.* and the latter at 300*l.*

From this statement, it will be apparent that a clerk of works enters the service, and leaves it 30*l.* better off than a clerk; but the third-class clerk is soon as well off as his professional brother; and during the principal part of their service they are both alike remunerated.

Now, sir, I think I have shown the evil of calling a man one thing, and expecting him to be qualified for another. A so-called clerk of works in the Royal Engineer Department is expected to design, draw, specify, and superintend any works connected with architecture, civil or military engineering, measure up works, and bring them into bill,—in fact, be architect, civil engineer, surveyor, and storekeeper to the Department, giving ten hours a day to the duties for the same, or little better remuneration than a writing-clerk, who is only expected to write a good hand, be competent in arithmetic, and give about six hours a day.

If a clerk of works is not to receive extra remuneration sufficient to pay for drawing instruments, architectural and civil engineering works, and per-

odicals necessary to keep him well informed in his profession, to say nothing of the heavy duties imposed on him, he would find it answer his purpose much better to throw over his professional abilities, and get transferred to a clerkship in the same department; or, better still, get into the store-branch, where he would be paid the same as a clerk of works, with the chance of promotion to military storekeeper.

Your insertion of the above will give our master, Mr. John Bull, an idea of what he pays for head-work; our friends, who are seeking employment, what professional attainments are worth in the Royal Engineer Department; and oblige

AN OLD SUBSCRIBER.

ON THE FURNISHING OF GOTHIC DWELLING-HOUSES.

At a meeting of the Oxford Architectural Society, held on Wednesday the 3rd of February, Mr. Fowler read a paper "On the Proper Decoration and Furnishing of Gothic Dwelling-houses," wherein he said.—If Gothic architecture is to be our national style, it will show itself in the inside as well as in the outside of our houses. In the Middle Ages there was no article of furniture which did not bear the impress of the style upon it. It becomes, therefore, a contradiction that a house whose structural portion is so well adapted to be discovered to be fitted up in a manner totally opposed to the spirit of that style. We shall have to consider in what way we can give expression to the interior arrangements of our houses, so as to be consistent with the style of the outside. We are impeded by several difficulties, which, there is little doubt, are the great hindrances to a proper style of furniture. The false notions which people have with respect to the style—an idea that Gothic and comfort are opposed, and that the style is fit only for churches and church furniture, that, in some way or other, it expresses particular religious sentiments, and that the purchase of furniture is in no way connected with an architectural taste, but merely a matter between the upholsterer and the purchaser, are among the difficulties in our way. On the side of the upholsterer are old prejudices to traditional patterns which are sometimes modified and brought out at old patterns for small wages, and the tolerably fixed prices. There are, besides, on the purchaser's side, that prevailing evil of desiring to make show for a little, and the regard for good work and good value, and on the seller's part, an incapacity, from education or ability, to design what is suitable. The great principle on which to go is reality. To be real we must be practical and honest. On the one hand, absurdity is avoided; on the other, sham. To be practical we must consider our wants as persons living in the nineteenth century; we must regard comfort and utility in our designs, as well as harmony and beauty. The subject of house decoration generally is a very wide one, and cannot be more than touched on in the present paper. A few subjects may be handled, as the arrangements of colours in papers, carpets, curtains, chair and sofa coverings, ceiling decorations, and the use of coloured materials for ornamentation, as marbles, coloured tiles and woods, &c. The chief objections to Gothic furniture are, first, incompatibility with comfort; second, its inconvenience for being moved about; and, third, the very great increase of expense of manufacture. Gothic, from its very nature, is easily modelled to any form, so as to ensure comfort and retain its own character. It is not necessarily clumsy and heavy; and if the principle of showing construction were adopted, its capability of being moved about would be much greater than the present style of furniture, as it would take to pieces. If it were in common use, so far from costing more, it would cost less than common furniture, from its being able to relinquish the more costly woods, and make the best of common ones. Mr. Fowler then entered into a discussion with respect to various kinds of woods, urging the addition of oak, beech, dead pine, birch, &c. objecting to paint, and recommending varnish, so as to bring out the natural grain of the wood.

Correspondence.

MASTERS AND MEN.

SIR,—I have a job in hand, on which I am employing, in addition to carpenters and bricklayers, about a dozen labourers. The said labourers have recently joined a society, which has for its object, amongst other matters, to obtain for its members an advance to a uniform rate of wages of 20*s.* per week. I have hitherto been paying 18*s.* with an addition of a pint of porter each man, or 2d. if they so prefer, making, of course, 19*s.* Everything went on very well until to-day, at half past twelve, the time they return from dinner, when, without the least previous notice, they all struck for the advance; and they further intimated that, unless I discharged a man who has hitherto been in the society, they would be compelled by the rules to leave the work. Now, it so happens that the man in question is one in whom I have every confidence, he being both sober, industrious, and trustworthy. I shrank to sacrifice him to what I consider a conspiracy on their part, as I feel they have no right to dictate to me who I shall or shall not employ; and I should have at once discharged the lot, but that I was unwilling to throw away a man who was so well adapted to the work. So I consented under protest to the advance, until I can ascertain whether it is generally acceded to. I have always been an advocate for men having proper wages, and feel they have a right to procure for themselves in a lawful manner; but surely they have no right to compel me to sacrifice a man, merely because he refuses to join them. If not too much trouble, I shall be much obliged by your noticing this in your next number.

T. K. LACKINGTON.

GLASGOW ARCHITECTURAL SOCIETY.—At a meeting of this society, held on Tuesday night, in the Scottish Exhibition Rooms, Mr. James Salmon in the chair, a paper "On Masonry, and how it may be improved," was read by Mr. Alexander Thomson, architect.

Books Received.

Works of the Architectural Publication Society.
Part II. for 1857-8.

As we recently reported an appeal in favour of the Architectural Society, it will suffice now to say, that the present part completes the issue of the year, and the illustrations to the letter "C" of the Dictionary, with a part of "D." It comprises the following subjects.—Cancellum, Candelabrum, Ceiling, Chamber-Stop, Clerestory, Cloister, Corbel Table, Crocket, Crypt and Cross, Dentil, Diaper (a coloured plate), and Doorway.

Mr. James M. Lockyer, who has been one of the most persistent workers in the committee, writing to us in support of the observations made at the Institute, says,—"It has been for many years past a matter of surprise and regret to myself and many others equally interested in the society, to witness the apathy with which its efforts are received and appreciated, not only in the profession, but amongst those whose known sympathies for art one would imagine would long ago have enlisted their support. It is, nevertheless, impossible to shut our eyes to the fact that the number of subscribers has decreased of late years. I hope and believe that this does not arise from deterioration in the matter supplied, either in text or illustrations, and can only be ascribed to one cause,—the little encouragement that such productions receive in this country compared with the success of similar efforts abroad. The publication in parts, often extending over a long course of years, of such magnificent monuments—if I may so term them—as 'L'etrouilly's Rome,' Gallahaband's 'Monuments Anciens et Modernes,' and, more recently, his 'L'Architecture du Cinquieme au Dix-septieme Siecle,' Verdier's 'L'Architecture Domestique et Civile,' and numberless similar works in every department of art, sufficiently attest that there exists in France a large body of artists and amateurs who not only appreciate but encourage such labours."

We hope soon to hear of numerous accessions to the list of subscribers, so that the Dictionary may be rapidly completed.

VARIORUM.

THE third part of "Lund's Elements of Geometry and Mensuration" (Longman and Co.) has been issued. It treats of geometry combined with arithmetic (mensuration), with easy exercises, designed for schools and adult classes. This is not a work fashioned after the old pattern of English books on mensuration, but is grounded upon, and recognizes as a necessity, the geometry of Euclid—that is geometry as a science. The student's memory is not burdened with mere rules, as each process is reasoned out, and the units of measurement especially, are carefully laid down and explained as the first step to a sound and useful knowledge of the subject.—No. 18 of Vol. II. of the new series of the bi-monthly "Journal of Proceedings and Papers of the Kilkenny and South-east of England Archaeological Society," has reached us. It is illustrated with engravings chiefly of leaden and pewter tokens, issued in Ireland, on which there is also a paper, by Dr. Aquilla Smith, M.R.I.A. besides various other matter interesting to archaeologists.—The fifteenth annual report of the Sheffield School of Art, read at the annual meeting recently noticed, has been printed at length, together with a report of some other proceedings connected with the Sheffield school.—An American volume, titled "Engineering Precedents for Steam Machinery," embracing the performances of steam-ships, experiments with propelling instruments, condensers, boilers, &c. accompanied by analyses of the same; the whole being original matter, and arranged in the most practical and useful manner for engineers. By B. F. Isherwood, chief engineer, United States navy," has been published by Baillière, of Broadway, New York, and 219, Regent-street, London. It contains an elaborate account of British gun-boats in China, British war-screws, &c. such as we do not remember having seen in any of our own publications. The volume is illustrated by a number of fables of the data of various experiments referred to in the title.—To supply the tradesman and the merchant, with a popular exposition of those laws which most commonly concern their every-day transactions, and which shall enable them to guard against knavery and imposition, Mr. Sleight, the well-known barrister-at-law, has prepared a little volume, just issued by Routledge and Co. of Farringdon-street, under the title of "A Handy Book of Criminal Law, applicable chiefly to commercial Transactions." Mr. Sleight is an able counsel, and doubtless a reliable authority in all such cases.

Miscellaneous.

MR. ARMSTRONG, C.E. KNIGHTED.—At her Majesty's levee recently, the honour of knighthood was conferred upon Mr. W. G. Armstrong, the inventor of the new rifle ordnance, who is further described as "Engineer to the War Department for Rifled Ordnance." Mr. Armstrong was the inventor of hydraulic cranes, and also of the electrical steam-boiler.

CHURCH EXTENSION AT HAMPTHEAD.—The foundation stone of a new church in Upper Avenue-road, Regent's-park, has been laid by the Bishop of London. The edifice is of the Early Decorated period, of red and black brick, enriched with tiles. This church will be the third that has been erected in the parish of Hampstead in less than four years, for a new population of some 6,000 souls, that has sprung up on what, ten years ago, were pleasant country fields.

THE ROYAL ALBERT BRIDGE, SALTASH.—This bridge, which connects the counties of Devon and Cornwall on the line of the Cornwall Railway, crossing the River Tamar, at Saltash, is now nearly completed, and the first locomotive will pass over it on this, Saturday morning. It is a subject of wonder, for its lightness in appearance and great strength. The flooring is completed on the westernmost side, and the permanent way and rails laid down; the eastern span is also in course of rapid completion. The greatest weight possible in train travelling on any one point is about 30 tons, the weight of the largest locomotive engine—while a test of 1,200 tons has been applied, and which extraordinary pressure produced only a deflection of 4-10ths of a foot. The links of the chains have been subjected to a test of about 10 tons on each inch of section. There is a skew bridge over the turnpike-road on this line, near the three-mile stone from Plymouth, of 139 feet span from end to end, and of 135 feet in the clear, of a surprising engineering character. It contains 90 tons of wrought iron.

THE IMPROVEMENT IN PARIS.—Allow me to ask if there is not a mistake in Mr. P'Anson's account, in your number for Feb. 26, of the "Recent Improvements in Paris," in adding up the value of the new buildings and enlargements, and so making a total of 35 millions letting and 712 millions selling value; whereas, I apprehend the aggregate to be stated in the year 1856, when the total number of new or enlarged houses had risen to 2,000, being considerably above the number demolished, and the value to 250 millions, or nearly double the value of the old houses.—J. G.

THE '61 EXHIBITION.—Sir Cusack P. Roncy, in a letter to the chairman of the Council of the Society of Arts, expresses a strong conviction that the increased facilities of railway and other transit will greatly promote the visitation to the Exhibition in '61 compared with that of '51, at least from foreign countries. "Since 1851," he remarks, "various railways on the Continent, converging more or less towards this country, have been opened, and several others of great importance, both in respect of shortening existing routes and of opening new districts, will be completed this and next year. Besides, the continental railways have now learned to appreciate through-booking, return-tickets, and excursion traffic, at reduced rates, which they would not look at a few years back. I have the proof of this within my personal knowledge. . . . The case of our own railways affords abundant proof of travelling development since 1851. The total number of passengers conveyed on them that year was 85,000,000; in 1857 there were about 140,000,000; and these numbers are constantly on the increase, at a rate of proportion immensely beyond the additional mileage opened each year. . . . As respects the American continent, the number of persons who come to Europe every year is largely on the increase, especially in steamers. In short, look to what part of the world we may, we see increased facilities of communication. Every one of these tends towards England, and therefore think that as regards facilities, without saying a word on the increased desire of every one for travel, or on the reduction of fares which has taken place almost universally, sufficient has been said to prove that the statistics of the past cannot form a real criterion as to what may be expected if the Exhibition of 1861 have in it—as I believe it can have—features every whit as attractive as, though differing in many respects from, its great predecessor of 1851. Let me suggest (he adds) that the traffic arrangements for this Exhibition be begun in ample time."

SIR R. PEEL AT TAMWORTH LIBRARY AND READING-ROOM.—A *soirée*, in connection with the Tamworth Library and Reading-room, was recently held in the Town-hall of that town. About 300 sat down to tea. Lady Emily Peel presided at the centre table in the hall; and Sir Robert Peel, bart. M.P. president of the institution, was present, and addressed the meeting on the state of Italy,—a discourse chiefly political. After tea, when the address was delivered, there were about 500 persons present.

WATERING THE STREETS AND ROADS.—Already are complaints being made, and the principal thoroughfares avoided, in consequence of the clouds of dust. Is the same game to be played off, over again, and no water all dusty and windy March,—and then are the water-carts and April showers to come in together?—EXPECTANTS.

MASTERS AND WORKMEN.—Mr. Mackinnon has obtained leave to introduce a Bill to establish equitable councils of conciliation and arbitration to adjust differences between masters and workmen. Connected as he was with the mining and coal districts in Lancashire, especially in the neighbourhood of Ulverston and Bacup, he was able to state that the workmen there were unanimous in favour of the measure, which they believed would go far to prevent those strikes that had done so much injury to that neighbourhood.

LAYING THE FOUNDATION-STONE OF ST. PAUL'S SCHOOLS, KNIGHTSBRIDGE.—This ceremony has been performed on the large piece of ground attached to the church and devoted to the new buildings. The schools will cost not far short of 3,000*l.*; most of which has been subscribed in the parish. Residences will be attached when the funds will admit of it. The schools will accommodate altogether about 400 children. The style of architecture will be Early English, and the materials white Suffolk bricks, with Bath stone dressings, and brick relieving arches over stone windows. The roof internally will be open timber, stained. There will also be a bell-turret, corbelled over with ornamental red brickwork.

OXFORD ARCHITECTURAL SOCIETY.—At a meeting of this society held on Wednesday, the 16th February, a paper by Mr. F. S. Grose, of Queen's College, was read, on the "Ecclesiastical Architecture of Suffolk." He began by defending the Perpendicular style, the prevalent one in that county, from the abuse often lavished upon it, pointing out its superiority in symbolism and in general convenience, especially for city churches. Professing himself an admirer of Perpendicular window tracery, he indicated how important it was to consider the character of the masonry employed for the wall in which the windows were set. For as the mathematical precision of Perpendicular work was a natural reaction upon the extravagancies of the later flowing, its merit could not be sufficiently appreciated except when brought into contrast with the error against which it was a protest.

THE GLASS TRADE AND DISPUTES.—For crown glass, according to the Leeds Chamber of Commerce, the demand is at present only moderate, the war question having a certain effect. The sheet glass trade, a branch latterly introduced into this district, is, on the whole, in a healthy condition, and a great many hands, some of whom had been thrown out of work by the cessation of a firm engaged in another department of manufacture here, are well employed. Though foreign-made sheet glass is still imported, the market for our home production is little influenced thereby.—At a meeting of operative flint-glass makers held at Newcastle, it has been resolved to support the locked-out glass-makers throughout the country.

BLACKBURN SEWERAGE.—The borough surveyor has just presented a report on the sewerage works. It appears that the length of sewers constructed and under contract is 5 miles 522 yards. About 960 yards of the main outlet sewer (6 feet by 4 feet, egg-shaped) have been completed, and it is proposed to continue the main through a principal part of the town by tunnelling at a depth of about 35 feet. The surveyor, Mr. Brierley, says:—"The complete sewerage of this borough will be a work of some magnitude. What is our position? We are now only beginning what should have been going on systematically during the last ten years at least. A population of nearly 60,000 has grown up destitute, or nearly so, of properly organized sanitary measures; so much so, that our borough has become almost a by-word in this respect. From a rough calculation I have made, I estimate that not less than 30 miles of new sewers are required to make the system efficient, and that the execution of these will extend over at least four years."

NEW HARBOUR OFFICES, SWANSEA, COMPETITION.—The trustees have selected a design by Mr. Charles R. Gribble for the new harbour offices at Swansea, and the building will be carried out forthwith under his superintendence. The frontage of the building is 150 feet.

LIVERPOOL ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—The usual fortnightly meeting was held on Wednesday evening, the 23rd, at the Royal Institution, Mr. H. P. Horner, the president, occupying the chair. Mr. Frank Howard read his paper on "Criticism." The paper elicited discussion.

MASTERS AND MEN.—Messrs. Devan, Minchener, and Routledge, of Canon-street, have recently converted a spacious apartment in their establishment into a lecture-hall, and have made arrangements to engage the services of men eminent in the several walks of science and literature to lecture fortnightly, during the present season, to the numerous staff of persons in their employ, including clerks, warehousemen, apprentices, porters, and the domestics, all, without any preference or distinction, having the privilege of each introducing a friend on the occasion. Lectures have already been delivered by Professor Malone, Professor Kymmer Jones, and others. The firm have also taken a field at Kingsland, to give the young men opportunity to enjoy a game of cricket on Saturday afternoons.

MAIN DRAINAGE OF THE METROPOLIS.—At a meeting of the Board held on the 25th, the Main Drainage Committee sent up a report stating their proceedings pursuant to the resolution of the Board of the 11th February, 1859, in relation to the tenders for the pumping-engines and machinery for raising the sewage at the Deptford station; and recommending that Messrs. Stephenson, Bidder, Field, Hawkesley, and Penn, be requested, in conjunction with the engineer of the Board, to give their opinion on the relative merits of such designs and tenders, as applicable to the works to be carried out. Upon the motion of Mr. Deputy Harrison, the report was adopted. Upon the motion of Mr. Carpmel, it was ordered that the engineer should report to the Board as to the progress of the main-drainage works, on the first Friday in each month.

STRIKES AND INTIMIDATION.—At Glasgow, at the present moment, unfortunately, there are two strikes of workmen. The plumbers and bottle-makers of Glasgow are on strike. The plumbers have been on strike for about three months, and the bottle-makers nearly the half of that period. The masters are assisting each other in their resistance to the demands of their workmen, while, on the other hand, the operatives have resorted to the criminal procedure of threatening, assaulting, and intimidating workmen and apprentices who had not joined in the strike. In order to put a stop to this, Sheriff Sir Archibald Alison has issued a proclamation, in which it is stated that intimidation by look, word, or act, or by threatening assemblies, will be visited with the full penalties of the law.

THE STREET FOUNTAIN MOVEMENT.—The late mayor of Chester, P. Eaton, esq., an extensive brewer there, has placed, at his own expense, in different parts of the city, public drinking fountains, a bowl being attached to each. This supply of pure water has been found of great advantage to the working classes in the city.—There are to be at least two drinking-fountains erected in Southampton, and in addition, two ornamental iron pumps, one of which has been and the other is yet to be erected in the Above Bar-street, have ladies attached.

IPSWICH BOROUGH JAIL WORKS.—Mr. Gowing, one of the Town Council of Ipswich, and a member of the Jail Committee, lately brought under notice of the council the quality of some of the materials employed in the jail works. Bricks were produced which are said to have been crumbled to powder in presence of the council. The committee consulted Mr. C. Humphreys, of London, surveyor, who examined the workmanship and materials used by the contractor (Mr. H. Ludf). Some correspondence afterwards took place, and Mr. Humphreys, in a letter to the town-clerk (Mr. S. A. Notcutt), observed, "I think that the materials and workmanship used in the brickwork are not such as, in fairness, your surveyor ought to condemn. . . . The contractor, by reason of the insufficiency of the concrete works, ought to indemnify the corporation from any loss by failure of works, on payment of contract." The council have determined, after considerable discussion, to act upon Mr. Humphreys's report. Mr. Gowing states his intention of retiring from the jail committee, as he does not wish to be in any way responsible for the works.

CHESTER ARCHEOLOGICAL SOCIETY.—At the last monthly meeting of this society Mr. Octavius Hudson (Government lecturer at the Department of Science and Art, London) delivered a lecture "On the Polychromy of the Lady Chapel in the Chester Cathedral, and on the Principles of Colour as applied to Architecture." There was a very numerous attendance of members and their families. Mr. Hudson had hung around the room a large selection of illustrations from various examples of Christian art, which added much to the interest of the lecture. Mr. Hudson, in the course of his lecture, gave an outline of the system of decoration he was pursuing in the lady chapel of Chester Cathedral. In the first commencement of the work they were not aware that any of the original colouring was present, so that they proposed drawing up a scheme of decorations; but, fortunately, previously to that being done, the original colour was found, the walls, the bosses, and the ribs were all seen to be enriched by colour. With regard to the vaults there was more difficulty. It appeared that some years ago they had been stuccoed, and the stone had been chipped with an axe to make the stucco hold; a great deal of the stucco was taken away, with the hope of discovering the original plan of colouring, but the search was unavailing. They then had recourse to the style of decoration of the churches of that period as discovered in some English and some Italian churches now in existence. The lady chapel in Winchester Cathedral afforded them one means of supplying the deficiency, and the walls had been supplied from a church near Bedford. He inferred that the lady chapel was the work of the latter part of the thirteenth century.

CHEAPEATING ORNAMENTAL TILES.—We have had our attention pointed to a mode of manufacturing tiles, by Messrs. T. and R. Boote, of Burslem, invented and patented by them. The process is extremely simple. A mass of common red bricklay is beaten into a mould of the required size, and, after the removal of the mould, the oblong block is cut by a series of parallel wires, in one process, into so many quarries of the requisite thickness. A surface coating for the quarry of finer clay, of the required colour, and about one-sixth of an inch in thickness, is obtained by a similar process, the wires in this case being placed so much closer together. The coating is then placed upon the tile, which is put in a press, upon an iron plate, perforated in the form of the pattern intended to be imaid. Underneath is a metal die, also in the shape of the design with which the tile is to be decorated. A "bat" of fine clay, about an eighth of an inch thick, and of the required colour, or colours—if the pattern is composed of more than one—is placed upon this die, which is then forced up by powerful mechanical pressure, and inlays the clay into the surface of the quarry above. After a day's drying the quarries are scraped, to bring out the clear outline of the pattern: they receive a few days further drying, and are then ready for the oven. We learn that by the processes previously used one man is expected to make about three dozen tiles per day. The tiles are a month or six weeks from the commencement of the making before they are ready for the oven; and the present price is about 15s. per yard, exclusive of the additional cost of laying floors composed of many small tiles.

TENDERS.

For a new warehouse at Bow's Wharf, Cock-hill, Ratcliff. Mr. J. Tanner, architect. Quantities furnished—

Brown	£940 0 0
Roper	910 0 0
Davis	870 0 0
Callis	675 0 0
Asby and Sons	670 0 0
Elston and Sons	658 0 0
Oxford and Co.	657 0 0
Turner and Sons	649 0 0

For making roads, &c. to the New Workhouse, Folehill. Mr. Edward Holmes, architect—

Canwell and Rown	£375 0 0
Dutton (accepted)	295 0 0
Priestly	260 0 0

For works to be done in erecting stables at the rear of the Warrington Hotel, Portisdown-road, Maida-hill, for Mr. E. Pitt. Mr. Wilkinson, architect. Quantities supplied—

Hinds and Aldred	£2,660 0 0
Johnson	2,597 0 0
Langridge	2,350 0 0
Hyde	2,180 0 0
Rodkin	2,026 0 0
Cross	1,986 0 0
G. Todd, jun.	1,958 0 0
Longmire and Barge (accepted) ..	1,895 0 0
McLennan and Bird	1,828 0 0
Smith and Hatt	1,797 0 0

* Messrs. McLennan say the opportunity was not given to them to comply with conditions.

For tanks, water-supply, &c. to the new workhouse Mr. Edward Holmes, architect—

Edwards	£473 0 0
Jeake	449 0 0
Matterson and Huxley (accepted) ..	408 0 0
Smith	390 10 0

For new baths, Woodcock-street, Birmingham. Mr. Edward Holmes, architect. Quantities supplied—

	1st class swimming-bath, of 100 ft. by 60 ft., with residence and offices, &c.	2nd class swimming-bath, of 100 ft. by 60 ft., with residence and offices, &c.	30 private baths.	Total.
Nowell	£587 13 6	£14 8 16	£81 6 0	£587 13 6
Cresswell	590 14 6	600 7 16	7516 5 0	5100
Horsley	5839 12 51	594 7 48	5342	5342
Mountford	5520 13 00	550 7 20	5235	5235
Wilson	5477 12 50	594 7 20	5235	5062
Smith and Sons	5490 12 00	600 7 30	5150	5150
Hardwick and Son	5234 11 75	542 6 51	4895	4895
Rowe	5047 12 47	587 6 31	4640	4640
Matthews	4879 12 45	525 6 50	4687	4687
Branson and Gwyther	5021 10 00	548 6 42	4646	4646
Webb and Son	4950 11 37	527 6 63	4627	4627
Harley	4536 9 60	470 5 07	4261	4261
Chambers and Hilton	4342 9 57	471 5 77	4093	4093
Jones	4299 9 53	497 5 31	4065	4065

PLUMBING, GLAZING, AND PAINTING.

Wilson	£73 13 11	1037	£47
Nowell	696 2 02	133 10 31	646
Webb and Son	667 1 92	754 9 08	623
Branson and Gwyther	619 1 80	132 9 52	595
Smith and Sons	603 1 30	135 9 50	580
South and Son	622 1 78	128 9 28	570
Chambers and Hilton	692 1 69	125 9 17	562
Rowe	620 1 72	124 9 16	562
Horsley	612 1 72	125 9 10	561
Matthews	604 1 72	125 9 03	561
Hardwick	584 1 64	110 8 59	542
Harley	584 1 67	114 8 56	532
Reakes	578 1 65	120 8 65	527
Jones	575 1 61	122 8 38	539
Whitworth	573 1 64	119 8 36	542

ENGINEERING.

Meeling and Son	£1917 231 671	£9890 0 0
Tyler and Son	1695 212 647	2545 0 0
Milton and Co.	1565 330 565	2160 1619
Jeakes	1696 60 358	320 0 0
Busby	1630 211 448	2869 1632
Heywood	1436 230 411	2 86 1480
Middleton	1404 297 440	2141 1498

Estimates accepted for the first portion—

Building—Jones	£1,205 0 0
Plumbing, &c.—Whitworth	573 0 0
Engineering—Middleton	1,404 0 0

For Kent County Prisons, St. Augustine's, Canterbury. Messrs. Whecheard and Blandford, architects, Maidstone. Quantities supplied—

	Bricklayers &c. Contract No. 1.	Smiths, &c. Contract No. 2.	Plumbers &c. Contract No. 3.
Marsland and Son	£1200 0 0	£2060 0 0	£700 0 0
G. Myers	899 0 0	1975 0 0	799 0 0
Messrs. Wood	7980 0 0	1815 0 0	579 0 0
John Willson	7875 0 0	2027 0 0	611 0 0
K. Spicer	7850 0 0	—	—
Moxon	7500 0 0	1280 0 0	530 0 0
Lancelotti & Gaskin	7113 0 0	—	673 0 0
Sutton and Vaughan	7110 0 0	—	—
G. Punnett	6880 0 0	1591 0 0	326 0 0
Evans, Brothers	6847 0 0	—	—
W. Wood	6602 0 0	—	—
W. E. Smith	6347 0 0	—	563 0 0
J. G. Naylor	6210 0 0	—	300 0 0
Stiff and Richardson	6209 0 0	—	—
Ayers and Co.	5582 0 0	1189 0 0	463 0 0
Kirk and Parry	5495 0 0	1417 0 0	495 0 0
Drury & Biggleston	—	1165 0 0	—
R. and J. Rankin	—	1819 0 0	—
Austen and Brown	—	1301 0 0	—
Cottam and Co.	—	1330 0 0	—
Weeks and Son	—	850 0 0	—
Dove	—	—	570 0 0
Ashton	—	—	492 0 0
Court	—	—	197 0 0
J. Hyles	—	—	198 0 0

Those marked thus (*) are accepted.

For new district church, Selly Oak, in the parish of Northfield, Worcestershire. Mr. Edward Holmes, architect. Quantities supplied—

	Church.	Tower and spire.	Internal colored stone bands.	Total.
Cresswell	£2650	£950	£90	£4390
Branson and Gwyther	3999	691	64	4054
Smith	3250	709	75	4025
Hardwick	2951	513	53	3513
Biggs (accepted)	2950	618	49	3617

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The best and cheapest preservative for all building materials, and
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DECORATIONS, on stone and all kinds of cement, &c. rendering the
surface of stone-like and impervious to water. Refined from
6d. per gal.

For specimens and estimates apply to Messrs. RUFORD,
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Genuine White Lead, 31s. per cwt.; Lined Oil, 2s. 3d.; Turpentine,
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WHARF, 74, BARKSIDE, Southwark, S.E. Fire-bricks, Lumps,
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superior Newcastle Fire-bricks, Clay Refractories, &c. Sanitary Pipes,
Chimneys, &c. &c. at the lowest prices. Shipping
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PIPER, &c. tiles is hereby most respectfully given, that the
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may be enabled to deliver at such prices, either LUMP or
GROUNDED, as will ensure its being used, not only in works where
quality is considered, but for ordinary building purposes, and for its
be found very advantageous in building all BASEMENT
FLOORS, being better adapted for such purpose than any other tile
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Wentley, and Friday, of the Three, and Tuesday, Thursday,
Saturday, at Eight o'clock. The Three Views of Don Quixote
Lecture on Chien-see, National Philosophy. The Atlas Chaudier,
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"RENDERING" PLASTER, for SUPER- RENDERING the USE of LIME-MORTAR in the PLASTERING of WALLS and CEILINGS.

This VERY TOUGH and STRONG PLASTER is not liable to crack or
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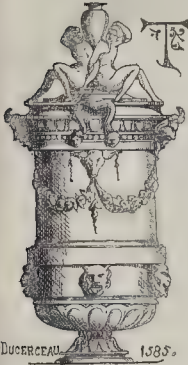
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The Builder.

VOL. XVII.—No. 840.

On Furniture and Furnishing.



HERE are many living who can look back sufficiently far into the vista of the past, to call to mind the period when articles of decoration in the parlour or drawing-room of even the middle classes, were of a very peculiar and more national character than at present. Themantel-piece usually boasted its florid peach,

pear, or orange, made of stone. The virtuous was supposed to be so deceived by the "*ars est celare artem*," that he would, undoubtedly, attempt to comminate the tempting delicacy; and the complacency of the artist was, no doubt, satisfied at the contemplation of the human teeth in contact with the work of his skill. Then there was the chalk parrot, very green and brittle, regarded generally by the inmates as a specimen of high art. Near to this cretaceous specimen of ornithology reposed in great dignity a squat Chinese mandarin, who, upon the slightest touch, would gravely and sententially nod his head; but whether at the said touch, or at things in general, deponent sayeth not. Added to these a few specimens of shells and pebbles, a pair of Derbyshire spa candlesticks, an eui-case, and a couple of hand-screens of peacock's feathers, and the catalogue of mantel-piece *penates* was well-nigh complete. Then, in the corner of the room, carefully arranged on a small round walnut-wood table, would most likely be found a collection of either Worcester, Derby, or Chelsea China, with a Chinese tea-pot, and cups and saucers, by no means deficient in little bits of brass ribs, called rivets. Then there was the eternal round, convex mirror, reflecting everything in a small, clear focus, like a peep into the world of Lilliput. An eagle perched at the top, with a brass chain in his beak, and little gilt balls around the frame, were part and parcel of this curious specimen of the reflective genius of the age, and its position was universally over a prim old-maidish sort of side-board, whereupon, with straight thin legs, and oval stomach, stood the family tea-urn. The brass-wire fender, square and high; the chintz curtains, the Kidderminster carpet, and the home-spun hearth-rug; chairs and tables truly English in substantiability and form; and the old marqueterie book-case, with a falling front, were severally characteristic of the time. The spinet, too, though suggestive of an earlier date, was often there, as an heir-loom or for use; and then the odd-looking music strewn about! Amateur singers in those days had evidently little ambition to ascend to *alto* or to dive down into the depths of *basso*, as evidenced by the very limited scale of the domestic score. The engravings which often graced these leaves of the muses were certainly wonderful specimens, and some few lying before us at this moment are "screetchingly" ridiculous. People at the present day who, with a shilling in their pockets, can purchase a book full of admirable wood-cuts, could scarcely credit the dismal, meagre engravings which adorned the pieces of music and the books of our grandfathers. And lo Apollo—the words of the songs! Judging from these, the morality of the times must have been at a low ebb, re-

deemed, however, by some of the light elegancies of Marlowe, Raleigh, or Crashaw:—

"Hey down adown did Dian sing
Amongst her virgins sitting,
Than love there is no vainer thing,
For maidens most unfitting.
And so think I, with a down, down, derry."

The pictures on the walls most likely represented ladies rising like flowers out of flower-pots reared in the Lely, Kneller, or Reynolds' nursery-grounds, while admirable mezzotints, in black and gilt frames, found their allotted places. The Countess of Berkeley and the Countess of Essex, by Sir Joshua, engraved by Ardell; the family of the unfortunate Charles, after Vandeyck, were probably amongst the number, not omitting the Countess of Coventry, one of the celebrated Miss Gunning's, of whom the wits of the day said,—

"Cupid one day, to show his cunning,
Left off his bow, and took to gunning."

Instead of these comparatively humble attempts at ornament and decoration, what have we now? The periods of Louis XIV. XV. and XVI. revived without the governing laws of taste to direct the choice of buhl, marqueterie, and ormolu. As for pictures, our own artists have sprung into giants. Our walls are covered with the finest water-colour drawings in the world, or rich with the productions of oil painters, whose works fetch prices which would make—and perhaps do make—the ghosts of Gainsborough and Morland long to come back again into the world of palettes and easels. Clean swept away are almost all the landmarks of our forefathers' tastes by modern innovations imported into this country after the general pence; and although Wedgwood and his fellow labourer and helpmate, Flaxman, achieved miracles of art,—and although at the present time our furniture-makers, whose boast is more in respect to substantiability and use, than to form and outline, have done their best to keep the English taste in one direction, yet we are every day reflecting more and more the period of French magnificence which made Paris some 150 years ago the most elaborately furnished capital the world has ever seen. For a long period our insular position, and the necessarily limited means at our disposal for an acquaintance with continental taste, cast us upon our own resources, the result being the *fortiter in re* of furniture, instead of the *suaviter in modo*.

We must endeavour, however, while yet there is time, to chasten our predilections for the highly decorative in in-door art, lest we fall into the error of collecting in our drawing-rooms an incongruous assemblage without repose, order, or design. Upon entering a room, any one in the habit of thinking upon these matters, can see at a glance whether fastidious taste has presided over selection, or a mere reliance on the recommendation of the upholsterer or commission agent.

Possibly one of the most important features in the proper adornment of the interior of our houses, and one certainly the least considered, is the curves of the various articles of furniture, and of matters of decoration generally. The correct arrangement of outline gives the peculiar character to all the finest furniture. It has been urged, that "the composition of curves will be most agreeable when the mechanical means of describing them shall be least apparent;" and we know that at the best period of art, the curves used in mouldings and ornaments, were those of the higher order, such as conic sections, whilst in the period of declining art, circles and compass work prevailed. In the choice, therefore, of your cabriolet chairs, tables, and pier-glasses, look to their curves, and to the relation they bear to the other furniture of the room and to the room itself. This necessity equally applies to all the minor articles where undulatory lines are in use; and, as the laws of beauty are much more arbitrary than is generally supposed, an investigation into the causes which make one article beautiful and another the reverse is a very useful and a very agreeable recreation. You object to the bulge in that jug because it is too sudden, or you delight in the outline of that vase, or you greatly prefer the oval frame of that particular picture to the other square ones, pro-

bably not remembering that your taste has been guided by the most subtle and delicate laws of geometry, plane and solid. Arabesque designs owe their beauty to the highest principles of this science, showing the close relationship between art and science,—so close, indeed, that in some cases it is almost difficult to say where the one begins and the other ends; and so wonderfully formed is the human mind, that it arrives at results and produces wondrous effects before the causes and principles which have led to them are discovered.

"Causa latet, vis est notissima"

If these should appear to the general reader, to whom these remarks are addressed, somewhat abstruse matters in connection with so ordinary a subject as that of properly furnishing one's house, we would ask him to reflect a little, and assuredly he will alter his opinion. The "taste" of England may be said to be in almost a state of transition. It is emerging from darkness into a light almost overpowering. The most beautiful objects from every part of the world are pouring into the English market. So great is the demand for articles of *vertu* that private collections on the Continent are at this moment being broken up for the purpose of sending to England. They find their way, too, not into private shops, where only the few can examine them, but into all the respectable auction-rooms of London, where any one has a right to enter, to investigate, examine, admire, and purchase, if he can. Our auctioneers are all making fortunes, for, through their rooms percolate the treasures of the world, a fact which scarcely requires illustration by referring to the extraordinary public sales of the last two or three years. Added to this means of guiding and refining taste are the art exhibitions, where the private collections of individuals are gathered together for the public good, and as "comparison" is one of the first necessities for arriving at sound conclusions in respect to judgment in selecting, it is to be expected that the impulse given to art, will, and does, outrun all possible calculation, and advances in almost geometrical proportion. On the other side, however, the lamentable displays of Vandalism, or pure unmitigated ignorance, are lamentable in the extreme. The success of some of the mock auctions of London, where daubs are sold for "paintings by the old masters," and glaring vulgar china as Sevres or Dresden, and sticky, treacherous bronzes as old Florentine, is attributable to this ignorance, to say nothing of the enormous price given for inferior articles at the more legitimate sale-rooms. The laws, therefore, that govern and direct these matters are not unimportant, and one of the rewards of good taste is not only in the pleasure created by a recurrence to a really beautiful object, but it touches the pocket also; and this fact, if it be received as one, will, we conceive, be considered unanswerable.

The next important matter for consideration is *arrangement*, so that one piece of furniture may not unduly obtrude on the observation of the beholder to the detriment of its neighbour, nor its colours kill adjacent articles. The eye loves the contemplation of harmony, and none can exist in a chamber, however magnificently furnished, unless proportion is observed. How often the entire beauty of an otherwise well-furnished room is utterly ruined by a gaudy carpet, the ill-assorted colours in which dissipate the vision, and do not permit the eye a moment's rest on worthier objects. Repose is so necessary for the visual faculties that they enjoy nothing without it, and as the eye naturally first seeks the floor, it is best fitted for the enjoyment of surrounding objects of beauty if it does not rest on a pattern which might suggest the idea of an iris distorted into madness by the agonies of the loom! The same remarks apply, of course, to the papering of the room. There again, patterns of all kinds are destructive to decorative furniture, although when there are neither pictures on the walls, nor ornamental objects around, paper of delicate and appropriate design is an excellent substitute—and comparatively a cheap one—for more expensive means of pleasing the eye and satisfying the taste; but do not indulge in

both, for each will be neutralized by the other. In short, a room furnished with incongruous objects, without regard to harmony and arrangement, however admirable they may singly be, is like a room full of people talking at once, making of the whole mere jargon and din, even though each individual speaker may be an impersonation of wisdom itself.

THE NEW REFORM BILL: SOCIAL PROGRESS.

At the time of the last general election, in 1857, we ventured to offer observations on the subject of parliamentary representation; and certainly the period of nearly two years between that time and this, in regard to subjects which have come before the attention of the House of Commons, has not diminished the concern which we specially must have in the selection of men competent to express opinions of the educated classes, and acquainted with facts of the condition of the people. The questions of the health of towns and the improvement of dwellings; the metropolitan questions of sewerage, street and railway communications, bridges and river-embankment, public parks, and others; questions such as those which have been brought into discussion in reference to the public offices, which may favourably or prejudicially affect our art for many years to come; questions of relations between masters and workmen; and others educational and social, more than we have space to recount, are arising continually in the House of Commons, and many of them only to be occasion for exposure of ignorance on the part of conspicuous members of that august assembly. We therefore have intimate concern with *politics*—interpreting the word in its true sense of the art of well-regulating states, not limited in application to the matters traditional of old which have been termed “parties,” and to those which are international. We will not say that if Parliament did its work, there would be no need of the formation of an association such as that for the Promotion of Social Science: the probability rather is, that the inquiries pursued out of Parliament are necessary prior to any useful measure of legislation. Such was the view recognized by Mr. Chadwick, when he recently urged the systematic pursuance of this preliminary investigation. The insufficiency, and what is often the one-sidedness, of inquiry in parliamentary committee, has been shown of late in every question taken up, in which we have felt concerned.

If the question of public health were properly understood, it would be seen to be most immediately connected with that of the defence of the country. When we are able to present facts, such as those brought to light by the Reports of Local Boards of Health, for example, as mentioned in another place, that the average duration of life can be lengthened immediately, several years, by sanitary operations, and that the high mortality of children which has been well recognized as showing prevalence of causes that determine degeneracy of race, can be in similar manner reduced, the *Builder* may be justified in offering those facts for the consideration even of a Secretary at War, or a First Lord of the Admiralty, along with the arguments for the better care of the men at present in the nation's service.

In the bill now before the House, “to Amend the Laws relating to the Representation of the People in England and Wales, and to Facilitate the Registration and Voting of Electors,” we observe that there is not only an extension of the suffrage so as to include those of the working-classes who have acquired settled habits, who alone it may be desirable should influence the representation, but that there is a certain concession to that representation of professions and educational and progressive agencies, for which before we ventured to contend. It must be quite clear that whatever qualification, say of property, be taken as entitling to a vote, that system must be a most imperfect one which can exclude from the register any portion of such a profession as (like of those with which we are connected). Under the existing law, an architect or engineer, resident in chambers, is not qualified for a vote, although the nominal owner of the house, who may be a person quite inferior in social position and in education, may have one, and in spite of the facts, which we have made sufficiently clear, that the architect or engineer is one who is conversant with those very questions which make or mar the prosperity of the country. To how much, indeed, of that prosperity, not to speak of architects and town-improvements, has not the class of engineers already contributed? It is true

that we should have been better satisfied with a bill that would have given the direct qualification to our *profession* (and we may name the actuaries and statisticians also as deserving of recognition); but the limitation of the professional title to being on the register to the professions called “learned,” and to certificated schoolmasters, has probably arisen only from the fact that in callings such as our own, the means of defining the limits of the profession, by diploma or otherwise, have not been discovered, and that therefore as before the public, there would be no protection from the assumption of a qualification by any lod-man who chose to call himself “architect.”

We would express no opinion in favour of clauses of the bill at this stage of its progress; but, as tending we believe to forward the social interests of the artisan class, and the progressive and beneficial influence of our profession, its principle we hope will receive impartial examination.

RESULTS OF SANITARY IMPROVEMENT. MACLESFIELD.

Two years ago we had to notice results, at that time, of the sanitary improvements at Maclesfield; and we have lately met with particulars of the sixth year's proceedings of the Local Board of Health and Improvement Committee, which should be stated, as with other experience, corroborative of the fact of the extraordinary and immediate benefits from works of the like character. In the two first years, 3,372*l.* were expended beyond the income, with the avowed object of effecting the extensive works required in the streets and courts most needing improvement, within the shortest period. The beneficial results were at once manifested, and were, singularly, confined to the localities operated upon. The decreased mortality ranged from 12 to 60 per cent.; as to sickness, the cases attended by the union surgeons were from 24 to 29 per cent. less; and police-offences were reduced 21 to 55 per cent. Such benefits, of course, have been attained not without increased rates; yet even during the last year of unexampled distress “not a single summons or other summary proceeding, has been issued” for the recovery, though there are “11,000 separate assessments.” Previous to the last six years, a very large per centage of the Highway and Lighting Rates was lost. The present Board, it is true, have powers for the collection of assessments at 10*l.* and under, from the landlords.

The practice from the first having been to complete the chief sanitary arrangements in houses and courts, whilst the streets were being sewered and paved, full opportunity has been afforded for measuring the character of the results. Forty-three streets and 215 courts have been thus improved, as mentioned in our particulars from the fourth report; and 602 houses have been similarly treated, the whole expenditure having been 15,944*l.* Great as the outlay has been, the results, sanitary and moral, as well as pecuniary, have far outweighed the cost. The cottage-surveyor has gained in the improved ability for payment, by reason of lessened sickness, and by lessened cost of repairs; moreover, cottages have become better tenanted as compared with the period prior to the improvements. In four of the streets, where sickness had always prevailed, there had been a saving of 133*l.* a year in parish relief, or about one-eleventh part of the cost of the improvements. Surely direct results like these cannot be over-estimated. The report properly remarks on the influence which the change from extreme filth may be supposed to have on the habits of the people, and in words similar to those we have often used, says, “The mind, too, receives a secret sympathetic aid to purity.”

Before the operations of the Board, the mortality in the borough, in a period of five years, was at the rate of thirty-three in a thousand; for the last five years it has been twenty-six in a thousand. In the rural districts, immediately surrounding the borough, the mortality during the first five years had been sixteen in a thousand. In funeral expenses alone, calculated from returns of 232 burial clubs, 8,727*l.* have been saved. There have been 28,420 less cases of sickness, and the cost of these cases being estimated, according to the data furnished by benefit societies, or at one shilling a day for twenty days, 85,120*l.* would appear to be thus saved. The average age of all who died in the first period of five years, was twenty-four years (whilst in the adjoining rural districts it was thirty-four years); in the last five years it has been twenty-seven years. The last year's average is twenty-eight and a half years. Three years at least have already been added to the life of each

inhabitant. Deaths of children under one year have decreased 16·3 per cent.; and those under five years 4·6 per cent. It is fairly presumable thus that the causes of the degeneracy of race are being removed. The decrease of deaths is chiefly in that class of diseases which are called preventable. Zymotic diseases have decreased upwards of twenty-seven per cent. It is, however, right to state that the average mortality is the same at the present time as two years since, and that although the report says, “Each year gains an accession,” &c. the average duration of life in the last year has not equalled that as mentioned in the fourth report. The reasons of the difference and apparent falling-off should have been inquired into.

In regard to the plans and structure of houses, the Board,—being empowered to supervise and approve the plans of all new houses, factories, and schools,—some time since prepared, in concert with the leading architects and builders, a scheme of regulations; and these regulations have been adopted, without trouble, in 316 new houses, and wholly or partially in 1,600 alterations. The regulation of the 224 lodging-houses has also produced important results.

The Board claim credit for having reduced the rates by one shilling in the pound; for having collected them in full, and for having thereby saved 1,450*l.* a year; for having saved 343*l.* a year in gas, and 317*l.* a year for glazing and repairs, and for having extended the lighting, and promoted the ultimate object of gas-manufacture by the town to aid the rates by revenue; for having improved the cottages, lodging-houses, slaughter-houses, and streets and courts; erected a new bridge, and effected other improvements for the advantage of the town; and for the large amount of saving in lives and expense of sickness, and the improvement of morals; for having provided work for able-bodied paupers during the panic, and for having effected all their works without a single dispute in the shape of litigation,—the money, 15,039*l.* from owners of property in the streets operated upon, also having been collected without default or legal proceedings. They have maintained the public park in a state which has provided means of recreation for the working classes; and since its opening they say that “drunkenness and disorderly conduct,” and “summary charges” of every class, have decreased 25 per cent. A new plan of the borough, on the scale of 10 feet to a mile, has been completed, giving the accurate dimensions of all property, and registering all matters connected with the sewerage, the gas and water mains, and the levels. The Board appear to have made only one omission, judging from their report, and that is, in the document itself, where there is no mention of the name of their surveyor, to whom, however, it is obvious they consider themselves much indebted for “attention and practical skill” in general matters, as well as for his management of the new water-works and other duties, through which engineering assistance had been saved.

METROPOLITAN IMPROVEMENTS.

INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Institute was held on Monday evening last; Mr. J. J. Scoles, V.P. in the chair.

The minutes of the former meeting having been read and confirmed, several donations were announced, among which were a set of engravings on a large scale, representing the decorations on the ceilings of the palace at Versailles.

Professor Donaldson observed that the study of ceilings was one that was comparatively little pursued, yet was one deserving of the utmost attention; and there was scarcely any place which afforded such beautiful specimens of this description of art-decoration as the palace of Versailles, where the rich and tasteful ornamentation of the ceilings was illustrative of the wars of Louis Quatorze and other French monarchs.

A letter was read with reference to some excavations at Worcester, the site of the Roman city of Uriconium; and also a communication from Lord de Grey, stating that he would have great pleasure in holding himself invited to the Institute for Monday, April 4th, for the purpose of presenting the prizes.

Mr. Digby Wyatt said there were two subjects which had engaged the serious attention of the council, and before taking any proceedings with regard to them they were most anxious to have them prominently brought under the notice of the profession at large, in so far as it was represented by the members of that Institute. The first of these subjects was the position of the Royal

Academy, and more particularly as it was affected by the debate of the other evening; the second being that portion of the new Reform Bill by which the franchise was extended to certain professional bodies. The council was strongly of opinion that, whilst it could not but recognize most gratefully and warmly the good done in different ways by the Royal Academy, still, that in anything like a modification of its constitution, the profession to which they all belonged might be more worthily represented; and therefore they considered that means might very properly be taken to call the attention of the Premier or of the ministry to the extension and development of architectural studies in reference to the reorganization of the Royal Academy, if he might use such a word, which was, perhaps, a little far-fetched. And as to the other subject, the council, seeing that members of other professional bodies were distinctly recognized as entitled to the franchise from the fact of their belonging to a profession, could not but feel anxious that architects, whose studies were no less onerous and calculated to enlighten the intellect, should participate in the enjoyment of this privilege, and they felt it very hard that they should be left altogether out of the class of the learned professions. The council hoped that the members of the Institute would see fit to present a petition, probably in connection with both subjects; and at any rate they would be very glad to meet them on that day week, with a view of having the subject fully discussed.

Mr. Godwin congratulated the council on the movement which they had made in these very important matters, and believed that it would be hailed with great gratification by the whole body of the profession, especially that branch of the question which related to the franchise. When the right to vote was acquired simply by the fact of professional position, he thought the special attainments required for the architectural profession afforded a very strong claim indeed to the franchise. He had risen, however, simply for the purpose of suggesting that there was a third subject which might well occupy the attention of the council, and which had, in fact, already received it to some extent: he alluded to the question of copyright. It was expected almost every day that Lord Lyndhurst would move for a committee to consider the matter, and it seemed to him desirable that the council of the Institute should appoint a small standing committee, to bring forward evidence and to take steps for the protection of architectural copyright.

Professor Donaldson was glad Mr. Godwin had called attention to the subject, for it proved that the matter had come legitimately under the consideration of the council, and that it had not assumed to itself any position which was not justified by the feeling of the members of the profession at large. It would be remembered that a petition had been already presented by the Institute to Parliament, claiming the protection of the Legislature with reference to copyright, and of architectural subjects generally; and the matter was now introduced by the council, in order that members who had anything to recommend might have the opportunity of doing so, and that, fortified by such opinions, the case might be put in such an aspect as to come most forcibly before Parliament. The subjects required the utmost consideration, and a special evening would be devoted to them, including the matter to which Mr. Godwin had called attention.

The adjourned discussion on Mr. Rickman's paper with reference to "Metropolitan Improvements now under the consideration of Parliament," was then resumed.

Mr. Rickman said he did not know that he had anything further to communicate. The most interesting point in connection with the metropolitan railways was the one to be chosen to continue the West London to join the South-Western Railway and the Pimlico Station. This line was almost identical with the West and South London Junction Railway, and was put forward by the directors of the West London Railway itself, he believed, with the approbation of the North-Western and Great Western lines,—the two most important influences in connection with the movement. This new line adopted the Kensington Canal, which belonged at present to the West London Railway, till it approached the gas-works; it then crossed the river, and connected itself by several junctions with the South-Western line, and also with the West-end and Pimlico line, at a station the other side of Chelsea-bridge. He was not aware whether the Institute was in a position to take any steps with reference to the general subject of metropolitan improvements at the present time; and he believed this would form a

very fit matter for discussion; but there was one subject to which he should like to draw the attention of members. There were at present established in London several distinct authorities, such, for instance, as the Commission of Sewers, the Metropolitan Board of Works, and the Board of Trade, which had a department for the management of railways; and thus, so far as the Government of the country was concerned, the arrangement of new streets, of new sewers, and of new railways, was controlled by three separate bodies. London, according to his view, could never be properly treated as a metropolis unless these three authorities combined together in some way to determine on the course of new streets, of sewers, and the localities best adapted for termini. It was true that the streets governed the termini, and the sewers to some extent governed the streets; but it was, nevertheless, most important that these three things should be brought together under one head that should have power to deal with them.

Mons. Horeau read a paper developing his views on the subject of improvements generally in the city of London.

Mr. Haywood said that it was by no means so easy a matter as it might at first appear, to effect improvements in London; and if it were viewed as a whole, one would find that he became involved in political considerations. Some years ago he had experience of the difficulty of laying down a system of sewers, and discovered very clearly that it was not such a system as he should have preferred, but such as proved to be practicable, that he was compelled to adopt. On looking at the map, the first thing which forced itself on the attention was the utter want of forethought on the part of those who had the control of metropolitan improvements. If a spider had tumbled into an inkstand, tumbled out again, and crawled over the paper, he believed that he would have succeeded in accomplishing as presentable a design. He was not an advocate for the extremely practical and economical system in favour with the Americans for laying down a town: he believed he should weary very much of living in streets which were told off as A, B, and C, and that on the whole he had no doubt he would rather live in London, even as it was; but there was a great difference between rectangular streets and the miserable confusion which the map of London exhibited to them. Disregarding smaller works, there seemed to have been but two improvements commensurate with the wants and capabilities of the metropolis, one of which was the formation of Regent's-park and Portland-place, and continuing the line down to Charing-cross; and the other was the erection of London-bridge, and the formation of the approaches. These were works of still greater magnitude in that day, for he need not say they were executed before railways had taught us to hack about property and to pull down houses as freely as was done at present. The destruction of property which was requisite for the construction of the London-bridge approaches was in that day considered as something wonderful; and these improvements, notwithstanding the present crowded state of that locality, were still largely felt and appreciated. For the benefit of the metropolis at large very little had been done since then. Cannon-street, it was true, had been opened, but this, though in the heart of the City, he regarded as a local, rather than a general improvement. It should be borne in mind that the thirty or forty different streets which had from time to time been laid out in London had been constructed through the aid of that much-abused, but very useful impost the coal-tax, and he for one hoped it would not be abolished. The two great centres of traffic in London were at the West-end and in the City, and a great many improvements had from time to time been effected, both in the neighbourhood of Charing-cross and the Bank; but the great fundamental want, that of one leading grand communication between these two centres, had been entirely lost sight of. At the same time, he believed there was one object on which money could be even more profitably expended, and that was in throwing open the whole of the toll-bridges; and his reason was, because at the present moment it was utterly impossible to say what the traffic would do for itself; just now it was unnaturally compressed into a channel which was not intended for it, but which was followed in consequence of the existence of these toll-bridges. Let the whole of the bridges between London-bridge and Vauxhall be opened, and they would find that a wonderful deviation of traffic would at once take place, which would immediately relieve London-bridge to the extent of one-third of its traffic, and in a very short time would relieve it

of even more, whilst the necessity for the contemplated outlay of 25,000*l.* or 40,000*l.* in spoiling London-bridge and making its approaches infinitely more crowded than they were in the present day, would be avoided. He sincerely hoped that sum of money would never be spent; he would rather see the bridge become utterly impassable, believing that these small measures only had the effect of delaying and procrastinating and making much more costly in the end great improvements which must come at last. After the bridges had been opened, which he believed was the first great metropolitan want, came the construction of new thoroughfares, and the first that would be required was in his opinion a street connecting the two great centres of circulation, which would begin near the Bank, and take a line between Oxford-street and the Strand up to Hyde-park Corner. He had no pet scheme of his own, and he therefore confined himself to giving an outline of his idea with respect to the requirements of the metropolis; after the bridges were opened and this main street had been constructed, the direction of traffic would have been so considerably altered that they would then be far better able to see the next improvement that would be required. With regard to railways, as in everything else, we had just waited a quarter of a century too late till we had laid out our system. It had been the fortune of Mr. Martin, the painter, a man of great power of mind, and other projectors, to live a quarter of a century before the time when the country was prepared for the realization of their great schemes. In the metropolis persons had got into the habit of waiting until it required three and four times the amount to carry any public object into effect which it would have required in the first instance, and in the end it was carried out in an inefficient manner. They would find that Martin's scheme for a railway surrounding the metropolis was gradually being worked out, but worked out only as it suited the particular views of each company, not for the general advantage of the metropolis, which did not therefore derive the full benefit that would be attendant on economy of outlay and consequent cheapness of transit, or on the advantageous disposition of stations which also affected the time that would be occupied in transporting passengers from one place to another. They would gather from what he had said that he did not give his approval to any large scheme of centralization; for he looked on that as a fundamental error. He would rather at any time have two bridges of 50 feet than one of 100; and any person who was compelled, as he unfortunately was during all the summer months, to create occasional stoppages in the street, would find how great an error it was to have a huge traffic running through one thoroughfare without the means of turning it into others. So, with regard to railways, he looked on the plan now projected for bringing the northern district of London into the valley of the Fleet as a very admirable one, but he would rather have it coming with three termini than with only one. He held that it would be a mistake to bring any large body of traffic into Farringdon-street, and discharge it several times a day at one point across Blackfriars-bridge: he would rather that a portion of it only came into Farringdon-street, and that the other half should go southward, which might be accomplished by taking the line of the canal, and trying to bring that portion of the traffic down nearer to the Bank. The metropolitan improvement, however, which he considered of more importance than all the rest was the communication across the Thames; and he believed that entirely new streets were more important than railways, so that they might have alternate lines of communication. Holborn-bill might be very difficult for horses, and it might be very desirable to do away with it, but he hoped the Board of Works would not think of spending 200,000*l.* on its improvement, for the money could be far better employed in opening Southwark-bridge. The embankment of the Thames would no doubt be a very splendid scheme, but, in his opinion, it would be more splendid than useful; he did not mean to say it would not be an improvement, but it would not render the others unnecessary; in fact, if it were accomplished the others must follow. He should like to see it done with a view of giving London what it wanted greatly, a feature; and he had no doubt that in course of time the streets would adapt themselves to that line; but the great thing needed at the present moment was a grand line from east to west. He hoped that the Board of Works, if they did not now possess the requisite funds, would have them in their hands at some future day, and that they would contemplate this improvement in a

broad spirit, and would not make a street which in a quarter of a century would be too narrow for the purpose. He must say, too, that he hoped it would be made quite irrespective of cost, for if anything of the kind was to be done effectually in the metropolis, of which the present generation might be proud, and which might be useful hereafter, it was absolutely necessary that the work should be accomplished irrespective of cost. He thought, also, that the metropolis was quite rich enough to find the amount requisite for improving its streets; and this brought him to the question of funds, which lay at the root of everything. It would be found that for many years nearly the whole of the large improvements which had been carried out in the metropolis had taken place either directly or indirectly through the agency of the corporation, except such as were effected by the crown revenues. The metropolitan board of works, constituted as it was, and embodying in it what he might call the quintessence of the economy of all the parishes, and also perhaps the quintessence of their locavity, would never carry out these streets in the way in which they ought to be done. The desire for economy, would, he was afraid, be paramount; but economy in the parochial meaning of the term, must not be thought of; the simple necessities of population must be paramount, and any improvements to be projected and carried out be quite independent of cost. He was inclined to think that these improvements never would be carried out by direct taxation; and if they only looked at the works which he had pointed out—and he had not referred to parks at all, though he could see two spots at which the inhabitants were as well entitled to them as in other parts of London,—he was quite certain that ten millions would be required to cover the cost. Cannon-street afforded a noble opening, but it was a street with only one side; and yet it had cost nearly three-quarters of a million of money, at the same time that it added little to the architectural embellishment of the city.

In reply to Mr. Wyatt,

Mr. Hayward stated that he could not charge his memory with the exact figures, but he believed that the amount, after making allowance for increased ground-rent, was as nearly as possible what he had stated?

Professor Donaldson inquired whether the rent of the plot at the corner of St. Paul's churchyard was included in the calculation.

Mr. Hayward said that he was not included; but it only amounted to 60,000*l.*; perhaps not so much as that, and 100,000*l.* did not go far in the improvement of a city. The calculation which he had made with regard to the large street which he advocated from the Bank to Hyde-park Corner was that about a million a mile would be required. He believed it would be found that throughout any of the continental states no improvements had taken place out of direct taxation. The Emperor of the French, who had his own way tolerably well, had not ventured to do them so, but it was entirely done by *octroi*. And as there was in England one article which was consumed by everybody without exception, and in direct proportion to the means which they possessed, and as, moreover, the retention of the duty on coals had now lasted for a couple of centuries, he believed it was as fair and as little oppressive a charge as could possibly exist. This tax, which was actually insignificant in amount, being only 1*s.* 3*d.* per ton, and producing something like 240,000*l.* per annum, was collected without any unpleasantness or undue pressure; and if, instead of taking it off, it were doubled or trebled, they would raise, according to circumstances, half or three-quarters of a million without any pressure, without injustice, or without opposition from any parties, except a few leading manufacturers, who would be the only persons that would benefit to any great extent by the removal of the duty. If it were removed to-morrow, the general body of consumers would not be benefited, unless in course of time the prices might be brought down by competition; but the immediate effect would be to remove the only fund available for improving the city, thus throwing this necessary object on that most troublesome method of collecting funds, on the assessed value of the metropolis. The coal-tax was to expire in 1860, with the exception of that portion of it which belonged to the City, and which, as would be proved before a parliamentary committee when the time came, had been in existence for the last 500 or 600 years; and whatever might be the fate of the remaining portion of this tax, he believed this part would be maintained, or, at all events, compensated for. It was absolutely requisite to keep public improvements prominently in view, for year by year the extent of

London was getting fearful, and men had not now the ignorance of their forefathers to excuse them. According to well-known data, at the present rate of increase London would double its population in thirty-seven years, and from a minute calculation which he made of the extent that would be required for this additional population, he found that it would be a very serious matter indeed; and as it was a law that everything which ran to a centre must run back, so the traffic must increase amazingly. And it should be remembered that the carriage traffic would increase in a much larger proportion than the population, owing to the impossibility of those at the outskirts coming to the centre without employing vehicles; and consequently the carriage traffic for the next fifteen or sixteen years must make the streets all in one huge stricture, and none of those small measures of police legislation—such as making the vehicles pass along the curbs, or the construction of overhanging footways—would be effectual in remedying the evil. It was a fact worthy of notice, that the mass of property lying between the two centres of which he had spoken was gradually rising in value; the world was beginning to find that its nervous system was not good enough to run to London and back every day, and consequently they found that what had been a depreciated property, was within the last five or six years rising in value again; and therefore there was no knowing what they might have to pay; if a necessity arose for carrying out those improvements which he had pointed out. A tax which might fairly and equitably be given to the metropolis was that on carriages; there would be a great struggle for it, and he was afraid there was truth in the remark which he saw published last week, that the House at large was not at all earnest in its desire for metropolitan improvements. But he believed it was one which might reasonably be given towards the metropolis by the House, and this, with the coal-tax, would admit of some of those large measures being carried out which, if London was really to go on prospering, should be adopted, otherwise its traffic which at this moment was the wealth of its centres would be their ruin, as the population would be led to seek for other centres, to which there would not be such an immense difficulty in getting, throughout their being surrounded with what, in comparison to the population of London, were nothing better than alleys.

Mr. Pocock said, the improvement of the metropolis had been a subject of interesting contemplation to him for many years, and it was a little more than twenty-five years since he used to get up at three o'clock in the morning and survey those very courts and ways with reference to projected improvements at Holborn-hill. On this particular matter he did not coincide with the previous speaker, but he agreed fully in all his other observations—especially in what he had incidentally said as to the necessity of providing for the distribution rather than the concentration of traffic. When the approaches to London-bridge were being made, that principle was not sufficiently kept in view, and a gentleman who had very considerable experience of the works, Mr. Jones, had acknowledged to him that this point had been too much overlooked. About the Mansion-house especially, it would be found that all the streets converged to a point, leading of course to great confusion, and requiring a very great amount of space. It was on this very principle of distributing the traffic that he thought Mr. Hayward was quite correct in urging the opening up of the bridge, not only of those which he had pointed out, but the improvement likewise of Blackfriars-bridge; for he knew that large contractors were in the habit of sending round their vehicles from the westward over London-bridge to such localities as Cheapside, rather than subject their horses to the pull over Blackfriars-bridge. And it was on this same principle of the distribution of the traffic that he disagreed with Mr. Hayward as to Holborn-hill. Any one standing at the corner of Chancery-lane, or Shoe, or Fetter-lane, would see that the heavy vans, which ought by rights to go to Holborn-hill, came down through Fleet-street and these lanes, in order to get from London-bridge to the north-west of London. Another point of great importance would be a further communication from east to west; Gresham-street would afford a very good opening for this, but there was one obstacle in the way, namely, the school, which ought to be taken away altogether and sent into the country for a little fresh air. Mr. Hayward was quite right in the principle which he laid down, that money should be spent in widening narrow streets; it was always better to plunge into a mass of houses and make a street right through, because by so doing we secured a double frontage, instead of only one, and generally speaking less valuable property was taken in the way. Right, as well as Chancery-lane, was always sure to be a focus for traffic, no matter how streets might be opened up; but a great deal of traffic passed these points which had no business in their vicinity at all, and only went that way because there was no other open to it. In this way a large proportion of the traffic which crossed London-bridge was not so much metropolitan, but passed over it, as the great thoroughfare between Kent and the City, and might as well not come into the City at all, or, if it did, it could as readily go over Blackfriars or Southwark-bridges if the communication were open to it.

Mr. Lambert Jones (being called upon) said the meeting had cause to be thankful to Mr. Hayward for the manner in which he had treated the subject; and though he differed from him in many respects, still it was pleasant to hear the other side of the question. It was impossible to say whether it was out of the question to conceive that they could carry out improvements irrespective of cost. The fact was

that the cost of some of the properties in London would be so enormous as to render it impossible that they could be purchased, however small an estate the price of a nation as well as to that of an individual. He alluded to such property as that at Cornhill, which had sold at the rate of about 346,000*l.* an acre. Perhaps the cheapest and the most useful piece of land made was Abchurch-lane, and the cost of that per acre was 87,000*l.*; but the corporation were most successful in the return which they obtained, getting back no less than one-third of their expenditure. He understood that in the majority of improvements of this kind they were under the necessity of taking nearly twice as much land as they required. At Moorgate-street they were fortunate enough to cut at right angles, and so were able to get away by there, they wasted, front and rear, but at Cannon-street, although the width which they required was only 20 feet, they had often found themselves under the necessity of purchasing properties extending back for 150 or 100 feet. In the year 1842, when the improvements at Cannon-street were contemplated, there was a great desire to carry a street through Watling-street, as parties in the neighbourhood did not like that old thoroughfare to be turned into a lane; but on investigation it was found that there were certain properties the value of which rendered it utterly impossible that any funds at all adequate to the undertaking could be procured. With respect to the opening of bridges, beginning at Southwark bridge, he did not believe it would accomplish the object proposed. Cannon-street and Cheapside would be the only thoroughfares there would be for the traffic to get away by, these were now crowded, but the additional amount to be thrown upon them would render them wholly impassable. To get out in any other way they should remove Guildhall, or do what he would not recommend, and that was to occupy a little piece of ground that he was keeping for an improvement of his own. The great advantage, in his mind, would be if improvements could be carried out the right way, and that was to be accomplished gradually, and, as it were, on a sliding scale. They had now been thirty years, from the commencement of the London-bridge approaches, expending three millions of public money, and had not a considerable advantage, but the full benefit would never be realized until these other improvements were carried out. For this purpose he suggested that a certain amount should be laid out in the improvement of the metropolis, and that the property along the river; he did not mean that they should wait to commence operations for eighty years, but that opportunities should be sought from time to time for a judicious improvement of the metropolis, and that they would in time be able to carry out a very grand improvement indeed. He was opposed, however, to all idea of encroachment, and he had regretted to see the Houses of Parliament stepping the river right up to the wall, and he would hardly allow a walling-stick to be put into it. He hoped, therefore, that if they were to have a new bridge they would be made to carry it across, for when old London-bridge was removed, not only was there more water a mile and a half higher up the river, but there was even more water at London Docks. The dock-master had for many years—he had himself seen it for eighteen—kept an accurate registry of the rise and fall of the tide, and of high water twice a day; the results of his observations were submitted to the present Duke of Newcastle, then Lord Lincoln, and as soon as he saw them the idea which had before been entertained of obtaining an act of Parliament for embanking the Thames, and of encroaching on the river was at once abandoned. The thoroughfare proposed to be made to Hyde-park Corner was an admirable one, but he believed the money would never be expended so judiciously as on a good wide quay, which would be valuable on the very principle stated by Mr. Hayward, as affording a short way for persons to get down to the Houses of Parliament and between Westminster and the City. With regard to the funds requisite for these undertakings, he contended that instead of the taxation proving oppressive to poor persons especially, the employment which they obtained from the improvement of the metropolis would benefit them to a far greater extent than they could possibly be affected by the tax; whilst there could be no doubt whatever that opportunities had been given to persons in better positions to obtain a share of the benefit by the extent to which thoroughfares had been widened. Mr. Jones proceeded to explain the course of a railway in which he himself was interested, by which it was proposed to relieve the pressure on the London-bridge approaches, and to carry the traffic, setting passengers down close to the Bank, and being enabled by a difference in the levels to bring the road out into the open air. The same line would also have continued to the other side of the river, by cutting it in 160 under the Docks, and, making use of the Thames Tunnel, would join the southern railways at the other side of the river, and so relieve London-bridge from a large amount of the traffic by which it was now overcrowded.

Mr. C. H. Smith said that too much stress was laid on opening new streets and on widening old streets, and but little attention was paid to the River Thames, the injury of which would be the most fatal blow to the City of London. He believed it was extremely detrimental to the trade above bridge that heavy goods could only be got out at high tide, and he thought that the same facilities ought to exist for loading and unloading at all times, the course of the river as existed in the London or St. Katherine's Docks. Where the stream was wide, mud had accumulated to a great extent, and a considerable portion was only to be got out at high tide. On the contrary, where the river was narrow and the channel deep, the mud was swept away without being suffered to deposit itself. He believed that the desired end of distributing the traffic would be attained, if docks and quays were constructed all the way down between the bridges.

Mr. Jennings said he was very frequently down in the crowded part of the City, and he had observed that the obstruction was caused to a greater degree by the heavy traffic than by anything else. Probably at some period it would be found necessary to put a stop to these being being loaded and retained at the sides of streets in London, such as thought it was a desirable matter for the heavy traffic to be made from St. Martin's Grand towards Blackfriars-bridge, and the object would be accomplished with comparative ease, inasmuch as that part was much clearer of houses than other neighbourhoods. It was found that the expense of going through a low neighbourhood was always greater, because, although the amount of compensation was individually less than it would be in large streets, the number of houses more than made up

for the difference in their relative value. On the subject of railways, he considered that if the project were successfully carried out of taking a railway to Charing-cross, it would have the effect of greatly relieving London-bridge, the traffic over which, more than anything else, was instrumental in choking up the City. At the same time, he believed it would be a most expensive line, and he had very great doubts that it would ever yield a dividend. He could not conceive it possible that a line would ever be carried under the London Docks, for in the first place it would be a more difficult undertaking even than the construction of the Thames Tunnel, and he was sure that it would meet with very opposition from the Dock Company.

Mr. Gordon Donaldson considered that the discussion was one of a most important character; and in order that all men's minds might be thoroughly given to the best mode of improving the metropolis, he thought the Institute might well devote another evening to the consideration of the subject. He fully concurred in every word which Mr. Hayward had said; his principles were admirable, and it was only on such principles that they ought to proceed. But there were still topics which had not been touched on, and since Mr. Hayward had spoken the discussion had rather gone into detail than dealt with the subject in a large and comprehensive manner. He therefore trusted they would be able to resume the discussion on that night forthwith; and this was ultimately determined on.

Mr. Hansard said that the great amount of traffic in the middle of the day appeared to him to be created altogether by the different railways; and he would suggest that if a leading thoroughfare could be commenced at the corner of Cranbourne-street from Leicester-square and so on down Long-acre and into Farringdon-street, it would have the effect of making Blackfriars-bridge lead directly from the west to the south, and so direct a good deal of the traffic over London-bridge. It was worthy of remark that, in a very interesting work which was published by John Gwynne a hundred years ago and dedicated to King, nearly all the which streets could be effected since in the City and at the West-end had been pointed out, and among them the formation of Regent-street, Portland-place, and of Regent's-park, but with a central palace for the king.

Mr. Cates explained the difficulty, amounting almost to impossibility, attendant on carrying any new street between Fleet-street and Holborn, on account of the property of several important corporations which lay in that district, as well as from the fact that it likewise contained Lincoln's-inn, and the region occupied by the lawyers. At the present moment there was one piece of ground unoccupied, and it might be possible to commence the project that it should continue in that condition. He had just seen, however, that it was to be let for building.

Mr. Godwin said, without then touching the general question, their hour having come, he should like to offer one word in conclusion to emphasize the importance of a project which Mr. Bickman had mentioned at the evening, but had accidentally omitted to mark on his plan, he alluded to the proposed extension of the West London Railway, as proposed by the company itself, which, as would be seen, offered very important advantages. The North-Western and Great Western lines, giving them connection with the lines on the south side of the river, and access to the Finsbury station at the West-end, and to Charing-cross, if the Act for that line were obtained, which was not unlikely. The present position of the railway system in London was so absurd that one could hardly speak of it with patience; London was the only town in the United Kingdom where a person wishing to go through, was obliged, if not to remain at a hotel for several hours, to get into a cab and drive through a crowded thoroughfare to another station. The West London line had often been pointed to as an object of ridicule, but connected with it as he has long been professionally, he had always felt and maintained its importance. There were no less than five projects before Parliament at the commencement of this session, of which it formed a part, and these of these he had passed the standing orders. The North-Western had agreed, he believed, to subscribe 100,000*l.* towards the West London Company's scheme; and it would unquestionably tend greatly to relieve the existing pressure on the city thoroughfares. The discussion was then adjourned, and a ballot having been taken, the proceedings terminated.*

LONDON-BRIDGE AND CHARING-CROSS RAILWAY, *versus* ST. THOMAS'S HOSPITAL.

On June 27, 1832, the physicians and surgeons of St. Thomas's Hospital addressed a letter to the governors, on the injurious effect likely to be the result of extending the buildings in "the low, close, and confined position of the hospital, as it at present stands." And they stated, that "after mature consideration, they feel it a duty earnestly to call the attention of the governors to this question, whether instead of the expenditure necessary to keep the present decayed edifice in a state of repair, and increase its accommodation, the rebuilding of the hospital in a more eligible situation would not be a measure infinitely better calculated to promote the benevolent views of the founders and supporters, by rendering it more extensively and efficiently useful." This letter bears the signatures of Drs. Williams, Elliotson, and Roota, and of Messrs. Travers, Green, and Tyrrell, physicians and surgeons to the hospital. They were, at least, twenty-seven years before their time, for their wise and benevolent advice has not yet been followed. The works of New London-bridge were the occasion of the representation being made. And the same question, as we stated on the 26th of February, has come round again in another and

more important form. The Charing-cross Railway, as we observe on the Parliamentary plan, starting from the Greenwich Station, London-bridge, makes a sweep over the arcade of shops, crosses the north-east angle of St. Thomas's ground within about 10 feet of the corner of the new north wing, and bridges the street close to the west end of the wing. Besides the constant noise and vibration from passing trains, the ventilation of the whole hospital will be most seriously interfered with; and no one can doubt that the hospital will be damaged, as an hospital, to an enormous extent. Nothing short of removing the institution altogether will meet the case, if the railway is to go on. The question is being battled before a committee of the House of Commons in the usual railway style, and it is to be feared that the interests of those whose interests are most at stake—the sick, will be overlooked in the contention. In the meantime we have heard it stated that the question of removing the hospital has in some sense been discussed, and that sites have been proposed more unhealthy, if anything, than the one the hospital at present occupies. We should rejoice to see a more enlightened view taken of the whole question, and a building worthy of so great a charity erected, say at Blackheath, or some similar suburb easily accessible by railway; a measure which, in the words already quoted, would be "infinitely better calculated to promote the benevolent views of founders and supporters" than either leaving the hospital where it is, or transferring it to any other populous neighbourhood.

CAIRO.*

I COULD have wished that you could have had the advantage of hearing Sir Gardner Wilkinson, or my friend Mr. Owen Jones, both of whom I had suggested as so much better qualified than I am, to do justice to the subject; but, as circumstances have prevented this, I have, at the request of the committee, accepted the task, and, quite aware of my own deficiencies, must ask for your kind indulgence in its fulfilment. As Cairo is not so well known as Rome or Venice, the subjects of the two former lectures, I shall give a slight sketch of its history and its principal features, and then describe it more in detail, by the help of the photographs, and of some beautiful sketches lent to me by Mr. Owen Jones. The exact date of Cairo is well known, as it was founded shortly after the invasion of Egypt by the Arabs, and so far as I am aware, no other city had occupied its site. There are few great towns of which the same can be said.

Search, for instance, here in London, and some 15 feet below its present streets, buried under the debris of centuries, you will find the mosaics, the walls, and baths of Londinium of the Romans; and deeper still even beyond that, tradition points to the buried city of the people whom they conquered. But, in Cairo, you will find only the rich virgin soil, which the Nile, for thousands of years, has been laying down over the barren sands, and changing by its fertilizing flow, the arid desert into a smiling garden. Yet if itself can boast of no antiquity, its neighbours were of the most ancient.

Within a few leagues to the south lay Memphis, the great capital of the Pharaohs, after the glory of Thebes had declined. Some two leagues to the north lay Heliopolis, where Herodotus and Plato were taught the learning of the Egyptians; within sight are the everlasting Pyramids and the Sphinx, and within three miles was Babylon of the Nile; afterwards a great fortress of the Romans, and now, like Memphis and Heliopolis, scarcely recognized by a few ruins.

Nearly on the site of this Babylon, El Fostat, or old Cairo, was founded in 639, by Amrou, general of the Caliph Omar, who built there the mosque of Amrou, now ruined like the town itself. But in 970 Gohir, another Arab general, founded at the foot of the Mokattam mountains, between them and the Nile, Cairo the Victorious, which a few years after became the residence of the caliphs, and the capital, in place of Fostat. In 1171 the French crusaders advanced into Egypt, and the Sultan, anticipating the Russian plan in their late wars, set fire to Fostat, to prevent its falling into the enemies' hands. It burnt for fifty-four days, and most of the wretched inhabitants, when the French retreated, abandoned the old town, and took refuge in the new one, which at about that time was largely increased by the celebrated Saladin, who, as I shall presently show, enlarged the city to nearly double its former

size, and gave to it some of its now leading features. I may add, that in 1754, the town was severely injured by an earthquake; and that in 1798, during the French invasion, it suffered the usual calamities of a besieged town in consequence of an insurrection of the populace.

It now occupies an irregular site of about three miles long and two broad, or about seven square miles, some slight distance back from the Nile, and according to the various times of the year, and the heights of that river, lies in the midst of a luxuriantly fertile country, an expansive lake, or a rank marsh.

Like most towns in a decaying empire, where life and property are insecure, it is compressed within walls which, in its prosperity, enclosed 300,000 citizens, but now, in its decay, some 100,000 less. Internally it is divided into no less than fifty-four quarters, each separated from the other by a wall and gates, and is a vast mass of narrow streets and wretched alleys, with houses overhanging, so as almost to exclude the light of day; studded with vast mosques and palaces, whose crumbling walls and domes speak of the glories of the past, and with the decaying tombs of their founders, from the hands of whose descendants the sceptre has departed.

Amongst the photographs there are six views of the city, viz. No. 186, taken from the Arab mountain; (188), Mokattam; (195), from the north of the citadel; (206), Old Cairo; (294), citadel; and (311), the panoramic view taken also from the citadel. Now, looking at these beautiful views with the eye of an architect or an artist, we find almost every requisite for the picturesque and the grand but one, viz. some grand central mass to which the forest of minarets and domes might be subordinate,—something to form the culminating point of all the beauty, and to tower above it as St. Peter's does above the Roman palaces, and as the great church of the Fiori does above the campaniles at Florence; or as superior, perhaps, to these in grouping, as it clearly is in outline, as St. Paul's does above the innumerable spires of the city churches of our city, which we value little, because near to us, but which, as seen from the eastern bridges, and contrasted with the grand massing of Barry's towers at Westminster, presents an architectural group never to my mind exceeded. It is true that in Cairo we have, in the Mosque Hassan, predominant in every view, a structure of imposing size; but even its mass, compared with those I have mentioned, is poor, whilst it has the disadvantage of possessing two minarets of unequal form and height, and perhaps the really only ugly dome in the city. But put this want aside, take Cairo as it is, with its graceful minarets, its sculptured domes, its houses of many colours, here spread with drapery and there shaded by the graceful palm, abstract from your mind the ruin and decay (never more active than in an Eastern city), people its great squares with the gay Egyptians, let the bright Eastern sun flash on the waters of the Nile, show in the far distance the hoary Pyramids, and light up with rays of gold the minarets and domes, and in this glorious picture you will but have realized fair Cairo as it was,—a vision almost of dreamland. Enter within its walls, and in its filthy alleys, its mud-built hovels, its ruined mosques, your dream is gone. From the contracted nature of the streets, it happens that the leading thoroughfares cannot be distinguished in the photographs, and to make the subject more intelligible, I will occupy a few minutes in describing them before going into the detailed examination. The main street leads from the citadel through the gate of Zouayleh by the bazaars of the Kaleel and Ghoreeh, by the great mosques of El Moyed, Ghoree, and Kaloun, to the northern gate next the Desert. Nearly parallel to it, but further west, is the old canal, a pestilential marsh when the Nile recedes, and by the side of which poor Burchhardt, the bold traveller, lived and died. He is buried in the cemetery, just outside of the northern gate. This canal was once thought to be that cut by Trajan or Adrian; but it has since been attributed to Amrou, and Sir G. Wilkinson, I believe, considers it to have been the work of Ramses II. (Sesostris) re-opened under the caliphs. Quite to the west, nearer the Nile, lies the great place of the Ezbekeh, near the Alexandrian gate, bounding the Frank and Copt quarters, and between the main street and the canal, no great way from Mosque Hassan, is the large open space of the Birhet el Fyl, which, in the time of the inundation, is a large lake surrounded by pleasure-houses, overhung by trees, and covered with pleasure-boats. The other large Place, the Roumalee, is seen close in the foreground, in front of El Hassan. I must mention here that I have

* The following gentlemen were balloted for and elected fellows of the Institute: Mr. Edward C. S. Blake, 2, Queen's-square, and 42, Parliament-street, Westminster; and R. McKilwaine Phipson, of Ipswich. Mr. Hymat Henry Collins, of 61, Torrington-square, was elected an associate.

* Read by Mr. T. Hayter Lewis, at the Architectural Photographic Society, on Tuesday, February 22nd.

purposely exaggerated in the map the width of the streets, the chief of which only are shown, in order that they may be better seen here. Beginning, now, with the immediate foreground of the panorama, we have the long low line of flat plastered roofs belonging to the outbuildings of the lower part of the citadel, and in then you will see numerous projections like dormer windows, formed of boards, in the most temporary manner, and all pointing to the north or north-west, for these are to catch the cool winds which blow from that quarter, and to entice them into the sultry interiors below. In the centre of the picture, under the great mosque, is a low, dark archway, leading from a narrow road, which, hemmed in on each side with high walls, has run deep with blood almost in our day, for it was close here, in this same road, that the Mamelukes were massacred by Mehmet Ali. The way leads down to the great Place of the Roumale, into which it opens by the gate El Azhar, or the citadel, shown in No. 187. Directly to the left of the gate is the minaret, fast decaying, of the old mosque of the citadel; directly in front is the great mosque Hassan, shown in nearly every view, and especially in No. 191. A little under is the pretty little one of the Mahmoudieh, shown in 207; still farther to the right is that of the Emir Akhour, shown in Nos. 200 and 288 (but wrongly catalogued); still farther to the right, down the street shown in No. 291, that of Ibrahim Aga; and, in the distance, the last mosque, perhaps, clearly distinguishable to you, is El Moyed, with its two great minarets flanking the gateway of Zonayleh.

To the left of the Hassan are the Sheyk Houn and the Teyloun, and still farther is the long low line of the aqueduct, which, stretching from the citadel to the Nile at Old Cairo, almost bounds the view. The whole of this great mass of houses and mosques was, before the time of Saladin, merely a suburb of the town itself; for, until he enclosed it, and built the citadel (about 1180), the city ended with the gateway next El Moyed and the mosque Teyloun was the only one of note between it and Fostat. As, in every view of the town, we meet with the mosques as the chief features, I have thought it better to explain, in a general way, their internal arrangement, which cannot be seen by the photographs, and must ask you to follow me through the details of these two places, viz. mosques Amrou and Hassan, the former dating from very early time, and the latter from the fourteenth century, which may serve as fair specimens of the whole. You will see that the arrangement in each (in fact all, or nearly all, in Cairo) is that of a great open court, containing a large water-tank or raised reservoir or fountain surrounded on all sides by colonnades, as in the mosques Amrou, Teyloun, Hakem, and El Moyed; or of great arched recesses, answering the same purpose, as in mosques Hassan and Ghoree, and having completely the cruciform plan. The side nearest to Mecca (here the eastern) is of greater width than the others, and is, in fact, the only part reputed holy.

In the wall bounding the east side are niches for prayers, to mark the direction of Mecca. To the right of the central one is the minbar or pulpit: opposite are the reading-desks, where the copies of the Koran are placed, and a tribune, supported on little columns, whence the Imam announces the hour of prayer and chants the choral services. The very beautiful drawing of the interior of El Hassan gives a very excellent idea of the general effect.

The columns and capitals in the earlier mosques were taken without scruple from the ancient buildings in the neighbourhood; but, as the Saracens abandoned themselves to the arts of peace and luxury, they rapidly formed a style of their own, and developed the very beautiful one which we know so well. The most graceful ornamentation was lavished on the various parts of their mosques, and the pulpits, the lamps, the fountains, are studies of beauty of form and detail.

The lighting was often effected by an immense number of single pendant lamps, combined with chandeliers of great size and singular design.

The Mussulman puts off his shoes on entering the mosque, washes his hands, face, arms, and feet at the central basin or fountain, and enters the eastern part of the mosque at the hour of prayers, their holy day being Friday. He prays, turning towards one of the niches, and hears a priest read a portion of the Koran from the reading-chair. Prayers are chanted by one or more priests from the platform, and the Imam ascends the pulpit, and preaches there. In Mr. Lane's work there is the translation of one of these sermons, and by no means a bad one. The internal walls are

usually whitewashed, but the voussoirs of the arches are often formed in differently coloured stones, the ceilings elegantly domed or beautifully carved in wood. Sometimes the arcades are of brick, plastered, as in the earlier parts of El Azhar and in Teyloun.

Externally, the stonework is almost always in alternate rows of black or red and white; the black being of basalt, the white of the country limestone, and the red tinge given by red ochre. Mr. Owen Jones's drawings give an excellent idea of these arrangements.

The domes are sometimes of brick, plastered, or of wood only, plastered, as El Hassan; but often of stone, as in Kait Bey. The plans of the mosques vary as the plans of our churches do; but the general arrangements of the fountains, niches, and pulpits are always the same. The minarets seem to have been placed in any situation that might be considered best for the purpose, and to prevent the harems being overlooked by the Muezzins as they called the people to prayers, these criers are usually chosen from amongst the blind, no lack of whom exist in this opthalmic town. The domes which, with the minarets, give the chief character to the city, are not, as we should suppose, in general over the mosques themselves, but form the canopies of the tombs annexed to them, to the small space over the niche, or to the fountains in the centre. In the mosques Teyloun and Amrou there is no tomb, and therefore no dome, except as I have described. In those of Hassan, El Moyed, Berkauk, and Kait Bey, the domes are large, but are raised over the tombs of their founders or descendants.

The number of the mosques is quite extraordinary, it being stated to be no less than 400.

To show the case strongly, let us take one of our own great cities, Manchester, with 130,000 dwellers in it, or half as much again as Cairo had in its glory, and to this great number there are at the utmost 200 places of worship belonging to all denominations together—not one-half of those in this smaller town. And these said mosques are not in general small, poor buildings: on the contrary, some are of gigantic size, and the one before us (Hassan) could, in one of its great niches, hold the whole nave and aisles of Oxford Cathedral, with plenty of room to spare. It will, within a trifle, take under its great arch the famed Luxor monument, pedestal and all, at Paris; you must add 50 feet to the height of our Monument before you get to the elevation of one of its minarets; and you might, upon its surface, lay Cologne Cathedral, commenced eighty years before it.

I would not, indeed, place this plain, massive building to compare with the delicately elaborate work of Cologne; but these grand mosques contain much more than the temple of prayer, and are often much more elaborate buildings than might be thought. Each generally contains a public bath, school, and fountain, and that of Kaloun, for instance, contains the well-known Moristan, or hospital for lunatics, and the large spaces in the angles of El Hassan are filled with apartments for the priests, and with other buildings, no less than nine stories high.

And remember that Cologne is not finished yet, whilst Hassan, begun eighty years after it, was built in three years. Think of its great mass, its dome, its minarets higher than our Monument, and then give only three years for its erection. These old Cairens were no bad builders.

We have in the photographs the following shown:—(191, 212), Mosque Habenia (or Ibrahim Aga); (194) Omar, near Mocattam; (199) Ayeb Bey (or Kait Bay); (202) of the Citadel (a modern work); (207) Malan adie; (279) Kait Bey, 200, 288, Emir Yan; besides the great mosque Hassan, already described, and the great ones of Amrou, Teyloun, El Moyed, and Kaloun, which are to be seen only in the distance. Of these, the earliest in date is Amrou, built at Fostat in 642, but very much altered since: next to that is Teyloun, remarkable for the outside winding staircase to its minaret, and for the beautifully-perched stonework in its windows; El Azhar (981), but with a beautiful minaret added in the sixteenth century, and then numbers of others, up to the end of the mosque-building age, in the beginning of the sixteenth century, when the great mosque, El Ghoree, was built. One there is indeed erected since, that of the citadel, by Mahmoud Ali; but its barbarous style and ornamentation make it unworthy to rank with its predecessors.

Next to the mosques come the private houses of the town. Their chief external feature is the projecting window, formed of wood, carved in the most elaborate patterns, and with the smallest quantity of light through it, for these upper rooms

are the residences of the ladies, and as the narrow streets almost make the overhanging houses meet at the top, the greatest precautions are taken to prevent the invasion of the privacy required. The wood is usually fir, and left unpainted. In the chief streets the lower parts are used as shops, the rooms over not communicating with them, and separately occupied in the way in which we are familiar in most of the continental cities; but where the lower story forms part of the house, the front, up to the one-pair, is commonly of stone, in alternate stripes of red and white, as I have described for the mosques. The upper stories, of which there are often two or three, overhang considerably, as you may see, or rather may have seen them, for they are disappearing fast in Chancery-lane and other old parts of London, and in most old timber buildings here and abroad; but we miss the bold gable which gives so picturesque and noble an effect to our old places; and when ornament does appear, it seems put in for concealment or defence, much as we use shutters and gratings; and if the Cairene defences be ornamental when ours are not, it is simply, I think, because there is in the Oriental mind a tradition (if I may call it so) of beauty, which pervades all classes, and will make a common workman shape his work in forms of elegance which we vainly seek for here. Whether this be the offspring of a real perception of the beautiful, or whether it be, as I have called it, a mere tradition, a mere rendering unchangeably of common things in a graceful way, because no other way was known to him, would be too deep a subject to enter upon here. I believe in the stereotype and the tradition. But be it as it may, the Cairene houses, even of the largest class, have little external grandeur, though some perhaps may lay claim to it; as, for instance, the palace of Achmet Pasha, shown in the photographs, near to the Mosque Hassan; and where, as you will see in numberless cases, the projecting windows are wanting, the fronts present as bald and lifeless an appearance as the rows of two windows, iron railings, and a door, in Harley-street, and others of that time. These windows, causing great risk in case of fire, are not, I believe, to be allowed in future houses. The entrance-door is usually so contrived, that when you open it, the passer-by cannot look into the house, and, in fact, you may consider that the architect in planning it has, as one of his chief objects to provide every possible means of concealing everything and every body,—his rooms, his money, his wife, and very often himself, and to give him a way of escaping for his life by some back way. Whether or not from this idea, the houses are arranged in the most irregular manner, no one part answering to another, no two parts of the same story, of the same height, and the whole filled, in the most break-neck way, with steps to and from the unequal levelled rooms. To give a notion of the plan ("where plan is none"), you may assume that, passing through the jealous barrier, you will find an open court shaded from the sun by overhanging eaves or drapery, and into this court open the doors leading to the various rooms and stairs. At the back is a large garden surrounded by high, jealous walls, and in the upper stories the harem. I can't enter there. One circumstance seems at first curious. There are no bed-rooms—not that people do not sleep in the East; they have been sleeping for centuries, whilst we Northerners have been pushing them out of their seats; but the fact is, that the beds are merely mattresses, rolled up in the day, so that the room is a sitting-room under the sun, and a bed-room with the stars. The furniture would horrify Gilwell or Banting, for the best rooms have usually a carpet, a divan, perhaps some curtains, and a few trifling articles of ornament or domestic use. The windows now have, in many cases, casement sashes and glass—a modern innovation, but they often have a filling in of gypsum in thin sheets, gorgeously coloured. The ceilings, too, in their best houses are of very elaborate designs, the mouldings gilt, and the ground covered in the most glowing tints. The roofs, as you will see in all the views, are flat, covered with plaster. The shops are not quite of the size and splendour of Howell and James's, nor are the bazars quite so grand as those of the Pantheon, nor of our friend Mr. Owen Jones's, opposite to it; for the shops are generally about 6 feet square, closed at night by shutters, which, by day form counter, chair, and shelf; and the bazars are simply so many shops put together, containing the same sort of goods, the open way between being covered in with awnings to exclude the sun. Few streets are broad enough for carriages, and they are laid with soft sand, not very pleasant when the wind is high and the traffic great, and which causes wary walking, to prevent

some huge camel or some great donkey, with his noiseless tread, crushing you against the sides.*

HARBOURS OF REFUGE: BREAKWATERS.

A PLAN of a breakwater has been proposed by Vice-Admiral Sutorius. It consists of three parallel lines of buoys, so moored that the buoys of one line are opposite to the intervals between those of the others, and of a floating bed of coir rope matting moored on the landward side of the innermost line of buoys. The force of the sea would be progressively diminished by the lines of buoys, and there would be perfectly smooth water between the matting and the shore.

Mr. Michael Scott has patented some improvements in breakwaters, which include frames of woodwork formed on shore and floated out to where they are to be used, as already mentioned; and Mr. Charles Burn has just issued a pamphlet on the construction of breakwaters, which deserves notice. The enormous mistake at Dover has set men's minds to work. The report of the Royal Commission on Harbours of Refuge will, we believe, be very shortly presented to Parliament. The *Shipping Gazette* says: "We have reason to believe that the following sites have been selected, as combining the requisite qualifications; viz. Wick, Peterhead, Carlingford, Waterford, Douglas (Isle of Man), St. Ives, Padstow, Tyne river, Filey, and Hartlepool. The sum which the commissioners are prepared to recommend to be expended on these places will probably exceed 2,000,000, or 360,000, more than the aggregate amount proposed by the select committee of last session."

MR. SPURGEON'S TABERNACLE.

The committee have selected the design submitted under the motto "Metropolitan," by Mr. W. W. Pocock, and are likely to entrust to him the execution of it. Confining ourselves to description,—the design is based upon the Surrey Music-hall as a model; the ends and staircases, however, are rectangular instead of being polygonal. The extreme internal dimensions are 70 feet wide, 140 feet long, and 62 feet high, those of the Music-hall being 68 feet 6 inches, 153 feet 6 inches, and 70 feet respectively. The front consists of a hexastyle Corinthian portico, 58 feet in width and 23 feet deep, flanked by towers 100 feet high, which extend the frontage to 106 feet. These towers are advanced one intercolumniation, or 11 feet 4 inches beyond the real front of the Tabernacle. Two similar towers occur, similarly placed at the rear of the building. The order, 42 feet high, extends along the flanks, and answers to the area and first gallery, the upper gallery being provided for by an attic of no great height. The lecture-hall is provided under the front part of the chapel, and the school-rooms occupy the remainder of the substructure. The most peculiar features of the plan are as follow:—The pews throughout the greater portion of the area are disposed in concentric circles, of which the pulpit occupies the centre. At the spot where this arrangement yields to the ordinary rectangular method the floor commences to rise gradually towards the front, giving each tier of seats an elevation of 3 or 4 inches above that in front of it, and giving about 2 feet additional height to the lecture-hall beneath. The four towers contain staircases for the galleries, and, as there are two galleries, so each tower contains two series of stairs, circulating, the one over the other, to the respective galleries. The area of these staircases is said to be beyond the average of the fourteen provisionally selected designs, and, therefore, by the method of double stairs, gives much more than double the stair accommodation. The stairs are 5 feet out of the wall, with open well-holes; it is proposed to carry the outer ends by iron girders, and to secure the handrails to the same. There are no winders, and each tread is 12 inches wide. Each range of stairs has its own distinct external exit, 1 foot wider than the stairs themselves. In all there are fifteen distinct external entrances (besides the minister's), all 6 feet wide, of which five are under the portico. We have been thus particular in describing the stairs and other means of egress in accordance with our known views, and because they are evidently, in the plan before us, made to constitute a leading feature, which was the more needed if the architect's estimate be correct, that, in addition to the provision for 4,000 hearers required by the committee's instructions, the aisles, &c. will furnish standing-room for some 2,000 more, making nearly or quite 6,000 persons. We should have stated that one point which weighed

in favour of "Metropolitan" with the committee was the fact that, out of the 3,000 sittings and 1,000 standings required, more than one-half, especially of the former, are provided on the area of the chapel. The building is to be proceeded with at once.

ARCHITECTS ABROAD.

THE following is a translation of a curious edict, which may be interesting to your readers. It was quoted in the *Sicéle*, from a provincial paper.

F. D.

The Mayor of the town of Périgueux,—

Considering that the Sieur Cruveiller, architect of the town, has forgotten the respect and consideration due to an officer occupying a high grade in the military hierarchy;—considering that when this fact has taken place the Sieur Cruveiller was in the exercise of the functions which he holds from the municipal authority; that this situation imposed upon him still more reserve, and renders his conduct more reprehensible, decrees:—

The Sieur Cruveiller, architect of the town of Périgueux, is suspended from his functions during a month, with the loss of his salary.

Périgueux, the 21th of February, 1859.

(Signed) BAUDY DELISLE.

PROVINCIAL NEWS.

Banbury.—The design adopted for the New Cross, at Banbury, by the Cross Committee, has been submitted to the local board. The height of the cross, according to the designs of the architect, Mr. Gibbs, will be 48 feet, and very little alteration would be required in the surface of the site selected.

Witney.—The new County Court building at Witney is now nearly completed. The structure is of the Italian style, the architect being Mr. Charles Reeves, of London, and the builder Mr. James Long, of Witney. The front is of Bath stone, as are also the dressings of the side windows, the remainder of the building being of brick. The site is on the left hand of Bridge-street, entering Witney from Oxford. The court-room is 10 feet by 27 feet, and it has seven windows on each side and a ventilating lantern-light in the centre. The roof is panelled.

Stratford-on-Avon.—The last pipe of the main sewerage of Stratford has now been laid. By way of celebrating the event, the men who had been employed in the work assembled near the Market Cross and drained sundry flagons of ale. The construction of side-drains will give employment to a number of the men for some time. Those who have been discharged by the Messrs. Callaway, the contractors, will probably be employed on the railway works.

Burton-on-Trent.—The Leviathan Brewery is not yet completed. Contrary to the usual practice observed in the erection of establishments of this description, the whole of the coppers for boiling the liquor stand on the ground-floor of the building, which will in consequence do away with a great deal of labour in the hoisting up of coals, &c. and reduce the necessity for the extensive pumping machinery required in other establishments. Wooden beams and floors have been superseded by brick floors and cast-iron pillars and girders; in fact, cast-iron has been used in every case where the requirements of the business would allow the change to be made, and the building has in consequence a light appearance throughout. The chimney shaft for conveying away the smoke from the numerous fires, &c. will be upwards of 270 feet high when completed. It has been built from the interior and is of circular shape: the opening at the top will be about ten feet. A branch line of rails running out of the Midland Company's yard will entirely surround the buildings.

Redruth.—Public rooms are now being erected here, opposite Tweedy's Bank. The materials of the walls will be the local stone from Sparnon quarry, and all the quoins and ornamental door and window dressings from the Boxhill quarries in Wilts. It was wished to use the Mabe granite for that purpose, says the *Cornish Telegraph*, but on the fenders being opened from various builders, the extra cost of the granite, as compared with the free-stone, was found to be 180l. and the funds at the disposal of the proprietary did not justify them in incurring so large an additional outlay. The same cause has also compelled the architect to abandon or reduce many ornamental features in the original design. It is estimated the total cost, including every expense,

will not exceed 2,000l. The architect is Mr. W. G. Habershon, of London. Messrs. Nicholls and Son, of Redruth, and Mr. W. May, of Pool, are the general contractors; Mr. J. Trestrail, acting as clerk of the works on behalf of the proprietary.

Abergavenny.—A corn exchange and new markets for this town are talked of.

Ashton.—Alderman George Higinbottom has offered to the corporation of Ashton, to erect, at his own cost, four granite drinking-fountains for the benefit of the public, provided the corporation will give him an undertaking to supply them with water and keep them in repair. The corporation have agreed to this. The fountains are to be erected in each ward; and that near the market is to have a trough for cattle.

Leicester.—The foundation-stone of the Freemasons' hall, Leicester, has been laid. The lower portion of the building, says the local *Advertiser*, will consist of a hall, 17 feet by 9 feet; kitchen, 19 feet by 12 feet; bedroom, 15 feet by 14 feet; underneath which there will be a cellar, 9 feet by 17 feet; yard, 5 feet by 15 feet; and a store-room at the back, 46 feet by 25 feet 6 inches, the passage leading to which will be 60 feet by 4 feet 6 inches. In the upper portion of the hall will be the lodge-room, 60 feet by 21 feet 9 inches (containing an elevated orchestra, 24 feet by 25 feet 6 inches); supper-room, 17 feet by 24 feet 9 inches; ante-room, 20 feet by 8 feet 9 inches; and a landing to the two latter of 20 feet by 15 feet. The front of the building will be of Italian character, and of red dressed brick with Bath stone dressings and cornice. The entire cost of the building and site will be about 1,500l. The work is in the hands of Brother Wm. Millican, Prov. Grand Superintendent of Works, architect; and Messrs. Hutchinson and Smith, builders, for whom Mr. Johnson is executing the stonework.

Workop.—Mr. Rawlinson, C.E. as engineer of the local Board of Health of this town, has inspected the drainage works at present being carried on here. He is said to have assured the Board that by the time the drains are completed the cost incurred will be considerably under that of any other drainage in the kingdom. He strongly advised the Board to settle the outfall question as early as possible.

Holmfirth.—Mr. Bateman, C.E. has recently made the annual inspection of the three reservoirs in this district. With regard to the Bilberry reservoir he reports:—"It still continues in pretty much the same condition, the puddle lining frequently giving way as the reservoir fills with water, though the reservoir sometimes remains full or nearly so for many weeks without any material leakage. The water never escapes discoloured, and the repairs are easily and cheaply made when the reservoir is emptied. Some time will probably elapse before the reservoir is water-tight, but it gradually improves, and time and perseverance will, I have no doubt, conquer the great difficulties which are connected with this unfortunate place."

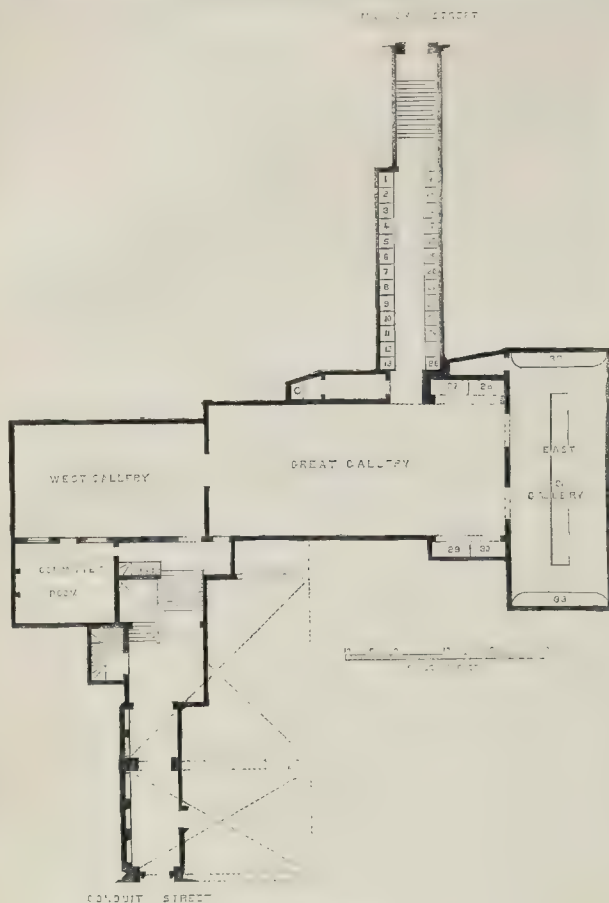
Halfpenny.—Another marble statue has been added to those already placed in the People's-park, by Mr. Frank Crossley, M.P. the donor of the park, to the inhabitants of his native town. It is a reproduction of the Apollo Belvidere, and is from the studio of Signor Francesco Bimbiau: it is of pure Carrara marble. This last production completes the proposed number of figures, which are, Hercules, Venus, Diana, Telemachus, Sophocles, a dancing-girl, and a Neapolitan music-girl. There are also two vases, from the chisel of the same artist.

St. Helier. The committees named by the Town Parish Assembly and the Assembly of the Landed Proprietors of the Town Vingtain, to take measures for the repaving the streets of St. Helier, says the *Jersey Times*, have come to a joint resolution. They calculate that the repaving, on the new system, will cost 5,500l. and recommend the following arrangement:—"The 552l. due by the Drains Committee to be placed in the hands of the procurers of the Vingtain; the parish to vote a sum of 1,500l. payable in annual sums of 200l. on the rate, for its part of the repavement; with these contributions, the procurers of the Vingtain to undertake the repaving of all the streets, the proprietors of the Vingtain signing notes of issue to meet the surplus expenditure."

PROPOSED NEW DOCKS.—It is currently reported, says the *Maidstone Journal*, that another gigantic project will be brought before the public shortly, for constructing three docks, to be the largest in Europe, near the mouth of the Medway, in the Isle of Grain.

* To be continued.

THE PREMISES OF THE ARCHITECTURAL UNION COMPANY,
CONDUIT-STREET, LONDON.



Galleries and First floor.

SUBSTITUTE FOR COAL.

An apothecary of Cologne has just invented a process by which he prepares two new substances, which he calls Cialine and Lignite. They are produced from ordinary peat, and lignite or brown coal, and can replace, we are assured, coal and coke, at a saving of 35 to 50 per cent. in price. Numerous experiments have been made with these two new products on German railways and in factories, and, according to competent judges, with a very good effect and satisfactory result.

COMPETITIONS.

Liverpool.—A new church for the Roman Catholics being desired, Messrs. Hadfield and Goldie, and Mr. Pugin, were requested to submit designs for the building; and those by the latter gentleman have been adopted. The works are to be commenced, we are informed, on the 17th.

Birmingham.—At a special meeting of the Birmingham Architectural Society held last week, a memorial was read from the local architects who competed for the Woodcock-street baths and wash-houses, in which it was stated that the selected design could not be carried out for the sum stipulated in the conditions; and the competitors having further explained the circumstances of the case, a resolution was unanimously adopted, to the effect,—"That in the opinion of this society the town council, by accepting a design the cost of which exceeds the sum fixed, has committed an act of injustice towards the other competitors; and that this society strongly protests against any such infraction of rules which should govern honest compe-

titions." The memorial was presented at the council meeting on Tuesday, but its reception was negative on the advice of the town clerk.*

Middlewich Cemetery.—The clerk to the Middlewich Burial Board writes us to say that he has misent a packing-case containing a framed perspective view by one of the seventy-six competing architects, to some other, of the number to whom it does not belong, and that he hopes the gentleman who has received it will communicate with him on the subject.

Baptist Chapel, Nottingham.—The competition for the schools in connection with the Baptist Chapel in Derby-street has been decided in favour of the plans of Mr. R. C. Sutton, architect, Nottingham. The schools will comprise boys', girls', and infants' schools with large classrooms. The style is Geometric Gothic, to harmonize with the present chapel.

THE ARCHITECTURAL GALLERIES, CONDUIT-STREET.

THE ARCHITECTURAL EXHIBITION.

The premises of the Architectural Union Company, No. 9, Conduit-street, are being rapidly rendered fit for their new destination,—the home of the architectural bodies of the metropolis,—the centre, it may be hoped, of architectural progress in England. The new galleries are finished, and the first Architectural Exhibition there will be

* Touching this same matter, we have received copies of a published correspondence on the subject of the charges, 2 per cent. and 50s. for stationery, &c. made to contractors, and ultimately falling on the ratepayers, for supplying the various bills of quantities.

opened to the public on the 16th, a conversation being fixed to take place as a sort of private view on the evening of Tuesday, the 15th. We have engraved a plan of the building and a view in the galleries, made without precise reference to the pictures now on the walls, and including some decorations not yet executed.

Entering the exhibition from Conduit street, we go first into the west gallery, 28 feet by 23 feet; then into the great gallery, 60 feet by 26 feet 6 inches; the east gallery, 51 feet by 20 feet, and out into Maddox-street by the north gallery, 43 feet long by 12 feet 3 inches wide. The last is appropriated to inventions and materials, as are the centre of the east gallery and some recesses in the large room. A committee-room on the ground-floor, adjoins the west gallery. The latter will also be used, we believe, by the Architectural Association. The galleries, it will be seen, are lighted from the centre of the ceiling. The ornamental filling-in of the ribs is of iron, tinted grey; the ceilings are white, and the walls a reddish brown.

The hall and approaches will display three specimens of tile-paving, from the establishments of the Poole Company, Messrs. Minton, and Messrs. Maw respectively: these were not completed when we went over the premises. On the staircase the windows are filled with cast glass in colours, by Rees and Co. The doors at present open at once from the landing of the stairs into the meeting-room of the Royal Institute of British Architects: curtains, if not an enclosure, will be wanted to prevent draughts.

The apartments for the Institute are on the first floor, and include the meeting-room, 36 feet 6 inches by 37 feet 6 inches, and 17 feet in height; the library, 37 feet 6 inches by 19 feet 8 inches, and a committee-room. The position of these is shown on the plan. The meeting-room is lighted by a range of ten arched window-openings high up, provided with Moore's ventilators; and the ceilings have ornamental bands and flowers. The ground floor of the Conduit-street portion is let to Mr. Boyd, founder and stove-maker.

Messrs. Hack and Sons, of Poplar, have executed the alterations; the plastering was done by Mr. Parsons; the ironwork by Messrs. Hart; the heating with hot-water pipes, by Mr. Potter; and the gas, including star-burners similar to those at St. James's Hall, by Mr. Johnston, of Holborn. The walls were coloured by Messrs. Arrowsmith.

Messrs. Edmeston and Gray have acted as architects.

The Architectural Exhibition on the present occasion includes, we believe, nearly 400 works. None of the Academician architects, and but few of the other elder members of the profession, have sent drawings; but it has points of interest of its own, to which we shall hereafter refer. The central place in the large gallery is given to two careful drawings, by J. E. Goodchild, of the interior of St. Paul's, as it would have been if built in accordance with the model of Wren's original design in the Architectural Museum at Brompton. Mr. Decimus Burton has sent a view of the United Service Club-house, as altered by him; Mr. Street a pulpit; Mr. Falkener, his Interior of the Parthenon; Mr. Penrose some sketches; Mr. Norman Shaw two designs for organs, cleverly drawn; and Mr. Owen Jones a contribution not yet hung. In the east gallery, with specimens of tiling and other matters, will be found some of the designs sent in competition for the Ellesmere Memorial, Hanley Cemetery, Tottenham Church, Chelsea Vestry-hall, Trinity College Church, Edinburgh, and Heigham Church.

The committee have not, or at least had not when we saw the rooms, hung any plans or sections. This seems to us a great mistake. It is desirable, of course, to give the Exhibition an attractive appearance, that it may please the public and bring the shillings. It is of consequence, however, to accustom the eyes of the public to plans and sections: designs cannot be thoroughly explained without these, and if architects themselves will not hang them in their own rooms, they will have no right to complain of committees, or of the managers of less technical exhibitions, for refusing to do so. The act is really suicidal, and nothing less.

We shall go fully into an examination of the Exhibition next week.

PUBLIC OFFICES EXTENSION.—Lord J. Manners has obtained leave to bring in a Bill to make further provision for enabling the Commissioners of her Majesty's Works to acquire a site for additional offices for the public service, near Whitehall and her Majesty's palace at Westminster.



INTERIOR VIEW OF THE EXHIBITION GALLERIES OF
THE ARCHITECTURAL UNION COMPANY CONDUIT ST
REGENT STREET.

MR. SMIRKE'S LECTURES AT THE ROYAL ACADEMY.*

WHILEST columns were destined to receive horizontal entablatures alone, a square abacus of some sort seems essential: it was almost a structural necessity. When arches were first substituted for entablatures, the square abacus was retained, and the square abacus, the square abacus, and their springing, therefore, was necessarily square.

Of this construction illustrations are afforded by the earliest Christian basilicas, buildings which are among the most interesting examples of our art, although scarcely studied, or even known, so well as they deserve to be.

The first attempt at innovation on the square jambs of openings was to take off the crude edge, by substituting a roll at the outer salient angle, as we see it in the clerestory of the round part of the Temple Church. This idea expanded into a pillar, inserted in a rebate, cut in the jamb. The rebates were then multiplied, so as to gain light without enlarging the opening of the window; and thus ornamentation began, for the concentric expanding arches invited, and readily suggested, especially in door jambs, the use of carving to the vigorous imaginations of the builders of Lombardy and France. Subsequently the spig suggested itself as a simple and natural means of obtaining a similar expansion of the external opening, without reducing the stability of the wall.

These changes in the form of the cossours and jambs brought, of course, a corresponding change in the form of the abacus, from whence the arches sprang: it became round, especially in this country, and so paved the way to many consequent changes in the form of the bell which received the abacus, and in the mode of decorating it. Capitals, however, in losing their square abacus lost much of their original simplicity of form, and reverted in some degree to the classical type. As I formerly had the opportunity to remark, the most unclassical capital, and, therefore, the Medieval capital of greatest originality, was the cushion capital. But there was another type, almost as original, and more graceful, namely, the whorl, whereby the circular shaft and the square abacus were adjusted to each other by the introduction of a somewhat concave bell, having a simple leaf, or scroll, at each of the four angles, and thus descending to the base. Merely to appear, never ceased to adhere, more or less, to the former; whilst the Christian school (although varieties of the cushion cap retained their hold for a long time) began to lead towards the foliate type, as more favourable to the introduction of the scroll, which the school delighted. I must not, however, fail to direct your attention to another circumstance which much influenced the design of this period. Either from choice, or necessity (it is not here worth while to inquire which), the Medieval builders always affected the use of small stones in forming their capitals: this habit led to no inconvenience, as long as the pillar was slender, and the capital, consequently, small; but they did not choose to be limited to slender shafts; indeed, the early French builders (who, I am afraid we must admit, led the way) showed great distinction to abandon the habit of resting their arches upon the four cylindrical shafts, and to substitute, in the place of Roman art, and of which so many examples existed (and, indeed, still exist) in those parts of France most under the influence of Roman art. The capitals, then, had to be adjusted to a considerable diameter. The cushion type was often resorted to, but was not, I presume, found so applicable as the other more graceful type. To this, therefore, the inventive and dexterous workmen of the twelfth century applied themselves; and as they had only small stones to build with, they built up their capitals to a proportionate height, in courses; each course comprising a separate and distinct system of design, thus produced the elegant capitals, of which the cathedral at Paris affords us familiar and very beautiful examples.

My chief motive in sketching out this slight and partial history of Middle-age capitals, is not to gratify mere archaeological curiosity, but to show how, in practice, how much design of all kinds, and in all ages, has been influenced, and, consequently, may hereafter be expected to be influenced, by exigencies of construction, and by external circumstances.

This consideration is important, for it teaches us how to direct our advances, and appears to afford to us some glimpses into the future of our art. It is to me new material, or to new material, but it is to me new material of the materials we possess, that we must look to our progress, otherwise we shall but move in a circle.

To resume now our inquiries into the class of ornaments which I have placed first, viz. those having, or appearing to have, direct utility, I would call your attention to the corbel, an object of design very inferior in importance, it is true, to the feature we have just been discussing, but still coming clearly under the same category.

A stone projecting beyond the face of a wall to receive a beam, or other weight, must, in one form or another, have always been a requirement in architecture. The fastidious Greek, for example, did not convey the idea of active strength which should be the special attribute of a corbel. Its form does not tell us how it bears the weight with which it is charged, nor how it conveys the weight of that weight; it is, in fact, a dead weight, the leaves which enter into its composition at all assist in imparting to it an impression of solidity or strength. There are, however, various classical forms of corbels, which, if less elegant, are far more expressive of their real use.

The rude designers of Early Christian art were content with corbels, very simple, it is true, in form, but perfectly honest in their construction. The basilicas of Ravenna and of Rome we find various examples, but the most characteristic simplicity, was published, by myself, in the "Archæologia," many years ago, as occurring in the earliest Christian in Sicily, usually held to be among the earliest Christian.

These corbels never ceased to be employed as points of support throughout the whole of the Middle-age period; sometimes, even, facetious, at the front of the corbel is so moulded as to convey the rude idea of a face, with a nose of undue proportions. I may here take days to remark that the religious zeal of those days was not always sufficiently ascetic, or serious,

wholly to exclude a certain vein of quaint humour occasionally betraying itself, even under the broad shadows of a sacred edifice; and church discipline was sometimes permitted to be relaxed with a carver, zealous for the honour of the wealthy establishment whose church he decorated, was minded to raise a smile at the expense of some uncanonical friar or unbefitting vagrant. Such corbels had attracted the notice of Dante, in his "Purgatorio." He says, in the 10th canto,

"Come per sostenitor solato o tetto
Per mensola, tal volta una figura
Si vede giunger le ginocchie al petto," &c.

Purgatorio, canto x.

An equal fertility of invention shows itself in the corbels of the Renaissance period: nor were men in the most distinguished position in their art averse to bestow the outpourings of their genius on even these insignificant objects. It would, however, lead me much too far were I to enter upon any critical examination, or even enumeration of them. Like the studied variations of a simple air in music, which will sometimes depart so widely from the original motif as scarcely to be recognized as having descended from it, so the exuberant fancy of several artists has been wont to indulge itself sometimes in very eccentric deviations from the original and natural form of a corbel.

I will only add that, to my mind, the most pleasing designs are those which best resist, in their contour, the primitive idea of an active support.

The keystones of an arch are also one of those ornaments coming within the category of useful ornaments. There seems a great and manifest propriety in thus giving emphasis to the keystone which, as the name implies, gives security to that of which it forms a part. Very elaborate examples occur in buildings of the Roman era; and in works of plain, grand, and simple character, the builders of that period were quite alive to the effect of these keystones in imparting to their work a character of force and robustness. This was especially felt by the revivers of Roman art in the fifteenth century. The use of keystones upon which more attention was bestowed by the architects of that remarkable period than upon these keystones. Whilst, however, they are capable of adding much to the effect of architecture, especially in the case of adapting their degree of force to the circumstances of the case. We sometimes see flatness and poorness where boldness is most required; whilst, at other times, arches may be seen apparently ready to be crushed by the undue weight of this component part of them. It is, perhaps, worthy of remark, that in Middle-age architecture, this feature was, from the very nature of the pointed arch, necessarily laid aside and wholly discarded; but even in the modern arch type of that style, I cannot call to mind any example of a keystone, except, indeed, at the intersection of ribs. That very natural and effective mode of ornamenting a circular arch seems to have been altogether overlooked after the extinction of Classical art.

Buttresses are another feature which may be properly classed under this head. They perform a task similar to that of columns—in the one case the pressure on them being perpendicular, in the other lateral.

Buttresses may be said to have originated in the Medieval epoch, for the Roman vaults usually sprang from such massy piers that they needed no additional support.

Beginning timidly, the builders of the Pointed style, taught by gradual experience, and by repeated failure, acquired a wonderful mastery over this feature; sometimes giving it stability by breadth of base, and sometimes augmenting its resistance by height, and generally rendering it subservient to pictorial effect by the most varied ornamentation. As the vaulting arch became depressed, lateral pressure of course proportionately increased, and this led to a corresponding increase in the power of the buttress to resist it, so that by the time masons had learnt to construct such marvelously flat ceilings as we see in King's College Chapel, their buttresses had grown into a series of cross walls, or rather shores of masonry, which were, in fact, accessories of constructive necessity, invented to enable vaulted ceilings to be erected in a form, and of a material, which refused to support themselves.

Time will not permit my adverting to any further illustrations of this æsthetic treatment of constructive features: I will therefore hasten on to the second class of ornament, and which almost always directly contributed to the name in the proper acceptation of the word, namely those which are purely decorative, and which neither fulfil nor appear to fulfil any structural duty. Under this head we may place all enriched mouldings, the bosses, scrolls, and other carvings ordinarily inserted into hollows, or on to friezes, and spandrels; also all crocketing, diapering, and other surface enrichments. If we were to adopt Madame de Staël's theory, that all ornament derives its nobility from its practical usefulness, this class of ornament ought to rank high, indeed, in our estimation; but without adopting that somewhat extravagant standard of excellence, we must, as artists, admit that ornament has great claims on our attention, quite independently of any use in the common sense of the word.

To attempt to force, as it were, a character of utility upon a purely decorative feature, seems to me contrary to good taste, and has led to very unworthy results. I have seen smoke issuing from what bears the semblance of a vase with an osc, or some such plant, apparently growing in it, although it was, in truth, a chimney, and the chimney, or pipe, was not intended to be concealed, but to imitate the plant, such fraud is much to be condemned; not, indeed, because it is a fraud, for nobody is deceived, but because it ever must be an unsuccessful and ludicrous failure, and above all, because it is a falsehood. I am inclined to class under this category the shrines, candelabra, tabernacle-work, and the like, which we not unfrequently see in Medieval art, representing miniature churches, or parts of churches, with tiny arcades, flying buttresses, battlements, even tiled roofs, spires and crenellated bastions, all these diminutive features being simply decorations, although professing to imitate works of construction. Such toys appear to me to be a species of misapplication of forms, as gross in their kind as the sham eastern gables at Lincoln Cathedral, the wooden masonry in the vaulting of some of our cathedrals, as in the cloisters at the last-named cathedral, or the hollow

* "As to support incumbent door or roof,
For corbel, in a figure sometimes seen,
That crumples up its knees unto its breast,
With the triple D posture stirring rude wielder
In the builder's fancy."

Cary's Translation, Purgatorio, canto x.

wooden columns of which, to the disgrace of modern architecture, from the time of Palladio downwards, were all more or less obliged to be guilty. Indeed, that casuist, without which should I deserve to stand before you in my present capacity, compels me to admit that to enumerate all the errors of this nature which may be justly imputed to modern art, would, indeed, be a long and tedious task.

Under this head of ornamentation I am inclined to class the cuspidation of Gothic arches. I know that attempts have been made to force upon this ornament some sort of purposeful utility; but I am convinced that all such purpose is a theory *ex post facto*, and that æsthetic motives alone dictated to the artists of the thirteenth century this elegant mode of enrichment.

I will here take the opportunity of stating my impression that this practice of cuspidation strongly confirms the opinion of those who would refer to an Eastern inspiration the style of art which began to prevail in Europe a little before the commencement of that century; a very old opinion, which I cannot make up my mind conclusively to discard, although it has been repeatedly by every writer who has wished to set up a claim in favour of his own country.

The buildings of an early Byzantine date have received far more attention of late than formerly, and it is now pretty certain that from them sprang, by clear and direct descent, the Saracenic type of architecture, for the family resemblance is obvious.

In studying the curious remains of Moorish and Saracenic art, it is impossible not to entertain a strong suspicion that the early art of the Middle Ages owed much to these Eastern artists, there is so much like cuspidation in the feeling, and so much of the feeling of Gothic architecture in it. Take, also, into consideration, the fact that the horse-shoe arch (a purely Arabian feature) is not unknown in early Gothic art; that a rude kind of Cupic cuspidation, which has been classed as the "scribbled ornament," occurs in early Medieval work in this country, and I have seen exactly similar inscriptions similarly used in the Pointed architecture of Sicily, without referring to the more regular inscriptions in the Saracenic character abundantly found in the Koots and elsewhere near Palermo; that the enrichment in flat relief commonly used on the surface of walls, in early Pointed architecture (as in the spandrels at Westminster Abbey) is essentially Saracenic, and abounds in the Sicilian examples; all these facts taken together tend to the conclusion that our Pointed style, to which has been assigned the name of "Christian Architecture," has derived some of its most characteristic features from the followers of Mahomet. Nor does it seem any improbable supposition that the European devotees who visited the Holy Land would endeavour, on their return, to realize, however imperfectly, their recollection of buildings which they had seen and admired there in all their variety and beauty—buildings, it must be remembered, erected by men of far more cultivated taste and refinement than themselves. In Sicily we know that the Saracenic style survived throughout the Norman rule in that island, and workmen brought up in the Arabian schools continued throughout that period to be employed on the palaces of their conquerors, and even on their churches, as we learn from the direct testimony of Matthew Paris.

I am afraid I have been deviating into something like an archaeological episode on a subject of no great moment. I fear, too, that my hesitation to assign a purely Christian pedigree to that style which has been classed as exclusively Christian may savour to some of condemnable heterodoxy; but I will not on that account refrain from expressing those doubts which the interests of truth appear to dictate.

In this sketch of a classification of ornaments I cannot permit myself to dwell on individual forms: I proceed, therefore, to allude to what I have supposed to be the third class of ornamental forms, namely, those designed with a view to impress a particular character on the work ornamented. It is here that decorative sculpture takes its highest stand. Ornament that merely charms the eye has no doubtless high claims on our regard, and we should be as thankful for it as for any other innocent pleasure; but ornament that addresses itself to the mind also, claims certainly a higher rank. An ornament endowed with sentiment becomes an intellectual treasure, and is capable, in a degree, of interesting and elevating the mind. Take, for example, a laurel wreath. As merely a graceful and elegant ornament, it pleases us; but when carved on a wall encircling the name of some victor distinguished among his fellows for courage or patriotism, see how it rises above the level of a mere ornament! A palm-branch, also, is a highly ornamental object, of the beauty of which artists of the remotest ages were not in the least conscious, and which they placed upon the tomb of an early Christian martyr, it rises, as an emblem of our faith, far above the level of a mere empty decoration.

It is thus that the sculptor's art is eminently able to give expression to a building. An acanthus leaf, a guilloché, or a crocket, conveys no idea, expresses no thought,—whilst a statue of Minerva, or some sacred figure, explains to us at once the nature of the building which it ornaments, and elegantly it may be, but still enough to attune the mind, as it were, and bring it into harmony with the structure. This language of sculpture was fully understood and highly appreciated by Medieval builders, in whose works we have literally "sermons in stones," and with whom a capital, a boss, or a niche, was, as it were, a petrified homily.

Representations of animal life, and especially of the human form, necessarily constituted a large portion of this sculpture; and such forms, when of life-size, had the very important collateral value of affording an excellent standard of measurement, familiar to every eye, and capable of serving as a guide to the least experienced and most ignorant observer.

The human form also presents the most agreeable contrast to the flat surfaces, and to the dry, rigid angularity of mere architectural shapes.

If, for example, your composition demands a slender, upright form, how infinitely more pleasing to the eye (exclusive of all higher considerations) is a statue than an obelisk! The variety in the chiaroscuro of its drapery, the variety of outline, and the roundness of forms, in the undraped figure, are sources of beauty very faintly and inadequately afforded by festoons of flowers or scrolls of ornamental foliage, whether Greek or Gothic. Such is the human figure richly due to the sculptor; but our high estimation of the value of his art ought to render us especially chary in its use, and most careful not to misapply it. Unhappily, the abuse of that art is a vice which architects have ever been too prone.

I am afraid it must be admitted that our great Greek masters have set us an example of this misapplication

* See pp. 107, 135, and 169, ante.

the sculptor's art in the caryatides, graceful and beautiful as the Athenian caryatides are. One cannot but wonder at the severe and learned Greek committing such a capricious as this conversion of a virgin into a burthen-bearing column!

Again, what could have induced those masters of their art at Agrigento, to place those muscular monsters to carry on their shoulders an integral part of one of the largest temples ever built in classic times!

The only apology I can offer is, that art was then young, and it had not wholly emancipated itself from the archaisms of its Egyptian instructors. The Greek artist had seen, on the banks of the Nile, and on the plains watered by the Euphrates, colossal gods upholding their ponderous temples and palaces. His reverence for the teachers of his youth forbade him to reject the barous practices and he contented himself by touching it with his Promethean torch, and animating it with the fire of his immortal genius. Had a better taste emancipated him from the traditions of the past, and induced him to reject this and other monstrous mixtures altogether, from what an unsightly progeny of hideous creations we should, in later times, have been spared!—those perversions of the human form divine, which degenerated downwards into the lowest species of bestial nature,—the race of centaurs, satyrs, sphinxes, and other monsters which the sculptors of antiquity unfortunately bequeathed to us, and which the ill-regulated fancies of the later artists of Europe, in every succeeding age, have been too ready to reproduce and exaggerate.

Upon the treatment of sculpture as a fine art, I do not presume here to discourse. Nor will I inquire whether the Greeks were right in idealizing that art; but I will venture with confidence to say that in the treatment of sculpture, when applied to the purposes of ornament in subordination to architecture, it should be treated with an architectural feeling, and in some degree conventionally. I can honestly, although with unfeigned humility, say that no one can feel a more real and ardent admiration for the handiworks of nature than myself, yet it would be the merest affectation were I to join in the clamour for an exact imitation of nature, at all events in architectural sculpture. When we introduce a lion's head as an object of ornamentation, are we to reproduce in stone a civil taken at a messenger's every conventional head to do so? My belief is, that in the whole range of decorative art it would be difficult to adduce an instance of more consummate skill and artistic feeling than the Greek conventional adaptation of the lion's head to the purposes of our art—an adaptation the merit of which long familiarity has almost disabled us from duly appreciating; and I cannot bring myself to think with those who would instruct us to realize, in stone, the sharp and eager glare, the bristling ferocity of the real lion, when we apply the form of this beautiful creature to the purposes of ornamentation.

The opinion I have expressed, that an architectural feeling should pervade ornamental designs, applies with particular force to the application of statues to the decoration of buildings. When a sculptor's object is exclusively to represent life, he can hardly, I apprehend, give to his subject too much of the freedom and elasticity of life; but when he applies himself to the very distinct object of architectural decoration, some restraint must be submitted to. A reference to the practice of the past times of sculpture, affords the best illustration of my meaning. When the Greek artist designed the Athenian caryatides to which I have just adverted, we see in every portion of his work that, whilst never identifying nature, he felt the necessity of giving, both to the flesh and to the drapery, a rigidity and formality which stamped a peculiarly artificial character on the statues. So, in the best times of Mediæval art, a figure is usually designed in so severe and so simple a manner, with such singularity and rigidity in its drawing, that one sees at once that the natural model has been very widely departed from, and that an architectural character has been impressed upon it, which admirably fits it for its special purpose as an accessory to architectonic art.

To take an illustration from a later period: in the seventeenth century, when a corrupt taste prevailed; here and elsewhere, both in our art and in the sister art of sculpture, we see the niches tenanted and the parapets fringed by a host of most natural figures in every imaginable variety of lively action and with their fluttering drapery designed, as it were, in a gale of wind.

I have now, in a very hasty and, I fear, superficial way, skimmed over the surface of this subject of architectural sculptured ornaments. I am very well aware how much substantial practical instruction can be gathered from desultory remarks, ranging over so vast a field of study, yet crowded within the compass of an hour. I will, however, indulge myself in the hope that I may perhaps have imported into your mind some new subjects of inquiry and reflection, and I may have thus encouraged you, and perchance helped you on in the pursuit of professional knowledge. That pursuit is undoubtedly an arduous one, requiring all your energies, and it is well that you should seek out, and avail yourself of, every adventitious aid. Lectures may be well enough steadily directed, methodical reading may be still better. But, after all, you must not forget that it is mainly by your own constant habits of observation and study; by your own ever watchful eye; your own ever employed head and hand, that you can hope to succeed in the race that is set before you. As has been wisely said,—

"Who fame would share,
Must learn with labour, and must live with care."

Rely, then, on nothing but your own exertions. If you are born with a name of note, your position is a perilous one; your labour must be directed to sustain that name, and to prove yourself worthy of it. If born of a name unknown to art, your energies will be nobly directed to create one; and be assured that a self-acquired reputation is a far more illustrious distinction than the loftiest inheritance. Above all things, identify your own honour with the honour of your profession. Show in your own character the elevating and purifying effects justly attributed to the fine arts; and be assured that, by adopting a policy of honour and brightness, you face the surest course for securing your own worldly welfare.

I hope I am not assuming a too sententious and didactic tone in addressing to you these few parting words: so uncertain is health and life, and all that is dear to us, that this may well be the last occasion I can have to address you. I have already reminded you, as architects, that, in laying down your plans, a straightforward, obvious, and simple mode of action is the best; so, as a man, let me say that, in all your dealings with the world, a crooked policy is the least likely to lead you on in the right direction. There is an old and valuable aphorism, well deserv-

ing of a place in your memory, an aphorism derived from the East, whence so much of wisdom has come down to us, which teaches us that "no man will ever lose his way on a straight road."

NEW GOVERNMENT BUILDING, MILWAUKEE, S. WISCONSIN.

THIS new structure, which has a frontage towards Wisconsin-street of 110 feet, and 60 feet flank in Milwaukee-street, with an altitude of 60 feet, is now fully completed. It is constructed principally of Athens marble, said to be a very beautiful and durable material; and in front of the main entrance in Wisconsin-street are spacious marble steps, extending nearly the entire front. Internally, the arrangements comprise post-office, collectors' office, district attorney's and United States Marshal's office, besides the United States Court and offices connected therewith. The basement is occupied by the post-office packing-rooms and the furnaces which transmit warm air to all portions of the building. The post-office is on the main floor, and, together with a handsome vestibule, extending the whole length of the front and half across the east end, occupies the entire first story. The post-office is inclosed with bronzed iron columns and glass partitions. The vestibule is 128 feet by 12½ feet, and is floored with variegated pavement of black and white marble. There are three main entrances to the post-office, with massive bronze doors, weighing one ton each, and there are two smaller doors at each end of the building. The walls of the interior are finished in imitation of granite, and the upper floors are supported by cast-iron columns, through which the heated air is diffused from the furnaces beneath. Columns, with other decorations, are introduced, and spacious iron staircases lead to each story: a central staircase connects the postmaster's rooms with general offices below.

In the second story, on either side of a wide and lofty hall, running from the east to the west end of the building, are the collectors', attorneys', and clerks' offices—all said to be well-lighted and fitted up, the ceilings being decorated in fresco by Otto Fritz; the counters, desks, cases, &c. of black walnut; floors oil polished, &c. &c. In the third story is the United States Court, 56 feet square, with jury-rooms on one side, and a library and private room for the judge on the other; and the United States Marshal's office is in the south-east corner. A trussed roof of corrugated iron covers the entire building, which is fully fire-proof. The construction was commenced in May, 1856, by the late Colonel C. A. Jones, of Rochester, N. Y. and since his death has been continued by his partner, Mr. N. Osborn, under the supervision of Colonel Henry W. Gunnison. The total expenditure, including ground, fittings, &c. was, in round numbers, 165,000 dollars.

THE COST OF SEWERS.

IN a recent number, page 85, we remarked that "the cost of sewers increases about as the squares of their diameters," and put the case as betwixt sewers of 2 feet and of 4 feet in diameter.

The surveyor to the parish of Paddington denies this. Now, how stand the facts?

A sewer 2 feet in diameter may be single ring, or "half brick" in thickness.

A sewer 4 feet in diameter must be double ring, or "brick," in thickness, and requires about four times the quantity of bricks, mortar, and labour.

Then as to the excavation. A 2-foot sewer can be constructed in a trench 3 feet wide; but a 4-foot sewer requires a trench 6 feet wide; and, to preserve the mid-section line of both sewers at the same level, the 4-foot sewer must be 1 foot 4½ in. deeper; so that there are more than four times the quantity of brickwork, and more than double the quantity of excavation. And in street work the larger work costs more than an equal price with the smaller work, as any contractor soon finds out, so that it is quite true, broadly, that sewers cost, in proportion to their diameters, just as houses cost in proportion to their cubes. The capacities of sewers are as the squares of their diameters, and the capacities of houses are as their cubes. But the Paddington Surveyor may deny this also.

We are accused by this gentleman of recommending, in the article in question, "a general system of pipe sewers in preference to brick sewers!" We did no such absurd thing. We recommend brick sewers where these are large enough, and pipe sewers where these are large enough. We do not, however, recommend "that all sewers shall be of brick, and of dimensions sufficient to allow men to enter them." The Paddington Surveyor is tormented by having "to remove

numerous stoppages at first-class houses," &c. and helplessly asks, "How is it to be obviated?" Must we teach this learned surveyor his business? Must we send him to towns in which thousands of houses are drained by earthenware pipe-drains, which drains have been several years in use, and in which the first stoppage has yet to occur? Or is it our business to teach him how to construct sewers and drains in which stoppages may be removed without breaking up sewer or drain, and with little expense or trouble? We are quite aware "there is no science in which theory is less to be trusted than in town drainage," and the Paddington Surveyor adds another proof to the fact, "that a great deal has been written by persons who have not the useful practical experience," or have been little benefited by what they have had. Before he again imputes "ignorance," "wrong motives," and "blunders," he had better perfect himself in his business, and be quite sure of his own sincerity and practical wisdom.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual meeting of the members of this society was held on Wednesday last, at the rooms of the Royal Institute of British Architects. The chair was occupied by the president, Mr. Sydney Smirke, A.R.A. The minutes of the last meeting having been read and confirmed.

Mr. Turner, the honorary secretary, read the report of the council, which contained a reference, by way of illustration, to a case in which relief had been afforded to a member during temporary and unavoidable distress, but which had since been repaid, while the recipient had again become a subscriber to the society. The paragraph in question was, at the request of the meeting, expunged, and the report then read as follows. This reference is necessary to make the subsequent discussion intelligible:—

REPORT.

"In fulfilling the annually recurring duty of reporting on the state and prospects of the Architects' Benevolent Society, the council have great pleasure in being able to congratulate the society on its continued well-doing. The year 1858 was a year of little prosperity to our profession generally, but the society has preserved its even tenor, and can point to undiminished resources and to a satisfactory balance-sheet. The necessary expenses have been kept down to the level of last year, whilst the balance left, when every liability has been cleared off, is about three times the amount of last year's balance."

We have, through the kindness of the Royal Institute of British Architects, been hitherto spared the expense of hiring any place of meeting, and the Institute has expressed to us its willingness to continue to us that indulgence for yet another year. The sympathy of that distinguished body, comprising, as it does, so many of eminence in our profession, is a great support and encouragement to us, and in return we cannot refrain from expressing our earnest hope that the Institute of British Architects may shine with still increased lustre, and exercise a still wider influence when enshrined, as it shortly will be, in a new temple. The council deeply regret the want of co-operation generally on the part of our provincial brethren, and respectfully urge those members of the society who reside in the large commercial and manufacturing towns to stir up a better and more friendly feeling towards us on the part of their fellow-townsmen of the same profession; reminding them that the society extends to all alike that sympathy which is due to misfortune and good character, and recognizes no limits except those prescribed by the length of its purse.

The original plan of the society to comprise all England, and its mission will not be completely fulfilled until its list of subscribers every large town in England is fully represented."

The statement of receipts and disbursements showed that the total income (including a balance of 631. 18s. 6d. carried forward from last year) was 3671. 4s. 7d. of which 1721. was derived from subscriptions, 1421. 14s. belonging to 1850; donations, 731. 3s.; dividend, 231. 15s.; gift made in July, 1856, returned in August, 1858, 301. income-tax returned, 21. 6s. 1d. The disbursements included petty expenses, 361. 10s. 4d.; collector's commission, 11. 11s. 7d.; gifts to applicants, 631. cash invested, 731. 2s.; balance at the bankers, 1811. 18s. 8d. The cash at the bankers on the 31st of December was 1801. 13s. 8d.; the amount of stock in New Three per Cents. 6611. and the subscriptions in arrear, about 441.

The Chairman, in moving that the report and statement of accounts be received and adopted, said that the council were always anxious to listen to any suggestions or propositions that might be made to them, or to give any explanation likely to conduce to the welfare of the society. There was, he was aware, a certain amount of vagueness in the report—something after the manner of a Queen's speech; but this was to be traced to the circumstance that the council felt it most important that in distributing the funds entrusted to them they should do so with the utmost delicacy, for if they were to enter into the details of individual cases they might run the risk of wounding the feelings of those whom it was their special desire and duty to relieve from all unnecessary pain. But even this vagueness was met by the constitution of the society, for as a third of the council retired every year, it followed that in a short time every member of the society who was

qualified to become a member of the council had it in his power to do so, and could thus become acquainted with all the operations of the society. But it might be said that the council consisted only of members who could attend the meetings in London; but there were corresponding members of the council who could, if they desired it, communicate with the board in London, and obtain all the information in their power. It would thus be seen that the organization and machinery of the society were complete, and that a little more grit was all that was wanted to make the mill go. He regretted very much that the society was not more commensurate with the number, intelligence, and wealth of the profession with which it was connected.

Mr. Mocatta seconded the motion for the adoption of the report.

Mr. Billing suggested that it would be desirable to omit in the reports of the council all reference to particular cases. The report, as originally drawn, contained a paragraph referring to a case where, owing to unknown and unavoidable circumstances, relief had been given which the recipient was afterwards able to refund. Now, he was well acquainted with the circumstances of the case, and he could state that the circumstances were neither unknown nor unavoidable, as in point of fact the gentleman who got the money was labouring under a delusion, and did not really require any relief of the kind.

After a short discussion, the Chairman said the council were quite willing to omit all mention of individual cases.

In reply to a question, the Chairman said that the amount distributed in relief during the past twelve months was only 63*l.*—a proof that no large amount of distress had prevailed during that period; at the same time the council regretted to say that some heavy demands had been made upon their funds since the commencement of the present year.

The report, as presented in the above form, was then agreed to.

The president and council were re-elected, and Messrs. H. Jones, Charles Mayhew, George Mair, B. Ferrey, and Sancton Wood, were elected to fill the vacancies; and thanks were voted to the president and the council for their services during the past year; to Mr. Tite, M.P. the treasurer; Messrs. Mawley and Clifton, the auditors; and Mr. John Turner, the honorary secretary.

CHURCH-BUILDING NEWS.

Southerly (Donmham Market).—The new church in this village approaches completion, the seating only remaining to be fixed. The building is erected upon a new site, the gift of the rector, and is in the early English style. It consists of a nave, south aisle, chancel with vestry on the south side, tower and spire: the height of the last, which stands at the west end of the nave, is 80 feet, the spire being constructed of timber covered with slate. The walls of the church are built of the local stone, relieved by bands of Wansford stone; the dressings of Auster stone; Caen stone being used inside for the nave arcade, chancel, and tower arches. The roofs are all open-timbered, stained, and covered with slate. The seats, which are open, are of deal, stained and varnished. The passages in the nave and south aisle, and the floor of the chancel, are to be laid with Staffordshire tiles. Accommodation is provided for 400 persons. The cost of the works is 1,700*l.* The building has been carried out according to the designs, and under the superintendence, of Mr. Walter Robinson, of London, architect, the contractor for the works being Mr. Charles Bennett, of Lynn.

Lindfield.—A new school-church has been opened at Sayno's-hill, Lindfield. The building will accommodate about 100 persons: its cost is 350*l.* The church has been built with a two-fold object,—that of affording instruction to children during the week, and enabling all to attend divine service on the Sunday.

Brighton.—Very shortly, it is said, a church will be built on the vacant ground in Queen's-square, Brighton, the greater portion of the funds for which has been contributed by two ladies.

Weston-super-Mare.—For the proposed new church on the hill, we hear the tender of Mr. John Palmer has been selected by the committee. There were five tenders sent in. Mr. Palmer's was the lowest.

Cleghonger.—A Roman Catholic place of worship, with an accompanying priory and school, has been erected in the parish of Cleghonger, near Hereford. The church is situated upon an

eminence. It is now far advanced towards completion. The building is cruciform in plan, and comprises choir, side chapels, central tower, transept, nave, aisles, and south porch. It is also the intention of the founder of the church, not of the priory (F. R. Wegg-Prosser, Esq.), to erect a chantry. The most noticeable feature in the interior is the east window. It comprises a representation of our Saviour encircled by angels—of St. Michael, of St. Raphael, and of St. Gabriel. In the margin are nine choirs of angels surrounding the three archangels. The tower has a groined ceiling. The style of the Benedictine Priory adjoining is an adaptation of the Gothic to domestic purposes. The object of its founders is the establishment of a college for the education of young men intended for the Catholic priesthood. The priory is built of stone raised on the Belmont estate, with facings of Bath stone. The entrance for the interns, or community, is on the western side. There is a cloister 12 feet wide, 14 high, and 110 long, for in-door exercise. On the left is the church-cloister, and the sacristy or vestry in connection with the church. On the ground-floor of the priory are four apartments for lectures and recreation. On the east are the refectory, 26 feet wide, 59 long, and 20 high; with the kitchens. At the south end of this same western front is the separate entrance to the hospital, or apartment for the reception of visitors and friends of the students. It consists of two parlours, a staircase, and bed-rooms. This portion will be quite cut off from the part of the building occupied by the students. From the ground-floor, a staircase leads to two floors of private rooms for the collegians, or monks, who will have one apartment each, called a cell. There is on the first floor a corridor of 160 feet long and 8 feet wide, on either side of which are these cells; and an upper corridor, not quite so lofty, with a similar arrangement. Thus forty private bedrooms in the whole are obtained. The cost of the "pro-cathedral" will be somewhat more than 10,000*l.* and of the Benedictine Priory about 7,000*l.* Near the priory is a school for the instruction of poor children, to the number of about forty.

Heywood (Manchester).—St. Luke's Church, Heywood, is to be rebuilt, with a nave 80 feet long, side aisles, &c.; a chancel 45 feet deep, organ chamber, vestry, and chapel. The tower and spire will be 200 feet high. The church will seat more than a thousand persons on the ground space. The pews will be open. The height from the floor to the apex of the nave roof will be above 60 feet, and the entire length, including walls, between 130 feet and 140 feet. The clerestory runs the entire length of the nave and chancel, and is above 10 feet in height. The piers are moulded, and the chancel arch will have clustered columns of Derbyshire marbles. The small shafts in the clerestory arcades, and other parts, will be of different coloured stones. The architect is Mr. Joseph Clarke, of London, from whose designs the church of St. Alban, Rochdale, was built.

SPURGEON CHAPEL COMPETITION.

SIR,—As you have printed Mr. Garbett's philippic, allow one of the authors of "bad art" to remind that gentleman that a man has so much art as he has power to convey the impress of his own mind and heart to those of others, and no more. Weak thoughts and feelings will create weak expression, or insipidity; ill-defined or ill-sustained thought or feeling, confusion; whether in stone, on canvas, or in writing; as witness your correspondent's letter last week. He has some thought to convey, and strength of feeling; but for want of clearly defining the one, and regulating the other in his own mind, before taking pen in hand, he has woefully failed in conveying them with any clearness or force to other minds.

If speaking in stone be art, then must there be, to some extent, fixed signs of ideas, or stone words: for instance, a Doric column is one synonyme for strength, an Ionic for elegance, &c.—ideas conveyed by proportions. The minds to receive the impressions must, therefore, have some acquaintance with the language employed. The truth of this is evident from the fact that no newly-introduced style of art is at once popular, however beautiful to the artistically instructed. The power to read it is wanting. Hence the difficulty of inventing or introducing a new style of architecture.

But Mr. Garbett should not forget, that as originality in speaking or writing does not consist in coining words or hyperbolizing whole sentences, neither in architecture does it consist in inventing new forms or features (though architecture affords far more scope in this respect than language does),

but rather in so combining the old as to embody and convey sentiments and ideas which, if not actually novel, have some new aspect or savour imparted to them.

Without having any very exalted opinions of most of the sixty-two designs under discussion, I would suggest the inquiry to your correspondent and all others who rate out against art in the nineteenth century, whether the defect in part, at least, may not be in their own power of perception. Certainly I pity the man from my heart, who, having devoted his life to art, has his perceptions so deadened or so sublimated that he could derive little or no pleasure from contemplating several of the (unprinted) designs, regarded simply as works of art only, and would strongly recommend him either a dose of blue pills or depletion.

What, then, does your correspondent mean by "no art"? Does he admire and applaud the man who has cultivated no power of embodying his conceptions, rather than him who has acquired partial and as yet defective powers of expression? Does he despise the day of small things? *Proh pudor!*

WILLIAM WILLMER POOCK.

CHEAPENING ORNAMENTAL PAVEMENTS.

A CORRESPONDENT conversant with the manufacture of ornamental tiles fears that the intimation in a paragraph in our last number (p. 180) as to the present cost of tile pavements, may prejudice the use of them, because, although correct of the description of paving to which it refers, it does not point out that the cost of the geometrical pavements, of combinations of the ordinary colours, is much less than that named. We will let him speak for himself:—

Two of the leading manufacturers charge the red, black, buff, chocolate, and grey pavements, of elaborate design, at from 3*s.* 6*d.* to 6*s.* a square yard. They also supply many very beautiful designs, containing blue, green, dove-colour, white, fawn, cream, &c. at from 6*s.* to 8*s.* 6*d.* a yard; scarcely any but the most elaborate designs exceeding 9*s.* or 10*s.* a yard. As the greatest misapprehension exists in the public mind as to the cost of tile pavements, their cost relative to other paving materials, and the profits of tile-manufacturers, it may be as well to state here that the leading manufacturers are now executing geometrical pavements, of very beautiful design, in red, black, buff, and chocolate, at from 12*s.* to 14*s.* a square yard. These rates include not only the cost of the tiles, but also package, carriage, labour of laying, cement, carriage of cement, and travelling expenses of men. At from 14*s.* to 18*s.* a yard for the complete pavement, very elaborate designs, enriched with blue, white, green, &c. can be carried out. When it is borne in mind that these pavements not only do away with ordinary stone paving and boards, but also dispense with the necessity of oil-cloth, or carpet coverings, it will easily be seen that even in the first outlay they are as economical as the commonest paving material in use, setting aside the consideration that they obviate the material current expense involved by the renewal of oil-cloths and carpets. From the manufacturer having been carried on for a number of years under a monopoly, the public appear to be impressed with the idea that they have been victimized by the two or three firms who have had it in their hands; and from the difficulty of the uninitiated entering into the details of the manufacture, it is almost impossible to remove this conviction. Messrs. Minton and Co. who have now carried on the manufacture between twenty and thirty years, and Messrs. Maw and Co. for a considerable period, positively state that they have scarcely been able to meet their expenses. Mr. Minton, so recently as 1851, wrote a letter to the *Builder*, asserting that he had at that time (nearly twenty years after commencing the manufacture) cleared nothing by it. Messrs. Maw and Co. have now by then the records of above eighteen hundred distinct experiments on the composition of the bodies and colours of their tiles, independent of the various elaborate experiments referring to the intricate mechanical processes and methods of burning. When it is asserted that experiments referring to the burning of the tiles cannot be carried on on a small scale, but that whole kilns full of tiles are necessary to correctly experiment upon, it will easily be seen what vast outlays and losses these manufacturers must have sustained before bringing this manufacture to its present perfected state.

The current cost of the manufacture is another question; but when it is borne in mind that the whole mass of the materials composing the geometrical pavements passes through exactly the same processes as the finest porcelain body (even before it is subject to the special process of the manufacture), and that out of it, 300, 300, and even, very frequently, as many as 500 pieces have to be separately moulded and lapped eight or nine times to compose a square yard of tiles sold at 3*s.* 6*d.* and 6*s.*; that an elaborate drawing has to be made of every pavement that is executed (the cost of which is included in the manufacturer's charges), however small; that the loss in the burning is never less than 10 per cent.; and that very frequently, so difficult is the process, whole kilns are spoiled through want of close attention on the part of the foremen,—it will be easily seen that, under the most favourable circumstances, ornamental pavements cannot be much cheapened; also that the present expenses of the complete pavements leave but a very moderate profit. The manufacturers that have hitherto attempted to cope with the apparently insurmountable difficulties of the processes have charged their manufacture at rates which cannot possibly be remunerative, excepting by its production in very large quantities. Of this, however, the public have no means of judging; but they can realize it as a most liberal arrangement on the part of the manufacturers, that they supply experienced paviors, to any builders requiring their services, to lay the tiles at the cost of their wages. Such accommodation is unknown in any other branch of business relating to the building

trade, and should be looked upon as an earnest of the liberal intentions of the manufacturers, notwithstanding their being protected by the difficulties of the processes which give more security than any artificial monopoly.

WAT TYLER.

LONDON TAVERN. STRENGTH OF FLOORS.

Messrs. CHATER and Company ask us to insert the following, in answer "to a paragraph which appeared in the *Builder*, that was calculated 'they say' to mislead the public as to the strength of our large rooms." We do so very willingly, though in truth nothing has appeared in our journal calculated to do anything of the sort suggested. The only allusion we can find to the floors in the London Tavern is that of a correspondent signing himself "Observer," so long ago as January 15th, who said that often, when he had been at a crowded meeting in the large room of the London Tavern, for example, he had felt "that the room had need be sustained by very solid walls to bear the tremendous weight on occasions when the room is crowded, and perhaps stamping with excitement on some special occasion." No one can deny the correctness of the feeling; and it is very desirable that the proprietors of all places of public resort should have the necessity of care brought under their notice; so that they may be led, as Messrs. Chater have been, to get a perfect assurance of safety. The communication is as follows:—

"In reply to your letter, we beg to say that the floor of the large room at the London Tavern was reconstructed by us in the year 1838, under the superintendence of an architect, since deceased. It is of great strength, and we have no hesitation in asserting that it is fully capable of sustaining four times the weight to which it is subjected."

WILLIAM CUBITT AND CO.

NORTH OCKENDON CHURCH, ESSEX.

This church, during the last summer, has undergone a thorough repair and restoration. The earth outside the walls has been excavated to the bottom of the foundations, and filled in with concrete; the walls, externally, have been made good with dressed flint-work in cement, and pointed with blue mortar.

The old oak roof has been stripped of the tiling and plastering, and planed, stained, and varnished; the rafters lathed on the upper side, and plastered between the timbers, and coloured a light blue tint. A new fir roof has been placed over the old rafters to carry the tiles, which is planed, and ridged, with terra-metallic tiles. The walls over the chancel arch, and the east end of chancel and mortuary chapel, have been carried up faced with flint, and have a Bath stone coping, with crosses on the apex of each gable.

The walls, internally, have been stuccoed and hand-floated. The windows, with the exception of one on the south side and one in the tower, are new Bath stone, similar to the old windows. The old Norman doorway has been recut, and a new porch has been erected.

The whole of the earth, to the depth of 1 foot, has been taken from the inside of the church, and filled in with concrete. The grave-places are laid with terra-metallic tiles, red and blue; the chancel and within the communion rails, with Minton's tiles, to a pattern. The whole of the seats, which are open, are of pitch pine, varnished; the old oak pulpit recut, and restored to its original state. A new vestry-room has been built on the north side of the church.

The glazing of the windows in nave and aisle is in cathedral tinted glass, with coloured glass marginal traceries, by Messrs. Palmer, of Charing-cross. The glazing in the east window of chapel and chancel are of stained glass: the latter contains a medallion of the Nativity, Crucifixion, and Ascension of Christ, filled in with quarries of antique patterns; the whole surrounded with a border of rich pattern, the liberal gift of the rector, the Rev. George Felling. The window nearest the east of church has a medallion of "The Resurrection," with a border, the gift of Mrs. Snowden, of the Hall Farm. The other window in the chancel contains a medallion of "The Baptism of Christ" and "The Last Supper," the gift of Mr. Russell.

The east window of the mortuary chapel, belonging to the Pontz family, consisting of three lights, has also been filled with painted glass, the gift of Mr. J. F. Francis, "Christ Blessing Little Children"; the quarries under and surrounding which, have been taken from an ancient window found in the church. The side lights are filled with the ancient glass formerly in the church, in di-jointed fragments, now restored to its original appearance by a rich canopy over the figure of a saint; that on the south side representing St. Helen, while its ancient counterpart in the north, having entirely disappeared, has been replaced by a figure of St. Mary Magdalene, the patron saint of the church, by Mr. Clutterbuck, of Stratford.

The cost of the repair and restoration of the church, amounting to about 1,000l. has been defrayed by the patron, Mr. Benyon, of Epsiefield, Berks. The works have been carried out under the direction of Mr. Armstrong, architect. The contractor for the general work was Mr. James Barlow, builder, of Chipping Ongar; the stone work by Mr. Robert Strong, of Windsor; the carving, by Mr. Purdy, of Gravesend. The contractor for the general repairs has been a considerable loser, we are told, owing to the old building being in a much more decayed state than it first appeared to be. The carting the materials, amounting in value to 150l. has been done by three of the principal farmers in the parish.

LONDON ASSOCIATION OF FORMER ENGINEERS.—At a meeting held on Saturday night, the 5th inst., Mr. Joseph Newton, the newly-elected chairman of this society, read a paper on the "Influence of Mechanical Science and Mechanical Men on the Age in which we live."

Books Received.

The Year-book of Facts in Science and Art: exhibiting the most important Discoveries and Improvements of the past Year. By JOHN TIMBS, F.S.A. London: W. Kent and Co. 86, Fleet-street. 1859.

Mr. TIMBS's yearly volume is always most welcome as a refresher of the memory, in regard to the scientific and art progress of the year, which therein only, as a whole, it may be said, assumes a popular and handy form for reference. The present volume contains a portrait of Sir Benjamin C. Brodie, the President of the Royal Society, with a memoir; and a vignette of the new suspension-bridge at Chelsea. A better volume as a present, or a friendly memento, there cannot be. It is full of interesting and varied information.

Liverpool, past and present, in relation to Sanitary Operations. By JAMES NEWLANDS, C.E. *Sanitary Legislation; with Illustrations from Experience in Liverpool.* By Mr. T. MCGOWAN, Solicitor; principal Assistant to the Town-clerk of Liverpool.

THESE two pamphlets consist of papers read before the Public Health Section of the National Association for the Promotion of Social Science, at Liverpool, in 1858, and were both mentioned by us at the time. They have been printed by the Health Committee of the Liverpool Town-council, at the request of the Association. They constitute, incidentally, a reply to the charge of unhealthfulness brought against Liverpool, which Mr. McGowan declares to be a fiction, at least for the last twelve years. Instead of being the unhealthiest town in England, he says, Liverpool "has attained a lower death-rate than either Glasgow or Manchester." It is for Dr. Greenhow and others to consider and explain the statistics here offered in connection with their own. Mr. Newland's paper gives a very interesting account of the important works which he has ably carried out.

Facts and Fallacies relative to the Main Drainage Scheme of the Metropolitan Board of Works. By FRANCIS H. FOWLER, M.R.I.B.A. London: Stanford, Charing-cross, 1859.

IN this shilling pamphlet Mr. Fowler gives an account of sewers and sewage; a brief but comprehensive history and description of the main-drainage scheme; urges its inadequacy for the drainage of the metropolis; maintains that the scheme will not improve the condition of the river; that the main drains and reservoirs will silt up with the 100,000 loads of street mud spread over the thoroughfares in slushy weather; and that there is danger in the scheme and impending ruin to Oxford-street, Piccadilly, and other leading thoroughfares, and other great dangers to be feared. Some remarks then occur on the law of sewers, and illegal and unjust assessment of rates. The whole is very ably done.

A Defence of the British School of Medal Engraving. By R. SAINTHILL, of Topsham, Devon. 1859.

UNDER this title, Mr. Sainthill has printed, for private distribution, a memoir read by him at the Royal Cork Institution, condemnatory of the "National Medallion" prepared for the department by M. Vechte, after the observations of Mr. Redgrave, that, "In endeavouring to give them the very best work of art that could be obtained, they were obliged to go to the most eminent artists, and the artist on this occasion happened to be a foreigner. He hoped that on future occasions English art would stand well enough, to produce its own medals, but on this occasion the medal would be the work of M. Vechte, whose works stand of good pre-eminence in the Great Exhibition in Paris?"

We were forced to express the regret with which we viewed the course taken, and in speaking of M. Vechte's work afterwards, we were unable to give it the praise of fitness. It is an exceedingly clever work of its kind, though imperfect; but it is not a medal, to begin with, and further, is not at all adapted to the purpose. The Department must try again. Let them follow the example of the Art Union of London, and set themselves to aid the English school of medal lists, to whom little encouragement is afforded.

VARIORUM.

"VACTER's Parliamentary Companion for the Session 1859" (Vacher and Sons, 29, Parliament-street), is the 148th issue of a very useful little pamphlet, containing lists of the House of Peers, alphabetically, and according to rank and seniority, and of the House of Commons, alphabetically

arranged; also lists of boroughs and their members; lists of the ambassadors, and Government officers and offices, courts of law, &c. The most recent London addresses of the peers and commons are given, with space for correction, &c., and appended are map indices to the Ordnance survey maps.

Miscellaneous.

HIGHGATE CEMETERY.—A monument has been erected here in memory of the late Mr. Thomas, of Fen-court, London, which is superior to the majority of similar works. It consists of head, foot, and grave-stone, Decorated Gothic in style, and was executed by Messrs. Casentini.

PROPOSED DESTRUCTION OF A RELIC OF ANTIQUITY.—It appears that a motion is to be made at the meeting of the York city council, on the 14th inst. for the demolition of the barbed of Walmgate-bar, the only one of the city barbeds left, and with, we think, a single exception—that of Southampton.—the only one remaining at the entrance of any English town. Of apparently the Edwardian period, this barbed is in perfect repair.

THE WESTMINSTER CLOCK AND BELLS.—In reply to a question put in the Commons last week, Lord John Manners said that in a letter Mr. Denison had stated that the bells had been let down a little to allow of the putting up of diagonal braces as a preservative against the blow of the great tongue, and he believed that the clock-room would be ready in a week; that the bells would be firm in a few weeks; and he saw no reason why the clock should not be driving the hands and striking in a few months.

COMPANY FOR IMPROVEMENT OF LABOURERS' DWELLINGS AT LIVERPOOL.—At the ordinary half-yearly meeting of this company, the report of the directors was read, and a dividend of 3 per cent. declared upon the profits for the year ending December last. The report stated, that the success of the operations of the company, regarded as an investment, did not justify the directors in recommending the erection of further buildings at present; but, hoping that the depression of the last year may be regarded as the cause of so many of the houses remaining unoccupied, they preferred to take the experience of another year before recommending to the shareholders any definite course regarding the future.

THE ENCLOSING OF THE CASTLE BAILEY, COLCHESTER.—A densely-crowded meeting, comprising all classes of the inhabitants, convened by the Colchester Footpath Association, has been held in the Town-hall, to take into consideration the enclosure of the Castle Bailey, as resolved upon by the Town Council, in their arrangements for removing the cattle-market from the High-street. A lengthened and animated discussion on the subject took place, and various appropriate resolutions against the corporation project were come to, including one to send a memorial to the council deprecating the attempt to shut up that portion of the Bailey in question.

STREET ARCHITECTURE.—A correspondent, signing himself "Architectus" writing to the *Liverpool Courier*, says:—"Allow me to express the great pleasure I felt in reading your very judicious remarks upon a house recently erected for an artist in Paris, and illustrated in the *Builder* of last week, feeling assured that, if more notice was taken by the press, and more reviews given of architectural works as they are produced in our large towns, it would do more than anything else to improve the public taste, and consequently our shop architecture. We should then have in our places of business that consistency of character so admirably displayed in the work alluded to, and are less of the 'abominations' on which we are compelled to look in our daily walks. Your last remarks as to builders would, I am afraid, mislead, by laying the blame upon them. Some of them may be chargeable with spoiling our streets by attempting their first lesson in architecture at the expense of some luckless client; but is not the client more to blame for not giving the right way about his business? When we want bread do we go to the ironmongers for it? Yet the principle is the same. Generally the builders are not blameable, but those who, from avaricious motives, employ their own workmen, as they term it, grinding even the operatives, and, if not the architects of their own fortunes, are determined to be architects for their own buildings, and so not only lose in the end, but bring disgrace on the architecture of this country, and death and desolation into families hitherto happy and comfortable."

ARCHITECTS IN AMERICA.—Mr. Calvert Vaux, architect, late of London, has been appointed architect to the Public Parks, at New York, at 4000. per annum. We noticed some time ago, that he and another gentleman had gained the competition for laying out these parks. We may add that the latter gentleman has been appointed the chief commissioner. It would be well if some of our competitors turned out as well for those whose designs are selected, but who now merely receive the premiums, and are then dismissed.

THE BIDEFORD SURVEYORSHIP.—The borough of Bideford being about to rise into the dignity of local government, the town council found it necessary to consult together as to the appointment of the requisite officials, and amongst others of a surveyor. They were enlightened enough to be aware that their surveyor ought to be "a man possessed of great comprehensiveness of mind, a capacity to grapple with great engineering difficulties, combined with business habits necessary to attention to minor details." In the discussion which ensued upon so promising an outset, however, it soon became evident that the council themselves were sadly in want of a little of that grapping and comprehensive power which would have enabled them to see that such faculties, together with the education necessary to their development in the profession of a surveyor, were not to be had without an equivalent "consideration." "The surveyor will be required to devote the whole of his time to the performance of the duties of his office," nevertheless, a salary of 80*l.* a year, being the highest sum even hinted at in the council, must have been considered as something quite handsome in its way,—the majority pool poohing the *low* suggestions of certain unlightened members of their respectable corporation, that a "plain, practical, common-sense individual, one who would be always on the spot, could be had for 60*l.* or 70*l.* a year." "Why, one of them expressing his opinion that they "could procure a surveyor for about 40*l.* a year." Therefore, we repeat, the sum of 80*l.* a year for a borough surveyor must have been regarded as quite handsome on the part of the Bideford corporation. In order that the expectant surveyor, however, might not run away with the idea that anything he could do as mere surveyor would ever repay the corporation for the expenditure of so much money,—or in order to show the profession and the public their own actual ideas of the office itself—we do not well know which,—it was resolved that he "will also be inspector of nuisances;" in short, it appears in truth to be "an inspector or surveyor of nuisances" of whom the corporation of the borough of Bideford are in want, and we wish they may get even that end efficiently accomplished for "80*l.* a year."

VENTILATION IN CARRIAGES.—The article on this important subject, in our columns of the 15th January, has induced Major Hepburn, to draw our attention to the fact that he had patented, in 1851, an invention for the ventilation of carriages, which consists in the construction of "a second or interior roof or lining, in addition to an ordinary or other exterior roof; the said interior roof or lining being composed of perforated metal, cloth, or some other substance or material permeable to air, or having apertures therein, and the chamber or chambers between the roofs having apertures in its sides, or being otherwise constructed to communicate with the external atmosphere." It will be seen, on reference to the article in question, that what was stated was,—not that no patents had been taken out for such inventions, but, that the ventilation of carriages, cabs, &c., is not what it ought to be. Major (then Captain) Hepburn's patent shows what could easily be done in this matter: but what is first of all requisite appears to be the establishment of a public opinion in favour of such ventilation as shall not lead to exposure to draughts. Meanwhile, it is precisely the want of proper ventilation which often leads to evils arising from draughts themselves; as in carriages, for example, when young people are driving home heated from dancing and other parties: in such cases, down go the side-windows and through go the draughts; whereas, with some such simple invention as that of Major Hepburn, the occupants of all kinds of carriages may be made comfortable, however heated, and the moist and other vapours from the body will escape without inducing feelings of suffocation, or condensing on the panes, as the moisture of perspiration and of the breath does in close carriages. Major Hepburn, as is to be expected from an intelligent soldier, particularly alludes to the advantages of carriage ventilation to sick soldiers, especially when exposed, during their conveyance, to the effects of a hot sun by day, or land winds by night.

LECTURE ON STEAM AND THE INVENTORS OF THE STEAM-ENGINE.—Recently, Mr. Baldwin Latham, architect, of Norwich, has been delivering lectures on the above subject. The lecturer, after enumerating the varieties of steam-engines, the natural agents employed in the production of steam, the theories of heat, and the process of combustion, passed to the historical part of the subject, which he classified under three heads:—1. Steam, and the inventors of the ordinary steam-engine, to the time of Watt. 2. Steam as applied to navigation up to the time of Henry Bell. 3. Steam and locomotion up to the time of George Stephenson.

A NEW SUBSTANCE RESEMBLING GUTTA PERCHA.—M. Serres lately communicated to the *Cercle de la Presse Scientifique* certain facts concerning the *Achros balata*, which are not without interest. The tree grows wild in Guiana, Martinique, and the other islands of the West Indies, and its wood is used for building. The juice of the balata, dried, forms a light, spongy, rose-coloured mass, which crumbles when rubbed within the fingers. He has succeeded in purifying it. The substance thus obtained is more supple and elastic than gutta percha: it softens at a higher temperature. M. Serres thinks it preferable to gutta percha for moulding, and for covering telegraphic wires with.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The second general meeting of this society was held in the Philosophical Society's Rooms, Cambridge, on 24th ult.; the Rev. the President in the chair. The Rev. G. Williams, King's College, laid upon the table an exterior and an interior drawing of Mr. Caird's Church at Glasgow. The church consists of nave, aisles, south-west tower, south porch, and a presbytery, which would be a chancel in an English church. The presbytery is separated from the body of the church by a stone screen and a curtain, which fills up the whole arch. Height for the windows of the clerestory is obtained by a succession of gables which run into the nave roof. Mr. Roched was the architect. Mr. Williams then read a paper on the "Ancient Vestments used at the Foundation of King's College," during which a good deal of discussion took place concerning the curious devices on them.

DESTRUCTION OF HOUSES BY FIRE.—These calamities unceasingly suggest the necessity for the adoption of fire-proof arrangements in building. Another destructive fire has just occurred in Marylebone, with a loss of three lives and injuries to several others. The premises were tenanted by a licensed victualler, and the fire originated behind the bar, but how is not known. The Britannia Circus, in St. George's-in-the-East, has run an imminent risk of a like fate from the burning of the roof of the stage, in consequence of a number of combustible theatrical dresses taking fire. The prevention of the latter occurrence, as we have often pointed out, can easily be effected by various means, such as the impregnation of the material with alum, or by the addition of borax to the starch used in getting them up. The borax, moreover, greatly stiffening and improving the starch itself. Duxbury Hall, near Chorley, has been totally destroyed, in consequence of the butler leaving wet clothes before the fire in his room to dry when he went to sleep. The inmates would in all probability have been either suffocated or burnt, but for a small dog, which awoke one of them by his noise and agitation just in time to save the lives of all.

THE OMNIBUS SUBWAY.—A correspondent writes as follows on the omnibus subway:—"The proposal to carry a subway from Westminster to the Royal Exchange is calculated, I am fully aware, to startle the minds of those who have not already given attention to the subject; but the details of the plan proposed have now been submitted to a considerable number of men capable of forming an opinion on the subject, and the feasibility and practicability of the proposal are fully admitted. The space required for the passage of the proposed trains running to and fro is only 14 feet in width, and 8 feet in height. To construct a tunnel through these streets, capable of passing ordinary railway-carriages, would be perfectly impracticable, both on account of the interference with private property, and on account of the expense; but a subway of the dimensions above stated can be made without any practical difficulty. The gauge of the proposed subway is 4 feet 8½ inches,—the same as all narrow-gauge lines; so that, should the system be hereafter extended, the subway trains might be run for moderate distances on to all the metropolitan lines, except the Great Western; thus giving access from the suburban districts to the heart of the City without change of vehicle.

INSTITUTION OF CIVIL ENGINEERS.—The evenings of February 15th and 22nd (Mr. Joseph Locke, M.P. president, in the chair), were occupied with the discussion of Mr. Jameson's paper "On the Performance of the screw steam-ship *Sahel*, fitted with Du Trembley's combined vapour engine; and of the sister ship *Oasis*, with steam-engines worked expansively, and provided with partial surface condensation."

THE COST OF HOUSE, AVENUE-ROAD, REGENT'S-PARK.—We are asked to mention that the cost of the house and dependencies in the Avenue-road, Regent's-park, illustrated in our number for February 26th, was 12,000*l.*, not 1,200*l.* Though the information came to us from what we considered head-quarters, we hesitated before printing it. We should certainly have hesitated quite as much, however, if the additional 0 had been given to us in the first instance. The scale attached to the plans makes the building smaller than it is.

BRIGHTON DRAINAGE.—We are glad to hear that the Town Council is in earnest on the subject of draining Brighton. One immediate step was taken last week which was imperatively called for,—the reconstruction of the outfall in front of the Junction-parade. Its state is such as to admit of no delay. We understand Mr. R. Rawlinson has been directed to report to the Town Council on the general drainage of the town.

THE CONCENTRATION OF THE LAW AND EQUITY COURTS.—A petition to the Commons has been presented by the Society of Attorneys, Solicitors, Proctors, and others, pointing out the inconvenience, waste of time, &c. arising from the present scattered disposal of the courts of law and equity, and offices connected therewith, and urging the concentration of the whole upon the Chancery-lane and Carey-street site, the cost to be wholly defrayed out of "the Suters' Fund." [before referred to with this view in the *Builder*], a fund whence suitors never did, and never will, derive any other sort of benefit than this. This fund (amounting to not less than 1,200,000*l.* of 3*l.* per cent. Consols) the petitioners state is entirely at the disposal of Parliament; and, indeed, sums have already been taken from it by Parliament on carrying out law-court improvements.

BRADFORD SCHOOL OF ART.—On Tuesday, the 1st, Mr. Ruskin delivered an eloquent inaugural address at the Mechanics' Institute, for the newly-formed school of art at Bradford. He said, in concluding, Manufacturers had great power in their hands. Let them only act with nobleness and independence, not following the demand of the market, cringing to the caprices of fashion, pilfering from each other whatever attracted the popular whim of the hour. Let them rather form and lead the market, by presenting what in the end would elevate and refine, disregarding the vulgar cry for the showy and tawdry, and adorning stuffs suitable for every-day homely use, with devices both beautiful and quaint. This had been the work of Wedgwood for his own peculiar ware. In truth, the manufacturer might be regarded as an author, with power to direct the taste and form the minds of his fellow-men. Talk against ambition! Why, the fault was, that none of us were ambitious enough. We might be rulers, many of us, if we only would.

THE GLASGOW RIVER TRUST ENGINEER.—From the thirty-two applications for the office of engineer to the Glasgow River Trust, vacant by the resignation of the late engineer, who had long been an invalid, five names were agreed to be suggested by the individual trustees, and of these, three were more particularly indicated; the final struggle, however, being between two of these—namely, Mr. Ower, of the Dundee Dock Trust, of whom we have had occasion of late to make favourable mention in our columns, and Mr. Andrew Duncan, who has been for the last twelve years assistant to the Glasgow Trust engineer, and is practically already acquainted with the technical details of the Trust works. The advertisement inviting applications had stated that an engineer was wanted by the Trust, at a salary not less than 600*l.* a year [the late engineer's salary was 700*l.*]; but the result of the final discussion, by the Trust, of the comparative merits of Mr. Duncan and Mr. Ower is, that Mr. Duncan has been appointed interim-engineer, with such salary [400*l.* it was stated] as the trustees may see fit to give. The decision was come to by a majority of twelve to ten, eight of the minority protesting against this decision, as not keeping faith with the applicants, and for other reasons stated during the discussion.

EXHIBITION OF PATENTED INVENTIONS.—The Society of Arts is preparing to hold its annual exhibition of inventions. The last day for receiving models, specimens, or drawings, is the 9th of April.

NEW CHURCH AT TWICKENHAM.—At a meeting held at the residence of Rear-Admiral Sir H. L. Baker, Bart. at Richmond, a committee was formed for the purpose of taking immediate steps to secure the erection of a church on the site set apart by the Conservative Land Society on the St. Margaret's estate, at the corner of the St. Margaret's-drive and Ailsa-road, at the entrance of the Richmond-road.

EXCAVATIONS AT WROXETER.—Various Roman walls and tessellated pavements have been uncovered at Wroxeter, the ancient Uriconium. Part of a hypocaust has also been traced, and various relics have been picked up during the excavations, which were begun on the north side of the old Roman wall of the town, which was traced to its foundation. The work was carried out under the direction of Mr. Thomas Wright, F.S.A.

ENTRANCE TO ST. JAMES'S PARK.—In reference to some remarks which had been previously made on the subject in the House of Commons, Mr. Tite explained the intentions of the Metropolitan Board of Works. Berkeley-house had, he said, been taken by the Board, who intended to re-erect it with great improvements. The new building was to be set back exactly in a line with Spring-gardens; and the effect of the alteration would be to throw a considerable space into the park, and to widen the passage from Cockspur-street. It would, therefore, be perfectly easy to make an opening into the park for carriages. The contemplated improvements would be completed within six months from the present time, without causing any expense to the public.

ST. GILES'S AND ST. GEORGE'S.—At the Russell Institution, on Tuesday evening, the 1st inst. Dr. Buchanan, medical officer of health for the St. Giles's district, gave a lecture on "St. Giles's and St. George's," some points in the sanitary history of the parishes." Tracing this history from the dedication of a leper hospital to St. Giles in the twelfth century, the lecturer showed that the district had always presented points of interest to the student of hygienic science. From the time of the earliest census an excess in the mortality of St. Giles's had been steadily conspicuous. The reason of this excess was mainly to be attributed to the extreme density of the population, which had from one cause and another been greater here than elsewhere since the days of Elizabeth. It was in St. Giles's that the great plague of 1665 first broke out, and two-thirds of the poorer inhabitants were destroyed in the year. The lecturer followed the fortune of the district from comparative opulence in the seventeenth century to the point of its lowest debasement, delineated by Hogarth and Fielding; thence again increasing in prosperity with the growth of Bloomsbury. In spite, however, of this new association, the entire district had maintained its evil pre-eminence on the death-registers down to the year 1857. In the most crowded localities the rate of mortality was uniformly the highest. The lecturer stated the measures which were being adopted in St. Giles's to remedy this fatal condition of "overcrowding," and pointed out the urgent necessity of providing new habitations for the poor creatures who were thus debilitated. In conclusion, some of the results which had already followed the use of sanitary measures were stated. From mere drainage improvements, for instance, the deaths from fevers and other zymotic diseases, in Dudley-street, had fallen in 1858 to exactly one-half the number in 1857. In the whole district there were, last year, fewer deaths than the average by 120, although the year was much less healthy than its predecessor to the metropolis at large.

NEW COOKING APPARATUS.—A Dublin correspondent (an architect) gives us a few particulars as to a patented apparatus of Mr. Radley, of Dublin. It will roast, boil, bake, stew, fry, and steam, it is said, all at the same time, with considerably less fuel than is now required for the best constructed range hitherto used, and in a much shorter space of time. The construction is described as being simple, and not liable to get out of order. It has an inclosed jacket for roasting, which is made to rotate with the smoke current of the fire, spring weight, or steam (or it can be worked by the hand), the principle being self-acting. The boiler can steam large quantities of vegetables, &c. and at the same time heat several gallons of water.

NEW BRIDGE AT SALFORD.—The proceedings of a recent meeting of the Salford Town Council comprised a report presented from one of the committees with reference to a proposed new bridge over the river Irwell, near Water street. The London and North-Western Railway Company are to build the bridge complete in every respect, to carry their line of rails over the new street, the corporation of Salford paying 2,500*l.* to remove the earth and material excavated by the company to form the road and foundations. These and other terms are embodied in a memorandum of agreement on the subject. The total expense which the proposed new works on the Salford side, and their share of the cost of the bridge will entail upon the Salford Council, approaches 8,000*l.* The company are to pay 3,000*l.* towards the purchase of a street site in connection with the improvement.

MERSEY DOCKS AND HARBOUR BOARD.—Mr. Charles Turner presided at the usual weekly meeting of the Dock Board, on Thursday; and the other members present were—Messrs. Shand, Evans, Smith, Littledale, Brooklebank, Rankin, Busbell, Hubback, Boul, Mondel, Bold, Anderson, Farnworth, Hutchison, Segar, Forwood, Arnold, Inman, Rounthwaite, Lockett, Langton, Moss, and Tobin. The engineer reported plans for a half-tide basin and two canal docks, with locks and entrances to the north of the canal dock, for the accommodation of the land carrying and timber trades, the cost of the works being estimated at 213,956*l.* and the date of their completion eighteen months or two years from the date of their commencement. Plans were also brought up for a dock on the south-east side of the Huskisson Dock, for the accommodation of the steam trade, at a cost of 70,000*l.*; the time of the completion of this dock to be included in that for the construction of the works previously mentioned. The committee approved the plans and estimates, and recommended them to the board for confirmation. It was recommended that the tenders of the Ebbon Vale Company, and of Bailey Brothers, to supply iron rails, be accepted. The proceedings were confirmed; and it was agreed that the consideration of the plans for dock extension should be deferred for a week.

LIABILITY OF SUBSCRIBERS TO BUILDING SOCIETIES.—An important decision has been given by Mr. Baron Martin in the Court of Exchequer, in the case of Farmer v. Smith. The action was brought to recover 4*l.* two months' subscriptions upon four shares held by defendant in the British Building and Investment Society, established 1845. In 1851 the defendant received an advance of 70*l.* on each share, and executed a mortgage to the trustees, which contained a covenant that he was to continue his subscriptions during the continuance of the society. In August, 1858, the society should have ended, but, owing to losses, and the absconding of the secretary, there were no funds to pay 120*l.* on each unadvanced share, and the question was whether the defendant could be called upon to continue paying his subscriptions until that object was accomplished. The court was of opinion that the defendant was bound to continue the payment of his subscriptions; and that in case of a previous redemption of the mortgage, calculated upon the supposition that the society would end in the thirteenth year, the obligation to pay the subscription beyond that time, in case the 120*l.* was not then realised, remained in force. The plaintiffs were entitled to recover.

IS AN EMPLOYER RESPONSIBLE FOR ACCIDENTS?—The following case was lately tried in the Queen's Bench, Dublin. The action was brought by a carpenter against his employer for the consequences of a serious accident which happened to the former, by the breaking of a flag of slate which was being placed at the approach to a hall-door, and by which breaking the plaintiff was precipitated into a pit below, and seriously injured. The Chief Justice, in pronouncing the decision of the Court, said there was no averment here that defendant knew of any defect in the slab which broke and occasioned the accident. The plaintiff was not bound by his pleading to negative all that constituted a defence, but he was bound to state all that could constitute a liability. There was no positive averment of negligence or want of skill on the part of the defendant, but only an averment that he neglected his duty, and no facts were stated to constitute a breach of duty on his part. There was no averment that the plaintiff and the mason were directed to stand upon the flag which broke, or that the plaintiff was acting under the defendant's directions, or was laying the flag in the way the other desired. Judgment against the plaintiff.

ROMAN ANTIQUITIES AT LINCOLN.—During some recent excavations for building purposes, on the ancient site of a cemetery for the southern division of Liudum Romanum, several mementoes have been brought to light. These consist not only of fragments of inscribed stones, shreds of funeral vessels, amphore, patellas, &c. some of the latter of the fine red texture known as "Samian ware," but also of two or three unbroken cinerary urns and a gracefully shaped jug, believed to be the same which those ancient people designated by the name of "urceus," and used by them both for domestic and religious purposes.

STEAM HAMMERS.—A very large steam hammer has just been made at the works of Messrs. R. Morrison and Co. of Newcastle. It is constructed upon Morrison's patent principle, and it is for the Mersey Steel and Forge Company, Liverpool. The total height is 21 feet, and the width between the frames 14 feet 6 in. The clear height from the ground to the underside of the frame is 9 feet 4 in. The hammer-bar is 15 inches diameter and 19 feet long, and is made of steel, with the piston, which is 36 inches in diameter, forged in one solid piece, the hammer-bar forming a solid mass of steel weighing above 7 tons in the finished state, with a stroke or clear fall of 6 feet. The cylinder is 36 inches diameter, and weighs, finished, above 8 tons: the two frames weigh 15 tons. The hammer, when in its place, will stand upon a mass of cast iron, wood, and stone, 32 feet long, 18 feet wide, and 9 feet deep. The implement is intended for preparing the steel (Mr. Clay's patent process) for being rolled into plates for shipbuilding and other purposes. Messrs. Morrison are also constructing a 3-ton hammer for Messrs. W. G. Armstrong and Co. for the manufacture of Mr. Armstrong's wrought-iron rifle-guns.

TENDERS.

For works to be done at 41, Upper Harley-street. Mr. Eales, architect—

Matthews	£1,283	0	0
L'Anson	1,275	0	0
Clemence	1,269	0	0
Bellingham and Arvey	1,195	0	0
Keyes and Head	1,149	0	0
Morris and Phillips	1,145	0	0
Clarke and Co.	1,145	0	0
Batterbury	1,127	0	0

For new church, Charles-street, Walworth. Mr. Henry Jarvis, architect—

	Church.	Spire.	Total.
Willson	4,653	219	4,882
Downs	4,850	296	5,146
Piper	5,046	259	5,305
Tarrant	5,198	228	5,426
Forster	5,250	250	5,500
Higgs	5,300	255	5,555
Gannon	6,572	371	6,943
Hack	5,890	250	6,140

For shop-front for Mr. Gibbons, Walworth-road. Mr. Jarvis, architect—

Penlington	£170	0	0
Tarrant	129	0	0
Keast and Moon	125	0	0
Marsland	110	0	0

For warehouse for Messrs. Butterworth, Great Dover-street. Mr. Jarvis, architect—

Crawley	£1,300	0	0
Higgs	1,300	0	0
Rider	1,274	0	0
Gannon	1,267	0	0
Marsland	1,250	0	0
Peak	1,250	0	0
Martin and Childs	1,180	0	0
Tarrant	1,170	0	0
Downs	1,160	0	0
Thompson	1,133	0	0
Carter	1,075	0	0

For house and stabling, Commercial-street, Spitalfields, delivered to Messrs. Hammack and Lambert. Quantities not supplied—

Heath	£1,054	0	0
Jones	1,020	0	0
Downs	990	0	0
Perry	982	0	0
Tolley (accepted)	912	10	0

For additions to premises in Hammond-place, Chatham, for Mr. John W. Whitehead. Mr. John Young, architect—

Pankhurst	£553	0	0
Spicer	525	0	0
Clother (accepted)	590	0	0

For alterations, No. 4, Albert-terrace, Knightsbridge, for Captain Ramsbottom. Mr. Thomas Archbutt, Surveyor—

Brown and Son	£245	0	0
Blore	345	0	0
Fish	340	0	0
Stimpson	348	0	0
Godbold	335	0	0

The Builder.

VOL. XVII.—No. 841.

Review of the Architectural Exhibition.—
Opening of the Galleries.



ON Tuesday evening, as announced, the new galleries in Conduit-street, occupied with the Architectural Exhibition, and illustrated in our last number, were inaugurated, Earl de Grey, the president, taking the chair, and a very large number of subscribers and their friends, including ladies, attending. It seems that there were from 800 to 1,000 persons in the galleries during the evening. A list is out of the question, but we may mention, as amongst those we noticed and can recall, Sir Charles Barry, Professor Donaldson, Messrs. Ashpitel, Morgan, T. Wyatt, D. Wyatt, O. Jones, C. Barry, jun. E. M. Barry, Mayhew, B. Watson, James Wyllson, H. Clutton, F. P. Cockerell, Grace, H. Currey, J. M. Lockyer, J. Papworth, W. Papworth, Edmeston, Garling, W. P. Griffith, R. Hesketh, W. Herbert, J. Hop-

good, Pocock, A. Smith, Woodthorpe, Henry Thomas Hope, Burges, C. Gray, A. Allom, Sibley, E. Hall, J. James, C. C. Nelson, Burnell, Louis Kossuth, Bazalgette, W. Haywood, Scoles, Panson, Træfitt, Bowman, Sancton Wood, Ewan Christian, Nash, Johnson, E. Roberts, Paraire, H. R. Abraham, Goldie, Morant, C. J. Richardson, Lamb, Colling, Caiger, John G. Nichols, Collman, the Rev. Richard Burgess, James Fergusson, G. E. Street, Jas. Thomson, G. Godwin, R. Kerr, &c. &c.

On the previous day the Prince Consort had visited the galleries, and, in company with the hon. secretary and some members of the committee, had carefully examined many of the drawings and the various building processes and materials there exhibited. Earl de Grey, in his usual genial tone, from the chair, congratulated those present on the opening of the Exhibition in new quarters. He described at length, the course which the Prince's interest had taken by becoming the patron of the Exhibition, and having called upon Mr. Edmeston to read a letter which had been received from General Grey, expressing this warm interest, spoke of the kindly manner in which the Prince had come to the galleries on the occasion already alluded to. There was no doubt, the Earl proceeded to show, that the interest which architecture was beginning to excite generally, was real, and tending to extinguish the disadvantages under which the art had been labouring. He explained that the building in which they were assembled was designed to accommodate several analogous institutions, which would co-operate for the progress of architecture. Works which the exhibition galleries would contain, in whatever branches of art, could all influence that improvement—observation of landscape paintings, and even portraits, though distinct branches of art, could play some part in the formation of the artist-architect,—and truly it was difficult to say what branch of art might not be of service to other branches. The interest taken by ladies in architecture, he described as most important,—though at the same time, looking with the eye of art, he did not think taste was shown in present fashion of dress.

Mr. Ashpitel, in following, expressed the new sensation which he had felt as treasurer, in discovering a balance in his hands, for which

circumstance he thanked the subscribers. The committee were most anxious to ensure a large circulation of the season-tickets, at the nominal price. Many were thus induced to come to the exhibition; became interested in the subject; and derived advantage from the lectures, where all opinions were heard—nothing being so fatal to progress as narrow-mindedness.

Mr. M. Digby Wyatt then moved a vote of thanks, and in the course of his speech mentioned the donation by the Earl, of his shares taken in the Company, to the Institute and the Exhibition, and the considerate manner in which the gift was made.

The company then dispersed to view the collections, and so will we, looking first at

THE BUILDING MATERIALS AND INVENTIONS.

The Building Materials and processes scarcely make so great a show as on some former occasions, perhaps because they are more distributed than they were in Suffolk-street, and perhaps because manufacturers are reserving themselves for an exhibition of these specially, which will be opened in the galleries in July next. On the present occasion the North Gallery, which opens into Maddox-street, as shown on our plan,* is appropriated to these matters, together with the recesses in the Great Gallery and the walls of the East Gallery. The chief exhibitors in the latter are Messrs. Maw and Co. who have sent a very large collection of their tiles in various combinations, and of designs for pavements, either executed or proposed: one side of the gallery is wholly filled with the former, and includes some very good specimens indeed. The prices are given in some cases, and with advantage. In another part of the premises (the north gallery), Messrs. Minton, Hollin, and Co. and the Patent Architectural Pottery Company, of Poole, exhibit: the former encaustic tiles of well-known excellence, the latter their tessellated and mosaic tiles, and their glazed and coloured bricks, of which more use will probably be made than has yet been attempted. The paving laid by the latter company in the hall, is not quite a fair specimen of what they can do. Mathematical correctness in a tessellated pavement of that kind, is scarcely attainable, and scarcely to be desired if it were, but so great an irregularity in the lines as is here observable is not satisfactory. In conjunction with the communication on the cost and manufacture of tiles in our impression of last week,* the collection of tiles and designs now in Conduit-street, will enable the public to get a good notion of what may be done with them, and at what cost.

Returning to the East Gallery, Mr. Desachy exhibits several examples of his patent plaster casting, of which we have before now spoken, including a length of the box-front of the Italian Opera House, Covent-garden (weighing only 87 lbs.), and a large portion of the ceiling of a gallery, 45, Oxford-street, designed by Mr. Owen Jones. The latter is similar in character, though not in details, to the ceiling of the London Crystal Palace, Oxford-street, by the same architect, including stars of coloured glass in the intersections of the ribs. The ornament at the foot of the cove, resembling in character that in St. James's Hall between the windows at the springing, is beautiful: the ribs are somewhat puffy,—have the aspect of a pliable material tied up, linen, for example; but possibly in position the effect might be different. The capabilities of Mr. Desachy's material seem great, uniting strength with extreme lightness. At the other end of the gallery Messrs. Trumble and Co. of Leeds show a collection of paper-hangings from designs by Mr. Jones. We have not looked into the present prices of these: attention to this consideration is the only thing wanting to ensure a large demand for these excellent productions. The only other exhibitors in this gallery are the Lizard Septentine Company, of Surrey-street, Strand. Their beautiful material is, we are glad to hear, coming into extensive use.

* Page 188, ante. The numbers shown on the plan were marked by the committee for the purposes of letting, but have not been adhered to in the arrangement for the catalogue.
† Page 193.

The two recesses in the Great Gallery are occupied, one on the north side by Messrs. Johnston, Brothers (by whom, as mentioned last week, the premises have been lighted), with specimens of Mediæval brass and iron work, brackets, standards, coronæ and other objects, well executed, but not much unlike what we have seen before; and the recess on the south by Messrs. Cox and Son, with carved bench-ends, lectern, altar-table, brass coronæ, standards, and rail. Messrs. Cox have purchased the machinery worked under Jordan's patent for wood carving, and are applying it to rough-out only, while hand-labour is properly called in to finish the work, and leave mind-impress upon it. They give some comparative prices, to show the saving which may be effected by this arrangement:—thus a poppy-head, 15 in. by 8 in. which cost 15s. 6d. carved by manual labour, costs by machinery and manual labour combined (machining, 2s. 6d.; finishing, 6s.) 8s. 6d.; a double panel in pew front, 2 feet 2 in. by 1 foot 6 in. which cost 28s. can be done for 18s. 6d.; and a 10-inch ceiling boss, with 6-inch projection, costing 16s. 6d. for 9s. 6d. The chief want in the carving exhibited is breadth.

In this department we must include No. 19, in the same gallery, a sideboard and wine-cooler, executed by Fisher, of Southampton-street, Strand, from the designs of Mr. Burges. The panels contain paintings designed and executed by Mr. Westlake, illustrating subjects from a thirteenth-century allegory, *Le Martyre de S. Baccus*. The sideboard is formed of picked deal, and the price of it is 120l. A frame of drawings, No. 120, by Mr. Burges, contains representations of other pieces of painted furniture, executed during the past year. The bookcase, No. 2, with the history of Cadmus depicted, cost 60l.; and No. 4, a wardrobe, subject, Flax and Wool, 17l. We are disposed to regard these works even more for what they may lead to, than for what they are.

That we may not outrun our space, we will leave this department of the collection till next week, and now look to some of the drawings on the walls.

THE DESIGNS.

Our examination of these works is made certainly under great advantages, as compared with any attending performance of the duty in the galleries at Suffolk-street, where it was painful to remain in December weather, and difficult even to see much of that which is represented in drawings—those matters of detail so essential in the effect of architectural designs, or works when executed. Comprehension of the real character of our art, and true appreciation of it, for which we have been crying out during many years, were hardly possible under the former condition of circumstances; and though the Exhibition may have been gaining that place in public favour which has rendered possible the erection of galleries in Conduit-street, and promoted the union of the architectural societies, it may safely be affirmed that the interest was not chiefly of that kind which we desiderate—an interest which is something different from that taken in showy drawings. For, the exhibition merely, by an architect, of his design—so far as power of delineation, or even modelling, can avail—is not to be made without a sympathetic chord and susceptibility in the observer. The real character of a work of architecture is, we might indeed say, not at all portrayed in drawing: the impression rather is to be synthetically formed; and a single drawing, as perspective view, though accurate by the rules of perspective (which, however, fall short of the real effect, especially in interiors, by being based unavoidably on, what nevertheless is the fallacy, that the eye is an immovable point), and though supposed taken from a station at which the spectator might choose to stand, is of necessity only part of what is needed in the absence of the building itself. The value of a drawing in perspective is great; so is that of a drawing of a group of sculpture; but, just as the sculptor relies not on delineated representation, but on the plaster cast, the dimensions of the original, for the full exposition

of his design, so the architect has no alternative from exhibition of the building itself, or full-sized model of it, but an appeal to those perceptions or impressions which result by a species of mental composition, from many separate visual observations. Strictly speaking, therefore, a complete set of geometrical drawings forms the only means of securing this desired impression,—the presentation in the mind's eye, of the building as it will be or is. The intellectual process, however, we may be told, the public are not prepared for, unable as they are first to read the language of drawings. But the prevalent short-coming is more serious than this; for, the practice of looking at a most prominent drawing to the exclusion of those which may be of greater importance, is too general in the profession, as we noticed in Westminster Hall, at the exhibition of designs for Government Offices, and more recently in the case of the competition for the Rev. Mr. Spurgeon's chapel. In the latter case, remarkable to state, the committee seemed to have looked more to the plans and sections, and less to the mere perspective views, than did the competitors who voted. The fact is, the admiration for effective colouring, or artistic touch in pen or pencil, prevails greatly amongst the profession. So it should; for, not merely does such admiration betoken feeling, such as every architect-observer should possess, but frequently the qualifications betoken also in the author of a drawing, those which are far higher than the delineative skill. Besides, the perspective has its distinct use to all in *facilitating* explanation. But the executive qualifications, not the only, and much less the highest, for the accomplishment of a design, should not be mistaken for the others, and least of all by those who very well know that a drawing may be unattractive, and yet be consistent with the best character of architectural work.

We are glad to find that either those in the gallery who informed us separate plans and sections would not be hung, were hasty in their assertion, or that the committee now view the matter differently. Certain it is, that they disclaim any such intention, and that plans not previously hung are now on the walls. We fully understand the difficulty, which has been above adverted to, of just now forming an exhibition chiefly of plans and sections: besides it was obvious that the whole space of the galleries would not suffice for the drawings of the different competitions; and we have ourselves recommended the affixing of *small* plans and sections to the corners of the views—a practice which has since become general, and is this year one of the most valuable features of the collection in Conduit-street.

It is necessary for us to urge, both the effort at some limitation of the scale as in competition drawings, if these are to be exhibited and seen, and the habit on the part of architects in their own galleries and everywhere, of looking at the whole number of drawings, and realizing the impression by what we call *synthesis*, rather than at any one singly. Thus, and thus alone, the expression of a design, as intended by the author, may be realizable by the public, or the architectural profession. We may single out numbers 133 and 134: the first giving the complete illustration of the design of a "Boat and Summer House" erected on the Thames, at Isleworth, for Mr. R. M. Andrew, by Mr. J. M. Lockyer, and the other, a view of the United Service Club-house, Pall-mall, as recently altered by Mr. Decimus Burton, to which are attached in the same frame, plans and other illustrations exhibiting the exact character of the alterations,—as either of them exemplifying the principle which we are anxious to see adopted. The Boat-house building, we may say, is of Italian character, carefully planned; and, having study in design rather than mere elaboration of details, it is no doubt a good architectural feature on the banks of the Thames. The same architect also exhibits drawings (307 and 313) of "Mosaic Inlays of the Twelfth Century" from Salerno, Palermo, and Monreale, and (312) of details from the Duomo Orvieto. Mr. Burton's work, trammelled by the previous ineffectual design, and falling short of the best character of architecture by reason of the imitative cement, should be regarded on the whole as a great addition to the effect of the clubhouse. The best part of the improvement, however, the frieze of Mr. Thomas, is not well shown in the drawing. In the building itself, the frieze may be too elaborate or minute, calculated for being made out from below, being in this respect inferior to the fine scrolls of the Roman buildings; but it has much of that invention, and specially *architectonic* character and suitableness, which have already, by the works of its sculptor-author,

added so much to buildings of our day; whilst to whomsoever is due the harmonious junction of the two portions of frieze,—the one appropriate to the upper order of the portico, and the other proportionate to the whole height of the building,—the design in this respect merits particular encomium.

But before naming more of the drawings, let us offer one or two further observations of that character in which the value of our notice, if it have value at all, must mainly consist. We have broadly hinted at danger of that very facility of delineation which might be so great an advantage, and one peculiar to our time,—danger of the specious show of invention, where there is mere dexterity of hand or eccentricity of architectural detail; and, in former years, we have endeavoured to point out some of the errors which attended the recent progress, and some of the elements of good architecture, notably "breadth" and *grouping*, which were greatly neglected. There may be in our country an architecture of draughtsmen, as there was in Italy a painters' architecture,—or, as perhaps there is now, an architecture of ornamentists in France. At some risk of being deemed opposed to invention,—whilst we have always specified it as an essential, one without which there was not art,—we have contended against that which was only novelty, that which could be exhibited by any one, without the smallest talent, or slightest skill architectural. It is indispensable to success in every new building that the architecture should be *new*,—the "architecture" is not breathing art, otherwise,—but likewise it is indispensable that the new in buildings should be equal or superior to the art which has gone before. We want in this day, when our legacies are so numerous and so varied, and when the history of architecture should give lessons as well as facts, that there should be avoided alike the feebleness which is sometimes called *purity*, and which was the error of the late Palladian, and on the other hand that disregard of rule and precedent, and accumulated experience, and of the structural character of our art, which characterized the antagonistic style of Borromini and many of the churches of the Jesuits in the new world, as throughout the old. We want to avoid the particular sort of changes of fashion in style which have been the bane of architecture for some eighty years past, those affording the difference of style without the art, as without even really the novelty; and we want to see in lieu of that which occurs in dress, to which all seem to be held subject, or changes which are sudden, and without reasoning exercise, a course which shall be really progress, and not ever taking up different channels, and always eccentric or experimental. It may turn out that such utilization of advantages, and such progress, is slow; nevertheless it will, only in the manner we have spoken of, equal, whilst we doubt not it will surpass, any progress that has been experienced—in art or science.

Looking at the character of the works in the present Exhibition, we cannot but feel that if our art is in a hopeful, it is in some respects in a critical state, and that anything said or written at such a time might help to throw back the progress by a space of many years. We have much evidence of delineative skill, abundant novelty, great articulation, if not study, of detail, and large use of coloured materials in exteriors, and still the mistake that display of a *style*, Gothic or Italian, or as the case may be, is display of the art. We are well aware that in noticing some of these points, we are looking at a number of drawings which, no more than in previous years, reflect exactly the builded architecture of the day. The 336 numbers in the catalogue, for drawings and manufactured articles together, seem to include a smaller proportion than previously of the drawings representative of works of actual execution. The more necessary, therefore, is it to warn the young of the little value of a drawing which has not reference to building, as to effect and construction; and, without losing the advantage to art of their new-born energy and enthusiasm, to point out to them, that they may be leaving the insipidity of the "old school," only to fall into errors equally removed from good architecture:—

"We think our fathers fools, so wise we grow;

Our wiser sons, no doubt, will think us so."

But altering a word, let them remember,—

"In art, as nature, what affects our hearts

Is not the exactness of peculiar parts,

'Tis not a lip, or eye, we beauty call,

But the joint force and full result of all."

Errors of the architecture of Nash, and cement imitation of masonry, as well as pseudo-classicism, and any style enscapulated or caricatured, may no longer exist; yet others may have grown up; and something necessary to the realization of archi-

ture, and which was appreciated by the old school, may have been lost.

Without reference to the necessity for our advocating the study of grouping, it is obvious that at no juncture was it more necessary to dwell on the requirement of *study* of detail. The demands of rapid execution, the prevalence of cast work and ready-made ornaments in every material, and the exaltation of mere eccentricity or mere polychromy which we have named, seem just now, to some extent, actually opposed to this study; and yet, not less necessary than general effect and proportion is beauty of detail. Detail, as well as outline, goes to form the general effect; and without it, cared for, there must be disappointment and revulsion, instead of growth and permanence of interest.

A villa erected at Reigate (No. 4, shown in photograph) suggests certain capabilities of the Elizabethan, Italianized, but divested of the contorted scroll-work and bad features of the Jacobean, hitherto copied. Whether such a style would supply the needed want, utilizing harmoniously features of the Gothic and Italian, we need not inquire; but, as the French say, "*Les extrêmes se touchent*." Already there is a marvellous *rapprochement* in current architecture that is based on opposite foundations; and, while no style should be copied, the English, like the French, former combinations of Gothic and Italian, cannot but afford useful ideas,—if the high-pitched and gabled roof be wanted, most especially. A certain harmony of character should pervade buildings which are of the same date, as it should be found throughout parts of each building; but, whatever the architecture of the future, it may be predicated that, consistently with this character, the style of value proportionate to our resources, will be one making very great use of the materials from every style previous. The imitative Gothic of some few years back, required the modification (we are not alluding to the question of mullions—which needed not so many words as have been used) that is being essayed in domestic architecture, and is still called for in ecclesiastical, in order to constitute, if through that foundation, good work of our day; and the best of the recent buildings called Italian, are those which have derived something from sources extrinsic to the architecture of Italy. We have noticed this character when speaking of recent works in the north of England. To the features of these last, Mr. W. R. Corson has contributed more matter of value than what he shows in the photographs 74, 75, and 87,—the first named, "Warehouses erected for Messrs. D. and J. Cooper, Wellington-street, Leeds;" the second, "The Phoenix Inn, Kirkgate," in the same town, with some clumsy details, but a notion in the window at the angle which might be further worked upon; and the last, "A Doorway of Warehouse, for Wm. Lupton and Co. Wellington-street, Leeds," which is marked by novel and good treatment in the coupled and rusticated pilasters, and their conjoined capital of foliated ornament in low relief, and fretwork on the abacus. The doorway, however, is not improved by the filling-in of the fanlight: the forms appear to be taken too directly from tracery of a style different to that of the main part of the composition; that is to say, there is discordance of character. Mr. G. Corson exhibits a photograph of a shop-front in Briggate, Leeds (86).

To the praiseworthy effort at utilization of hints from all sources, we alluded in our papers on the recent architecture of the City of London. Mr. Lanson has several drawings of his works in that locality, most of them such as we have illustrated or described,—Nos. 24 and 34, including "Colonial Chambers, Fenchurch-street," "the Corn-Exchange Chambers, Seething-lane;" and a "House in Broad-street" (as well as houses at Dulwich and Surbiton); and (334a) a separate "Group of City Buildings," including, besides the Colonial Chambers, the Colonial Life Office, and the Royal Exchange Buildings—drawn and coloured by other hands, and not favourably presented.

Mr. C. Gray is successful in his treatment of colour, and chiefly in works of humble pretensions. But in the "Covent-garden Approaches; Houses in continuation of Burleigh-street" (143), the rounded corner is left a defect, rather than taken hold of and converted into a feature of effect; whilst forms of the trusses are clumsy, and out of character with ornament introduced in features elsewhere. Cement,—like his masonry, not managed so well as brickwork, by Mr. Gray,—is here used—in deference, we believe, to the surveyor to the Bedford estate. It would be worth inquiring why cement should be

so often enjoined by surveyors: is it that there can be argument for it, æsthetically or financially: is the need that of its artistic treatment? Certainly, of brickwork, the difficulty of giving with that material, good architectural character, and of getting rid of its meanness in the eye of the public, is seldom overcome. Mr. Gray having heretofore worked fairly in this direction, has now, we think, done well by moderating his tone of colour, and by lessening parti-colour, as in the "Semi-detached Villas, Boston-road, Ealing,—cost 800*l*. the pair" (309), and the "Corner House, Dudley-street, St. Giles's" (347), either of which might be named as having few of the faults now common in coloured brickwork, and as exhibiting in works of moderate cost, art in the details, and in the outline and grouping.—Mr. Lamb also is one of those whom we have had reason to except from the category of offenders against qualities of the beautiful in architecture, before spoken of: his details are peculiar, but have both freshness and the mark of study: they are not the merely new of which we have complained; so that in the grouping and the simple brickwork of his "Knottley House, Peshurst; now erecting for the Lady Charlotte Proby" (314), there is more to look at, and to be interested with, than in many of the elaborate works shown in the drawings of other exhibitors. "The Working Men's Institute, now erecting at Lower Norwood" (308), very different in materials and character, and not so satisfactory; and "The Market-house, Assembly Room, Magistrates' Room," &c. now erecting at Berkhampstead (323), are Mr. Lamb's other contributions.—"Fox Warren, Surrey" "designed by" Mr. C. Buxton, M.P., and "executed by" Mr. F. Barnes, in our mind helps to show—that every one should be aware of, but what we have had to point out—that good architecture of the day requires presence of more than elements such as mere old Gothic work and red colour. There is a watch-box perched on one part of the building, that seems in an unsafe position.

Reverting at once, to the promise which there is in the architecture of the City of London, and to the art displayed in masonry, as better now than that in many coloured materials and brickwork, as well as to the point—value of designs made with reference to building—let us indicate Mr. H. Currey's "Peninsular and Oriental Steam Navigation Company's New Premises, in Leadenhall-street" (361), as illustrative of each of these circumstances or positions. The building was only commenced when our late notices of matters in the City were written; otherwise it might have deserved a prominent place in them. It is not perfect in the proportions relatively of the three main divisions in the height; and there is in parts, exuberance of ornament, which interferes with due relief. Still it is a very careful and meritorious work in the whole and the details. We may have opportunity of describing the design from the building itself.—Mr. M. D. Wyatt's "House, No. 96, Gracechurch-street, erected for Messrs. Lloyd," also is here, represented in a drawing (179). The merits of the work have been already spoken of in our pages, and the details described at length. It may be said to rank with the few successful applications of external colour, as of manufactured works,—perhaps so as to the latter, because they were such as had been designed by the architect himself. Mr. Wyatt also exhibits (181*a*), an "Elevation of Station and Hotel Buildings, proposed to be erected at Birmingham," designed (in conjunction with Mr. Brunel), for the Great Western Railway Company. Mr. Wyatt's name occurs elsewhere in the catalogue, and as the designer of nearly all of the large number of patterns for tile-pavements, executed by Messrs. Maw and Co. already mentioned. With the paper-hangings exhibited, to which we have already referred, it is now made manifest that there is no reason, at least in two important departments of floor-decoration and wall-decoration, for continuing in house after house, offences against all architectural beauty and taste, which have been common, and which remain so in most branches of manufacture connected with decoration, and the furnishing of buildings. The application to the whole of the arts of manufacture or ornament, of the principles of good architecture, those which recognize use and physical properties of materials, as well as symmetry and form, and harmony of colour, we have claimed to have been amongst the first to show—though we may not have known that there should be such application, better than Mr. Wyatt or Mr. Jones, or any thinking architect.

We have already named, we believe, the greater number of the important drawings to be identified with building,—and small as our

enumeration has been, we shall nearly complete such enumeration by naming Mr. Kerr's "Entrance Doorway, Dunsdale, Kent" (177); Mr. Edmeston's "Tomb now erecting in Highgate Cemetery" (173); and his "Stone Porches—Canonbury-place" (351), a well-studied arrangement of forms which he has previously worked upon, and Mr. E. M. Barry's "Tomb recently erected in Norwood Cemetery" (137), which we illustrated lately; and by alluding to Mr. Colling's excellent treatment of the external walling in the new "Picture and Sculpture Galleries now erecting at Hooton Hall, Cheshire" (317).

But, amongst the most important of the designs made with a view to execution, are Mr. Pennethorne's, for the Government Offices, shown in photographs (291 and 292), and in a large view at the end of the room, which will be looked at with particular interest. As shown by plans on the table, there are the distinct designs—one adapted to the whole area between the Treasury and Great George-street,—and the other, a less extensive project, for the erection of the Foreign Office on a site in the present Fludger-street, southward of it (to leave the present building meanwhile, and the State Paper Office afterwards, standing), and an extensive group of buildings on the ground now occupied by the Foreign Office, Downing-street, and a corner of the Park, extending to a line continuous of that of the north front of the Treasury. This latter group makes the greatest show in the large drawing; though the design is, in some respects, not equal to that of the Foreign Office. The sky-line, and centre, and the columns carrying only statues, might bear revision, in one case; and so might minor details in the Foreign Office building; on the whole, however, the designs vindicate Mr. Pennethorne's taste from aspersions industriously cast upon it.

Mr. Owen Jones's "Design for the Palace of the People, Muswell-hill" (40 to 49), should be mentioned, though it has been spoken of before. It is completely illustrated, the drawings occupying more than one end of the West Gallery; and the six views are drawn and coloured with marvellous skill. The design is certainly an improvement upon the Sydenham building; and the arrangement for access of visitors would be much better. The railway station would be "beneath the platform on which the lecture-theatre stands," and the passengers would pass immediately up-stairs. Carriages would set down in the area above, next glazed corridors.

We must look at other works next week.

THE ROYAL ACADEMY; THE FRANCHISE; AND COPYRIGHT; AT THE INSTITUTE OF ARCHITECTS.

A SPECIAL general meeting was held on Monday evening, the 14th of March, Mr. Hussey, V.P. in the chair.

To take into consideration, and adopt, measures in connection with the discussion which has recently taken place in the House of Lords with regard to the Royal Academy of London.

To take into consideration a petition to the Houses of Parliament, praying for the extension of the elective franchise to the members of this Institute, and

To consider steps to be taken with reference to evidence to be given before the Committee of the House of Lords on the subject of artistic copyright.

Professor Donaldson introduced the first subject, namely, the propriety of expressing the opinion of the Institute that now that fresh arrangements are to be made as to the position of the Royal Academy, its laws should be revised, the number of members increased, and other steps taken to render it suitable to the times. He believed the Academy had not asked for quite so large a proportion of the site of Burlington House as had been named; perhaps about a fourth of it; but even this was an important grant, and would justify the imposition of proper regulations. He had no private interest to serve: at his time of life he had no desire for the dignity of R.A. He was prompted solely by wish to benefit the profession. The Royal Academy had done much good by their schools: it was in a very different position to the other architectural bodies, such as the Water-colour Societies, who divided the proceeds of the Exhibition amongst themselves, and did nothing for the public. Still the Academy had not treated architecture well, and the fewness of the architects in the body prevented that right attention to the interests of the profession that was needed. He believed it was certain that Mr. Cookrell and Sir Charles Barry had at times brought forward measures with that end in view,

but were not able to carry them. Now was the time, he thought, to make an effort to obtain for architecture a better representation there. The speaker then read a memorial embodying his views, and moved that it be referred to the council, to present in such quarter as might be considered best.

Mr. Tite, M.P. was quite willing to second the motion, if needed. He referred briefly to the foundation and progress of the Academy, and showed that, although adapted to the time of Reynolds and Johnson, it did not meet the wants of to-day. Architects then were few, now they were numerous. It seemed to him that architects were scarcely true to themselves, even in that room, and did not act together sufficiently. As to the request of the Royal Academy, he believed it was quite true that they asked for half the site of Burlington House, but he did not think that they had named any sum as that which they would expend in return. If they covered the site asked, it would of course cost much more than the 40,000*l*. talked of. Other societies wanted homes there, and to build such a structure as would be needed would perhaps swallow three or four hundred thousand pounds. He did not think the Ministry were prepared to take such a step. In the course of his address Mr. Tite referred to some unfair attacks which had been made on him because he differed in opinion from other members of the profession.

Some discussion ensued as to the right mode of presenting the memorial, whether to the House of Commons, Lord John Manners, or the Academy, in which Mr. Fowler and others took part. Mr. Mylne thought it should go to the Crown; but the general opinion seemed to incline to sending it to the Chief Commissioner of Works.

Mr. Godwin said he quite agreed in the prayer of the proposed memorial, namely, that the regulations of the Academy should be revised to agree with the present state of things, and the number of Academicians increased. Still he was not quite certain it would be for the interest of architecture and architects to create a body of Academicians architects above and independent of the Institute. It seemed to him opposed to that independence and unity for which many had been long labouring. He would certainly prefer to find the Institute the centre of honour for architects,—a Royal Academy of Architecture,—in conjunction with, or forming part of, the Royal Academy of Arts. He did not quite see his way to it, but thought it a reason for cautious proceedings.

Mr. Papworth took something of the same view, and inquired as to the constitution of the French *Institut*.

Mr. Scoles, in confirmation of the remarks as to the altered state of the profession since the foundation of the Academy, said he had looked through the complete collection of the Royal Academy catalogues to be found in that tomb of architectural records, the Soane Museum, and had obtained some curious facts. In the seven years, 1769-75, there were eighty architectural exhibitors,—say eleven a year. In their twelfth year, 1780 (when the Academicians were anxious to make the Exhibition a free one, but feared the large numbers that would be led to flock to it), there were twenty architectural exhibitors, while, in the last seven years, 1852-8, there were 473 exhibitors! The numbers had lessened in the last three years of that time because of the way in which architecture had been treated, and the consequent establishment of the "Architectural Exhibition."

Mr. Edmeston spoke strongly of the desirability of putting architects under a government of their own in preference to investing the Academy with it. As did

Mr. Kerr, in some well-expressed observations, said if the time had not yet arrived for the dissolution of the partnership with the Academy, of course it was most desirable to obtain as great a share of the good results, dignity, or what not, as might be. But come it surely would and therefore he thought, looking forward to the establishment of a Royal Academy of Architecture, that they should avoid committing themselves. At the foundation of the Academy, there were not twenty-five architects in London; now there were 1,000 gentlemen professing architecture, fully half of whom were equal in ability to the twenty-five of ninety years ago.

Mr. J. M. Lookyer took the same view, and expressed his deep regret that on the literal—eve of opening the Architects' Home, in Conduit-street, a proposition to divide the body should be entertained.

Mr. Digby Wyatt, on the contrary, thought it would be a grave error if the arts were separated.

So long as the Royal Academy were willing to give sound instruction, which the Institute did not pretend to, it was most desirable they should do so. If the Institute were prepared to become an educational body, it might be a different thing.

Mr. Fowler, jun. moved the adjournment of the discussion, urging the importance of moving rightly, which, after some conversation, was carried; and Tuesday, the 22nd, was fixed for its resumption.

The earnest, and, we must add, admirable manner in which the debate was conducted (and of which we simply give a recollection, not a report), showed the importance those present attached to the subject.

A petition to Parliament, praying that members of the Institute should be entitled to vote, as such, for members of Parliament, was agreed upon; and

Mr. Tite undertook to present it. It was further arranged that the council should appoint a standing committee on the subject of architectural copyright, and the meeting adjourned.

THE QUESTION OF EXIT-WAYS FROM PLACES OF AMUSEMENT.

THE CONCERT-HALLS: PLANNING AND PERIODICAL INSPECTION.

HAVING given very prominent attention to the subject of staircases, and sufficiency of exit-way from places of public amusement,—as we have reason to believe, already with good results,—we shall seize every opportunity for recurring to the subject, until we have succeeded in bringing to it the full consideration of the public, and have induced habitual measures in the planning and construction, and the subsequent management of buildings, which may prevent, so far as is possible, disasters resulting from arrangements of the present character. It has been seen in former articles on this question, that the defective arrangements might be classed under two heads,—those of original plan and construction, and those of special management creating defects even where there may have been advantages of plan. We have spoken mostly of late of the theatres. In regard to these we saw that, whilst as to staircases and barriers there were points in planning requiring matured consideration, there were conclusions which could be formed; and some of these seem to have been adopted generally,—as in cases which we have had occasion to specify,—and we notice that, in the ensuing season of the Italian Opera, at Covent-garden, the "entrances and exits" which it would be now admitted we properly alluded to at the opening of the building, are to be greatly improved, as well through the provision of the new Floral Hall, as by the formation of additional entrances in Hart-street, and by the erection of a covered way, the whole length on that side.

Our main conclusion, however, was that the full requisites, including number of staircases and exit-ways, and length of external covered approach, were such as an architect could not supply, except with a completely isolated site; and those requisites consequently may be long left unprovided, unless there should be that active intervention which was hoped for after the accident at the Polytechnic Institution. There is no sign of such intervention on the part of the legislature at present, though, judging from what we have been able to state as to the new staircase at the Victoria Theatre, increased supervision is being exercised by the Lord Chamberlain's department. But, considering the tendency to increase in the number of places of amusement of some kind or other, and that sites at a distance from any street are more and more chosen, where the access must be by a single narrow passage, it is obvious that there should be no further delay in interposing whatever restrictions upon private enterprise are required for the public safety. The principle of protection for the public is admitted by the existence of the Buildings' Act; and as regards selection of site and internal planning, there should be the same amenability to proper official sanction and supervision as we showed, existed in the structural points of entrances and stairs. We are thinking, even more than of the theatres, of the various concert-rooms and saloons, or exhibition-rooms,—some of them well-conducted, and most of them testifying to improved tastes amongst the people, but some of them of very different character,—all of them, however, seeming now to agree in the provision of exit-ways utterly inadequate in amount of area, and in the concentration of the out-going audience, rather than distribution into widely-separated streams. Bad as are the provisions in

the majority of the theatres; even their exit-ways are better than those of such places as Weston's Music Hall, in Holborn, where, from a room perhaps rather more than 90 feet by 40, with galleries, and densely crowded every night, there is a long passage, of about the width of the lobby of a fourth-rate house. At the Raglan Music Hall, in Theobald's-road, though there is a "grand entrance," but of no great width, in use in the early part of the evening, the sole entrance and exit-way afterwards is, reversing the due order of things, through the tavern, and partly, or next the street, by a passage little more than wide enough for one person. Private gain seems here to have been the first consideration,—safety of the audience being, in fact, not cared for in the arrangements. The connection of the music-halls each, with a tavern, largely increases the risk, and the demand for official supervision in places of their particular class.

Instead of being worse provided than the theatres with entrances and exit-ways, all public rooms to be used for entertainments of many different kinds, should be much better provided, in proportion to the total capabilities of space, and for reasons following. In the theatres, relativeness of the entrances to the several parts of the house and prices of admission will be a principle in the planning, and one which under proper regulations will not be greatly modified afterwards; though we should observe that a practice of altering and multiplying the prices of admission, as in certain theatres the worst provided with entrances, is exactly what is opposed to the success of any principle, and what the needed restrictions adverted to may have to deal with. Still, with number of accesses, increased subdivision would be possible without the result at present which there is of confusion and danger. But in buildings, not theatres, comprising chiefly a single room, the appropriation of which cannot be exactly settled beforehand, there should be no want of entrances sufficient for the frequent changes and subdivisions of the appropriation that are made, and which tend to destroy that knowledge of the means of exit so desirable for the safety of the audience. Such public rooms, therefore, should be at least as well provided as the theatres, in proportion to the number of persons they will accommodate, rather than quite the reverse.

Our main object just now is to show that whilst supervision is necessary as to the selection of sites and the plans for places of public amusement, continuous supervision is equally essential. We have, here and previously, adverted to cases of the destruction of whatever advantages there may have been in original plan, by subsequent alterations; and have spoken of the powerlessness of the police for protection of the public,—though certainly we have no good opinion of the qualifications of the present force, for the comprehension of such matters as are in question. The statement that *within* a place of public amusement, the police are only the agents of the manager, is literally correct. The proprietor, or manager, directs any arrangements of entrance-ways and barriers, and the force are called upon to maintain such arrangements, however fraught with danger. It is clear, then, that to the department of police, should be attached a staff of persons for the inspection of all places of amusement, qualified professionally, or we may say as architects, as well as by having given their attention specially to this subject; that such inspection should be maintained by weekly visits; that no exhibition or entertainment should be opened without previous inspection and sanction of the arrangements; and that no subsequent alteration should be permissible without distinct approval. Much consideration of the subject satisfies us that nothing less than this will meet the object; and experience has proved that we have been hitherto right in our demands.

All defects of original planning, or later arrangements, at places of public amusement, not only tend directly to interruptions of the performance and breaches of the peace, but are nightly the source of that fearful danger to the public which lately there have been so many evidences of, to fortify our statements; and we hope that no further needless time will elapse ere, by the assumption of the largest amount of responsibility on the part of the Lord Chamberlain and the licensing magistrates, or the amendment of the Police Act and other required measures, there will be established a complete system of supervision of public buildings and places of amusement to which the public are admitted, both at their first construction and periodically, so far as regards all points which concern the comfort and safety of the public. But it is no trifling amount

of change in the usual planning of such places, that is required; and for this, the public, the interested proprietors, and our own profession, must be prepared.

THE REVIVAL OF GOTHIC ARCHITECTURE.

EARLIEST GOTHIC BUILDINGS.

IN connection with the correspondence on this subject in our pages a few weeks ago, Mr. J. H. Parker has sent us an account of the hall of the Hospital of St. John, at Angers, first published in the *Gentleman's Magazine*. Mr. Parker says:—This hall appears to me to be the most advanced in style for its date of any building that I have seen, or have been able to get any authentic account of, in any part of Europe. It was founded by Henry II. in the same year that he ascended the throne of England, A.D. 1154, and was consecrated A.D. 1184, by Ralph de Beaumont, bishop of Angers. The style is remarkably light and elegant for that period, as will be seen by comparing it with the heavy, massive choir of Notre Dame de Paris, 1163—1185, or even with Soissons Cathedral, the earliest part of which, the south transept, was built in 1168, and the greater part of the church from 1175 to 1212. The corona of Canterbury Cathedral, 1179—1184, closely resembles the transept of Soissons, but neither of them is so far advanced as the Hospital at Angers. The Cathedral of Sens was almost entirely destroyed by a great fire in 1184, and the present structure erected almost immediately afterwards, probably by William of Sens after his return from Canterbury, which it closely resembles.

The hall of the Hospital at Angers is divided into three parallel aisles by two rows of pillars and arches, which can hardly be called anything but pure Gothic, the square abacus being a regular feature of foreign Gothic down to a much later period. The vaulting with its ribs is remarkably good, and bears a striking resemblance to Early English Gothic, too close, it appears to me, both in appearance and in construction, to be merely accidental; and, as Henry II. held his court at Angers frequently while this building was in the course of erection under his eye, and his court was attended by many English nobles and prelates, it seems highly probable that they brought home new ideas with them, architecture being then the rage with all classes: it was just the time when the movement was in the zenith of its activity, and hundreds of churches were building in all parts of England, as we know by the best evidence, for there they now stand to tell their own story.

This hall appears to have been always intended for the reception of patients, whose beds are ranged in six rows against the pillars and side walls. The windows are small and round-headed, which agrees with the transitional character of the building, and proves that it has not been rebuilt, as has sometimes been said without any ground whatever for the assertion, excepting that the style does not harmonize with a preconceived theory. When a building is really in a different style from its historical date, we may fairly assume that it has been rebuilt; but no one would assign a later date, judging from the style only, than 1200 to this hall; and it is far more probable that it is a few years in advance in style, than that it was rebuilt within twenty or thirty years after its erection. The chapel which joins on to this hall is very similar to it in style, the only difference being, I believe, in the vaulting. The doorways of both hall and chapel are round-headed, but with very bold and good round mouldings, and with detached shafts in the jambs. The windows of the chapel differ from those of the hall: they are longer, have shafts in the jambs, are not all alike, but more decidedly transitional and of later character than those of the hall.

The Cathedral of Angers, which was consecrated in 1150, is of a much heavier style, with enormous square buttresses, and no aisles: the vaulting is of the usual Angevine character, which is a transition from the Byzantine to the Gothic, domical, but with low domes covered by a roof. The vaulting of the hospital is evidently taken from this, but is a considerable step in advance, and approaches more closely to English Gothic vaulting than to the previous Angevine style. The observation of M. Viollet Leduc, that there was at all periods a Byzantine element in English Gothic, derived through Anjou, and afterwards developed in Henry VII.'s Chapel, King's College Chapel, and fan-tracery vaulting generally, appears to me to be well founded, and to show his usual sagacity, keen observation, and thorough knowledge of his subject. If English architects would follow the example of French ones, and instead of railing at

antiquarianism and glorying in their own ignorance of the history of their art, would emulate the laborious researches of their rivals, it would be far better for themselves and for the country. We should not then have such despised antiquarian books as the "Glossary of Architecture" used like a tailor's pattern-book, to select pretty bits and stick them up all over the face of the country and the town; nor could they make a rapid excursion into Italy and bring home pretty bits in their sketch-books to stick up in the same manner, however inappropriate, and then plume themselves on their originality.

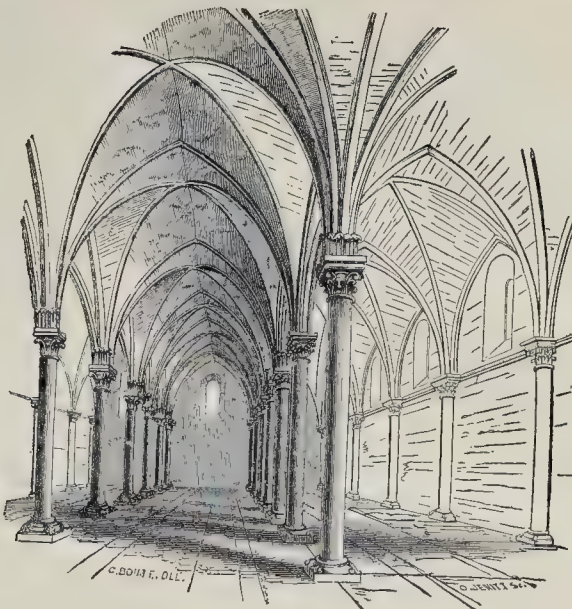
At the back of the Hospital at Angers is the large barn, or public granary of the town, one of the largest and finest that I know anywhere, and which also has equally large and fine wine-cellars under it. The barn, like the hall, is divided into three parallel aisles by two rows of pillars and arches of transitional character, but not nearly so light, nor so much advanced in style. The exact history of this barn is not known, except that it is said to have been built by Henry II.; but from the coincidence of style and date, it appears to be connected with the great famine with which these provinces were afflicted in 1176, which seems to have been very similar to the recent famine in Ireland; and as there was at that period much the same connection and intercourse between England and Anjou as there recently was between England and Ireland, so in like manner England undertook to feed the starving inhabitants. This great barn appears to have been either built at the time to employ the inhabitants, or built immediately afterwards to guard against the recurrence of a similar calamity. The king also built mills on the river Maine, of which the piers and some of the arches remain. It is stated by the chronicler, Ralf de Diceto, that the king undertook to feed 10,000 people from April to harvest-time, A.D. 1176.

The east end of the cathedral of Poitiers was also built by Henry II. and is remarkable for being square, according to the English fashion, which is rare in France. The style is also transitional, and considerably advanced, but not quite so light and elegant as this Hospital at Angers, although, as might be expected, there is not much difference between them, both being building at the same time.

It may be asked what has all this antiquarianism to do with the practical question of the revival of Gothic for domestic buildings. I answer thus:—If it can be clearly proved that the English have a national style of their own, distinct from any foreign style in its origin, its history, its progress and development, and not only in its architectural details, then those architects who are endeavouring to introduce the Italian Gothic, under the pretext of reviving our national style, are fighting under false colours; and, if they obtain a triumph, it is not likely to be a lasting one. It is not a mere question of aesthetics: if the followers of Mr. Ruskin consider the Italian Gothic more beautiful than the English, let them say so openly: every one may have his own opinion on a mere matter of taste: I do not agree with them, and I believe that the number of those who do is very limited. As a matter of history, I believe it can be proved that the Parisian style, though it approaches the nearest to the English, is still quite distinct from it. We must remember that in the twelfth century, when Gothic architecture was developed, the large territory which now forms the French empire was divided into a number of small states, each of which had a style of architecture of its own, each different from the other, but all derived from the Roman, excepting the English, which has a mixture of Byzantine with the Roman, which came to us by the same route as the silks, and spices, and other products of the East, the usual line of commerce at that period, of which Limoges was a central depot. And this line can be distinctly traced by the fine churches along its course.

It should be observed, also, that the western provinces of France, which formed part of the English dominions at the time of the development of Gothic, and which are usually known among French antiquaries by the name of the English Provinces, are full of valuable and interesting examples, by which the history of architecture, the gradual progress and development from the Roman and Byzantine to the Gothic, can be more clearly traced than anywhere else. It is true, as I observed long ago, that the English have left scarcely any traces of their occupation during the thirteenth and fourteenth centuries, being, apparently too much occupied in fighting to attend to building; but it is equally clear that at an earlier period the English architects studied there to a considerable extent. There is a particular

HALL OF THE HOSPITAL AT ANGERS.—A.D. 1154—1184.



class of buildings in Anjou, Poitou, and Maine, which the French antiquaries call the "Style Plantagenet," and although this style is not English, it may have taught much to English architects. It is certain that many features are found there considerably earlier than in England or in other parts of France; for instance, the well-known tooth-ornament, which in England is a characteristic of the thirteenth century, and the ball-flower, which is here rarely found much before the fourteenth, are both common there in work of the twelfth.

It happens also that in England we have scarcely any remains of houses in towns of the thirteenth or fourteenth century, while in the English provinces of France we have many; and thus modern architects can there find all that they want just as well as in any foreign country, while the details are at the same time better Gothic, and more in harmony with the English style than the Italian, which is just now so much in fashion. It is quite clear that the English architects did not study in Lombardy, and that the English Gothic is a national style distinct from any foreign style; and that, during the period when it prevailed, it was used for every purpose, and not at all confined to churches. The Oxford Museum, and the rector's house at Exeter College, Oxford, are proofs that modern architects can apply it to any purpose, and that Gothic buildings are not necessarily dark or inconvenient. When such is the case, the fault is in the architect, not in the style.

CAIRO.*

THE houses of the poor are built of mud, situate in filthy alleys, and, no doubt, the first idea in going into one would be, that the sooner you got out of it the better. The next thing to be noticed are the fountains. We have some in London. There are two in Trafalgar-square, and somewhere in the Kent-road, ever since I have known London, a sturdy Triton (I am afraid he is a plaster one) has been spouting a very little water from a very large shell. I dare say he is at it now. I hope he is; for even as he is, we cannot afford to lose him. There is, too, in the Temple a pretty little one; that is, the water and the trees are pretty; for there is nothing else, and it is a nice change from the hurry of the streets, or the pleasant odour of a lawyer's office, to hear that pretty trickling. They have fountains, too, in Cairo, and they make them there grand things, as you may see in Nos. 211 and 205, and in the numberless ones in the mosques; all

ornaments to the town, to which they give that blessed gift—water. And with an idea truly poetical, if it be not, as I am afraid it is, accidental, these buildings are fountains of refreshment to the mind also; for they have, in general, over them, an extensive building, used as a school for the district, and thus making, altogether, a very imposing mass.

These fountains are, however, on too large a scale for our use, being, more properly speaking, great public store cisterns. But the smaller kind, as seen in some of the mosques and in the private houses, are worth study. The basins are usually level with the ground; the outline being, perhaps, an octagon with curved sides, or other quaint pattern, with a rich border of mosaic. The design of the upper parts was very Mediaeval on its treatment, allegorical figures being seldom introduced even to the extent seen in the Court of the Lions, at the Alhambra. The effect being produced, usually, by a few columns and marble basins, arranged in regular and somewhat quaint forms.

To put the Cairene fountains, however, fairly with our own, we certainly must remember that they represent the whole water-power of the city (as they do in most cities of the Continent), except the aqueduct,—and that, truly an Oriental notion, serves only for the citadel.

And very grateful ought we to be for these photographs, and for such works as those of Owen Jones, Roberts, and Coste, in preserving to us the exact likeness of these buildings, whose decay is daily enhancing the value of these copies. And in the midst of a fanatical populace, a sketch or a photograph is a work of much trouble and some danger.

I hope that in the new movement which we may, I think, now call successful, the fountains in our streets may be made as ornamental to them, as they will be useful to our citizens.

We now come to the tombs; they are well shown in Nos. 193, 203, 208, 216, 279, and 292. On each side of the hill of the citadel there lies the city of the dead, the great necropolis of the living town; and missing, as we must, the gracefully sombre foliage of the Turkish burial-grounds, still under the shadow of the barren hills, removed from the turmoil of the town, the place is as well chosen as it might be. This, too, is all ruin. Very beautiful, and of great size, are the chief tombs; and to each of them there is a small mosque attached, so that each tomb rests in a house of prayer. Very Gothic were these Saracens in their death memorials. To their memories were carved no winged victories, no fearful spectres; no long inscriptions showed the

* See p. 185, ante.

grandeur of their virtues; but each old soldier of the Crescent (his Cross) lies in his stony grave, and above him rises the lofty dome, and the long inscription, not to his glory, but his Maker's, the idea to the very letter of our Gothic effigies and tombs in their memorial chapels. The old "Cujus animam propitiatur Deus" is in place of the long list of our modern virtues. Still more close is the resemblance shown in the tombs 198, which bring to our mind the beautiful canopied ones of the Middle Ages. Next comes the citadel from which several of the views are taken, but of which we have, I think, no direct view. It was built by Saladin when he enlarged the town, and, except the new mosque, of wretched design, rebuilt by Mehmet Ali, of which I have before spoken, and which in its building involved the destruction of the really fine old hall of Saladin, there is nothing worthy of detaining you. From it leads the aqueduct, which, originally built on wooden pillars by Saladin, was reconstructed, in 1581, as it now appears. It leads direct from the Nile at a point where you see a large, massive, low tower, and where the waters of the river are raised by means of oxen to the requisite height. These Saracens were famous water engineers, and many a town they founded or conquered still owes thanks to them on that head.

There is a famous work, still almost perfect, at Palermo where the water is brought down from Mount Pellegrino, and its force checked by a series of towers, which, overgrown by a luxuriant foliage and dripping with a constant stream, have a most picturesque effect. Now we come to the Nile. It is not an architectural work, but, if we may trust the father of history (and the more we know the more I believe we find we may trust him), it is an engineering one, though tolerably ancient; for Herodotus says distinctly that the river in old times used to flow to the east of Memphis, but that a new channel was formed for it, and that the Nile, as we now see here, left its old bed (still visible in the Desert), and flowed as it does now. Be that as it may, it now brings fertility to this valley, and did so for thousands of years before Cairo was reared upon its banks.

At the south end of the island of Rhoda, which stretches almost from old Cairo to Boulak, is the Nilometer, a column graduated to register the rise of the river, formerly at Memphis, but removed thence to this site in 847 by the Saracens. There is no view of it, I believe, here, and a sketch of it was, until lately at least, a work of some danger. Mr. Roberts got one, but at the risk of his life; and it seems from the drawing to be a plain fluted column, without a capital, its lower part in the water, and surrounded by a ruined Arab building.

The actual rise of the Nile, which inundates so vast a surface of country, is much less than one would perhaps guess, being only about half as much again as the height to which the tide rises twice a day at London-bridge. The rise begins in May, and is full at about Michaelmas. I have dwelt upon this part because the site of the Nilometer is one whose traditions are of intense interest, for they assign it as the place where, 3,430 years back, the infant law-giver of the Hebrews was exposed on the banks of the river and found by the daughter of Pharaoh; and so far as I am aware, there is nothing to make us really disbelieve that it was so. I fully think that the undoubted scepticism on such points that does arise in the traveller's mind is not the offspring of any innate want of faith, but of the exaggerated tale, and the wretched legends which, false as we know them to be, spread a doubt on the whole, and the truth is that we doubt against our own convictions. Most of us, perhaps, have, for instance, seen the Tarpeian Rock at Rome. We go there ready to believe, to accept almost anything as its representative; and how are we met? By a lot of ragged children, and "Tarpeian Rock, sir? show it you for a halfpenny." Our first impulse is to kick the nearest boy over the rock, and run away from it as fast as we can.

We pass down the Nile by the beautiful island of Rhoda, studded with pleasure-gardens, to Embabeh, a wretched little village, but known as the key of the position held by the Mamelukes in the celebrated battle of the Pyramids, where Napoleon destroyed their splendid cavalry; and no great distance off is Deekki, where some few years after our red-coats encamped. Nearer to the town is Boulak, the port of Cairo, and built on ground which, when Saladin enclosed the town, was part of the bed of the Nile. It possesses a very fine mosque, with a beautiful minaret of the fourteenth century; but the town was in great part destroyed during the invasion of the French. There is a branch hence to the railway station, near the Alexandrian Gate, whence to the east

goes on the rail to Suez. Going eastward, we come to the gates of Conquest and Victory—the pilgrims' route to Mecca. There is no photograph of these, but the former is strikingly like the gate of the citadel shown in No. 187. This completes the circle of the town. In taking, now, a general retrospective glance at the various buildings, the mosques, fountains, tombs, and houses, that I have spoken of, the first thing to be considered is, I think, their great comparative age. They are so new, contrasted with the hoary monuments around them; the whole city so clearly defined in date, that in the neighbourhood of Memphis and the Pyramids, we forget how much beyond anything we have is the age of these works. The mosque Teyloun, with its pointed arches, minarets, dome, and beautiful details, was finished, very much as it is seen now, in the latter part of the ninth century; El Azhar was in the tenth century; and the beautiful mosque tomb of Sultan Barkauk, in which the style seems to have been perfected, was finished by the middle of the twelfth century. To the first of these dates not a single building in England, so far as I am aware, can be clearly assigned; but in Italy, S. Vitale, at Ravenna, S. Clemente and the basilicas at Rome, had been raised, and so, also, had many of the campaniles. Germany could boast of none of its great churches. At the date of the mosque Barkauk, we had parts of Durham, Peterborough, Norwich, and St. Cross erected in the round arched style; in Italy, the cathedrals of Ferrara, Pisa, Modena, and Venice; and in Sicily, the very beautiful buildings at Palermo, Cefalù, and other places. In Germany, the great Rhenish churches were far advanced; and in France were these so well illustrated in Mr. Pettit's work. It was not, however, till the time of the tomb of Kait Bey, in 1465, or even perhaps that of the sultan, El Ghoree, in the beginning of the sixteenth century, that the style may be said to have arrived at its culminating point, and by that time our own architecture had passed through all its phases, from the heavy Norman to the bold towers of Canterbury and Magdalen, the rich tracery of Henry VII.'s Chapel at Westminster, and the bold roof of King's College, Cambridge. The architecture of the Continent, too, had progressed as ours had, and at this time Belgium had erected her fine halls. France had long since completed her great cathedrals, and in Italy, San Spirito at Florence, and the Certosa at Pavia, showed her leaning to the Renaissance.

For this long range, from the Saxon towers to those of Magdalen and Canterbury, and from the Mosque Teyloun to that of the Ghoree—that is, from the ninth to the sixteenth centuries, we may naturally expect to find an entire change in the architecture of Cairo.

I have purposely excluded from the review anything beyond the general features of the Mosque Amrou, as it has so often been rebuilt that its exact age is doubtful. Were that to be admitted in the comparison, we should be carried back to the seventh century, the times of our Benedict Biscop and St. Finian, of Landisfarne and Jarrold.

To begin with the plans: that which I have drawn of Amrou may represent also, in its general features, Teyloun of the ninth century, and El Azhar and El Hakem of the tenth and eleventh. We find it again in El Mogel, of the fifteenth century; but this is an exception in these later times. For the great mosques of the twelfth century and after adopted, in general, the cross form of four great arches or recesses leading out from the four sides of a court, still open, but very contracted, compared with the former extent; till in the later ones, as at Kait Bey, we find the centre itself covered. The temptation seems almost irresistible, in looking over these places, to cover the great centre square with a vast dome; but in the few instances of this space being enclosed, it is so with a flat ceiling and a lantern-light, the dome on a grand scale being almost always reserved for the tombs. The domes themselves come next in review; and I may, perhaps, be forgiven, if I detain you a few moments on a subject which has been with me a favourite study. We must remember that before these *Cairenes* were built, the only domes that we know, such as St. Sophia, St. Vitale, and those of that class, were formed for internal effect alone; or, if the effect of the exterior were studied at all, the attempt to make the dome form a graceful crown to the composition was decidedly unsuccessful. But here, from the first, the whole result, whether seen from within or without, was singularly well studied and successful; they are brought up from the square form into the polygonal, and the centre into the round, in the most graceful manner, as you may see in Nos. 191, 193, 200, 288, and

others. In the very earliest specimen, the fountain of Teyloun, the dome, although perfectly plain, and more abrupt in its transition from the square than the later ones, shows the germ of the finished style, whilst, with almost the single exception of El Hassan, the rest attain to an elegance not, I think, to be surpassed. At first the exteriors were plain, as we are used to see them; but later they were covered with diapered ornaments of great beauty, as you may see in the mosques of the Emir Aktoor, Kait Bey, and many others. Whether this cutting up the surface, however beautifully, would answer on a grand scale, may be matter of great doubt; but there can be none as to the way in which the internal work was done. This was invariably, I think I may say, in Cairo, though very differently in Sicily, Persia, and other places, by means of the well-known honeycomb ornament, by which, by insensible gradations, the circle was worked out of the square. You may see a very beautiful specimen of it in the Alhambra Court of the Crystal Palace, and the next time you look at it, oblige me by thinking how you would begin if you had to copy it, for all ornaments I ever sketched, this is most puzzling. Gothic tracery is sometimes troublesome enough when the exact curve eludes one's eye; but this is ten times worse, and no one who has not tried it can imagine what it is. I thought the mosaicked ceiling of St. Marc's sacristy was tolerably difficult, but when I tried my hand at the honeycomb, everything else seemed easy in comparison. The interiors of the domes themselves are ornamented in a conventional manner,—in a manner which I can scarcely describe,—being covered with ornamental work disposed in rings, and not in any way breaking up the outline of the surface. In the minarets we find the same difference as in the domes. The earlier were very plain, and, as Lieut. Burton describes them, were "plain round or polygonal towers, without stage or balconies," somewhat as may be seen in the old mosque of the citadel in front of El Hassan in the Panoramia. These gradually altered in outline and increased in richness until they became the beautifully ornamented towers that we know so well. I know no finer study of form than these graceful towering structures offer in contrast with the massive wall or the swelling dome, and it is from these outlines that we may, I think, learn much.

In all the Renaissance of Italy I cannot call to mind a single instance in which the Gothic outline of the spire has been boldly put in contrast with the massive dome; and of all the great architects of that time, Wren, alone, I think, has used it in an Italian form. What it became in his hands our City churches show.

The other great characteristic of these buildings is shown in the side of El Hassan. I mean the gigantic porches to the entrances. They range commonly from the bottom to the very top of the façade, which is often raised at that part to give even greater height; and they are worked out from the square into the semi-dome, and often into a sort of trefoiled arch in the most exquisite manner. But however grand these entrances might be, the Arabs were too good artists to spoil by their enormous size the effect of the interiors, and they thus allow them to remain mere porches, the doorways from them into the mosques being of ordinary dimensions only. The arrangement of the private houses is necessarily so totally different from that of our own, that the study of them would appear likely to lead to slight practical result. Now, however, that large surfaces can be so easily covered with glazed roofs as to give all the effect of open spaces, it may be worth considering whether, in our large country-houses, where the space to be covered is not an object, the centre court of these *Cairene* houses may not be studied with advantage.

It differs from the otherwise somewhat similar plan of the Pompeian, in having a number of stories, and from the modern Italian, in its irregularity to suit the exact wants of the inmates. Hence, we find in one part a few arches, where a gallery is required; in another, some windows, or a peep perhaps into the garden, here an open corridor, and there a blank, but all by the mere instinct of an eye alive to beauty, most excellently balanced, and producing a result at once picturesque and harmonious, whilst fulfilling the great requirement of allowing us to put an arcade or gallery, or a window, exactly where we want it, and because we want it, instead of straining the details of one portion of the house because the style requires us to match it with another. The details, too, of the ceilings, wall linings, and floors are very beautiful, the danger in their study being that we might, perhaps, thereby be led away

somewhat from the decoration of the style peculiarly our own, the domestic Gothic of the thirteenth and fourteenth centuries.

The study is, indeed, very fascinating, and the more so, perhaps, from the style in its general features, approaching much to our own. Put aside, in fact, the difference of detail, and I might be almost supposed to have been describing our own. But we have, I think, one great advantage in our buildings over any of the Calireen of the same date, viz. in the great comparative masculine boldness which ours possess.

With all the beauty of the Arab style, its masters appear to have wanted the grasp of mind which has produced Lincoln or Canterbury. There are, no doubt, many fine pieces of design, many parts of exquisite beauty, which seem to claim our utmost admiration. But I know of no building amongst all these 400 mosques, these numerous palaces, which is treated otherwise than as a series of fine fronts, and which realises one grand mass, instead of so many picturesque detached parts.

Even in El Hassan, whose great height, detached position, and unusually bold cornice, would almost claim our homage, the crowning feature, the dome, is very poor; and just at the very point where we look for the hold finish, which we find in our cathedrals, the one before us utterly breaks down, as though it was beyond the power of its architect to bring his whole structure, by its crowning feature, into one grand mass. The idea is that of grace, not power.

As if the Arab could, were a grand design marked for him, adopt it, and work it out with the greatest detailed beauty, but had not the greatness of mind himself to design it; and there is a passage in a celebrated author, Baron Humboldt, which strongly countenances my views.

He says, in one of the generalized descriptions of the Arab race, its progress, and the part that it has played in the world's history, "That notwithstanding perpetual change of place, they preserved their own national character, and the traditional remembrance of their original home; but judging from what they were under the Abbassides, they could never have produced those works of sublime poetry, and created art, which are the boast of our Europe."

An interesting task it is thus to try and discover how far a nation's mind is reflected in its arts. Let us try further what may be its results. Throughout the whole range of these buildings the great thing to be observed is their unquestioned, refined beauty. Throughout the whole there is scarcely to be seen a harsh outline, an ungraceful ornament, an ill-contrasted mass of colour.

From their very birth, these Arabs of our time have been used to the grandeur of their ancient Egypt the beauty of the modern, and the very name of their architecture is a byword for beauty in form and colour. But I have ridden for days together through one of the most glorious countries on earth's face, Greece, where within your time, and mine, an Egyptian army had passed through. Better for that land had been the loudest; better for its inhabitants the plague. Their general's orders were to cut down every tree, burn every house, kill every man, enslave every woman and child. And as far as he and his men could do this, they did it. These men were Egyptians,—men from that fair city and those fields, brought up to pray in those mosques, drink at those fountains, and in their daily labour show some latent source of beauty. And the Indian: too well we know the use to which those cunning workmen in ivory and mosaic can turn their delicate hands.

Is it that the lamp of beauty still burns brightly in these Eastern minds, but sheds no light upon the stern virtues of the heart, or that the Arab race, degenerating as we know it is, retains a mere remembrance only of the graceful, a mere tradition of the past?

As a ruin, broken by force, decayed by time, will still preserve some lingering trace of its beauty, though its strength be broken and its form be gone.

One thing more of these Moslem buildings, and I have done. Find them where you will, all are stamped with a mark of intense nationality. Even in Greece, where, from its association with the Byzantine style, we might think to find a great congruity; but even there we can, by the merest vestige of a building, trace where the Arab foot has been. His is a falling faith now, the Greek and the Russian are on his track, India is in Christian hands, and quietly, scarce noticed, the Englishman has put his foot upon the holy soil, and Cairo is now the stepping-stone between Malta and Aden.

That long black line of rail that marks our path to India will do more than shorten, by some few days, our path to it; and we can almost see the beginning of the end foretold in the brilliant "Eöthén":—"Islam shall wither away, and the Englishman, straining far over to hold his loved India, will plant a firm foot on the banks of the Nile, and sit on the seat of the faithful."

Even now, the race of the cunning architects who planned these works has gone and left no heritors behind them; and for the new temple in the citadel, the new palace in the capital, the Moslem summons the Englishman or the Greek; and remember that our nation is the only one now spreading itself on the earth; and as the Frenchman, Dupin, tells us, if ever again one race shall make its language universal, the Anglo-Saxon will be that one. Shall not, then, the temples that we worship in, our rulers' palaces, the homes we love, speak to the future of our proud race? And, if we hesitate in this; if we leave the print of the Italian or the Greek upon the land where the power of the Englishman only has been, let us think of the traces that the Greek and the Roman left of their own nation's art in the countries that they peopled,—that the Moslem has left marks in India and Persia, in Egypt, and in Spain, and in their nationality, though in our own style, let us learn something even from the Arab.

T. HAYTER LEWIS.

THE FITTINGS AND PROPOSED DECORATIONS OF ST. PAUL'S, LONDON.

We have already reported the discussion on this subject at the Institute of British Architects, on the occasion of Mr. Penrose's paper. We now give a part of the text on which it was founded.

The evening services (said Mr. Penrose) have answered to an extent which has given great satisfaction to those engaged in them. It would appear that Sir Christopher Wren from the very first must have contemplated such a use of the interior. Even before the fire of London we find him engaged in a plan for forming a large central space in the old cathedral, by removing the tower, which had become dangerous; and we are told he advocated the plan expressly for the purpose of its receiving a large congregation. Again, in the model of his single order, a design preserved till lately in the cathedral, but now at the Kensington Museum, it is quite evident that the great central space must have been the part intended for the congregation, so that the present use of the dome area is strictly in accordance with his intentions. It may be justly affirmed that it has not hitherto been used. It has, no doubt, two or three times in the century been the scene of great public memorials, thanksgivings, and funerals; and once every year it has been turned into a sort of amphitheatre for the exhibition of 4,000 charity children—certainly a remarkable spectacle, but not sufficient to satisfy the full purpose of such a building. It, therefore, seems a matter of great satisfaction that the present evening services have been commenced, at which upwards of 3,000 persons are arranged in great comfort; and it is remarkable how well, on the whole, the voice of the preacher is heard. The pulpit is raised about 7 feet, and a preacher with a good and clear delivery, speaking slowly but not very loud, can be heard by the whole congregation, the most distant part being upwards of 120 feet. With respect to the fittings for receiving the congregation, doubtless in the present commencement there is much that is temporary, and cannot fail to have a mean, unsatisfactory appearance; but, should sufficient funds be available, these will be gradually removed; and, when handsome marble screens or other suitable inclosures take the place of the present rough barriers, ample opportunity being given to the eye of the spectator to traverse in every direction, there can be very little doubt that the appearance of solemnity from the hallowed use of the place, as well as the scale given by the furniture, will render the interior of the cathedral very much grander than it was before. Indeed, has it not become so already, while much is confessedly incomplete? To admit of these services, the cathedral has been warmed by Messrs. Goldsworthy Gurney and Co. who are also engaged in warming the Houses of Parliament. In the crypt which underlies the whole church thirteen large stoves have been placed; and the air in the crypt is warmed to a temperature of about 66 deg. There are twenty-three openings formed in the pavement of the cathedral, each about four feet diameter, by means of which a constant circulation is produced; some being made upcasts, others downcasts, by means of a windmill, so that the warm air of the crypt rises by some of these openings into the church, and by

others, the air having been cooled by contact with the walls, roof, and windows of the church, descends to the floor of the crypt, and thus the circulation is kept up. The flues of the stoves are carried up in the external walls of the cathedral without any injury to the building, owing to the foresight of Sir Christopher Wren, who has everywhere provided for the due examination of the gutters and downpipes by carrying a passage in all cases under the gutters; the downpipes being carried in shafts each about 2 feet 3 inches square, formed in the hollow of the external walls, and iron steps left in the angles of these shafts. The stoves, without being forced, consume about one chaldron of coke per day: the effect is, that instead of a temperature of about 45 deg. Fahrenheit, which we should probably have had (in a severer winter than the present at this time it would have been about 42 deg.), we have a temperature of 57 deg. which rises about 2 deg. during the time of service; and if the weather were much colder, the same temperature could, I believe, be maintained; but at a larger expenditure of fuel. All the apertures in the floor of the cathedral are outside the part where the congregation is assembled, so that the stream of heated air which the congregation throws up is replaced by air moderately warmed, and the draughts, inevitable in so large a building, are deprived of their chilling effects, while they are greatly moderated in force. The whole expense of the apparatus, including mason and bricklayers' work, was about 1,250*l*. The floor is covered with Kamptulicium floor-cloth, composed of Indian rubber and cork, excepting the centre (60 feet) where Manilla matting has been used, with a view to its more ready removal if occasion should arise. To confine the sound of the preacher's voice, the space for the congregation is enclosed on six sides of the octagon by screens of American cloth (known as sham leather). Where the screens are placed, it is desirable, should these services become permanent, that marble screens or cancelli should be adopted, of which a good example is seen in the Duomo at Verona. Almost the whole of the congregation is seated on rush-bottom chairs of a very strong description, made by Mr. Skell, of High Wycombe. The cost of each was 3*s*. 4*d*. delivered. As nearly as possible, 1 foot 8 inches lateral, by 2 feet 9 inches longitudinal space is allowed. The gangways are reduced to a very small space, it having been found that persons are otherwise apt to stand in them, and interfere very much with the rest of the congregation. The chairs not offering so solid a resistance as pews to the congregation in entering and going out, it seems that this reduction of the gangways can be managed without any great inconvenience. The result appears to justify the use of chairs even in point of accommodation; and they certainly do not in any way interfere with the architecture of the cathedral.

Light is obtained chiefly from a corona of about 800 gas jets, placed round the Whispering Gallery: it is sufficiently strong to render moderately small print easily legible by the congregation. The form of the sounding-board is, I think a novelty; but I am led to believe that it is an approach to the true form for the purpose. The first Sunday, when the Bishop of London preached, his fine, clear, and distinct voice was very much confused by the echo from the dome. It therefore became necessary to put up a sounding-board to stop the inconvenience. Flat sounding-boards have been most commonly tried, but they are now generally discarded. A parabolic sounding-board behind the preacher has been used with a certain effect, but the advantage is limited to those in the direction of the axis of the curve; and in these cases, action and reaction being equal, the preacher can sometimes hear the criticisms of his audience, if any should be uttered tolerably loud in the proper direction. Besides which, a shell of this description would have had but little effect in stopping the objectionable echoes. To meet these difficulties a curve was selected, which has the property of distributing uniformly in every direction so much of the preacher's voice as can be advantageously reflected. The figure is hyperbolic, the axis being perpendicular over the preacher. The diameter is 10 feet, and so much of the voice it receives is reflected as if it came from a point about 4 feet above the preacher.

It would be interesting to know, but I am not aware that sufficient experiments have been made to ascertain, what amount of sound is reflected from a given material. The harder the material, obviously the better the result. In this case hard organ-pipe metal has been used. I observed a marked increase of audibility of the voice at a place where the assistance of the reflected sound

is obtained over a point equidistant from the pulpit, but too high to receive the reflected wave from the sounding-board.

The total cost of these fittings, with other expenses incidental to making the building available for the services, was about 3,000*l*. It should be mentioned that the funds requisite for this purpose have been raised by a committee of gentlemen, who have undertaken to aid the Dean and Chapter in this work. Unlike most of the cathedrals, the charge of maintaining the fabric has never rested with the Dean and Chapter, but has been met by a small fund (only just adequate to repair the damages of the weather), administered by the Archbishop, the Bishop, and the Lord Mayor; consequently, the Ecclesiastical Commission has made no provision for it out of the Capital revenues. Without inviting public assistance, the Dean and Chapter would not have encountered the considerable expenses which have been incurred: they have therefore invited the aid of a committee, in which our profession is well represented—Sir C. Barry, Mr. Cockerell, Mr. Tite, and Mr. Bunning, being among its members; and most kind and valuable has been the assistance I have received from them. Although the works actually necessary for opening the dome area for public worship have been accomplished, the Dean and Chapter and the committee do not consider their labours at an end, but they look forward to spend the surplus, at present a small amount of perhaps 2,000*l*, and as much more as they can raise without limit, in embellishing the interior in the most appropriate way. I do not hesitate to say, that from the moment that this prospect opened, I have had no doubt that the most appropriate would be the most magnificent that good taste would allow; no tawdry effects being aimed at, but the best materials being used, and most durable methods of applying them.

Up to this time no serious expense has been incurred, except reglazing the windows of the drum of the dome, and regilding the parts originally gilt. Messrs. Powell are engaged upon the windows. The glass chosen is of a very simple character, after a pattern in one of Palladio's churches at Venice,* it being felt necessary that these windows should admit all the light possible consistent with its not being too glaring. A richer description of ornamental glass may, however, be used in other parts, especially in the windows at the east end, and in the great windows at the ends of the nave and transepts; but the embellishment of the church ought not to be confined to, or even consist mainly in, glass. The chief indications of Sir Christopher Wren's wishes as to the embellishment of the cathedral, are drawn from a note in the "Parentalia." We read in p. 291, "In the aisles the lesser cupolas are both ways cut in semi-circular sections, and altogether make a graceful geometrical form, distinguished by circular wreaths, which is the horizontal section of the cupola; for the hemisphere may be cut all manner of ways into circular sections; and the arches and wreaths being of stone carved, the spandrels between are of sound brick invested with stucco of cockleshell lime, and which, having large planes between the stone ribs, are capable of further ornaments of painting, if required. The inside of the whole cupola is painted and richly decorated by an eminent English artist, Sir James Thornhill, containing in eight compartments the histories of St. Paul. In the crown of the vault, as in the Pantheon, is a circular opening, by which not only the lantern transmits light, but the inside ornaments of the painted and gilded cone display a new and agreeable scene."

In a note to the last paragraph we find the following information:—"The judgment of the surveyor was originally, instead of painting in the manner it is now performed, to have beautified the inside of the cupola with the more durable ornament of mosaic work, as is nobly executed in the cupola of St. Peter's, in Rome, which strikes the eye of the beholder with a most magnificent and splendid appearance, and which without the least decay of colour is as lasting as marble, or the building itself. For this purpose he had projected to have procured from Italy four of the most eminent artists in that profession. But as this art was a great novelty in England, and not generally apprehended, it did not receive the encouragement it deserved. It was imagined also the expense would prove too great, and the time very long in the execution; but though these and all objections were fully answered, yet this excellent design was no further pursued. The painting and gilding of the architecture of the east end of the church over the communion-table was

intended only to serve the present occasion till such time as materials could have been procured for a magnificent design of an altar, consisting of four pillars wreathed of the richest Greek marbles, supporting a canopy hemispherical, with proper decorations of architecture and sculpture, for which the respective drawings and a model were prepared. Information and particular descriptions of certain blocks of marble were once sent to the Right Rev. Dr. Compton, Bishop of London, from a Levantine merchant in Holland, and communicated to the surveyor, but unluckily the colours and scantling did not answer his purpose, so it rested in expectation of a fitter opportunity, else probably this curious and stately design had been finished at the same time with the main fabric."

A baldachino over the communion-table we do not perhaps require, but that is no reason why coloured marbles should not be introduced; we know we can have them both from abroad and from our own country, and they may be most advantageously applied in the panels; and why should we despair of carrying out the desires of Sir Christopher Wren in respect to the Mosaic decoration? There is no difficulty. The island of Murano in Venice still produces the material, not inferior to the ancient, even if our own manufacturers do not surpass or equal it. I know that Messrs. Powell are striving to produce this beautiful manufacture: the method is understood,—certainly it is slow,—but there is no mystery about it. I cannot conceive that there ought to be any insuperable difficulty in making this magnificent interior of Wren's cathedral brilliant with this forcible but quiet manner of colouring; and the cost of the undertaking cannot be beyond what might fairly be hoped to be contributed in London, many of whose merchant princes could singly do it without impoverishing themselves. I believe that 7,000*l*. or 8,000*l*. expended in Mosaics, would go far to make the drum of the cupola all that could be desired in point of ornament. This would be a commencement, which, if successful (I do not for an instant question its success), would most likely lead the way to greater things; a school of workers would have been formed, and the noble spandrels of the eight arches of the dome, and the hemispherical vaults through which the vaults of the aisles are pierced with so much beauty, would offer fit places for more elaborate designs, and subjects from Scripture history.

THE ISLINGTON SUNDAY-SCHOOL FOR DOWNWARD TRAINING.

On Sunday last, a body of the police, under the direction of Sergeant Lock, proceeded to the piece of waste land west of the Caledonian-road, illustrated some time ago in the *Builder*, for the purpose of putting a stop to the desecration of the Sabbath, which has for long been allowed to take place. At the time of the arrival of the police, there was the usual company of "roughs," and lads and girls, who could not fail to be injured by such association. After some little resistance, the swings were stopped, and the unruly crowd dispersed—much to the satisfaction of the quiet dwellers in the neighbourhood. It is probable that an attempt will be made to continue the nuisance, but the matter, doubtless, will be firmly dealt with.

SUNDERLAND HAVELOCK MONUMENT.

The models and designs sent in by the various competitors for the Havelock Monument, have been exhibited in the Lecture Hall, at the Sunderland Athenaeum.

The monument is to be erected on the hill in the Park. The committee advertised for designs for a bronze colossal monument of not more than 9 feet in height, on a pedestal of 10 or 12 feet, as it would be erected on a rock 40 feet high. There are twenty-six statues, two busts, and an obelisk, and several designs for statues and canopies. The competitors include Mr. G. G. Adams, Mr. W. F. Woodington, Mr. Bell, Mr. J. C. Lough (an equestrian statue and others), Mr. E. G. Papworth (an obelisk with figure at the base), Mr. R. Jefferson, Mr. Thornycroft, Messrs. Oliver and Lamb, aided by Mr. Beall (a Gothic canopy over the statue of the great hero supported on clustered columns, forming angle piers at each corner, from which spring Pointed arches: above these arches are gables enclosing shields, in which are placed the arms of Havelock, East-India Company, Britain, and Sunderland. There is an upper stage of octagonal form, designed for a clock tower or observatory, reached by a turret staircase, proposed to be formed in one of the angle piers. The roof is finished with a stone spire, crocketed), Mr. Noble, Mr. Behnes, Mr. Camroux, and Mr. Rowe, of South Shields.

THE ARCHITECTURAL MUSEUM.

On Wednesday evening last, the Rev. J. L. Petit, M.A. read an elaborate paper "On Refinement in Architecture," illustrated by a large number of drawings, and to which we shall return.

On the part of the council, Mr. Godwin, in moving a vote of thanks to Mr. Petit, stated that on Wednesday, March 30th, the prizes awarded to art-workmen will be presented, and a lecture delivered "On the Application of Colour to Form, and their distinctive Properties," by Mr. George Scharf, F.S.A.

THE REV. C. H. SPURGEON'S NEW TABERNACLE.

THE DESIGN SELECTED BY THE COMPETITORS.

In our present number we give an exterior perspective view of the design for the New Tabernacle, to which the first premium was awarded by the competitors. It was produced by Mr. E. C. Robins, architect, who says the general arrangement of his plan resulted from a conviction that the particular instructions given to architects were not arrived at without mature consideration on the part of the Building Committee, whose instructions, therefore, were adopted by the designer as the premises of the problem which was required to be solved by the competing architects.

Thus the plan of the Music-hall, an oblong apartment, with semi-octagonal ends, and an arched central roof, with side aisles, in which the galleries are situated, having proved acoustically good, was preferred by the architect, no less than by the committee, whose opinion was the result of their experience. In the present design the semi-octagonal ends of the Music-hall are exchanged for the semi-circular, the walls being continued round in an unbroken line, without the intervention of the corner staircases, as in the Music-hall; an inner peristyle of ornamental iron columns being also arranged equi-distant from each other and the walls with which they are parallel.

Between these columns and the wall, the double tier of galleries sweep round the entire building, in uninterrupted continuity. The pulpit occupies the central spot of one of the semi-circular ends, and immediately in front of it is the baptistery.

The arched roof of the central nave is enriched with raised mouldings, and is crowned with an ornamental iron skylight, extending throughout its whole length, and divided only by the main ribs of the roof, which are not severed in the centre, as in the case of the Music-hall. King-post trusses occur over the side aisles, in connection with the main roof, which externally has the appearance of being one, although internally it is divided into three portions.

"3,000 sittings are provided for, and 1,000 standing places, without inconveniencing the passage of holders to their seats. Not far short of 1,200 persons are accommodated with seats on the ground floor (from which there are eight means of exit), allowing 1 foot 7 inches to each person. The precise number required on the ground floor was not stated, but a greater number might readily be seated without altering any principle peculiar to the design."

The author pleads economic reasons for the form (objected to by us) of the corner staircases which fill up the spandril spaces formed by the circular ends, and says care has been taken to provide sufficient width of trend next to the well-hole to allow of persons safely passing up and down: further, that a handrail, on brackets, is also provided next the wall.

All the landings are sustained on iron columns, rising from the basement upwards, one over the other. The illustration renders unnecessary any description of the general character and treatment of the exterior. We have only to add that the building was designed to be set back some distance from the road, and to be surrounded with walks and shrubberies, with carriage entrances both in front and rear.

GEMS AT SOUTH KENSINGTON MUSEUM.—An important collection, lent by Mr. Matthew Uzzell, of antique and other engraved gems and cameos, is now to be seen in the Museum, South Kensington. It comprises nearly 500 specimens, many of great excellence and value, including upwards of 350 of those recently dispersed at the sale of the Hertz collection. There are examples of the best periods of Greek and Greco-Roman work; also some of the cinque-cento on settings of the time. The reception on loan of fine works of art from private persons who are willing to give the public some benefit from their collections, is a characteristic of the Museum of Art at South Kensington.

* Why not after a pattern by Mr. Penrose?—Ed.



DESIGN FOR MR. SPURGEON'S TABERNACLE, SELECTED BY THE COMPETITORS. — MR. E. C. ROUSS, ARCHITECT.

COLOURING SCULPTURE.

In a recent lecture by professor Westmacott, on the application of colour to architecture and sculpture, reference is made to the colouring of a cast of part of the frieze of the Parthenon, in the Crystal Palace. If it be in the state in which I saw it when it was first exhibited, the learned lecturer may well speak of it as a great failure. The impression which this modern attempt at sculpture-colouring made upon me was, that the horses, &c. looked like masses of putty or clay of different colours, or some such dense and muddy material. I was perhaps the more forcibly impressed by this opacity and heaviness of effect from having just completed the self-imposed task of colouring the whole of the plaster ornaments (consisting of heraldic devices, flowers, fruit, &c.) of an Elizabethan ceiling in my own dwelling. My first attempts in this work were executed quite in the manner of the Sydenham frieze, and the result was a very similar opaque, heavy, and obtrusive effect of colour. My red roses were coloured with a tint made up of lake and white-lead in oil: my pomegranates conveyed the idea of solid lumps of chromate of lead and vermilion: my heraldic camel was exactly the tint and tone of the brown horses of the Sydenham failure; and thus the whole ceiling, as a piece of colour, became a thing "out of keeping;" for by no ingenuity, as to gradations of tint, could it be made to keep its pictorial distance, or due subordination to the general effect of the apartment. I at last got out of my difficulties by applying some of the knowledge I had derived, from the study of an excellent Bassan picture in my possession, to my new occupation of house-painter. Actuated by my notions of Venetian modes of colouring, I had the whole of my *hard* work covered with two or three coats of white-lead and oil; and, upon this as a ground, I began, *de novo*, applying all my tints, as far as was practicable, in glazing or *transparent* colours. This mode of procedure set all at rights: my details became nice, gem-like "bits of colour," and the general effect quite Venetian, or Bassan-esque. This bit of amateur experience may perhaps not only explain why the colouring of the Sydenham frieze was a failure, but may also possibly serve to remind us that there are such things as principles of colouring, as well as scientific systems of colour.

M. I. H.

ENGINEERING WORKS ABROAD.

THE works for the construction of the terminus of the Vincennes Railway have just been commenced in Paris on the east of the Place de la Bastille, between the Rue de Lyon and the Rue de Charenton, on the site of the ancient court of the Israelites. The northern extremity of the station forms an angle of the entrance of the Boulevard which is to be opened from the Place de la Bastille to the Bois de Vincennes, passing by the Barrière de Neuilly. In the Rue de Lyon they are busy demolishing the last houses which would obstruct the new arched viaduct which carries the Vincennes Railway into Paris.

On the 1st inst, the last portion of the railway from Pistoja to Lucre was opened for public traffic.

Rails for the Marseilles and Toulon Railway have arrived at the Toulon terminus, and it is confidently expected that, by the 15th of March, an engine can run over the line all the way to Marseilles—not for public traffic, however, for which the opening is fixed in May next.

Several Sardinian officers and engineers have lately proceeded to Milan to take part in a conference relative to the international station of the Ticino for the junction of the Lombardy railways with those of the Victor Emmanuel or Sardinian Railway.

The *Tiema Gazette* publishes the international telegraphic convention concluded between Prussia, France, and Belgium, in the name of the Austro-German Telegraphic Union. The convention was signed at Brussels on the 30th of June, 1858, and ratified by the Austrians on the 15th of September last.

In Spain, on the Madrid and Saragossa line, the section from Madrid to Guadalajara is on the point of being terminated. The inauguration is to take place very shortly. This section is 60 kilometres long.

The directors of the North Spanish line will be ready in a few months to put into circulation the important sections of Avila to Valladolid and from Valladolid to Burgos—altogether 250 kilometres. The company have come to the determination to inaugurate, at the same time as the two above mentioned, that of San Isidro de Duena to Alar. The earth-works and masonry are completely

terminated. Thus a length of 110 kilometres added to the line, making a total of 360 kilometres.

Alar to Santander, 36 kilometres, will be finished in the present year. On the Almansa to Valencia line the works are finished to a few kilometres of the end of the line. The Seville and Cordova, the Seville and Jerez, and the Puerto Real and Cadiz lines are in the same state of active progress towards completion this year.

From Barcelona to Saragossa more than 16,000 workmen are at different points on the line. The company spend daily, for the salaries of the workmen, 10,000 *piastres fortes*, or 50,000 francs and upwards. Thanks to the exertions of the directors of management, this line will also be ready, we are assured, at the end of the year.

The railway bridge over the Rhine is continued without interruption. The temporary bridge, false-works, &c. and scaffolding have been for some time finished on the eastern bank as far as the first pier. They present a good appearance for solidity—inasmuch as the timber-work that is to serve for the construction of the permanent pier is so strongly put together, that it reminds one of a fortress. Inside are the iron caissons that are to be sunk in the bed of the river, and on which the piers will stand. As soon as these caissons have been placed in the bed of the river, masons will descend to carry up the stonework. By a proper arrangement they can work for a long time under-water: the air is renewed by pumps at the same time that the foul air is abstracted. On the French side of the bridge the railway works advance rapidly.

During the year 1858, in Germany, 129½ miles of railways were opened (the German mile has 7·408 kilometres in length), namely 24½ belonging to different governments, and 105 to companies.

THE "BUILDER'S" LAW NOTES.

Master and Servant.—Temporary Illness.—

By an agreement between plaintiff and defendant, the former agreed to serve the latter for the term of ten years as a servant (a brewer), and the defendant agreed that during that time he would pay the plaintiff a certain weekly sum. During the service the plaintiff had an attack of rheumatic gout, and was obliged by this illness to be absent for thirteen weeks, after which he returned to his service. The defendant refused to pay him for these thirteen weeks, and he brought an action for the amount. It was held that he was entitled to recover, for that the contract had never ceased to be in force. It would have ceased if the plaintiff had proved incompetent, or had voluntarily refused to act, or had become permanently disabled by a disease rendering him unable to return to his duty.—*Cuckson v. Stone.*

Insolvency.—Unless notice of opposition be duly entered, according to the rules of the court, no creditor can oppose an insolvent's discharge. If a debt be omitted from the schedule, the proceedings in insolvency will be no bar to the recovery of that debt, even though the same creditor's name be inserted for another debt. A debt omitted from the schedule will not be allowed by the court to be inserted in a schedule under any subsequent insolvency. If a lease be in the possession of an insolvent who is in arrear of rent to his lessor, and that it is of no use to creditors, the court will compel the insolvent to give up possession to the landlord; but if the lease be in the hands of a third party, the court cannot interfere.—*Re Allen.*

Landlord and Tenant.—Insurance.—A landlord insured certain premises. They were burnt down, and he received the insurance money. It was held that he was entitled to maintain an action for the rent even though he did not lay out the money on rebuilding the premises.—*Loffis v. Dennis.*

Docks.—Poor-rates.—The Tyne Improvement Commissioners were bound to expend the dock tolls on,—1, the current expenses; 2, payment of interest on loan; and 3, on the reduction of tolls. It has been held that they were liable to pay poor-rates for the docks.—*Queen v. Tyne Commissioners.*

Master and Apprentice.—A master may correct an apprentice for robbing him, but cannot for that cause (except in the city of London by custom) dismiss him from apprenticeship.—*Philips v. Cliffl.*

Libel.—In an action for libel, it is not a justification that the libellous matter was previously published by a third person, and that the defendant at the time of his publication disclosed the name of that person, and believed all the statements contained in the libel to be true.—*Tidman v. Ansley.*

Acknowledgment of Debt by a Minor.—A written acknowledgment of a debt is an answer to a plea of a Statute of Limitations, even though made by a minor, provided that the debt was for necessities supplied to him.—*Willins v. Smith.*

Land sold under Incumbered Estates Act.—The Incumbered Estates Act declares lands sold in the Incumbered Estates Court to be discharged from "all charges and incumbrances." It has been held that the purchaser is, however, bound to pay arrears of poor-rate, and that the lands could be distrained for same, as poor-rate is not a charge within the meaning of the Act.—*Lally v. Concanon.*

IMPROVED CRAB.

AFTER the meeting of the Institution of Civil Engineers on February 1st, Mr. Denison, Q.C. exhibited a small crab, or winch, capable of lifting half a ton with a single pulley, although light enough to be carried in one hand. It had two short barrels with five grooves in them for the rope, and a wheel at the end of each barrel, both of which were driven by equal pinions on the winding arbor. The rope passed from one barrel to the other; and the loose end was either pulled off by hand, or fell by its own weight, or by the weight of the descending blocks or empty bucket attached to it, if the crab was worked alternately, like buckets in a well.

Several members stated that the machine was a very good one, but that it had been invented long ago, and was now in use in many factories. To this it was replied, that it was surprising that so valuable an improvement of such a clumsy machine as the common long-barrelled crab, should have been unknown to the various engineers, builders, and other persons conversant with such matters, to whom it had been shown or described. It was found that the time spent in affecting the chain was a quarter of the time spent in actually lifting the Westminster bell to the top of the tower, and two crabs were used for it; whereas, with one such machine as this, it could have been lifted the whole 201 feet without any interruption. The object in bringing the machine to the institution was to make it generally known, and to show its convenience, and it was hoped that the present conversation would assist in doing so, as it probably would, even more completely than if the invention had been really new and comparatively untried.

THE SPURGEON DESIGNS.

SIR,—A writer who begins by ironically telling you he is "one of the authors of bad art," might be expected to defend either their art in general, or at least his own; but Mr. Pocock, in the letter so begun, confines himself to reminding me of what is or is not "art,"—questions on which I cannot see that we differ at all, and utterly ignores the only one on which the reasonableness of the votes I was defending turned, namely, whether the art (much or little) elicited by these competitions, and of which I suppose his accepted design may stand for a fair representative, is a public benefit or a public evil.

Now, if I take naturally, as the readiest to hand merely, this design of his as my text for making out the proposition that all this art (which, if it please him, shall be assumed *most* in his design), all that is now done among us as "architecture," or all that distinguishes such a design from a mere bricklayer's work, like St. Luke's Asylum, or the plainest warehouse, is a pure and unmitigated evil; I beg it may not be supposed I depreciate that design among its own class, or think it any way inferior to those of the Barrys, Wyatts, Pugins, Smirkes, or other ruling families of the architect caste (for a caste it is rapidly becoming among us). On the contrary, without wasting time in a comparison, we may safely assume it *superior* to them, for, in a false art, the new practitioner does better than the established, on many accounts. It takes better work to make a name than to sustain one already in fashion: where no tribunal exists, the more a man has to do the worse it is done: "live and learn," where the thing learnt is a nuisance, must be equivalent to "live and do worse." And thus, on all accounts, a man's first works are his best—as we constantly find in this art—while in every true and useful art the contrary takes place.

I can but take now those features of the design which appear in your well-condensed description, because "*Metropolitan*" was not one of those that impressed the memory by their boldness or any worse peculiarity, nor that drew me to a second view by any better one. Indeed, on

referring to my notes, I find that, with two exceptions, "*Honi soit qui mal y pense*" and "*Let the House be builded*," every design that received architects' votes was of the number as I eliminated at the first view, for their marks, as I thought, of either hopeless littleness or incorrigible wrongness or sophistication of mind; though among such as had no votes are many that interested me much, as "*Palma*" (the least), "*Xinem respice*," "*All above ground*" (whose incomplete state as to specification, &c. I unhappily regarded as excluding it from receiving votes, forgetting that this was decided by the committee when they hung it), the solitary Gothic design, so strangely mislabelled "*Byzantine*" (as if to get in under false colours), and the unframed set of drawings with a square plan (apparently not fitting the site), and a two-coloured brick elevation, with a scroll on it inscribed "*The House of Prayer*," which, though not a bit more refined or better art than might be expected of a South-Sea cannibal, was quite as Christian, and I believe would, in execution, be more dignified than any temple these British isles have produced since the first generation of outlay-paid artists, or are likely to produce before the last.

To come, however, to the selected plan, you say first, it differs from the Surrey Music-hall in having rectangular ends instead of apses. Now, as the plan of this hall, we were told, having "proved acoustically good" would "decidedly be preferred," a bricklayer attempting no architecture would of course have copied its main peculiarities, the only ones distinguishing its internal form from that most common to all halls and chapels, its two apsidal ends. And in so doing, he would reproduce, whether wittingly or not, its acoustics. But your "architect" has far too much art to attend to such trifles, or stoop to such copyism as this! Do not think he will copy anything less difficult than acanthus leaves. Here, then, by the first stroke of architecture, Mr. Spurgeon's people lose their acoustics, for if they think the acoustic virtue of the Surrey Hall resides in its having four towers or pepper-boxes (the only feature of it they now retain), they will be woefully undeceived.

Next, the having seats concentric with the pulpit. This you mention as a peculiarity of the design, but it never could be so in any time or place where there were real architects. Where building was an art at all, if 500 men made designs for this purpose, not one would make the seats otherwise than concentric—concentric, but not (as you say Mr. Pocock's are) circular. Circular joinery is one of those inventions, by the presence of which you may instantly recognize outlay-paid design.

Before there were outlay-paid artists it never occurred, nor could occur, to any mind, to sink labour and wood in a production so wantonly opposite to the material's nature. But of course this occurs to outlay-paid minds continually, because often (as in this case), by its means, what it would take any one some hours' study to effect by arrangement of straight seats, any clerk can be left to do with a pair of compasses in a few minutes; some thousands of feet of wasted material, and thousands of hours of joiners' labour being thus made do duty for one hour of the architect's, which is the grand distinctive principle of this modern art, the one great lamp of architecture and engineering, whose light will meet you at every turn, the clue that will take a critic through all their otherwise unaccountable mazes.

Again, the raising as an inclined plane the portion of chapel floor farthest from the pulpit, and thus getting height for lighting the lecture-room, was a simple matter of course, if the instructions were followed to their logical consequences. No real designer could have arranged these things otherwise, and the fact of there being any designs at all differing on these points merely shows the utter state of chaos and moping darkness to which a few generations of false science,—outlay-pay,—have reduced this whole business of design and building. But now see. What does it avail to be ever so right on one point by the chance stroke of a great artist? What is the use of getting this additional height to a room, if, on the side where you have it, and where a bricklayer would naturally put its windows, your artist has to "convey the impress of his mind and heart" in a Corinthian portico? This, if a place for "mind and heart," is none for a porch or entrances, even were the chapel floor on the ground. It would only be so if you had a direct central approach, as up Ludgate-hill to St. Paul's. In a wayside building, the corners of the front, and not its centre, the two points one of which every comer must first arrive at,—are the natural places to enter by. The middle, if there be a room there, is the

place for admitting light to it; and the "two feet additional height" which the rising floor is said to give Mr. Pocock's lecture-room (but which in any reasonably proportioned design would be a dozen feet instead of two), are totally useless if not to obtain it more light. In any time or place of rational building, Gothic or Madagascan, this wall of the lecture-room would be converted wholly into buttress and window, contrived to get every inch of light possible, and the highest side being thus turned to its natural use, the lower ones would not be hurt by the contact of the appendages for access to all parts and floors, from the natural entries at these two places, without passing which no person can enter or leave the site. But "art" must have these appendages,—No, a useless imitation of what answered to them in another kind of building,—a sham temple-front,—blocking up the place where the windows were wanted; and windows (but not availing to light the room better than a cellar), where the accesses were wanted!

Not, however, that the artist has any objection to corner entrances; for, far from this, he provides you grand ones, with "towers 100 feet high," not only at or near these corners toward the street, but equally at those turned from it, and buried 200 feet deep in private premises and back slums! This very novel idea will I suppose save the new tabernacle from the remark of Pugin on its predecessors, of which the Irish version runs,—

"They puts a front up to the street,
Like could Westminster Abbey,
But thin they thinks to chate the Lord,
And builds the back part shabby!"

At least it will if these four "towers" (just 50 feet higher than the stairs, of which they are built to be the "cases," but 50 feet too low for belfries, or the very shabbiest of shabby-genteel attempts at mock ones) are to be as uniform in workmanship as in height. Of which equality in height, however, I can see no conceivable result but to destroy the symmetry and unity of the whole thing. The two ends of a church or tabernacle never have like uses, any more than those of an animal or a ship; and therefore to make them alike (or apparently alike in any possible view) is (as Ruskin says of the earliest and almost sole instance of it, King's College Chapel) as perfect a blunder as to represent the fore and aft of an animal (or I will add a boat) alike. An animal with a head at each end would be as contrary to symmetry as with the body top-sided or ears dissimilar; and the analogue has, even in this land of architectural monstrosities, been as yet confined, so far as I know, to the absurdly over-praised chapel at Cambridge, and the hardly baser example of St. John's, Westminster.

As the entrances, however, are dispersed, it seems, all round the building, I conclude the architect was privately informed of an intention of Mr. Spurgeon's friends to buy all the surrounding properties. Otherwise, or till that is done, such a building, jammed in among them, could only convey the ridiculous idea so many of our buildings do, by their total irrelevance to any thing about their site, of having dropped there from the moon; or like M. Crépine's new Westminster, if it is ever built, of being cut out of some distant city and fitted in. Indeed, I would suggest to our anti-papal divines whether some eccentricity of this kind, committed when such were rare, may not furnish a plausible origin for the traditions of the Holy House of Loretto. In modern England, however, the only myth likely to be originated by so familiar a sight, will be that the architect copied, instead of his portico, his whole building, after the pattern, not "that was showed him on the mount," but engraved into one of his pattern-books from the market-place of some unheard-of Russian or Spanish town, where all its entrances, &c., were intelligible.

If people can only enter and leave your premises at one end, why are they to enter and leave your building all round, and (as it seems by the equal widths of the entries) in equal numbers everywhere? As many as enter directly at the corners where all arrive, just so many are to march thence, unsheltered, the building's full length, to enter it at the other extreme end! And this while you have, where neither shelter nor entrance is wanted, a portico—(mock Grecian sun-shade)—that to execute unlaughably, or so as to be any more than a stage sham (especially if to "convey sentiments and ideas which, if not actually novel, have some new aspect or savour imparted to them,"") would cost about half the money allotted to the entire work, and all the light of your second principal room! Moreover, if this appendage is for a shelter, it is (like all things designed for one use

and put to another) an exceeding bad one, the shed being some 30 feet too high above the floor to shelter it in moderately driving rain; the openings, five of the seven, where they are least wanted, in front; and lastly, the whole not sheltering the most used entries—those of the wings—at all. But if it be said to be for its original purpose of a sun-shade, the sun can never shine on an east front in this latitude from an altitude high enough to throw the roof's shadow on the floor at all! And if it is neither a shelter nor shade, but an ornament, it is at once a most base and most extravagant one,—most base (or un-Christian, because it uses a maximum of manual labour (and that of degrading kinds) to a minimum of the ornament's own labour; and most extravagant, because in the very grandest architectures and most ornate ever wrought, they not only never made any nuisance (as I have shewn this is) for an ornament, but had no single ornament bigger or costlier than a statue.

Again about entries, what is the use of vaulting so many feet width of them from the uncovered into the covered part of your premises, when you have not half so many from the streets into your whole premises? Of course I know my grand-mother's answer, that the amount of the latter would suffice for everyday but that on which the building is to be burnt down, when a double amount of ways (merely through its walls, not out of the premises), will be needed as fire-escapes!—An argument worthy of Tumbuctoo, not Europe!—As if a work of this cost relatively to size, had here (in a timber-importing country, say nothing of civilization) any business to be capable of catching fire!—Why even the design "Ubique," to which I only gave a third vote, showed how double the required number could be accommodated in a fire-proof building for the allotted area. A "Metropolitan" assembling place for thousands, dependent on some rotting burning sticks!—Talk of a nineteenth century,—it would have been deemed unworthy, in a "Metropolitan" work, of the first, or century before our first, that of Agrippa's Pantheon and baths. But this comes of the monstrous political fallacy, I with your help exposed, by which a proprietor is enabled (for what some of your correspondents consider "a tax on prudence") to elude God's law, that "if any man's work be burned he shall suffer loss," and to "insure" a property's worth to himself, without insuring the property,—insuring its existence among mankind at all!—The mode thus created, of private building, is adopted forthwith into all building; the "prudence" is prudence of course for a church as well as an individual; and this by Christian separatists, of so exalted a morale that they think one style of church architecture is of the devil!

But still it seems from the widths stated, that the artist believes, as our street improvers did till so recently (when they have made the discovery that as a chain is no stronger than its weakest link, so a way is no wider than its narrowest gorge), that excess of width in one part of a way will compensate for deficiency somewhere else. Though this was plainly the most general theory among competitors however, as regards the whole of each sinuous avenue from the street to the chapel's interior, yet once arrived there, where the passage begins feeding seats on each side as an artery feeds its branches, or (at departure time) receiving from them all like a vein from the capillaries; henceforth, through these seats, every designer began to draw every passage rigidly parallel. Of course, such fits of economy as nature stoops to are far beneath the attention of a man of art. So the stream (to the fire-escape) as long as it is like the Upper Nile, receiving one hundred tributaries (or, at least, one at every 2 feet 6 inches), has a channel of unvarying capacity; but where it flows, as the river of Egypt, without loss or gain, there we have the most eccentric expansions, as the designers would call them; it evidently never occurring to them that, whatever is an expansion to a stream going one way, is a contraction to it when returning!

The double stairs to keep the ways from Mr. Pocock's two galleries distinct are another of the points that never could be a peculiarity if plans in general had the least approach to reasonable attention. Though not required for this purpose, since none had any business with two galleries at all, they were needed for preventing such a confluence of streams from the only gallery and chapel-floor, of which the account says nothing.

The school-rooms are said to occupy as much of the basement as the lecture-room leaves, as indeed, in every plan I examined, that did not

deviate from the instructions by making all three an out-building. Now, this involves two little results—1. These schools themselves (specified to be but 12 feet high, and thus made some 40 feet wide) are, like the lecture-room as to light, mere *cellars*, which, indeed, was general; competitors well knowing a committee can tell about as much of this from their sections as a cow can of a new shilling. 2. There remains no portion of basement for an air-artery to the 6,000 people above, who, it seems, must either be fed with the refuse of these school-rooms (always in use at the same time with a chapel, while its congregation are assembling), or else depend (contrary to the instructions which required *warming* to be provided for) wholly on lateral indraught through the fifteen entrances on every side. And this, I suppose, explains at last why they are so distributed.

Nothing is said of the numbers of *pillars* the artist requires to bear all these floors,—a matter held of primary importance in reasonable architecture. Where it was in a reasonable state, I doubt if the most unskilful contriver would cumber his building with more than my design did, namely, *seven*. The three or four score found necessary in most of these works of art (occasionally varied, as in "*Templa quam dilecta*," by the addition of some bulkier ones for ornament) seem to have been taken as matters of course! Now, this is another of the infallible characteristics of outlay-paid designs,—iron pillars of about the proportion of barley-sugar sticks, and no fewer or farther between than ancient stone ones. The reason lies in a nut-shell. When you are given a stronger material for pillars, nothing is easier, or involves less invention, than, like the engineers, to draw them thinner, but to reduce *number* instead of *size*,—to make fewer serve your purpose,—this would involve *design*, and design of the kind that makes a little of the designer's labour replace a larger amount of manual labour and iron,—and this would be diametrically opposite to all principles of *outlay-paid* engineering and architecture, seeing you are not paid, O designer, according to amount of design, but amount of other men's handiwork and iron. Hence the results of iron among us are such things as those stations at Bricklayer's Arms and Reading, toppling down like card houses by a carriage happening to strike one of their fifty or one hundred pillars! Before there were outlay-paid professions, they would have been borne on *six* or *eight*; and then not only could none of these break by a carriage tap, but less iron would have borne more weight, because (as Professor Hodgkinson has proved) the thinnest *unweakened* proportion for iron posts is just the same as for stone, the Corinthian. For any pillar that could, by any load, be made to bend sooner than crush, or at least any *two* such pillars, are wasteful, since their material put into one pillar would bear more. But I am trespassing.

"'Tis an unweeded garden
That grows to seed,"

E. L. GARRETT.

THE INCREASED DOCK ACCOMMODATION ON THE THAMES.

In reference to the announcement already made by us, we can now state that a company has been formed, entitled the "Northfleet Docks and London Quays Company," with a capital of 1,500,000*l.* the directors having the power to increase it to 2,000,000*l.* Property has been secured at Northfleet, which is about twenty miles from London, near Gravesend, and at the base of the chalk cliffs adjoining the Rosherville-gardens. For over 100 years-vessels have taken their ballast from the spot, and every load that has been shipped will now count as so much work done for the company. The river frontage will extend for a distance of rather more than three-quarters of a mile. The whole area to be occupied with the docks and necessary buildings will be 165 acres. When entirely completed there will be three docks, each communicating with the other. At the western extremity there will be a half-tidal dock. Its length will be 1,160 feet, and its width 700, giving an area of rather more than 1*1*/₂ acres. This dock will have three river entrances, all of which may be entered at any state of the tide; but the centre one will be available at high water for the entrance or exit of vessels as large as the *Great Eastern*. On the east side of the dock are four dry docks: one, 700 feet in length, will accommodate the *Great Eastern*; a second will be 425 feet, a third 375 feet, and a fourth 325 feet. On the north-east side of the tidal basin will be an outlet communicating with the great basin, 2,200

feet, or nearly half-a-mile in length, 700 feet in breadth, and covering an area of 35 acres. This large basin will also have a communication direct with the river, about the centre of the quay wall. At the southern edge of the large basin piles of warehouses will be erected against the face of the chalk cliff. There will be also a line of warehouses on the north side of the large basin. The third basin is the "reserve" one, 1,000 feet by 600, with an area of something more than 13 acres. The estimate for the construction of the docks is 1,307,000*l.* less than one-tenth of the sum which has been expended on the London, St. Katherine, or other docks nearer to the metropolis, while the accommodation given is vastly greater than that afforded by any existing dock company. By the railway, the docks will be placed in connection with Woolwich, Chatham, Sheerness, Canterbury, Dover, Shorncliffe, Maidstone, Portsmouth, and all the military and naval depôts and establishments of the country. The brokers acting for the company are Messrs. Hill, Fawcett, and Hill, of Threadneedle-street.

ST. SIMON'S, MOORE-STREET, CHELSEA.

THE new Church of St. Simon's, Moore-street, Chelsea, is to be consecrated on the 21st, by the Bishop of London. It is built of Kentish Rag and Bath stone, the walls inside being of white brick, relieved with red and purple. The columns to the eastward are of red marble, with carved capitals. The font and pulpit are of stone, with marble pillars, and the east windows have slender marble shafts, and over them richly carved canopies. The five windows, which occupy nearly the whole width of the chancel, are filled with stained glass, illustrative of the life of Christ. The organ, by Mr. Walker, will be over the vestry, the front projecting into the chancel, and the galleries are arranged with considerable skill. The west front in Moore-street, has a bell gable for two bells, somewhat disproportionately high, supported on a boldly moulded arch, embracing the windows, the ground of which is dressed with diaper. A handsome tablet inside, describes the church as built from a fund left by the late Mr. Coles. The site was purchased by the parishioners. The church is calculated to hold 800. The builder was Mr. White, of Fulham; the architect, Mr. Joseph Hancock. The seats are of stained deal, and also the roofs; the aisles are paved with black and red tiles, and the chancel with Minton's ornamental tiles. The carving was done by J. L. Jaquet.

The stained-glass windows were by Messrs. Lavers and Barrard, representing the life of Christ, in nine subjects. The side lights have the Birth, and disputing with the Doctors in the Temple; Blessing little Children and Feeding the Multitude (representing two acts of his childhood and manhood). The centre light has his Death, Resurrection, and Ascension, and the intermediate lights have the two sacraments, with texts. The reredos and finishings to the chancel are by Messrs. Harland and Fisher. The church has cost about 5,000*l.*

CHURCH-BUILDING NEWS.

Peldon.—The old parish church, which has for some months past been undergoing repair and restoration, has been re-opened. The ceiling, gallery at the west end, and huge square and oblong pews have been removed, and the pews are replaced by open seats of stained deal. The old roof of oak timber, which is of the fifteenth century, is now seen, and has been repaired. The belfry arch, of Kentish rag stone, has been raised 4 feet, and through it the lower interior of the tower is opened to the church. The chancel floor has been raised, and a new altar supplied. This improvement made it necessary to shorten the several lights of the triple lancet window at the east end. The chancel is paved with Stafford tiles, the foot-pace being of encaustic tiles. On pulling down the plaster which surmounted the piers of the chancel arch, it was found necessary to construct a new arch, and one has been erected of carved oak. In making these changes several bits of Norman stonework were discovered, which prove that a Norman church once stood in the place of the present Perpendicular structure.

Funtington.—The parish church, which has been much enlarged and beautified, has now been re-opened. The old church consisted of a nave, with extremely narrow aisles, being little more than passages, all covered by a continuous span roof. The walls of the aisles were about 6 feet high, dark, and crowded by ill-arranged seats. The nave now has two wide aisles, each covered by a span roof. The south arcade, of early tran-

sitional work, has been rebuilt, and the Early English arcade restored where necessary. A new chancel arch, with corbelled shafts, clustered pillars, and arches, has also been constructed. The nave and aisle roofs are newly framed with arched braces, moulded purlins, &c. of stained deal. The nave and aisles are paved with tiles of various colours, laid in geometrical devices, the chancel being distinguished by encaustic tiles. The chancel is fitted up with side-seats and open book-fronts. The pulpit is an open rostrum of Caen stone. The church throughout is fitted with low deal benches, stained, the old high pews or pews having been swept away. The font is after a design from Mr. Ferrey, the architect. A painted-glass window on the south side of the chancel, was put in by Miss Douglas, to the memory of two sisters; and another is called "The children's window," because to the children of the parochial school was entrusted the collection of money to defray its cost. There are two lancet windows in the north aisle of the chancel, filled in with painted glass. It is to be hoped that ere long the present meagre east window will be replaced by one more in harmony with the rest of the chancel. The repairs and restorations of the church have cost about 2,000*l.* The church now contains sittings for about five hundred persons, mostly free. The contractor was Mr. Chincock, builder; and the architect, Mr. Ferrey, of London.

Feovil.—The church restorations are making progress. "The clustered piers," says the *Dorset Chronicle*, "have been carefully cleaned, and look fresh and new. The pure ebony of the grand black beams of the roof is relieved with rich gilding in the knots and bosses; and stained glass (figures) has been sparingly introduced in the chancel windows, the effect being somewhat puny. But why was not the opportunity embraced—to clear away those horrible abortions of galleries—divided into sections, and accessible (?) by cork-screw stairs of the most cruel aspect—destroying the proportions and appearance of an interior of the largest size, and all the ground-plan extension of a proper ecclesiastical fabric, nave, side aisles, transepts, and chancel? Also, when will an effort be made to effect the exterior restoration?"

Rampisham.—The restoration of Rampisham Church has been completed. The works consist of the rebuilding of the nave and aisles, slightly enlarging them by extension westwards, and the restoring of the tower. The nave and aisles are now rebuilt in a style corresponding with the chancel, and the whole has been re-seated. Some remains of carving were discovered in the west wall of the tower; in the south aisle, the remains of twelve niches; and at the angle a canopied niche, with some figures so mutilated as to be beyond restoration. This niche, with its canopy, has been restored as nearly as possible to its original form, and a statuette of St. Michael placed therein. This, with the other carving in the church, is by Mr. R. L. Boulton, of Birmingham. The works have been executed by Mr. Wellspring, of Dorchester, from the plans and under the supervision of Mr. J. Hicks, the architect, also of Dorchester.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting of this society on Wednesday, March 2nd, Mr. J. H. Parker, President, in the chair, the Secretary read a paper upon "A Visit to Iona, with some Account of its History." Mr. Lightfoot stated the interest with which Iona ought to be regarded, not only by those who are members of the Scottish Episcopal Church, but also by those who, although living under the pale of another church, yet owed no little to her sister in the north. Iona was the chief seat of the horrors of Druidism previously to the coming of St. Columba, about A.D. 564, who established a college on the island for the education and general improvement of the people. The religious establishment of Iona was altogether broken up by the act of the Scottish Parliament passed in 1560, which abolished religious houses. The island then passed into the hands of the McLeans, but is now the property of the Duke of Argyll. The second part of the paper contained a description of the ruins of Iona as at present existing. The most ancient of these is, without doubt, St. Oran's Chapel, which contains features of early Norman of a very rude character, as well as the remains of some later work inserted within the building. The chapel of the nursery is the next in age, and although built almost entirely in the Norman style, is clearly much later than St. Oran's Chapel. The cathedral, however, is by far the most important building on the island, and bears marks of

two distinct periods, the tower and nave being Norman work of the same date as the minnery, while the work east of the tower, as well as the transepts, are of a later kind. The crosses are a great feature in Iona, and bear a considerable resemblance to those in Ireland—especially those at Monasterboice, in the county of Louth. Iona is said at one time to have possessed as many as 300; but most of them were destroyed by Puritan zeal, and now only some three or four remain.

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

AN evening meeting of this institution was held on the 8th instant, at their rooms, Upper Sackville street.

After the usual transaction of business, Mr. Binton B. Stoney, assistant engineer to the Ballast Office, read a paper on the Newcastle coal experiment, made for the purpose of deciding to whom should be awarded the 3000. prize, which had been offered by the Steam Collieries Association of Newcastle-upon-Tyne, for the best method of preventing the emission of smoke from multibular boilers.

Mr. Stoney described his method of smoke prevention, which, with three others, was selected for trial out of 163 competing plans, and proceeded to institute a comparison between it and the plan published by the judges as their own.

A discussion ensued, in which the president, Mr. M. B. Mullins; the secretary, Mr. Alexander Tate, and Messrs. Anderson and Hill, took part.

UNDERGROUND ROOMS AND CELLARS UNDER THE BUILDING ACT.

ALL that the district surveyor can do is to see that these are constructed agreeably with the provisions of the Act. As to how they may be eventually occupied or used is clearly a matter of police regulation, the same as overcrowding.

If he "*knowingly*" suffers such rooms to be slept in (and how in the world can he know it unless specially informed of it), he is, of course, bound to report it;—it is, in fact, the province of an inspector of nuisances. A district surveyor has, in fact, as in the case of ruinous buildings, to report them when brought under his notice.

The Board of Works of the different parishes should serve notices on all the owners and occupiers of houses in their districts, giving them the particulars as to what rooms are to be considered habitable.

A DISTRICT SURVEYOR.

*** The Board of Works have called upon the district surveyors to do what is obviously out of their power, as we will take an opportunity to show.

THEATRES.

Gloucester.—The theatre of this city has now been re-opened. The walls of the principal building, says the local *Chronicle* in describing the re-edification, have been almost entirely rebuilt, and a new roof provided. The pit has been considerably lowered, and carried under the boxes, and the whole interior completely refitted. The house will contain about 1,000 persons. The dimensions are—

Total length, about	Ft. In.
Distance from front of boxes to proscenium	84 0
Width of building	37 9
Width of stage	34 2
Length of stage	31 2
Length of pit	35 3
Width of pit	34 9
Width of proscenium	21 6
Height of ditto	22 0
Interior height from floor to ceiling	35 0

A cupola, upwards of 80 feet in height, with a lofty dome visible from the surrounding locality, has been erected over the centre of the house, and it materially assists the ventilation. Every part of the house has its due supply of fresh air, and a proper warmth will always be kept up. The gas-fittings, including a large sunlight under the dome, many cut-glass chandeliers round the house, the footlights and other means of stage illumination, have been supplied by Messrs. Hinckley, of London. Behind the scenes the arrangements are as complete as in front. The interior decorations were carried out under Mr. Beverley's superintendence. The boxes, upper and lower, are fronted by panels of ogee contour, coloured with a ground-work of pearly gray, on which is an arabesque pattern of pure white set off with gold: between the boxes are terminal caryatides, in white and gold, and the centre of each box is adorned by a gold and white medallion, flanked by flying Cupids bearing wreaths of roses. The cornices are picked out in white and gold, and floral decorations are carried along the front of the gallery. In the ceiling the sun-light is surrounded by festoons of roses looped up by ribbons, and medallions, and alternated with groups of Cupids. The proscenium

is Corinthian, picked out in white and gold, surmounted by a cornice and carved ceiling, and finished by figures in the spandrels, of Spring and Autumn, with the Royal Arms in the centre, on a field of azure dotted with golden stars. The stage doors are of arabesque design, and bear the arms of the city, and the stage boxes above them are decorated with crimson curtains and panels of crimson cloth bearing lyres.

Leeds.—The want of a theatre in this thriving and important town is much felt, and a project has been started, in consequence of a hint from the Prince Consort, which it is to be hoped will shortly supply the deficiency in a manner worthy of the public spirit which has already distinguished Leeds in respect to its buildings.

THE STAGE AND MUSIC.

Royal English Opera, Covent-garden.—Bailie's "*Satanella*," with a very occasional change to the "*Rose of Castile*" "*Maritana*," and now, in the last week "*Martha*," has carried Miss Pyne and Mr. Harrison successfully through the season. The music, containing much that is fresh and new, has increased in popularity, and will be as world-famous presently as that of the same composer's "*Bohemian Girl*." We sincerely hope that the result has been satisfactory to the lessees in a pecuniary point of view.

Adelphi Theatre.—The re-appearance of Mr. and Mrs. Wigan, and Mr. Wright, and the revival of Mr. Planché's elegant extravaganza, "*The Invisible Prince*," which runs gaily, though written more than a dozen years ago, have filled the new theatre nightly, and tested the accommodation it affords to the public. Mr. Wigan, well appreciated as an actor and a gentleman, has been playing with small evidence of his long illness, in "*Still Water Runs Deep*;" and on Thursday appeared as the old Frenchman in "*First Night*," one of his most perfect assumptions of character. A number of Mr. Webster's friends have invited him to a dinner at the Freemasons' Tavern, on Wednesday, the 23rd instant, to congratulate him on the completion of his theatre; and it has been proposed to present to him on that occasion, some memorial of the event. Mr. Willott (at the Freemasons' Tavern) is acting as honorary secretary.

The Handel Commemoration at the Crystal Palace. The directors have issued their prospectus, and shown what the intended arrangements are. The number of performers will fall little short of 4,000. The size of the orchestra may be appreciated when it is said that its width is exactly double the diameter of the dome of St. Paul's Cathedral. The days fixed are Monday, June 20th; Wednesday, June 22nd; and Friday, June 24th. We understand that more than 3,000 tickets have already been taken.

WALMGATE BAR, YORK.

WE are glad to observe that in reference to the threatened demolition of the Walmgate Bar barican, at York, to which we deemed it proper to draw attention, the Lincoln Architectural Society have addressed the Mayor of York on the subject, confirmatory of what we said as to it, and deprecating the destruction of such a relic. It is to be hoped the York corporation will not persist in their threatened purpose.

Sir.—The public are much indebted to your correspondent, who states that the barican at Walmgate, York, is in danger of destruction. I trust, however, it is not too late to prevent such a valuable and beautiful relic being destroyed; and may I entreat that the efforts of yourself and the Architectural Institutes may be directed to preserve it. I feel confident, from what the city of York have already done, that if a proper appeal be made to the Lord Mayor, the corporation, and inhabitants, they will, as I have respectfully suggested in a communication to his lordship, construct a wide and lofty carriage-way at the side of the bar, and thus obviate the necessity of removing the barican. I enclose a tracing of a rough sketch sent with his lordship's note.

Allow me also to remark, that not only is it the most perfect and valuable barican we have, but that it is, I believe, the only one remaining in our town fortifications. The work to which your correspondent alludes at Southampton Bar is not a barican, but a northern extension, circa temp. Edward IV. made to the Norman square gate tower, between the flanking round towers. The site usually occupied by a barican was here for centuries treated ornamentally with lions sejant on pedestals, and there is no record of any such outlook.

PHILIP BRANFON.

METROPOLITAN MAIN DRAINAGE.

IN reference to a question in the House of Commons, as to what steps had been taken by this Board with regard to the main drainage of the metropolis, particularly on the south side of the river, Mr. Tite replied;—on the south side of the river there were two systems of sewers, the high level and the low level. The high level began at Clapham, and ended at Deptford; and its length, including branches, would be ten miles. The estimate was 203,000*l.* and the contracts for the work would be advertised for this week. The low level began at Putney, and ended also at the same point at Deptford. With its branches it would be eleven miles in length, and the contracts for it would be advertised in June. The two systems united at Deptford Creek, where the contents of the low-level sewer would be pumped into the high-level sewer, and then proceed together for seven miles and a half to Erith, where it would flow into the estuary of the Thames. On the north, the City side of the Thames, there were three systems of sewers. One of these was contracted for. It began at Hampstead, and ran seven miles and a half to a point on the river Lea. It was contracted for at 152,000*l.* The work had been commenced about a month, and would be finished within the twelve months. The second sewer on the north was the middle-level sewer. That would begin at Kilburn, and join the first at the same point on the river Lea. Its length was about ten miles, and it would be contracted for towards the end of the year. There was a third system of sewers on the north side which was involved in some considerable time. But the whole three would unite at the river Lea, where the water in the low levels would be pumped into the high level, and be carried in one conduit to Barking-creek, a distance of four miles. One portion of the works, therefore, had already commenced; another would begin in a few months; and the whole would be completed within four years. With respect to the money required, the entire 3,000,000*l.* had been lent by the Bank at 3 per cent.; and it was with pleasure he added that, inasmuch as it was to be paid off in forty years by a 3*d.* toll, the product of that toll for the present year had been 10,000*l.* more than the estimate. It was estimated that the toll would produce 140,000*l.* a year. In reality, it had produced 150,000*l.*; and if that increase continued there was every expectation that the debt of 3,000,000*l.* thus created and expended would be paid off in thirty, instead of forty, years.

THE BLACKBURN UNION COMPETITION.

Sir.—Do, pray, continue to raise your powerful voice against the absurd offers (I cannot call them temptations) made to architects to induce them to send in plans in competition.

I am not greatly in favour of competitions generally, but my apathy arises from the decisions arrived at even in competitions where a liberal spirit is evinced. However, in common justice to the profession at large, that their labours may not be so monstrously undervalued (because, no doubt, most competitors are put forward with the view of obtaining valuable assistance, and, I trust, in but few instances with the absurd view of obtaining that assistance at less than half its real value), I ask you, Mr. Editor, to do all you can in the way of agitating the matter. You have already done much, and may be inclined to say competition will work its own cure. Yes; and so it may; but it will be long first,—not until public bodies, and indeed the public generally, are better acquainted with architecture and architects. The progress is at present lamentably slow; but every word uttered by you is read by thousands. You can do more towards placing architects in their proper position in one twelve months, by exposing the abuses to which they are subjected, and to which some of those who make use of the calling subject themselves by responding to almost any invitation, than can be effected in twelve years by letting the "disease work its own cure." Further, I hold that such exhibitions would have a much more valuable result than even that of putting competitions on a fair and level footing;—they would materially benefit the professional man in his private practice.

The competition to which I wish to call your attention is that for the Blackburn Union, in the erection of which it is intended to expend the sum of 12,000*l.* In this competition it is proposed to give a bonus of 50*l.* for the plans, elevations, and sections, with a general specification and an estimate in detail. Then, at the conclusion of the instructions,

it states that "The Guardians reserve to themselves the right to appoint an architect to superintend the erection of the proposed new Workhouse," and, of course, to make the working drawings and specifications, which, it strikes me forcibly, the Guardians scarcely know will be required, possibly thinking that the drawings, specifications and detail estimate (which, mark the words, "A bonus of fifty pounds will be given for" &c.) will be all that is required. Certainly, this is a very tempting bait; but it is one which, in my opinion, will not even bring a nibble from those practitioners who have nothing to do: even they may find several ways of making better use of their time. Surely, the Guardians of Blackburn must think 50*l*. a large sum of money for an architect to handle, all at once, and a temptation not to be withstood, by needy men, and perhaps of no great ability, as they also say per instructions,—"The Guardians do not bind themselves to accept any of the plans which may be submitted;" from which one would infer, that they expected a considerable influx of designs from the class before referred to, but were doubtful whether any would be received from good and competent men; that is to say, whether the temptation of a cool fifty would be sufficient. Now such offers as these must, I trust, generally arise from ignorance, first, as to the usual remuneration of an architect; secondly, as to the amount of thought, study, and labour required to produce the design; and, thirdly, as to the real value of the services of a competent man. If not from ignorance in the matter, how can a class of men who probably have large mercantile transactions, think that any good can result to them as a body from such a paltry offer? The chance of obtaining the work to carry out would be infinitely preferable to any premium, but with only the uncertainty of such a premium as this, what must be the inevitable result? Disappointment, expense, and trouble to no purpose. There is one construction that might be put upon their offer, but I by no means attribute it to them: I only say it may be so construed: it is, that they may have some architect in view to carry out the design, and if he should also send in a design himself, he will be sure to succeed in all respects, because the offer is not sufficiently tempting for any man of ability to compete for who is not well known to the guardians.

AGITATOR.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

ATTACHED BUILDINGS.—At the Greenwick Court, Mr. James Corbett, barrister-at-law, appeared at an adjourned summons before Mr. Traill, issued at the instance of Mr. C. R. Badger, the district surveyor, to show cause why he refused to pay a sum of 10*l*. due as fee for surveying an office built by him, and adjoining a house in his occupation.

The defendant disputed the legality of the claim made, on the ground that he had included, in his notice of intention to erect the main building, the office in question (a water-closet), and which had been built with and at the same time as the main building was run up, and that therefore no fee beyond that charged for the entire building, and which had been paid, could be claimed.

Mr. Badger contended that, whether the office in question was erected at the same time as the main building or not, he was entitled to an additional fee as an attached building. He, however, denied that the office was so built, or that he had received notice of the intention of the defendant to construct such office in the notice given for the building.

The defendant said he had drawn up the notice himself, and was particular in including the water-closet, and even dust-bin, in order to try the question as to whether such extra fees could be claimed, when erected with and forming part of the main building.

Mr. Traill said the production of the notice given would at once settle the question in his mind.

Mr. Badger said the notice had been mislaid by him, but he was confident, from notes he held in his hand, that the water-closet was not built with the main building.

Mr. Traill said he could not admit as evidence in support of the summons anything but the notice itself, except witnesses as to fact. On a previous occasion workmen in the employ of the defendant, and who had been engaged on the work, proved that the water-closet had been run up with the main building to the height required; and as the defendant's evidence was now admissible as to what particulars he had given in the notice for the main building, he could be sworn to the fact, the notice itself not being produced by the surveyor.

The defendant having been sworn, and deposed to including the water-closet in question in the original notice.

Mr. Traill dismissed the summons.

FEES.—At the Southwark Court, Mr. J. B. Clifford, builder of Blackfriars-road, was summoned before Mr. Burcham, by direction of Messrs. Lablache and Co., one of the Commissioners of Police, under the New Metropolitan Building Act, to show cause why he neglected to pay the sum of 3*l*. alleged to be due from him for surveying three houses, Nos. 17, 23, and 25, Warwick street, Borough, which were in September last pronounced by one of the surveyors in the employ of the Commissioners of Police to be dangerous structures.

Mr. Caiger, the district surveyor, said he surveyed these buildings on Sept. 17, and found them in a dilapidated state. There was a fourth house in Little Union-street, which was pulled down and rebuilt, and the defendant was summoned for the surveyor's expenses for that

in October, and he paid 30*s*. according to the order, at the time. He was served with the usual notices for the surveyor's fees for the other three houses, which he refused and neglected to pay, consequently the Commissioners of Police directed the present proceedings to be taken.

Mr. Burcham: Were all the four houses in one block of buildings?

Mr. Caiger: Yes, sir.

Mr. Clifford: They all adjoin each other, and when the Commissioners complained to me about their dilapidated state, I wrote word to them that they were coming down directly, and would be rebuilt in a substantial manner. I did so, and would have done so before, only I have a refractory tenant in one.

Mr. Burcham: I think, as all the houses were surveyed at the same time, and were in one block, and belonged to the same owner, that only one fee ought to be demanded. I think a single fee quite sufficient. This has been paid, and the summonses are dismissed.

Books Received.

VARIORUM.

A HANDY and useful little volume has been published by Knight and Co. of Fleet-street, under the title of "Private Bill Legislation," by S. B. Bristowe, barrister-at-law. It comprises the steps required to be taken by promoters or opponents of private bills before and after their presentation to Parliament, and the standing orders of both Houses; with Notes, showing their origin and subsequent alterations to the present time. Such a work, in these days, when railway and many other kinds of public speculations and works have made private bills so plentiful in Parliament, only requires to be made known in the proper quarters to insure an extensive patronage. Members of either House of Parliament, themselves, must find such a book of considerable use as an addition to their private libraries. The work is provided with a good index for ready reference.—An excellent paper, by Mr. E. J. Reed, read before the Society of Arts, "On the Modifications which the Ships of the Royal Navy have undergone during the present Century in respect to dimensions, form, means of propulsion, and power of attack and defence," has been published in the form of a pamphlet (Robertson, Brooman, and Co. *Mechanics' Magazine* Office), together with an accompanying "Letter on the Steam Navy of France," by the same author, reprinted from the *Times* newspaper. Mr. Reed was formerly connected with her Majesty's Dockyard at Portsmouth, and he is even now editor of the ship-building division of the *Mechanics' Magazine*.—We may here notice the publication of another pamphlet on naval matters, namely, on a "Proposed Life Poop, and Round or Deck Houses, for the preservation of life and property at sea, in cases of fire, foundering, and shipwreck; by James M'Kenzie." The poop cabins and round houses are proposed to be made of iron, and capable of being temporarily made water and even air tight, with ventilators to open and shut, so as to provide against even the turning of them, upside down.—"A Contribution to the Sanitary History of the British Army during the late War" (Harrison and Sons, St. Martin's-lane), contains most important matter to which we must return. It echoes our call to extend sanitary measures to the army in India. "That subject must soon occupy the earnest attention of her Majesty's Government, and upon the spirit with which it is taken up will the ultimate fate of our Indian empire to a great extent depend."

Miscellaneous.

THAMES TUNNEL.—16,919 passengers passed through in the week ending 12th March, and paid 70*l*. 12*s*. 5*d*.

ARCHITECTURAL ASSOCIATION.—CLASS OF DESIGN.—On March 11th, Mr. S. C. Rogers in the chair, the sketches for the evening were for a "Staircase to a Public Building;" the half-hour's sketch, a "President's Chair." The secretary gave notice that the class would meet as usual on the 25th instant, the advertisement in our last week's number referring only to the ordinary meetings of the Association.

"CANTON" IN LEICESTER-SQUARE.—Mr. Burford, in conjunction with Mr. Henry Selous, has painted an interesting view of the City of Canton, as it appeared after the assault of December, 1857. Showing, as it does, the pig-styes in which the Chinese dwell, and the absence of anything like noble structures, or fine art, it will serve still further to dispel the illusions that have long been indulged in respecting these trumpet barbarians. The effect of distance, looking towards the "Gate of Eternal Purity" (?), is charmingly given. What are wanted are life and bustle—a near view of one of those streets described as "crowded to an excess really astonishing," but which in the view can scarcely be recognized as streets at all.

MEDAL OF AN ANTIQUARY.—Mr. Taylor, the medallist, of Little Queen-street, Holborn, has published a medal of Mr. Charles Roach Smith. The portrait is from a life-size bas-relief, by Signor Fontani. The reverse represents the walls of Dax (the Roman Aqua Tarbellica), which Mr. Roach Smith, as our readers will remember, visited this summer, and so far exerted himself to save that the French societies and the Government have stopped the levelling of them, which was commenced. These walls are remarkable as they encircle the town, and are entirely Roman work. Mr. C. R. Smith has stronger claims as an antiquary than this interference, and we are not quite certain that the reverse is a wise one, so far as foreigners are concerned. Higher ground might have been taken.

THE LATE MR. KENNETH LOFTUS.—The decease of this gentleman merits a place in our columns. The public are indebted to Mr. Loftus for some of the Chaldean remains which have of late years been excavated and brought to this country, and for a volume on Chaldaea and Susiana which we noticed at some length in a leading article a few years since. Mr. Loftus was a native of Rye, in Sussex, but had lived much in Newcastle-upon-Tyne. At the period of his death he held an appointment on the staff of the Geological Survey of India, and, indeed, he was a geologist of some experience, as well as an archaeologist.

LECTURE AT WREXHAM SCHOOL OF ART.—A lecture on art was delivered by Mr. Davidson, at the meeting for the distribution of prizes in the Branch School of Art at Wrexham. The lecturer traced painting from its dawn in this country through various periods, describing the influence manners and customs had on the fine arts; and how these, in turn, tended to elevate and refine. Names of artists in the earliest periods were scarcely to be met with, but the style and lives of such as stood out with any degree of brilliancy were given; and as the lecturer approached the later dates, of course he was able to enter more into detail, and gave the lives of Holbein, Kneller, Gibbons, Lely, Wren, Thornhill, Hogarth, and Wilson, with anecdotes. The lecture ended with the formation of the Royal Academy; and, in conclusion, the lecturer spoke of the prospects of art in this country, stating that through the agency of the Science and Art Department above 55,000 persons were now being taught the different branches of art in this country,—not distinctly for the purpose of making them painters and sculptors, any more than it was intended to make poets out of all taught reading and arithmetic, but to elevate and refine the taste of the nation, and to teach them to appreciate the beautiful forms surrounding them; to give to the people men who could design their pottery, their carpets, and their dresses upon the proper principles of art, and to elevate the masses, so that the manufacturers producing a beautiful article should find appreciators and purchasers. Of this number, he (Mr. D.) had at that moment 1,891 under tuition, according to the government returns.

ENGINEERS AND LOCAL BOARDS.—Sir: Noticing some remarks relative to the small salary offered for a surveyor, &c. by the town council (in their official capacity as local board of health) of Bideford, in your impression of the 12th inst. induces me to observe, that so long as the profession countenance such unprincipled methods of transacting their practice entirely by the aid of pupils, instead of employing some of the numerous assistants seeking engagements, so long will corporations—like Bideford—find surveyors ready to act as inspectors of nuisances for a mere nominal stipend. And shall it be said they act wrongly in accepting such appointments, who, having served their articles, are unable to obtain engagements other than such as is the above? In too many instances, this is the only means whereby beginners are enabled to make a start in their profession; and filling these offices satisfactorily often recommends, and frequently procures, them more remunerative appointments. It is a better salary than half the assistants at present engaged by the profession are receiving. Although inspector of nuisances is foreign to the profession, doubtless many efficient surveyors will grasp such opportunities as these rather than remain unemployed. The remedy rests with the profession. Let it engage a proper staff of assistants at remunerative salaries, in lieu of or in addition to pupils, and there will be less need to blame this or that corporation. Corporations and local boards of health will then find it advantageous to put forth more liberal inducements, and keep their surveyorships more distinct than at present.

E. R. H. C.

ENLARGEMENT OF THE "MECHANICS' MAGAZINE."—This excellent journal has of late been issued in an enlarged form, as an illustrated newspaper, and with various other improvements in detail. There is not a more practical or useful scientific journal in existence than the "Mechanics' Magazine."

THE PROGRESS OF PHOTOGRAPHY.—Amongst some of the wonders of this art, the application of it for the purpose of producing the figure of the moon affords matter for speculation. Shall we, say some, by the aid of microscopes of power, be able to increase the photographs of this luminary to such an extent as to enable us to have a knowledge of the inhabitants, vegetation, and configuration of that distant world? Perhaps re-photographing the magnified image, and again magnifying, would carry us on? It is not many years since the present speed of our railway engines, the electric telegraph, and some of the other results of modern science, seemed as visionary as the possibility of a minute inspection of the moon seems at this day.

BALCONIES UNDER THE LIVERPOOL BUILDING ACT.—In a case brought before Mr. Mansfield, at the Liverpool Police Court, in which Mr. Pictou was the architect, and the defendant, Mr. R. Wells, the builder, employed in the erection of a large building on the site of the old George Hotel, and the Local Health Committee the plaintiffs, the magistrate expressed an opinion that according to the Liverpool Building Act, section 67, a balcony above the street pavement is an obstruction, and as such removable; but as notice by the district surveyor is prescribed, whereas the town clerk had given the requisite notice, the application was refused. It was intimated that the Health Committee intended carrying the matter to a higher court.

THE LATE LORD A. FITZCLARENCE.—A mural monument has been erected in Coxwold Church to the memory of the late Rear-Admiral Lord Adolphus Fitzclarence. It is placed on the south side of the chancel, opposite the one recently erected to the memory of the late Sir George Wombwell, Bart. and to which it bears great similarity in its design. It is in the Early Decorated style of architecture, sculptured in Caen stone, and placed upon a ground of polished black marble. It consists of a moulded base, supported by foliated bosses, with pinnacles on each side of the tablet, which is surmounted by an arch, bearing in relief the arms of the deceased. Messrs. Skelton and Son, of York, are the sculptors.

SPRING-GARDENS.—An opportunity now offers, which should not be missed, that of widening the entrance to St. James's park from Spring-gardens. On the west side of the present discreditable entrance, is Berkeley House (about to come down), and on the east side, are premises occupied for an attorney's office. An entrance might be made as wide as Spring-gardens, by a trifling sacrifice, on each side the passage, which would have the additional advantage of opening to view, from Trafalgar-square, a considerable space of St. James's park, and its ornamental timber.—OBSERVER.

THE METAL TRADES.—Although the metal market has not lately been so brisk as could have been wished, remarks the *Mining Journal*, the position and prospects of the metal trade cannot be regarded as unsatisfactory. Copper has been dealt in to a moderate extent at former prices. Looking at the export of copper, it will be seen that we have not only regained the position we occupied at the commencement of 1857, but, if we except the unclassified descriptions of copper, where there is a decrease of 40 tons, can show a considerable increase in the amount of business done, the exports in the first month of the last three years having been—

	1857.	1858.	1859.
Foreign copper	1,980 ..	703 ..	3,479
English tough cast and tile ..	6,448 ..	3,343 ..	17,751
Sheets, nails, and yellow metal ..	24,068 ..	19,575 ..	24,792
Unclassified	3,631 ..	4,936 ..	2,591
Brass of all descriptions	1,347 ..	2,154 ..	2,962

Thus, in English unwrought copper, the export has been nearly threefold; in foreign copper, re-exported, the increase has been nearly forty per cent.; and the export of brass has doubled. The exports of lead during the entire years 1856, 1857, and 1858, were respectively 23,134 tons, 22,088 tons, 19,521 tons, thus showing a gradual and considerable decrease; whilst the exports for the month of January in each of the past three years have been;—In 1857, 1,231 tons; in 1858, 810 tons; in 1859, 1,372 tons; showing a very satisfactory increase, even compared with January, 1857. With the prospects for copper, tin, and lead, the iron trade by no means depressed, and the coal trade in a healthy state, few can fail to conclude that mining must prosper.

THE GREEK CHURCH OF RUSSIA IN PARIS.—The first stone of the new Russian Church in Paris has been laid. A temporary altar was erected, on which were placed the book of the Gospels, a gold cross ornamented with precious stones, and a large silver vase filled with water. The ceremony commenced by a benediction being given to the water, in the same manner as is done every year on the Neva at St. Petersburg, after which the water was sprinkled on the foundation-stone of the building.

THE DRAINAGE OF STROUD.—A special meeting of the Board of Health was held on Tuesday week for the purpose of letting the contracts for the drainage of the town. There were eight tenders received, the lowest being from Mr. Joseph Hayes, of Gloucester, for 4,650*l*. His tender was therefore accepted, subject to his sureties (which are for 500*l*, each) being approved of, and his giving certain explanations.

EXETER DIOCESAN ARCHITECTURAL SOCIETY.—The annual meeting of this society has just been held, under the presidency of Archdeacon Bartholomew. After the election of officers, a paper was read by Mr. P. C. Delagarde, upon the degenerate state of the architecture of High-street, Exeter. This paper was followed by a description of the "Buildings on St. Michael's Mount, Cornwall," by Mr. St. Aubyn, who reviewed the curious pile in its monastic, military, and modern mansion character. The paper was illustrated by numerous plans and sketches, aided by some water-colour sketches by Mr. Gendall.

THE ELECTRIC LIGHT.—A new process is spoken of as having been successfully tried, and, it is said, patented. Mercury, or other fluid or semi-fluid body, is used as one or more of the electrodes. A tube within the lamp is so arranged that it shall remain full, or nearly so, during waste or consumption by the light. The supply of the fluid electrode is regulated by a tap. Other improvements, such as the condensation of vapour on the lamp, by causing a constant flow of water over the glass, the prevention of vapours rising from the waste fluid, by the introduction of a stream of water into the waste-pipe, &c. are also mentioned. The use of mercury as an electrode is of old date.

OVERCROWDING IN CLERKENWELL.—The owner of eight houses in Adelaide-square, Lower-road, Islington, was summoned last week before Mr. Corrie, at the instance of the parish authorities under the Nuisances Removal Act for England, of 1855, for permitting overcrowding, dangerous to health, in his houses. From the evidence it appeared that in one of the houses there were twenty-eight persons; in another, twenty-two, and so on; each room being more or less occupied, one by five adults and eight children, another by two adults and four children, and so on. The owner said he had 100*l*. of ground-rent to pay the ground landlord, and that he must get in his rents somehow. He had only got 2*l*. 10*s*. all last week, and the property had nearly ruined him. The mortality in Adelaide-square was said to be about thirty-eight in 1,000, which Mr. Corrie remarked to be about that of Naples. The mortality of the other parts of the parish was about nineteen or twenty in the 1,000. The magistrate made an order for four as the maximum in each room, and the defendant to pay the costs in each case, and a penalty of 20*s*. unless he complied with the order. The defendant applied for a warrant to turn the lodgers out; which, however, was not granted; but whether this implies that he is to take the law into his own hands, and expel the surplus population without a warrant, does not appear. He is clearly bound to expel them somehow.

BUILDING AT BIRNAM.—Extensive additions to the Birnam Hotel, says the *Perth Journal*, are being carried on by the contractors, Messrs. McIntosh and Robertson. Mr. Jackson's villa on Torwood is now almost ready for occupancy. Messrs. McLean and Son's house is progressing. Mrs. Pullar's new villa is in a very forward state. Contracts have been entered into with Mr. Ross for the erection of his villa at Heath-park. The designs for this have been furnished by Mr. Heiton, Perth. A number more buildings are on the tapis. Mr. Robertson is about to commence his buildings in Strathbraan, the site of which will command extensive views of the Vale of Athole and surrounding scenery. The Little Dundeld side of the Tay, with its buildings, towers, and spires, bids fair to make true, ere long, the prophetic stanza attributed to Thomas the Rhymer:—

Little Dundeld was a town
When Muckle Dundeld was nane;
An' Little Dundeld will be a town
When Muckle Dundeld has gane.

DUNDY TOWER STRUCK BY LIGHTNING.—During a recent heavy storm the electric force struck the tower of Dundry, and did considerable damage. A large stone, about a foot square, was carried a distance of fifty yards over the houses, falling in an adjoining garden. The lightning would seem, from appearances, to have entered somewhere at the base of the church, and to have passed up through the tower. The lead on the roof of the church is likewise injured, and some of the windows are broken. It will cost, it is said, between 300*l*. and 400*l*. to repair the damage.

IPSWICH BOROUGH GAOL WORKS.—Mr. Humphreys writes us touching these works, referred to in our paper of the 5th instant (p. 180). He says there were no bricks that came under his scrutiny that "would have crumbled to powder" excepting that they had been submitted to powerful mechanical crushing forces. "A few of this exceptional class might, from accident or design, have been delivered into the works, but such was certainly not the character of the bulk, and I had no scruple in reporting accordingly. From the *Ipswich Journal* of the 19th ult. I learn that the whole subject was amply discussed, and with some vivacity, and that the council accepted my report." This we have said before, but will not refuse to repeat it.

GLASGOW ARCHEOLOGICAL SOCIETY.—The usual monthly meeting of this society was held on the 7th instant. Mr. J. T. Roched in the chair. The secretary having laid upon the table several donations, a paper was read by Dr. John Scouler on the "Early Ethnology of Ireland," in which, with the aid of philological and monumental antiquities, he traced the various migrations of the early Celtic inhabitants of Ireland and Scotland. Mr. Honeyman (hon. sec.) exhibited a drawing of a very ancient piece of sculpture, which, he believed, formed part of a chapel which formerly stood near Kelburn in Ayrshire. He also exhibited a sketch of a sculptured coffin-lid, of a very early date, from a churchyard near Campbelltown, in Kintyre. The stone is 6 feet 3 inches long by 2 feet broad, having the corners at the foot cut off with a chamfer of 7 inches. A well-proportioned effigy of what seems to be a female, and measures only 3 feet 10 inches long, is carved, not as in later monuments, on the slab, but in a sunk panel, which, following the form of the figure, terminates over the head in a pointed trefoil. The spandril at either side are adorned with the peculiar interlacing foliage, in low relief, characteristic of some of the more ancient crosses of Ireland and Scotland. There are no traces of an inscription.

FORM OF GAS FITTINGS.—It is, I am convinced, an enormous practice of many of the manufacturers of gas-lighting apparatus, to bestow much labour or expense in the conspicuous ornamentation of the chandelier, brackets, or other application of the chandelier, for carrying the gas-burner; as long as we were obliged to use such weighty articles as candles, or vessels of oil, which required conspicuous articles for their support, it was desirable to make these ornamental, or at least to endeavour that they should not be unsightly; but with gas it is far otherwise, we have next to no weight to support, and should endeavour, as far as possible, to imitate the celestial luminaries, so that nothing but the light should be visible: an approach to this is done in the case of the sun-light, and some few other forms of gas-light, but it appears as yet to be but little considered, that to give light for other purposes than to illuminate or to attract attention to the workmanship of the chandelier or other apparatus, which should, if possible, be entirely unseen, or as little conspicuous as possible.

Oxford.

W. C. THEVELYAN.

TENDERS.

For alterations at Shoreditch Workhouse. Mr. Jones, architect—

Clements	£390 0 0
Tolley and Son	325 0 0
Hocken	318 0 0
Wheen	317 0 0
Newman and Mann	295 0 0
Borster	240 0 0
R. Mann	245 0 0
Smith	240 0 0
J. C. Ramsey	214 0 0
Johnson	190 0 0

For a detached cottage at Buckhurst-hill, Essex. Mr. J. H. Rowley, architect:—

Wood	£487 0 0
Carter	295 0 0
Rivett	292 0 0
Miles	291 0 0
Darby	250 0 0
Child (accepted)	222 0 0
Fowell (withdrawn)	215 0 0

The Builder.

VOL. XVII.—No. 842.

The New Westminster Bridge—Progress of the Works.



Y recent inspection of the works of the new Westminster Bridge, we are enabled to offer some account of their state of progress; and we avail ourselves of the opportunity to give more precise information as to the intended character of the superstructure of the bridge, than we could supply whilst features of the design appeared open to alteration. A portion of the arch-ribs, equal to one-fourth of the length of the first-commenced, or southern division of the bridge, indeed, has been standing, provisionally put together, for some years, on a site near

to Battersea Park; but up to August, 1857, when a committee of the House of Commons reported favourably both as to the site and the intended gradients, it seemed possible that much of this preparatory work, as well as that of the foundations, would be rendered useless. Now, however, everything structural will be completed according to the design as it was in 1856, when the subject was prominently before us, or with the slight alterations assented to by the engineer; whilst the decorative character, to which we must revert shortly, will be varied only as regards some of the details of the upper part of the piers.

It will be recollected that there were several distinct questions (some of which had been often before discussed and apparently settled), raised in 1856,—that is to say, those of the site, of the sufficiency of the foundations, and of the headway for the river traffic; besides certain questions as to possibility of unequal settlement from the construction of the bridge in two halves, as to cost of removal of the old bridge, and as to the construction of the iron ribs—chiefly whether the means were adequate to meeting the effects of expansion and contraction in the metal. Our readers are already acquainted, by description and illustrations,* with the exact nature of the system adopted in the foundations. It was peculiarly well adapted to the circumstances of the case; since coffer-dams, whilst costly, would have been all but impossible (several of the new piers occurring in the present water-way of arches of the old bridge) without danger and complete obstruction to the navigation, or the alternative of removing the old bridge, or else of constructing each pier of the new bridge separately—thus prolonging the time of construction by many years. Our readers are also aware of our view of the economic importance of the system here,—and that adopted at Rochester, lately carried out under difficult circumstances at the Saltash bridge,—as regards the subject of "Metropolitan Bridge-communications." The system used at the new Westminster Bridge is the same as that adopted at the Chelsea Suspension-bridge, save that in the latter case the iron casing appears above water, and at the commencement of the works, may have been, used on the principle of the caisson,—wherein the joints being made water-tight, if necessary, the concrete would be deposited on the dried bed of the river, instead of being shot into the water through funnels.

The alterations made in the foundations of the new bridge, pursuant to the decision of

1857, were referred to by us at the time. The heads of the timber piles, which would have been, during some minutes, twice a day, two or three inches above the *estimated* level of low-water,—inclosed, however, in the concrete and the iron and granite casing, and covered by stone and brickwork—have now been cut down to 18 inches below the low-water line, along with the granite casing. This involved the refixing of the iron ties of the upper level; but it allowed the substitution of a projecting course of granite, forming a continuous capping, for the iron caps which were to have been put on to the iron cylinder piles subsequent to the fixing of the bolts to them. The granite capping-course would be better for resistance, supposing that a barge could at low-water strike the pier. The expense of the cutting and the refixing ties was estimated in July, 1857, at 1,950*l.* for the piers then advanced so far as to require the alteration, the work in replacement amounting to 922*l.* more, whilst the expense of the arrangement in the other piers and abutments throughout the entire bridge was estimated at 4,437*l.*

In the course of the protracted discussion on the question of the foundations, the report by Captain Burstall upon the state of the river appeared, wherein it was apprehended that the deepening of the river-bed would continue,—an impression which, if adopted, would have given colour to the objections brought by some authorities to the value of the external concrete banking, as tending in any way to prevent ultimate undermining of the pier, or otherwise as protective of the concrete and gravel within the casing, supposed to be susceptible of disintegration along the line where the granite slabs bedded upon the heads of the sheeting-piles. The engineer, however, attaching a certain value to Captain Burstall's soundings in 1856, held that the conclusions that the river had deepened by scour, 10 to 14 feet, had been arrived at without consideration of certain circumstances, such as the extent of the dredging, which could not be estimated altogether at less than 1,500,000 cubic yards during the previous fourteen years. Any increased depth in 1856 thus was viewed as irregular and exceptional, and not as solely the result of action going on, and which would continue at the rate deduced from the supposed appearances after twenty-three years, since the removal of London Bridge. Nevertheless, Mr. Page had, in 1853, "contemplated a gradual increasing depth in the upper part of the river above London Bridge, the result of the increasing action of the tide, which in the course of ages would assimilate the above-bridge sections in a ratio to those of 'the pool,' and eventually, unless stopped by measures for protecting the bridges, give a depth of 29 feet below Trinity datum in the mid-channel at Westminster Bridge;" and, consistently with this deduction, he had then provided for dredging under the middle arches to a depth of 30 feet below Trinity datum. In 1857, he states that nothing had arisen since the date of his first design, to induce him to make further provision against scour than that (as indicated in the sections at page 466 in our volume for 1856, already referred to) against undermining, namely, the driving the iron sheet-piling down to 38 feet below Trinity datum, and so leaving 15 feet of ground above the feet of the piles.

In regard to the manner of building the two halves of the bridge so as to avoid unequal settlement, or to obviate consequences should such settlement ensue, it seems first to have been considered that no settlement could occur—with the piles in both cases properly driven; but it is explained by the letter and diagram (in the Parliamentary Paper, 6th August, 1857), that the first rib of the second half of the bridge would be placed bearing upon a portion of the foundations constructed along with the first half of the bridge; and that, should there be settlement and any difference between that of the two parts, the arched ribs would not be ruptured or altered, except slightly, in their levels relatively, as the wrought-iron bearers transversely between the ribs, carrying the roadway-plates, would accommodate themselves to the irregularity, the bolt-holes being slotted or elongated to allow for the rise or fall of the bearers, and the rest-

ing of the latter on the flange of the rib that had settled.

The question of headway has been decided as according to the original design, or conformably with the views of Sir Charles Barry, and those of the importance of easy gradients for the land traffic as of first consideration. It was shown that the greatest number of vessels requiring to lower masts, passed under the arch No. 10 from the Middlesex side of the old bridge, or one which had a headway of 20 feet above Trinity datum. The headway in the new bridge will be 20 feet for the centre arch. The arch nearest corresponding with No. 10, or the sixth of the new bridge, will have a headway somewhat less than 20 feet; but from the smaller size of the arches in the old bridge, and their form, the difference in favour of the arch of the old bridge extends over a very small portion of its span in the centre; and the new bridge, therefore, even at the corresponding part of its length, may be considered as not materially different to the old, in facility afforded to the river traffic.

In regard to the expansion, it was estimated that by a difference of sixty degrees of temperature, the rise of the outer rib of the centre arch would not be more than half an inch above the mean line, and the fall half an inch below it—the rise and fall being very gradual; and this alteration even could, the engineer supposes, be reduced by coating the external arches with a non-conductor. Mr. Stephenson had suggested cutting part of the angle-iron of the upper flange of the wrought-iron ribs and inserting a wedge, to allow of the more easy rise of the arch. Part of the expansion will be met by rising of the arch and by compression of the material; but the state of Southwark Bridge, where the pavement of the footpaths is distorted through the want of any provision, and the precarious state of Sunderland Bridge in 1856, spoken of by Mr. Stephenson, show what might ensue from omission of special precautions. The longitudinal girders are to have vulcanized India-rubber inserted in the joints. It is worthy of note that the ribs of Southwark Bridge were originally intended to be secured by bolts to the masonry; and that these it was found necessary to have removed during the execution of the works.

The works of the southern half of the bridge are not so far advanced as we were led in 1856 and 1857, to believe they would be at this period after the resumption of the undertaking; but progress has been made otherwise. None of the iron ribs of the arches were fixed two or three days ago; but the piers and abutments of the first or southern half the bridge, are quite ready for them; and wherever the piers of the old bridge do not interfere, the piling and work of the foundations for the second portion of the bridge are in progress. The sixth pier, indeed, is quite complete, throughout the full width of the bridge, up to the springing; whilst No. 2 pier in the second half, is in course of completion, below low-water line, or thereabouts. The chief work of the foundations is interrupted at each rise of the tide, but perhaps as much by the rush of the water as other reasons, so far as regards that part of the work in which the diving-bell and diving-dress are employed. Careful observation now shows there is not the apprehended settlement.

We have presumed in the foregoing portion of our notice, that our previous accounts and illustrations had made our readers acquainted, as well with the general design of the superstructure of the bridge, as with the detailed character of the works in the foundations; but it may be well here to state the principal dimensions and particulars of the new bridge as it will be when finished, and as contrasted with the old bridge, in order that our further account of the structure, and the whole present design, may be understood. The new bridge will have seven main arches, whilst the old bridge has thirteen. Blackfriars, Vauxhall, and Waterloo Bridges have each nine arches for the water-way: London Bridge has five, and Southwark Bridge three. The thirteen main arches of the Westminster Bridge, however, comprise a greater length of roadway,

* See our volume for 1856.

or breadth of waterway, than the seven arches of the new bridge, by the space of one arch of the old bridge on the Surrey side, and two arches on the Middlesex side—the latter arches being included in the space of projection of the Houses of Parliament. There are three culverts, or flood-arches, on the Surrey side, in the new bridge, besides the main arches; and there is one such arch at each end in the old bridge, which is thus sometimes spoken of as having fifteen arches. The piers themselves in the new bridge, besides being further apart, will otherwise offer less obstruction than those of the old bridge; they diminish 3 feet or more between low-water and high-water line, being 10 feet to 10 feet 6 inches in the latter case (or at the springing, actually 2 feet above Trinity datum); whilst the semi-circular arches of the old bridge, springing from a line about low-water level, reach a dimension of 20 to 25 feet across at the corresponding level. We have alluded to the disadvantages resulting from the semi-circular form, as regards the craft passing at high-water. The arches of the new bridge will be elliptical, very flat at the crown, and remarkable for the small space (2 feet 10 inches) between the soffit in the centre, and the surface of the roadway. This peculiarity (though seen in arches of less span) seems to have led originally to the idea of constructing three of the ribs differently to the others, and carrying them above the surface of the roadway, so that the centre rib would have formed part of an arrangement for the separation, still contemplated, of the carriage-traffic, as the others would of a separation of each footway from the roadway. The ordinary ribs were to have been constructed as now, of cast-iron and wrought-and-riveted iron, the latter material in the crown of the arch. The large cast-iron ribs were abandoned, and ordinary ribs substituted, chiefly from the belief that difference in the expansion of the ribs would be injurious to the structure. Space was gained by the change, especially important in the first half of the bridge when opened; and a deduction of 1,008 ft. was involved. At high water, 2 feet of the piers only will be visible; but 18 feet fall of the tide will show the granite sailing-course of the foundations, and the displayed plinth. Above this, the sides of the piers curve inwards to the level of springing of the arch, at which point, on a second broad splay or weathering, is a semi-octagonal pedestal, with base and cornice mouldings, which is to be surmounted by the gas-standards.

The whole length comprised by the seven arches and intermediate piers, to be terminated at each end by a pier of the same character, is, measuring from the centre of the one pier to the centre of the other, 820 feet. Adding to that, the length on the Surrey side, comprising the three flood-arches, and terminated, probably by a pedestal similar to one of those of the main piers, the length is 915 feet 2 inches. This is all that can properly speaking be considered to belong to the bridge. The approach on the Middlesex side, north of the Houses of Parliament, would add 205 feet, making 1,120 feet 2 inches, which the Surrey approach may increase to 1,160 feet. The old bridge, exclusive of the flood-arches, measures 1,002 feet 2 inches in length; but adding 79 feet 3 inches at each end, the space occupied by those arches, the whole length is 1,160 feet 8 inches. The breadth of the new bridge, inclusive of the parapets, will be 85 feet. Of this, about 40 feet may be first completed, affording a roadway of 30 feet, and footpaths of 9 feet, on each side, all temporarily, and the footpath on the north side overhanging on cantilevers. The north face of the whole bridge, completed, will be on the line of that of the present bridge. The old bridge measures 44 feet, as contrasted with the 85 feet. It was about 42 feet in the clear of the balustrades—now removed. The new bridge will be 84 feet 2 inches in the clear width. The width of roadway will be 53 feet 6 inches, divided into two ways by a curb, to separate the traffic, and there will, moreover, be a tramway next each footpath. The two footpaths will be 15 feet 4 inches each. The old bridge has a roadway of 25 feet 6 inches, and footpaths of 8 feet 3 inches. The piers of the new bridge, on plan, at high-water level, measure, from cutwater to cutwater, 106 feet 3 inches, and are 110 feet 6 inches on the same line, in the foundations. The breadth of the piers at the springing of the arch varies from 10 feet 6 in. to 10 feet, as stated. The span of the centre arch will be 120 feet; that of the next arch each side, 115 feet; that of the next, 104 feet 6 inches; and that of each end arch, 94 feet 9 inches. The largest arch of the old bridge has a span of 74 feet 6 inches; and the smallest arch of the thirteen, one of 63 feet 3½ inches. The headway of

the centre arch of the new bridge, 20 feet, as mentioned, above Trinity datum, is lower by 5 feet than that of the old bridge; and the height of the surface of the roadway above the same level is 22 feet 10 inches in the former case as compared with 33½ feet in the latter. Thus there will be a difference of the greatest importance in winter time, between the gradients on the one bridge and the other. The gradient of the Middlesex approach will be 1 in 57, and that of the Surrey approach, 1 in 54, whilst to the centre of the bridge, we believe, the gradients will pass from 1 in 75 to 1 in 362. The old bridge, at the ends, is 1 in 22 or 23. Streets of London which have any such gradients are avoided in winter, and Mr. Stephenson mentions that Telford, when laying out the Holyhead road, regarded the limit of a "trotting-hill" for a stage-coach and horses as 1 in 32. The gradient to the present bridge originally was 1 in 15. Blackfriars-bridge is 1 in 24 or 25; but was originally 1 in 16. Vauxhall-bridge is 1 in 35, according to Mr. Walker. The approach to Waterloo Bridge, on the Surrey side, is 1 in 31. Southwark Bridge is very defective, the gradient on the Middlesex side being 1 in 22. For the sake of comparison, it may be stated that Charing-cross, from Craig's-court to King Charles's statue, a length of about 230 feet, is 1 in 27; the West Strand—Craven-street to Hungerford-market, for 100 feet, 1 in 34; Waterloo-place—Pall-mall to Charles-street, 330 feet, 1 in 38; and Regent-street—from Piccadilly to the County Fire Office, and Conduit-street, above Mill-street, each 1 in 42. The heights of the arches each side the centre, of the new bridge, above high-water mark, will be 19 feet 3½ inches, 17 feet 7½ inches, and 16 feet.

Each arch is formed of fifteen ribs, besides those of the ornamental facing, placed about 5 feet 2 inches apart,—except those under the footpaths, three on each side, where the distances may be over 7 feet 6 inches. Those ribs are formed as before mentioned. The wrought-and-riveted-iron portion in the centre arch, is 52 feet 9 inches long (out of the 120 feet span), and 2 feet 4 inches in depth, and is of 1½-inch metal; in the end arches, the similar portion is 42 feet 3 inches long, and 22 inches deep. The portion in cast iron, in the centre arch, next each pier, is of the same thickness of metal; and measures 3 feet 9 inches at the haunch, or iron skew-back,—which latter portion, as we may call it, of the rib, spreads out to 5 feet 3 inches, where it is bedded upon an horizontal plate, and also butts against the next arch,—except in the case of the shore abutments, where the bedding surface is inclined, as an ordinary stone skew-back, and where the thrust is resisted by brick counterforts carried on stone landings and piles. The cast portion of the rib is in six pieces in the centre arch; the wrought portion, of course, has a much greater number. The section is the common I form. The fifteen ribs are strutted by transverse braces. For the flooring, partly carried by spandril castings, cross bearers, 2 feet 9 inches to 3 feet apart, are framed with longitudinal girders, four-sided forming, from end to end of the bridge, four-sided spaces on which are to be fitted the Mallet's wrought-iron buckled plates as used in the Chelsea Bridge,—the paving being probably concrete and granite. The cast iron used in the whole bridge may amount to 4,200 tons; and the wrought iron to 1,370 tons,—each rib, spandril, and bed-plate being about 34 tons, or about 5 tons of wrought iron, and 22 tons of cast iron, besides 4 tons of cast iron in the bed-plates. The granite is chiefly from the Chesham quarry. There will be 165,000 cubic feet of it with other stone, 45,700 cubic feet of timber, 21,000 yards of brickwork in Portland cement, and 30,000 of concrete. Messrs. Cochrane have the contract for the iron-work. The foundations have been put in by workmen paid by the Commissioners of Works, under Mr. Page's immediate direction. This system was adopted under the idea that not only would time be saved, but considerable expense; since a contractor, new to the work, would feel obliged to estimate a large amount for contingencies. Whichever way the result in outlay, the precedent and experience will be not unimportant in future estimation of advantages of the contract system.

Of the decorative design, in details, we are sorry not to be able to speak so favourably as we should desire. The general characteristics of the superstructure, such as the great width, the lowness, and the easy gradients, the proportions of the piers to the arches, and the curvature of the latter, wherein the chief merits of the work consist, are in accordance with the design adopted by the late Sir William Molesworth; but Sir Charles Barry has repudiated "all responsibility in

respect of the questionable taste of the details." Some opinion may be formed of these from a full-sized model of half of the centre-arch, which has been erected on the Surrey side, near the end of the bridge, and from one of the pedestals, which is executed in granite. The latter is at best, common-place; and the arch has a spandril filled in with foliated circles (the larger one, with double cusping, being intended to receive a shield), which in the proportions of the foils and the mitreing of the tracery, might be deemed open to criticism at this time when Gothic detail is so much in vogue, and perfect delineation of it is generally demanded. How far these slight shortcomings would be observable in the executed work, or from a distance, we can hardly say. The parapet, including a range of trefoiled perforations, may be more successful in effect. But we hope it is not too late to reconsider any of the details, so that every part may equal the arches in the character these particular and prominent features appear likely to possess, and the whole may prove to be deserving of the praise, which the bridge has received as probably the best in decorative design, of the bridges of the metropolis.

Mr. Page claims to be affording an example not only of a system of construction as to foundations, which economically secures great durability, and extraordinary lightness, as compared with the system adopted in the other bridges, but he points to the works which he has constructed, or is constructing, as costing generally, far less per square foot of surface, than the other bridges.

It seems that much erroneous supposition has prevailed as to the reason of the failure of the old bridge; the common notion being that the foundations were first laid, and the piers carried up, for a timber superstructure, and that the design being afterwards changed, the piers were widened, so that the foundations were made to receive what they had not been designed to bear. This idea, indeed, receives apparent corroboration from what may now be seen in the piers on the south side of the bridge, where the projections have been cut away so as to expose the interior rubble work and masonry. A small pier with its impost is actually built up in, or has been widened by, the masonry of the subsequent arches, springing from a lower level. There was, however, a design by Labeley, in May, 1738, described by himself, for a stone bridge with thirteen semicircular arches, and it is stated by the author of "Gephyralogia, an Historical Account of Bridges Ancient and Modern," that the piers were intended to be executed up to one foot above low water, and to serve for either a stone or a timber superstructure. Labeley himself says that "the very first orders" he had were, that he should "take the utmost care to lay the foundations of the piers, and to see that the stone piers themselves should be erected in such a solid manner, of such dimensions and with such precautions, as might make these piers capable of supporting at any time hereafter, the arches and the superstructure of a stone bridge" such as his design represented; and he subsequently describes small upper internal shafts of stone which were ordered, to serve for a timber bridge in the event of that character of structure being adopted. It is, therefore, clear that the failure in the old bridge was due to the want of due precautions or foresight in the construction of foundations for a stone bridge. The platforms of the piers, originally, indeed, below the river bed, are now in several cases above it; whilst the piers are kept up only by the sheet-piling, and other contrivances adopted at the enormous expense incurred for the maintenance of the structure,—83,097 l. between 1810 and 1838, 107,124 l. additional, to 1846, and a considerable amount since.

DECORATIONS, MATERIALS, AND PROCESSES AT THE ARCHITECTURAL EXHIBITION.

In returning to this part of the collection in the galleries in Conduit-street, we would add a few words to the notice given last week of Mr. Burgess's furniture. Mr. Burgess's skill is so considerable, that we cannot consent to allow him to get into what seems to us a wrong course without an endeavour to point it out. The work, and indeed the fancy, which there is in them is great, in the minutiae of surface enrichment, and especially in the pictorial subjects so freely introduced. But in general outline, are they elegant, or consistent even with the best principles of Gothic? which are opposed to that caricature of structures to be met with in the table or altar furniture, and in the illuminations of manuscripts, which last Mr. Burgess's designs thoroughly reproduce. The representation of tiled roofs, and tracery win-

dows, and the imitation of masonry in furniture, seem to us a mistake.

Mr. Kuckuck, we suppose, will learn nothing, and forget nothing,—see his "Prize Designs for the Decorations of the Princess's Theatre, executed September, 1858" (23). Compare with these the admirable exhibition of right principles which there is in the drawing-room and library-doors, that have been decorated by Messrs. Aspinwall and Monkhous (367 and 368). Not only do these specimens of work show how doors may be treated without resort to graining for the variation in effect which has afforded the best defence for the practice (shown, however, previously in some works of the Adams), but they evince perfect recognition of the right use of natural forms—conventionalizing them, without shadow, or attempt at relief, when on the flat surface; and treating them on pictorial principle only where in framework. The panels of these doors in themselves display some excellent qualities, especially in the manner in which the flowers and leaves are grouped, with a reference to Shelley's "Sensitive Plant." The mottoes also are well brought into play. The decorators have been assisted, in part of their design in each door, by Mr. A. Waterhouse, architect. In the library door, the decoration is motivated by the mottoes selected: thus, in conjunction with "Learn from the past," an attempt is made to indicate the spirit and character of Gothic art. And in the panel bearing as a motto "Use well the present," the endeavour is to express the desirability of reverting to Nature,—or the present.

At the end of the great gallery, where these doors are placed, will be found a number of cartoons for stained glass by Hardman, Clayton and Bell, Lavers and Barrard, and others. Those by Clayton and Bell are for windows now executing for St. Michael's Church, Cornhill, where Mr. Scott is cleverly turning the Italian of Wren into Italian Gothic. There is much refinement in the drawing of the cartoons. Messrs. Lavers and Barrard are making praiseworthy exertions to advance, and bid fair to do good service in their department.

In the opening or lobby which leads from this gallery to the North Gallery, the London Parquet Company have placed a number of specimens of their *waterproof* veneered panelling, by means of which they say they are able to panel and decorate in any style the dampest wall or ceiling immediately after it has been plastered or cemented. Whatever may be the ability of the veneer to resist damp, it must be much better to work upon a dry wall or ceiling than a wet one,—and means should of course be taken to obtain this whenever possible. Several of the specimens are very good.

Some of the contents of the North Gallery we have already named. Messrs. Hardman have there a case of Mediaeval metal-work, not better nor worse than what they have sent before, and therefore very excellent: a wrought-iron casket and small swing bracket are particularly so.

In connection with metal-work, we may mention that Messrs. Hart were too late in applying for a stand, and were unable to obtain it. On the opening night, however, they exhibited many good specimens of brass-work in the tea-room, besides some elaborate wrought-iron hinges and braces for the north door of the church of St. Mary Redcliff, at Bristol, prepared from the designs and the directions of Mr. Godwin. These hinges, which with the fastenings are to cost for the two doors 50*l.* are still on the premises.

Hobbs, Ashley, and Co. (No. 6), exhibit various locks, made by their patent steam machinery, by which they are able to produce good *common* locks (a thing much needed) at moderate prices. The interest excited by Mr. Hobbs's lock-picking achievements had the useful effect of directing attention to the improvement of locks generally. The firm have built a large manufactory in Islington, where steam and machinery do nearly everything. For a mortise-lock there are about thirty pieces required; and these, although made in thousands, all fit together at once, with the greatest precision; while, where a *difference* is required in order to give certainty, this is effected with equal certainty by an arrangement of machinery.

In connection with their locks are shown Messrs. Pugh and Co.'s furniture, to the merit of which we have before now directed attention.

Messrs. Botten's Closets and Valves (8); Howard's Regulating Valve (9); and some capital hydraulic brass work, by Messrs. Hayward, Tyler, and Co. are close by. Messrs. Henry Doulton and Co. (11) send some smoke and air flues, invert blocks, drain-pipes, and other articles, in stoneware of a good description. Cottam and

Co. have a gate of wrought and cast iron, 7 feet 6 inches by 3 feet 10 inches, and some grilles and railings, very creditable. The white moulded bricks of Fayle and Co. (15) present an excellent appearance, and deserve notice. These bricks have been used at the Middlesex Industrial School, Fetham.

No. 18, apparently omitted in the catalogue, is a carved marble chimney-piece by Messrs. Edwards. The acanthus-leaves of the centre are attenuated and poor, and the effect of the patera at the angles of the fire-place (pressed down in one corner, so as not to project before receding mouldings), is not pleasing; but the carving is exceedingly well executed, and shows that Messrs. Edwards are in a position to execute first-class work, if it be entrusted to them.

Messrs. Arrowsmith exhibit designs for their *solid* parquet floors, but none of the parqueterie itself. Of the capability of the work we have already spoken more than once.

Mr. William Potts has sent a chimney-piece and some other specimens of his combinations of bronze work with marble and wood. Mr. Potts has been working at this for several years, and has now opened a place in Lincoln's-inn-fields for the sale of his productions. He has obtained the aid of Mr. Jefferson as a modeller, and seems determined to produce good works. Some of the works that we have seen deserve high commendation. The special mention made of them at the Institute of Architects is referred to in another page.

Our review of the general exhibition we shall continue next week.

ON ARCHITECTURAL REFINEMENT.*

WHEN I AM requested to read a paper, the subject of which is left to my own choice, I am apt rather to take one which I wish to see fully and efficiently treated, than one which I feel competent to handle myself. It is, I assure you, in no presumptuous spirit that I approach, on the present occasion, a subject, the proper treatment of which demands a far higher amount of knowledge and power of discrimination than any to which I can lay claim. An essay upon architectural refinement would call for not merely a general acquaintance, but a close intimacy with every style of architecture which has prevailed; and an amount of study, the extent of which may be guessed at by the reader of Mr. Fergusson's handbook. Still, as even a superficial observer may be able sometimes to make suggestive remarks, I hope that the few hints I shall throw out in my present paper will not appear altogether useless or impertinent. I shall have to repeat much that has been said before, both by myself and others, but for this I make no apology, as the lecturer, like the architect, who is always aiming at something new and original, is pretty sure to bring forward a good deal that is worthless. We may safely take it for granted that no human art ever was, or ever will be, absolutely perfect,—that there will always be ample scope for improvement, new excellencies to be developed, and faults to be corrected. A high standard of perfection ought to be set before us for our attainment, and should it be reached, a still higher one must be contemplated. The work may occasionally be advanced by a great and decided step, but it is more usually by a slow and almost imperceptible process, the results of which must be taken at considerable intervals to become distinctly visible, that art makes its progress. And if the art be a living one, this process of refinement will always be taking place: there will always be an effort to attain such beauties as show thought, care, attention, and the exercise of sound judgment, and to clear away all that is calculated to offend a cultivated taste.

But you may ask, has not art frequently, may, universally declined under this process of refinement? Are we not to look for the best examples of a style at a period when its vigour has not been softened away by continued attempts at finish? when there still remain some roughnesses, which, so far from displeasing, give a certain point and character that might otherwise be missed. Undoubtedly this is very generally the case, and from several causes. One is, that a system which conduces to improvement up to a certain boundary, is made to pass it, and after that it becomes a debasement instead. For instance, the Doric of the Parthenon is a refinement on the Doric of Corinth, as being considerably lighter; but in temples of a later date, the process of lightening the style is continued, till its character of massive-

ness and dignity is altogether lost. This is the case in the smaller temple at Paestum, which serves as a foil to the magnificent temple of Neptune.

Another cause of decline is, that in the pursuit of some excellence of a lower order, we are apt to lose sight of those of a higher;—that while we are endeavouring to attain elegance, or classical correctness, we may be sacrificing power or sublimity. Not that these merits are in themselves incompatible with each other, but it may easily happen that the genius suited to the development of one is not calculated to attain the other.

Again, we may entertain a false notion as to the steps essential to refinement. We may consider *that* to be an improvement which is in fact a debasement, as the later Gothic architects did, when they introduced classical details among those of Mediaeval character, and thus struck a fatal blow at the style they were studying to advance. I might, if necessary, adduce many more instances of false refinement, or over-refinement, but it is needless to enlarge upon the subject, beyond noticing such examples as may occur in the course of our present considerations. But this risk of introducing false refinement offers no reason why we should suffer art to stand still, without making any effort towards its advancement: if we are content with inaction, we shall be sure to lose, without a chance of gaining anything: if we aim at progress, we shall probably gain something, even though by an unlucky step we may happen to incur some temporary loss.

When I speak of a refined style, I must be understood to mean one that not only bears the impress of past improvement, but one which is continually receiving fresh improvements, and which presents no obstacles, in the shape of radical and inherent defects, to an unlimited amount of improvement. A low phase of art may easily be advanced to a point beyond which it is impossible to proceed. In high art the impossibility consists not in any irremediable defect or insurmountable obstacle, but in the limited measure of power and genius on the part of him who approaches it. And a higher style of art may abound with faults, but they are not irremediable; and the skill and perseverance of the artist should be called into exercise to the uttermost to discover and apply the remedy. No true artist, whatever be his branch of art, will rest content without doing something towards its improvement, either in developing beauties or correcting faults: he will not think all is done which is required of him when he has learned to work according to certain received rules and precedents: he must try if he cannot refine upon them by studying, and, if possible, carrying out still further the principles which guided the great masters on whose authority they were laid down. Nor is he to spare the faults even of these. The works of men of the highest genius are often the fullest of faults. You will probably find enough and to spare in the productions of Michelangelo and Sir Christopher Wren. They had something else to do besides finding out the faults of the style they had chosen: they saw its capabilities and were intent on bringing out its excellencies, leaving to minds of a different cast the task of criticism and correction. Look at the manner in which they handled the style; the vigour and expression given it by the one, the grace and beauty attained by the other. There is a front of a house in Florence attributed to Michelangelo, and I can well believe, rightly. It is of small extent, and merely forms one of a continuous street. I do not remember that it had any features with which one is not perfectly familiar, and which we may not meet with a hundred times in any street possessing architectural pretensions; but still there is such an air of dignity in the composition, such an evident propriety in the arrangement of the parts, that I could not help being convinced at once of its excellence. It was clear that the architect had a perfect command of his style. The same thing, I remember, struck me in a house in Trent. I do not know by whom it was designed; but there were giants in those days. The prints of the church designed by Michelangelo for Florence give us the idea of a building of wonderful sublimity; unrivalled, except it be by Sir Christopher's more complex model of St. Paul's. These works, doubtless, have many faults; I mean real faults, not mere violations of conventional rules; yet their authors were among the greatest refiners of the style they adopted.

But persons who turn their attention to the discovery and detection of faults, to the reconciling of elements which have hitherto been brought together with too much appearance of incongruity, to the better arrangement of what

* Read by the Rev. J. L. Petit, at the Architectural Museum, on the 10th inst. as already mentioned; the paper was illustrated with a large number of drawings.

has been misplaced, and the clearing away of all that is essentially meagre, feeble, or unmeaning; persons, I say, who contribute to this result, must occupy a high position in the annals of art; nor can we say that they evince a less amount of talent, though it may be of a different nature than the discoverer of new beauties. Each has his work to do, and according to its efficiency, the style, and indeed the art of which it is a branch, requires new excellencies, and becomes capable of still more.

Mr. Fergusson most ably shows the process of refinement in the erection of cathedrals;—how the architects and builders took, as a general model, some one that had been previously completed, or advanced towards completion; yet, while they did not make any rash innovations, whether they could not surpass their model, either by bringing out new beauties, or carrying to a higher point those which it possessed, or remedying some defect. And hence it is that we can rarely visit a cathedral without finding that it has some peculiar excellence of its own.

The ancient Greek style is altogether one of refinement. Its constructive system is so simple that we can hardly speak of it as an invention. It must have prevailed from the earliest and rudest times. Nor were the Greeks likely to reject any refinements which other nations, as the Egyptians, may have introduced. They probably took up the art as they found it, considered what were its capabilities of advancement, and commenced their work of refinement accordingly; and to what a height they carried it we see in that unequalled work, the Parthenon of Athens, a building, of whose impressiveness no description, drawing, engraving, photograph, or model, can possibly convey the slightest idea. Study it by the help of these, and you will find it easy enough to compare Greek with Gothic, and settle it satisfactorily in your own minds that the one presents the perfection of mere earthly beauty, while the other embodies conceptions of heavenly sublimity. But such of you as have visited Athens (a visit very easily made), will, I think, confess that your emotions on entering the area of the Acropolis, when, having passed through the Propylæa, you command the full front of the Parthenon itself, are in some measure different from those you expected when you were studying the subject in cork or paper. I certainly never felt so powerfully impressed with a sense of the sublime by any work of art. And this sense is produced, not by mere size, for in mass it is inferior to cathedrals below the first rank; nor to richness of decoration, for its character is that of severe simplicity; nor to any picturesqueness or variety of outline, but to its exquisite refinement. You see at once that the master-minds of the age put forth their full power upon it: that they instinctively excluded, indeed, that they could not have tolerated, anything that was coarse, mean, or incongruous; that they aimed at bringing out the highest beauties of the art, but yet in such manner that they should appear to be kept back, as it were, by a kind of dignified reserve, instead of being obtruded ostentatiously on the spectator. I will explain what I mean. Setting aside those invisible curves which have been discovered by accurate measurement, and which are only perceptible from their correction of optical errors, the only apparently elaborate line in the whole elevation is in the echinus of the capital. A most beautiful curve it is, and you may depend upon it, exercised the hand, eye, and judgment of great architects. But observe with what modesty it is introduced—not positively shown, but only suggested to the spectator; for it can be really seen only in a section or elevation—a mode of viewing it which is never obtained. Now, if you estimate this piece of refinement at its true value, you will perceive that much of the practice of architects, chiefly in the Classical styles, is liable to criticism, namely, where they introduce curves which they intend as lines of beauty, obtrusively, on a large scale, in the most conspicuous parts, and so as materially to affect the outline of the building. I am sure those large curved buttresses which we so often see in churches of the revived Italian, are essentially wrong, both as wanting that firmness and decision which we look for in a buttress, and as parading ostentatiously a form of little value beyond its mere beauty. I cannot say that I like urns by way of pinnacles, nor balustrades in parapets, seen against the open sky, unless the roof is evidently used as a walk, and then they are in place. But if delicate and beautiful curves are introduced with reserve, both in regard to size and position, as in mouldings, in brackets supporting small weights, and especially in the lower parts of

cornices, so that the spectator is at some trouble to find them out, they give grace and character to the design. The very nature of refined beauty is, that it improves upon acquaintance,—that the first favourable impression is not only one that lasts, but one that becomes stronger and more vivid. The true artist and architect know this, and take care that those masses which at first sight appear merely to produce a general effect, shall, on closer examination, be found to contain beauties only to be discovered by the careful and attentive. In this they have Nature as an example, who keeps her choicest treasures for those who search after them the most carefully.

To return to the Greek style, and its great type—the Parthenon. Everybody knows that the columnar style is said to be derived from the primitive wooden hut, and in the Parthenon we see represented the features which would most probably occur in such structures. The round column is capped with a square tile or abacus, for the convenience of supporting the square beam, which is of sufficient length to cover the whole space between two columns. On this beam, or architrave, rest other beams, placed at small distances, and spanning the building, or the space between the wall and the colonnade, the projecting ends of which beams are seen at intervals between the architrave and the roof, for the support of which they form a framework. These in the Doric style are represented by the triglyphs, the open spaces being filled up by blocks of stone or marble, usually enriched by sculpture. The eaves of the roof, with such timbers as might be necessary for its further support, were represented by the cornice. But you will bear in mind that these elements of primitive architecture were never directly imitated or copied: that would have been a mere barbarism; they were just recognized, and the conventional manner in which they were represented became a source of graceful and appropriate ornament. And I believe the practice of these ancient refiners of art authorizes us to pronounce a maxim which, had it passed into a law, would have saved Classical architecture from many abominations. It is that we ought never to copy or imitate directly in one material, or system of construction, the forms and details which manifestly belong to another. If we want them, we must adapt them to our purpose by a refined conventional treatment. It cannot surely be right to build keystones, and large voussoirs, of brick, and this not as a sham, as when they are covered with stucco or plaster, but actually showing the brickwork. It cannot be consistent with true architectural principle to build straight horizontal arches, so imitating the beam or lintel of a single piece, when the slightest curvature would be sufficient to express the real construction, without causing the inconvenience which may arise from a more decided arch. In the brick houses of the last century I have always been most pleased with those in which the segmental window prevails, however nearly its arch may approach to the horizontal line. When the actual lintel is used, the straight horizontal line is in character. There are many ways of using brick in such manner as to secure a picturesque appearance, and a good play of light and shade; for instance, in those chimneys, the plan of which shows a number of salient and re-entering angles. Now, it has sometimes amused me to see this kind of chimney, evidently suggested by, and specially adapted to, the nature of the material, namely, brick, carefully copied in squared stone, a process which must have been somewhat troublesome and expensive considering the results obtained by it. There is a very simple and effective ornament in brick, which, at a cost not exceeding, I should suppose, that of placing the materials in plain layers, gives great richness to horizontal strings, and which seems to have been used as freely and commonly during the period of Byzantine architecture as it is in the present day. It consists of a series of bricks, set diagonally, so that the angles project beyond the surface of the wall, forming a sort of horizontal chevron course under a flat string. I am not aware that I have ever seen this ornament copied in stone, and I hope I never may; but it is far too good and effective to be altogether lost to the stonemason, and I am pretty sure I have seen it adopted, and adopted by refinement, in Roman work, the effect being given by a series of delicate grooves or flutings worked in the stone. The great error committed in Roman architecture appears to me to be not so much the attempt to combine and reconcile two different systems, the trabeal and arcuated, a problem involving in itself no insuperable difficulty, though its solution still calls for a high exercise of mental power on the part of the architect: the

error, I say, appears to be not this attempt so much as the too distinct pronunciation of Greek trabeal forms, in a system of arcuated construction. The Roman architect had, indeed, this excuse, that the Greek forms were so refined that he could not easily refine further upon them. Still he ought, in such parts of his structure as were purely arcuated, to have found some other means than by direct copyism, of expressing his recognition of them, and applying to his own purposes the principles on which they were grounded.

We will not yet quit the Parthenon. I have said, that in the state in which we now find it, it struck me as the most impressive building I had ever seen. But what is its present state?—I say nothing of the terrible ruin of the intermediate part, between the two fronts, the effect of an explosion at a time when this architectural marvel was used as a powder-magazine; for the view with which you must still suppose me to be wholly engrossed comprehends little more than the full front; just enough of the ruin beyond, to make you sure that the temple has been worthy of such a porch. What I now notice is, that scarce a vestige of sculpture remains in the mass of marble before us; and yet, as an architectural composition, it gives the idea of completeness. I believe that if no sculptor had touched with his chisel a block of the marble of which it is composed, the Parthenon would still be, as it is, an architectural triumph; and we know that it was fully enriched with the finest sculpture that any age has produced. That it was built with the view of being so enriched; that it was intended to give such sculpture the greatest possible dignity, and to exhibit it to the highest advantage; and also to receive from it the greatest amount of adornment. Had we seen it fully enriched with its sculptures, we should have thought them a necessary part of the fabric: seeing it without them, we feel no imperfection as resulting from their absence. I say this advisedly. Pastum has no sculpture, and does not want it; nor could I distinguish any tokens which would lead me to think that sculpture had been much employed in its decoration. *A fortiori*, the Parthenon appears complete without it: at least, my English eye did not miss it, whatever a Greek might have done. But, then, I must observe that the cornices and projections are much injured by time; and it is probable there was some difference in the arrangement of these, according to the intention of employing sculpture, or dispensing with it. I certainly noticed at Pastum a peculiar depth of shadow, and some curious forms produced by it, which did not strike me at Athens. Be this as it may, it is clear that the Doric style may be worked out in a high degree of perfection without the aid of sculpture, and yet admit, without compromising its own character of simplicity, sculptures of the highest order, on which also it confers dignity by the positions which it assigns them.

On examining the building closely, we find that its workmanship, in point of careful execution, is worthy of its fine material, the white marble from the neighbouring mountain of Pentelicon. In some of the columns it is scarcely possible to perceive the joints; and it is clear that the greatest nicety must have been employed to give, by those minute deflections from the straight line to which we have alluded, the exact effect they were intended to produce, without forcing them upon the eye. To obtain an accurate view of the front of a Greek temple, so as to enable us to point out the actual convergence of the columns, I suspect to be even beyond the power of photography, as whatever means might be adopted to correct the convergence of even the best instrument, would not prove sufficiently delicate to show with certainty those small deviations. I commissioned a photographer at Athens to execute a photograph for me of the front of Theseus's temple, hoping to have an exact elevation, and chose a spot as distant as possible consistent with distinctness, but he thought the picture would be too small, and so went nearer: the result was, of course, perfectly useless, as far as the purpose for which I wanted it was concerned; and the other would have been inconvenient, from its small size, and would still have had the same inaccuracy, though in a less degree. I should think there were very few buildings in any other style whose minutest niceties might not be sufficiently conveyed by an ordinary photograph.

Now, I believe it is the opinion of some admirers of Gothic, that it is a style which will not bear statuary of the highest order, nor workmanship beyond a certain degree of accuracy. If this charge be a just one, then the Gothic is a style that at least, in one direction, opposes a decided barrier to advancement, since good execution on

the part of the workman is unquestionably an excellence, and a design that will not bear it must be wanting in refinement. Still less can an architectural design be a refined one, if the sculpture employed to embellish it must of necessity be of a lower order than the highest which the age can produce. For my own part, I do not consider Gothic as chargeable with this incapacity to avail itself of the most careful work, or the highest types of art, or the most delicate materials. The sculpture we meet with in German specimens, and the fine work we find in those districts of Italy where white marble is used as a material, convince me that the contrary is the case. But I do believe that our own northern Gothic must undergo some modification, must admit something of the Classical element, I do not mean in detail, but in feeling and in principle, before it can receive the full advantage that high art, precious material, and accurate execution are calculated to bestow. Indeed, I have little doubt that the refinements needed by the Gothic would bring it nearer to the Classical, as those required by the Classical would bring it nearer to the Gothic.

I have noticed the great impressiveness of the Parthenon as not being the result of gigantic size. Other larger buildings are far less impressive, and, I may add, give a less idea of actual size. You would probably set down a Greek temple as having greater magnitude than is proved by measurement to belong to it. This effect is, of course, due to the observance of proportion. It appears to be an error to suppose that fine proportion always reduces apparent size. It is said to do so in St. Peter's; but if the proportions have this effect, then, instead of being good, they must be bad; for such a church ought not to appear smaller than it is. Externally, it does not lose in magnitude, if we look at it from the proper point, that is, any point which does not command the principal front. The real cause of the apparent diminution (internally) is to be looked for in the defects, not in the merits, of the structure. In the first place, the canopy over the altar is decidedly larger than such a composition ought to have been. Consequently, the part of the building in which it stands loses both in dignity and the appearance of magnitude. In the next place, colossal figures of angels are perched among the spandrels of the pier arches, which are thus brought nearer to the eye, and deprived of height. Where size is an excellence, fine proportion increases it: where it is the contrary, there fine proportion reduces it. A figure beneath the size of life is raised up to the natural standard: a colossal figure is brought down to it. The essence of architecture is greatness: those cannot, therefore, be good or refined proportions which tend to diminish apparent magnitude. Exaggerated proportion, or, in other words, disproportion, is sometimes adopted as a source of sublimity: one feature or dimension is magnified at the expense of another, and consequently assumes an aspect of grandeur; but in this case there is at least a possibility that the eye of the spectator may be caught by the deficiency instead of the redundancy.

My first impression on entering Seville Cathedral was that of disappointment; and though every succeeding visit more and more convinced me of the grandeur and beauty of this edifice, still the feeling was one of which I could never wholly divest myself. The cause I believe to be the disproportion between the pier arcade and the clerestory. The smallness of the latter caught my eye, and weakened the impression which otherwise would have been made by the piers, which, for height and mass, are, perhaps, the finest I have ever seen (though a little more decision in their mouldings would have improved them), and by the arches, which are extremely beautiful in their form. The spring of the vaulting is on the horizontal line running above the points of the tier arches. There is no triforium, but a small gallery, or rather band, of open work. The clerestory in each bay is a small pointed window, with mullions and tracery, very insignificant in point of size when compared with the fine clerestories of Northern Gothic cathedrals. Had this part of the elevation at all corresponded in size with that below, I can conceive nothing finer; but in such a case the actual height of the roof would, I believe, have exceeded that of any cathedral in Europe, and I am now speaking of the art of giving apparent height and size when the real magnitude is limited. The fault here, as at Milan, is the suggesting that further height would have been an object, which a window of tracery and mullions does. The proper clerestory window would have been a circle, and then no disproportion would have been felt. At Milan, though it may appear a paradox, the fault is less, because

the disproportion is greater; the clerestory is so small, that we scarcely notice it, except to regret that it was not omitted altogether. But though the architect may succeed in obtaining sublimity by means of some exaggerated proportion, surely that building is more refined where an equal degree of sublimity is attained by means of really good proportion. We will compare in this matter two of the finest cathedrals in France. Bourges has two aisles on each side of the main central one. This latter has the arrangement usual in large churches of that date, an arcade of pier arches, a triforium, and a fine clerestory, the roof, of course, being vaulted. The adjoining aisles have also the same arrangement, namely, pier arches, triforium, clerestory, and vaulted roof, which latter corresponds with the pier arches of the nave, and is as lofty as the main roof of many cathedrals. Hence, if the central nave were removed, and its adjoining aisles brought together and made to meet at the crown of their respective vaults, a goodly cathedral would still remain. From this you may judge of the amazing height of the principal piers; and, as the eye is not struck by any deficiency in the features above, the height of the whole building, actually very great, is magnified in appearance by the disproportion. It is as impressive an interior as can be imagined.

Now let us look at Rheims. Here everything is in harmony and proportion, nothing exaggerated. The piers, solid, massive, and simple, even to plainness, in their mouldings, are evidently kept down in their height, rather than drawn up to the full extent which might have been allowed them, for the arches they support are considerably stilted, and their points fall very much below the string on which the triforium rests. The triforium is a mere arcade, without those subdivided arches which are almost universal in French cathedrals,—consequently, it is brought well within compass, and occupies, without any appearance of being crushed, crowded, or curtailed in its proportions, but a small part of the whole elevation. This gives room for a large and magnificent clerestory, the windows of which are remarkable rather for the width than the number of their lights. Although the span of the roof, taken between opposite piers of the nave, is rather beyond than within the average, yet the effect of great height is more fully given than in any other building with which I am acquainted, notwithstanding that several actually exceed it in this dimension. I believe the cause of this is the care which the architect took that nothing should appear crowded or curtailed in the whole design, and that no one feature should appear to be sacrificed to another.

I have remarked, that in statuary fine proportion approximates the figure (in appearance) to the scale of nature; but you must not suppose that I mean, by fair proportion, an exact adherence to the proportions of nature. When a statue is of the natural size, and intended to be seen on or near the level of the eye, the natural proportions, I take it for granted, must be observed as strictly as possible; but I can well conceive that some deviation is necessary when the figure is either larger or smaller than life, and meant to be seen from below and at a distance. Such deviations are not to be looked upon as attempts to improve upon nature, but as refinements of art calculated to make the representation more complete and satisfactory.

The existence of a style so beautiful, so refined, and so nearly approaching to perfection as that of Greece, could not fail of exercising an influence upon the first styles which might develop themselves on the introduction of that new element—the arch. Nor could this element, on the other hand, fail of affecting, to its very foundations, the system of Greek architecture. That system was an embodiment of pure art: science had very little to do with it, beyond that which was necessary to effect the movement of large masses of material, and also, in putting them together, to ensure the appearance of a proper adaptation of weight to support; but here is an element introduced which is the production of hard, mechanical, practical science; practical, I say, in opposition to theoretical, for the real properties of the arch seem to evade any test of mathematical calculation. I suppose the earlier kind of arch, formed by a number of brackets, and exercising no lateral thrust, was considered barbarous after the invention of the true arch which requires abutments; and yet the equilibrium of the former, as being a combination of levers, can be provided for and calculated, without taking into consideration the aid of friction and cement; an assertion which cannot be made of the true arch, unless its

abutments be immovable. Friction must be taken into consideration in estimating the strength of the arch constructed of voussoirs, and therefore the calculation must be somewhat rough and vague, and experiment after all must be the real test.

Now, this arch, and its near relation—the dome—are so convenient for the spanning of large spaces, and are withal so productive of beauty, sublimity, and variety in composition, that not to admit them as leading and characteristic features, would be to cut off from architecture more than half of its capabilities; and yet the Roman could not easily give up the column and entablature, on the refinement of which the genius of a nation, the most sensitive in the perfection of beauty, and the most cultivated in taste had been exercised for centuries. Their task was to amalgamate the creations of high imaginative art with the result of hard, utilitarian, experimental science. If they did not altogether succeed in arriving at the true solution of the problem; if the style they struck out was not without faults and inconsistencies, still they have left us a great and noble style, one which has proved the origin of others of great excellence and interest, and which itself admits of the highest degree of refinement.

But we will consider some of its defects, with a view of inquiring whether they can be removed, without destroying its beauties or characteristic features.

I have already remarked, that it shows its recognition of the Greek column and entablature by too plain an imitation (in places where they are not constructively required), instead of by some less obvious representation, by which we might be reminded of them, without having them forced upon the eye. The engaged column, much as it is used both in ancient work and revived Italian, I look upon (in most cases) as the reverse of a refinement; for the beauty of a column depends much upon its insulation, and our being able to see its true proportion from every point of view. And there is generally some little awkwardness in the line of junction between the shaft and the surface to which it is annexed. Besides which the engaged column is liable to be cut by some horizontal string, that, for instance, from which rise the intervening arches,—an interruption which by no means improves the beauty of the composition. It occurs in most, or probably all, of the Roman amphitheatres, and is of constant recurrence in modern work. In the beautiful amphitheatre of Pola, in Istria, the horizontal string is interrupted by pilasters which are not deep enough for its whole projection: the outer mouldings of the string are consequently taken in profile: the effect, as may be supposed, is anything but good. The same occurs in some of the plainer arcades of the Coliseum, in Rome. The least objectionable range of engaged columns (to my eye) that I know is that in the large crescent of Bath. Here the intercolumniation is occupied by plain, square-headed windows, without any horizontal string or moulding; consequently the lines of the columns are unbroken, and their convexity forms a pleasing contrast with the concave surface of the front to which they belong.

I have noticed in some of the Spanish churches of revived Italian that the engaged column is attached to a projecting strip of masonry sufficiently deep to receive any mouldings which may fall into it. This may also be the case in some English and other examples. The effect is good, or at least an unpleasant effect is avoided.

I should say that broken pediments, and indeed pediments of all sorts, affixed to the wall, might be wholly swept away without inflicting an irreparable injury on Classic architecture. A large amount of graceful ornament may be given in bands and horizontal strings. The Corinthian cornice, as treated by the Romans, is eminently beautiful, and its study would suggest many modifications of that feature when its full development is inexpedient.

The Romans do not appear to have made use of the column as a direct support of the arch till quite at the decline of the style. The palace at Spalatro probably offers the earliest example now extant. This belongs to the end of the third century. The mouldings, though not positively bad, have entirely lost that clearness and precision which characterizes Roman mouldings of the best period. The arches spring from the capitals of Corinthian columns without the intervention of any entablature or substitute for it; but the capital itself is more spread out than we find it in colonnades,—a deviation from the original type which renders it much fitter for its purpose, and, therefore, deserves notice. This arrangement of arch and column, though rare in ancient Classical work,

is common in the revival, especially during its earlier period. The old cathedral of Cadiz, a building of no importance as regards size and decoration, struck me nevertheless as a remarkably pure specimen,—pure in consequence of its perfect plainness; but it might have borne much enrichment without becoming debase. The Corinthian order is fitter for the purpose than that here used, whether you call it Doric or Tuscan, on account of the support offered by the capital to the angles of the abacus and their superincumbent weight. In the Romanesque and Byzantine styles a thick abacus, often somewhat clumsy in its size and form, comes between the capital and spring of the arch. The proper adaptation and enrichment of the abacus is still a desideratum.*

INSTITUTE OF BRITISH ARCHITECTS. METAL DECORATIONS.

The ordinary general meeting of the members of this Society was held on Monday evening last, at No. 16, Grosvenor-street; Mr. Henry Ashton, vice-president, in the chair.

Professor Donaldson said he had the honour to introduce Mr. Schweyer, a young Russian artist, from St. Petersburg, who had been travelling in Italy to perfect himself in his profession, and had there been his son's travelling companion, through whom it was that he had the pleasure of making his acquaintance. Mr. Schweyer spoke English as well as any native of this country; as the meeting were aware, the Russians enjoyed a peculiar facility with respect to languages: he had come as an artist to this country, and he might mention that last Sunday he had had the pleasure of showing him over St. Paul's Cathedral, from the bottom to the top.

Mr. C. C. Nelson then announced the contributions, which included some photographs exhibiting the finished model for the figure of Honour, known as the Guir's Memorial, of which Mr. Bell was the sculptor, and some publications by Mr. H. Roberts, on the condition of the labouring classes, and the dwellings which they occupied, with suggestions for their reform.

Some specimens of Mr. Potts's metal decorations, entirely the production of English artists, and to which we have elsewhere drawn attention, were exhibited.

Mr. Digby Wyatt said he had promised Mr. Potts that he would say a word about these products, because he thought them to be of a highly meritorious character, and also because he believed them to be specimens of an art which should be encouraged in England. When they remembered the beautiful effects that had been produced in Italy and France by the great masters of those countries, in the adornment of monuments by bronzes, they must feel that in this country, where the manufacturing processes were developed to the highest extent, if they were to employ the mechanical process, of which they had now an example before them, it might prove a most efficient aid to architectural embellishment. Mr. Potts, who had been working for many years at Birmingham, on smaller subjects, met with an artist named Jefferson, possessing great talents, whom Mr. Potts was one of the first to recognize.

Mr. Jefferson had studied in the schools of design in Birmingham and elsewhere, and had at last arrived at great skill in modelling. Recollecting, as they could not fail to do, the gates of the Madeleine, at Paris, and remembering, also, that within a few years Alfred Stephens had designed some beautiful gates for the Museum of Economic Geology, which only required at that time that there should be some person spirited enough to see to their execution,—and also taking into account that at the present moment there was not a single specimen of bronze gates in this metropolis, they must feel that with the power to do it, as was lately shown, only the will was wanting to bring in an entirely new kind of architectural industry; and therefore he heartily wished Mr. Potts success.

Mr. Matthews said the art in question was certainly not to be found in England some fifty years ago; but lately he believed it had been in operation. An exhibition of the kind had been established to some extent, at the Crystal Palace, and a pair of gates had likewise been exhibited in connection with Messrs. Baily and Co. at Paris. The specimens at present before the meeting he regarded as very ingenious, and perhaps they might be considered as improvements; but Mr.

Wyatt, he believed, on consideration, would admit the facts which he had stated to be correct. He did not claim any credit for himself, but for those gentlemen with whom he was connected in producing them.

Mr. Wyatt was very happy to acknowledge the admirable character of the castings to which Mr. Matthews alluded, and which, with the exception of some of the smaller castings of the Coalbrookdale Company, were certainly the best in the Paris Exhibition. The great beauty of those gates, he remembered, was their perfection of fitting, the parts which were cast separate being planted on so that the joints were not seen. But it must be remembered that the present specimens were produced by an entirely different process, and one of much greater economy; because in this case, however elaborate the mould might be, in hollowing out there was no clogging or difficulty of that kind, for the copper deposited itself in the hollow mould; the electro-galvanic process being that which was adopted. The economy created by this means was so great, that for 1*l.* by this process a piece of work could be accomplished which would cost 4*l.* or 5*l.* by any other process, principally from the difficulty of making the cores.

Mr. C. C. Nelson thought that one great objection to bronzes of the kind proposed was the impossibility of detecting the thinness of them. There was a notorious example in Regent-street, where, in the case of the Cupids supporting the bronze lamps, the bronzing was a mere sham; you might put your finger under the toes of the figures, which, in fact, were no toes at all; for though they appeared to be solid, they were quite hollow underneath.

Mr. Wyatt said the best of the antique bronzes excelled in proportion to their thinness, and the difficulty now was that artists could not arrive at a proportionate thinness: it was the same way with works in silver.

Professor Donaldson said the bronzes at the Marquis of Ely's were so fine that they yielded to the pressure of the thumb.

Mr. Matthews said the bronzes appeared to be quite different, one being cast while the other was not; in one case the treatment was liberal, in the other it was purely mechanical. He wished that the old work which was seen at Hampton Court could be revived—the peculiar designs which were wrought in iron with a hammer, but it appeared now to be impossible to find workmen capable of executing these.

Mr. Bell said, in small figures produced by fire casting, it was advisable that they should be about the thickness of a penny-piece; but with respect to those which were electrolytically, they were of course much thinner. He wished to be informed as to the comparative durability of figures produced by the two processes?

Mr. Wyatt stated that about four years ago he executed a monument about 4 feet high, which was done by this galvanic plastic process; it had been exposed to the air during that period, and had stood perfectly well. The difference produced by the two processes appeared to be, that those effected by the galvanic-plastic process were harder on the surface, but otherwise more brittle; while those which were cast were generally more homogeneous in their texture. It should be understood that these beautiful works of Mr. Potts's were most carefully executed; they were not to be confounded in any way with the attempt which the French had made to obtain a deposit on common plaster, but which process had entirely failed, and had never been taken up commercially at all.

Mr. C. Smith said it was a mistake to call these productions bronzes, because the deposit was purely copper.

Professor Donaldson said he had an interesting letter to read in connection with a communication which he had the honour to make on a former occasion, respecting the award published by the Sardinian Government, in respect of the plans that had been submitted in competition. The letter was from Mr. Jones, one of the late firm of Jones and Barber. The substance of the letter was to the effect, that Mr. Jones having failed to obtain a prize at the hands of the Sardinian Government, owing to the fact of his non-compliance with the official regulations in making out the quantities, that executive now wish to state, that regarding his designs as of superior merit, and wishing to retain them in the country, they would be willing to purchase them from him, and invited him to fix a reasonable price.* He had seen this

official letter, so that there could be no doubt that the Sardinian Government had given to these gentlemen information that their designs were in every respect superior, and that it was anxious to obtain possession of them, of course paying them honourably and fairly for them. He considered it very honourable to England that prizes should thus be carried off; at the same time, that it should act as a warning to them, in all future competitions, to adhere strictly to the instructions given. Here were gentlemen who were first in point of ability, but who yet lost an honourable distinction by not observing accurately the directions which had been laid down.

The discussion on the subject of Metropolitan Improvements was then resumed. We shall report it in our next.

THE INSTITUTE OF ARCHITECTS AND THE ROYAL ACADEMY.

On Tuesday last the discussion on the desirability of taking steps in connection with the proposed national grant to the Royal Academy (reported in our last) was resumed. The prayer of the memorial, which had been drawn up by a member and was submitted for approval, was as follows:—

"The Royal Institute of British Architects are therefore emboldened to suggest, that, in justice to the great body of eminent artists of all classes of the arts of design, and for the further advantageous development of the fine arts of this country, the rules and statutes of the Royal Academy should be revised; its privileges and distinctions no longer invidiously restricted to so limited a number as forty; that the minimum number of Academicians, as professors of any one of the three great divisions of the fine arts, should not be kept so low as to deprive them of a proportionately influential voice in the direction of the affairs of the institution; and that means of study and other advantages should be ensured to architectural students, similar and equal to those enjoyed by the students in the other branches."

Messrs. Fowler, Mayhew, Papworth, Ashpitel, Brandon, Wyatt, Donaldson, Mylne, and others took part in the discussion, and after a long debate the matter was referred to the council for consideration.

THE SOCIETY OF PAINTERS IN WATER- COLOURS AND THE GOVERNMENT.

The Society of Painters in Water-colours have addressed a memorial to the Lords of the Treasury, with reference to the appropriation of a site at Burlington-gardens to the wants of the Royal Academy and of learned and scientific bodies, and earnestly appealing "to be allowed to participate in the grant, and to erect a gallery at their own cost."

The memorial points out that the "society was formed in consequence of the inability of the Royal Academy to foster water-colour art in its infancy; and although the Royal Academy has numbered amongst its members many of great eminence who have occasionally practised water-colour painting, yet those who spent only in water-colours are excluded from any participation in the honours of that institution."

Further, "that the successful progress of water-colour art is mainly, if not solely, attributable to its being pursued as a distinct school, and to its works being exhibited apart from all other kinds of art; and this independence they are most anxious to maintain."

And it urges that,—"Education in the Royal Academy is confined to the professional student; painters in water-colours are the chief instructors of the public."

The society would require but a moderate space, and are willing to pay, in ground-rent or otherwise, for the area so occupied.

The request has our warmest support: but it would be necessary, in the event of its being granted, to give full consideration to the claims of the New Society, and, perhaps, so to extend the body as to make it include the whole profession. Schools should also be established under its direction. The New Society have likewise memorialized the Government.

Some particulars in connection with the foundation of the "Old Water-colour Society" may interest our readers,—a society, which for upwards of half a century has been the means of affording pleasure to the community, and has mainly contributed to the progress of this department of British art.

The society was originated at the time the art of water-colour painting was establishing itself in public estimation, and it was found that there

* To be continued.

* Mr. Jefferson executed a bas-relief for the Art-Union of London, "The Entry of Wellington into Madrid," some years ago.

* This would seem to explain the difference between the information received by us as to the result of this competition, and which we published, and the actual award of the premiums.

was no proper accommodation for drawings in the rooms of the Royal Academy.

On the opening of the first English Water-colour Exhibition, in Brook-street, Grosvenor-square, the Academicians were amongst the first to throng the rooms, and patronage and public favour soon flowed in. The original projectors of the Society of Painters in Water-colours held their first meeting at the house of the late Mr. Samuel Shelley, in George-street, Hanover-square—a miniature-painter of celebrity, and a *protégé* of Sir Joshua Reynolds. The parties were—Messrs. Shelley, Hills, Wells, Varley, Glover, and Pyna. The outline of the plan being arranged and made known, some few names were added. Subsequent meetings were held at the residences of the above-named originators of the society, and ultimately it was determined to form a society, for the purpose of opening an annual exhibition of water-colour drawings executed exclusively by members.

The first exhibition was opened to the public on the 22nd of April, 1805, at the great room in Lower Brook-street, Grosvenor-square, which was built by Vander Gucht, an engraver, who, quitting that profession, became eminent as a dealer in pictures. He was succeeded by his son in the same business. The premises, after the decease of this gentleman, who was much esteemed amongst the dilettanti and artists, were occupied by Mr. Thomas Barker, of Bath, celebrated for his picture of the "Woodman," who, in the great room, made an exhibition of his works. From Mr. Barker the premises were assigned to Mr. Tresham, and he, having little occasion for the great room, let it, together with its appurtenances, to the infant society.

The list of members making the first exhibition were, G. Barrett, J. Cristall, W. S. Gilpin, J. Glover, R. Hills, J. Holworthy, J. C. Nattes, F. Nicholson, N. Pocock, W. H. Pyna, S. Rignard, S. Shelley, J. Varley, C. Varley, and W. F. Wells.

The almost immediate success of the society, not only as regards attendance, but also sales, was extraordinary, and this was in a great measure owing to a plan, now general, which was suggested by one of the members, namely, having a person in the room who was furnished with a book containing the price of each picture. Conditions of sale were also inserted, and the purchaser, on entering his name, advanced a deposit of ten per cent. on the price affixed to each work, and bound himself to pay the remainder on the delivery of the purchase. Previously very few instances could be named of water-colour pictures having been purchased in the public exhibitions, whilst here the room at once became a capital mart for sale. Some thousands are now spent in London each year in water-colour drawings alone.

THE ACCEPTED DESIGN FOR MR. SPURGEON'S TABERNACLE.

We have engraved the plan and the elevation of the principal front of the design for Mr. Spurgeon's Tabernacle, selected by the committee for execution. A general account of it will be found on a previous page (187). The accommodation afforded was thus stated on the drawings:—

	Sittings.	Standing room.
Ground floor	1,572	480 persons.
First gallery	791	580
Upper gallery	674	...
	3,037	1,060
		3,037
		4,097
Standing room in aisles		1,800
Total	5,897	persons.

The estimate was given as follows:—

Carcase	£9,234	0	0
Portico	712	0	0
Finishings	4,156	0	0
Warming, fencing, &c.	852	0	0
Total	£14,954	0	0

The following communication from Mr. Pocock, in reply to a criticism on his design in our last (p. 207), will further elucidate his intentions and views.

WHILE I must controvert Mr. Garbett's opinion and dicta, as contained in his letter to you last week, I gladly acknowledge the tone of fair-

ness that pervades his critique, and at once join issue.

I cannot admit that I was bound to defend the "bad art." I chose rather to carry the war into the enemy's country; and as Mr. Garbett had contented himself with dogmatically asserting the whole fifty-eight designs were but an assemblage of something worse than rubbish, I considered myself equally at liberty to hint my opinion that he was not in a state to judge, and to declare my admiration of several, purposely excluding my own humble efforts. He now condescends to assign reasons, and so far as these involve general principles, you will probably not deem a small space devoted to their discussion ill appropriated.

In the first place, then, I must acknowledge I did not correctly interpret his expression "bad art." I supposed that by these useful but ambiguous little words, he wished to direct our attention to the aesthetics of architecture—that he regarded and spoke of architecture as a "fine" art. But if I correctly understand his latter communication, he would have us entirely discard all ideas of regarding our mistress in any other light than the handmaiden of bare utility, and that he would have us attempt nothing further than simply building plain walls and roofs, with such doors and windows as sheer necessity may require. But how far is this process of denudation to proceed? Shall we return to the wigwam and dog-hut? or why stop half way?

Utility is the first consideration, but not the only one. I will venture to say he patronizes broadcloth for his coat, and disfigures his head, as we all do, with a hat much like a chimney-pot, though a cheaper material would keep him as warm as the one, and a more comfortable tile screen him from the weather as effectually as the other. Why, then, does he go beyond mere utility? Because he thinks broadcloth looks better than fustian, and knows that both this and the beaver are by common consent employed to express a complex idea—respect for ourselves and deference to the opinions of others,—in one word, respectability. They do not constitute—nor even prove—the respectability of their wearer; they may be completely belied by his gait, the expression of his countenance, their own style, fit, or mode of putting on; but they are elements, generally speaking, by which, in London streets, we hastily assort those we meet. So the orders of Classic architecture, or the features of Gothic may constitute a caricature; but, duly applied, they may be made expressive of the noblest sentiments. And my argument is, that such sentiments cannot be conveyed in stone, but by the medium of forms and proportions, which, in the mind of the beholder, are associated with those sentiments. Why else had the architects of the sixteenth and seventeenth centuries no appreciation for Gothic architecture, or those of the thirteenth and fourteenth none for the noble remains of antiquity? Why has each nation adhered to a style of its own—Egyptian, Greek, Saracenic? For the same reason that they respectively speak only one language, namely, that it is the only one they know, or their hearers can understand.

But let us follow Mr. Garbett into particulars. And first, he asserts that the two apsidal ends of the Surrey Music Hall are the only peculiarities of its plan; and, strictly speaking, he is perhaps nearly correct. But does he suppose that the committee, in using that expression, had no reference to the *quasi* division into nave and aisle, with the vaulted ceiling to the former? Evidently the competitors generally thought otherwise; and were not far wrong in their conclusions. But how does Mr. Garbett prove that the secret of the acoustics of this hall lies in these apses, and nothing else? Is not affected by its proportions, its galleries, its ceiling, its materials, the position of its orchestra or speaker? I should take a satisfactory answer to this question as a great favour, for, after much study, I am ignorant enough to believe that in one short hour, or by building a single wall immediately behind the speaker, I could render him inaudible half-way up the nave. Nay, take away the galleries, and not half its occupants could hear, though the apses were left; but leave the galleries and square the ends, and little or no variation would be observed. So I believe. And I will be more humble than your correspondent, for I will assign a reason, and it is this. The difficulty of hearing arises not so much from deficiency of sound, as *redundancy*, that is, reverberation, and every wave of sound striking a hard body rebounds with a force and at an angle proportioned to those of its incidence. Now these waves are in the form of hollow para-

bolic spheres (so to speak), each within the other, like the layers of an onion, the speaker's mouth being the centre, and are consequently cut up by the galleries or other obstacles, which become the centres of new parabolas or spheres, constituting waves so diminished in force, and multiplied in number and direction, as to be powerless in their rebound to interfere with the original sound. By these means galleries are acoustically good, and greatly assist the hearing qualifications of a building. But the apsidal ends are so far removed from the speaker in this case, as to be, in my humble opinion, immaterial; the voice or wave being already spent before it reaches them, even were the galleries removed. And all the benefit that could, in a more ordinarily proportioned apartment, be derived from them, I expect I should secure by the angles of my plan being occupied by the projection of my staircases, though in rectangular instead of oblique-angled forms.

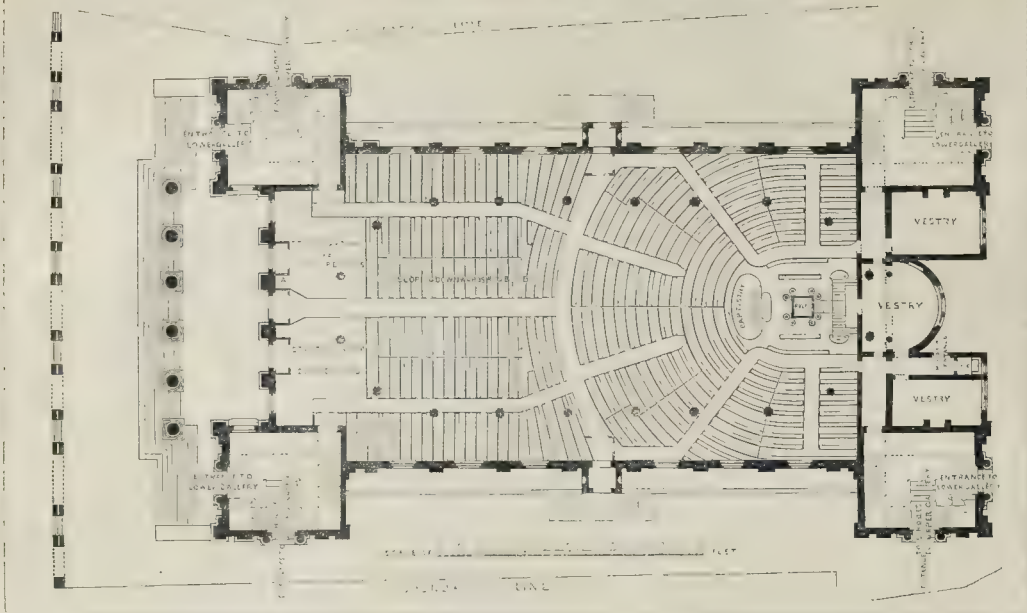
Your correspondent next arraigns my *circular* seats (the italics are his own). It was no fault of yours they were described as being in circles, for they are so drawn for expedition sake, as explained to the committee in my "particulars," in which I expressly stated they would be executed in short cuts or tangents. But where does he get the word *circular* from? For once, then, Mr. Garbett is wrong in supposing a needless expense intended to be incurred, to save the artist's time, or to fill his pocket with commission, for so I understand him to assert; and if wrong for once, perhaps he is so altogether in charging his brethren with dishonesty. I do not pretend to his smartness, or I might affect to bewail so much wit and hard-hitting thrown away upon a myth. A clinching argument, a paragraph and a half, a flourish of trumpets, an alarming disclosure, a "great lamp of architecture and engineering" all gone! Does our critic believe architects and engineers intentionally or indolently filch their clients to fill their own pockets? I am sorry for the company he has fallen into. I don't believe a word of it, but, on the contrary, that the vast majority of practitioners consider the economy with which they can husband their employers' resources one of their greatest merits and highest aims; or, to put it conversely, they are anxious to secure the greatest amount of result with the means at their disposal.

But as our critic kindly so far approves of those essential points in my design as to assert that they form the only rational mode of arranging those details, and as he baits his hook for my vanity with something about the "chance stroke of a great artist," I must not be too severe in return.

His next remarks amount to an assertion that a central entrance to a wayside building is wrong in principle. This I deny,—not in defence of my own design, but broadly. As a matter of fact, experience will satisfy any one that will take the trouble to observe, that casual visitors of any building almost invariably choose the central entrance, where they have the option of several. And as for regular attendants, who ever heard of a man selecting his seat at church or his box at the opera on the side nearest his own residence? And, especially in a place of worship, the centre is the most sought-after and highly-esteemed position—and naturally too; for, if you imagine yourself listening to a preacher, is it from a side-corner that you conceive yourself to be looking towards him? No, verily, but from the centre of the building; and, consequently, if going there (and you have, as we have supposed, no assigned location), the middle of the place is your centre of gravitation, and the central entrance is the natural and direct access to it; and this is confirmed by the practice of architects of all ages and all creeds. In theory, and in practice also, then, our critic's logic is at fault.

My four towers next fall under animal aversion as to height, &c.; but confining myself to the general especially, because, like King's College, Cambridge, and St. John's, Westminster, I have designed two at the back as well as two at the front; and we are reminded that an animal has only one head and one tail, and the head of a boat is not like the stern. But have not many animals two legs behind as well as before? and does not the portico rather than the towers answer to the head, if analogy our writer must have? The head of a boat is made pointed, to cleave the water. Has the front of a chapel any similar duty to perform? Mr. Garbett is wrong in intimating that the two ends of the building have not the same use. In this case at least they have: the four towers are all alike staircases and ventilating shafts. But, setting this particular case on one side, is there a front and a back to all objects in nature? Do trees or plants present spreading

MR. SPURGEON'S TABERNACLE.—Plan of the accepted Design.



branches or spring limbs on one side only? Is every mountain that has more than one peak a blemish in the landscape? Does the sun describe an arc of one kind in the forenoon and a curve of a different character in the afternoon? Is the egg a more beautiful form than the ellipse? Authorities I quote not; doubtless our critic despises all alike. In his eyes the Greeks were always fools: the fathers built their Parthenon, their Theseion, the temples at Paestum, Agriguntum, Selinus, with both ends identically the same; and the sons their churches with cupolas on all four sides alike! yes, and all four sides equal in extent. Perhaps Mr. Garbett can tell us whether in the East animals have four heads, or a breadth equal to their length; whether boats are built square in those sunny climes.

It has been suggested that Mediæval architects erected their tapering spires to point us to heaven. I confess I never see St. John's, Westminster, without its suggesting to me the idea of its spreading its hands towards heaven in adoration of the Deity. "But who has more than two hands?" facetiously asks some one; "surely it must be elevating feet as well as hands!" A man has two shoulders, and as many hands. A square building confessedly has four shoulders, may it not have the same proportion of hands as a man? A very poor conceit this of mine, no doubt; but I will confess a worse—it was with the same feeling I put four turrets to my Tabernacle.

Mr. Garbett proceeds to condemn all porticoes on eastern fronts, or having columns much exceeding the height (I suppose) of the human figure. He says those in "Metropolitan," which are 33 feet high, are some 30 feet too high to be of any use in affording shelter "in [I suppose he means from] moderately driving rain; the openings, five of the seven, where they are least wanted, in front; and, lastly, the whole not sheltering the most-used entries,—those of the wings—at all," and, therefore, he declares it an "exceeding" (he, printer! exceedingly) "bad one." In reply, on those points which affect this case only: driving rain in this country, indeed fully 9-10ths of our rainfall, comes from the south-west, and could not drive into the portico. The five doorways under the portico afford access to every portion of the building. The front openings in any portico are wanted, and I venture to assert will be used in this case, fully as much as the side ones, even by pedestrians; and, moreover, they are the only ones to which carriages could draw up. But the use of porticoes to places of assemblage is not so much for purposes of entry as of departure; and in most Gothic churches of the present day the want of some shelter, under which

a considerable portion of the congregation may wait for their conveyances, or prepare themselves to trudge through the wet, is a serious defect. As for putting up a portico in this country for a sunshade, that is simply absurd,—for the few days in the year that the sun is too hot, we may safely leave ourselves to the care of the upholsterer.

Having disposed of the portico as a weather shade, he concludes it must be meant as an ornament, and as such declares it "most base or unchristian, because it uses a maximum of manual labour (and that of degrading kinds) to a minimum of the ornamentor's own [non manual?] labour." That is to say, I conclude, anything ornamental should be all ornament, and only ornament. But does nature teach this doctrine? The blossom is the ornament of a tree; is it not useful also? or does it cover the whole tree, or last all the year round? Who bestows the greatest amount of labour on the diamond? the slave in the mine, or the lapidary at his wheel? But if the above dictum be true, then inverting the terms, an ornament is rendered more noble or Christian by increasing the amount of the ornamentor's labour bestowed upon it; that is to say, the more highly wrought, the more noble or Christian. The latter clause of the paragraph now under consideration I do not understand. Of what noun does the pronoun "they" supply the place? This portico is voted a "nuisance" (the italics are Mr. Garbett's), because it costs all the light of the second room, or lecture-hall, whereas this said room has 75 feet of unobstructed window on either side, besides two or rather five windows under a portico, which, though it will not keep out the rain, will, of course, exclude every particle of light!

Much is made of the lecture-hall being the "second principal room," and such it really is; but it is a very bad second—far in the rear of the Tabernacle in importance, seldom used but at night time and by gas-light; and to sacrifice a central entrance or a spacious portico,—two main requisites of utility to the primary object of the building,—to increase the light of this hall some ten or fifteen per cent. would indeed have been a manifestation of "bad art" such as few would be guilty of.

But why vaunt so many feet width of entries into the covered part of your premises, when you have not half so many from the streets into your whole premises? Stay: 15 times 6 feet make 90 feet for my doorways; my gateways together measure 61 feet—nearly three-fourths;—and I suppose even Mr. Garbett knows more people will pass through one 9-feet gateway on the level, in a given time, than through two 6-feet doorways where there are steps. Still, the point of

escape from fire, or rather in case of any alarm whatever, though a grandmother's, is a very sufficient reason, though Mr. Garbett may advocate the old school of narrow sinuosities.

His remarks upon the insurance question are not to our present purpose, though it seems on his principles, "most base and extravagant," to incur a larger expense where a smaller will effect the purpose; and the "prudent" arrangements sneered at, is evidently the cheaper, or would not be so universal. The close of the paragraph is again unintelligible, but if I mistake not, there are not less than four grammatical errors in it. I suppose all Protestants are separatists, indeed, all Christians; and the Jews themselves were separated from the heathen. Let Mr. Garbett remember there is no logic in a sneer.

There are practical difficulties in the way of tapering the aisles in the way Mr. Garbett suggests, which in most cases quite outweigh any advantage to be derived from it, and no part of the aisle requires to be so wide as the door of exit (unless it be for a few feet immediately adjoining it); in other words, the doorway always requires to be wider than the feeding passage, especially if there be any steps or turn. But many of the designs provided abundant aisle space as standing room. "Metropolitan" has on the ground-floor 36 feet of aisles to feed 42 feet of doorway.

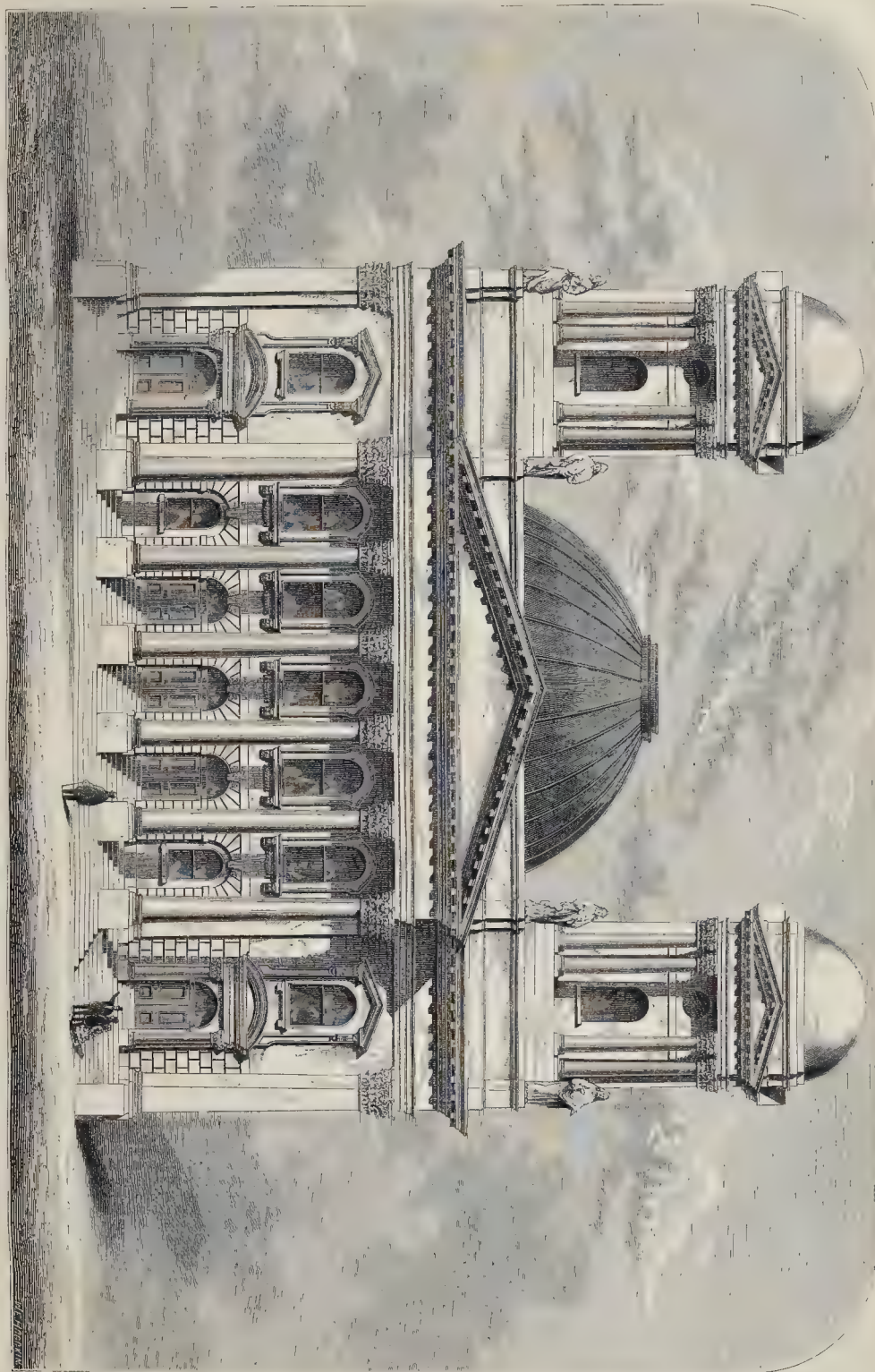
Our critic wants part of the basement for an air artery to the Tabernacle. He is welcome to the whole space between the floor of Tabernacle and ceiling of schools, which will enable him to admit fresh air as universally as he pleases. Had he understood the requirements of the case, he would have found it requisite that the lecture-hall should be in immediate connection with the school-rooms, so that nearly all the central portion of the basement, at least, must be devoted to these apartments; but why may not air come through the walls and roof, so that all six sides of the cube are free for its admission?

Our ironmaster would carry his four thousand persons, floors, galleries, and, I presume, roof, or a large proportion of them, on seven columns; and for economy's sake! Yes, of up-rights; but what of horizontal supports? and what about foundations?

In one word, when our critic's reasons for condemning all our designs as bad art come to be tested, they fail; many of them are altogether wrong; others are, to say the least, questionable, and none can be taken as infallible rules.

Should time and your space permit, I may yet trouble you with some remarks upon his hobby—his *delenda est Carthago*, i.e. "commission."

WM. WILLIAM POOCK.



DESIGN FOR MR. SPURGEON'S TABERNACLE; SELECTED FOR EXECUTION BY THE COMMITTEE.—MR. W. W. POORE, ARCHT.

THE REMOVAL OF ST. THOMAS'S HOSPITAL.

The *Lancet* of March 19 takes exception to part, at least, of the recommendation we made in the Numbers of the *Builder* of February 26 and March 12, in both of which we advocated the removal of St. Thomas's Hospital to a suburban district.

The *Lancet* agrees with us in so far as concerns the removal to the country of convalescent patients; but it lays down as a principle that, for patients other than convalescents, "it is one of the essential conditions of usefulness for such an institution that it be located in a populous district, . . . for the reception of the sick poor in the immediate vicinity, and of those suddenly seized with sickness or maimed by accident."

We feel bound to dissent from part of this doctrine, and for the following reasons:—

First, the sick poor have to be removed from their houses in any case; and, if suitable means of transport were provided, it would, in the great majority of instances, matter very little whether they were carried a mile or two farther, while it would matter a very great deal indeed whether, having undergone the fatigue of transport, they were put to bed in fresh, pure, country air, or in foul, damp, town air.

Secondly, we believe that an examination of the hospital books would show that a very considerable proportion of the cases received are brought from the purer air and quiet of less densely-peopled outskirts into the foul air and noise of the present locality.

Thirdly, from inquiries we have made, we are justified in stating that, even after the sick are brought to St. Thomas's and other hospitals, and have undergone the risk of transport, a very large proportion of them might be sent off immediately into a country hospital with the greatest advantage.

Fourthly, it is a mistake to suppose that most of the accidents necessarily take place near the hospital which receives them. We find, for instance, that on a recent occasion, out of all the accidents (thirty-five) in St. Thomas's Hospital, two-thirds (twenty-four) of the whole number came from a distance of two miles and more, and eighteen of them, or half the whole, came from New Cross and beyond. New Cross is nearly 3½ miles by road from St. Thomas's.

We suggested Blackheath as a likely place to furnish a good site, on account of the purity and dryness of its air, the porous, self-draining nature of part of its sub-soil, and the great facility with which such a site admitted at the present hospital might be raised to the level of the railway, placed in an easy carriage, and landed in fifteen or twenty minutes at Blackheath. Now it so happens that, of the accidents in St. Thomas's Hospital at the time we have referred to, fifteen could have been taken to Blackheath in cabs with less suffering than they underwent in being carried to St. Thomas's Hospital.

We do not on this account advocate the removal of all accidents indiscriminately into the country. We discussed this question in the *Builder* of August 28, 1853, in which we stated that "even in so vast a place as the metropolis, a few casualty wards, where accidents might temporarily be seen, rooms for the examination and reception of cases, and suitable vehicles for transferring them to the country, would be all that would be necessary to effect the reform." To this opinion we adhere. Let St. Thomas's Hospital be removed to Blackheath or to some other equally healthy and accessible locality: let a reception-room, and one or two wards for the treatment of accidents, until convalescence begins, be provided on part of the site of the present hospital, and all the rest of the establishment may be removed bodily with the greatest advantage to the sick.

Even severe accidents can be removed with safety at the very beginning, provided ordinary precautions be exercised; and a very small number of accidents would, in reality, require accommodation on the site of the present hospital.

In the *Builder* of March 12, we showed that the removal of the hospital was advocated twenty-seven years ago by Drs. Williams, Eliotson, and Rootes, and by Messrs. Travers, Green, and Tyrrell, the then physicians and surgeons; and we have reason to think that their successors of the present day entertain no less enlightened and humane views on this most important subject.

THE PUBLIC OFFICE EXTENSION BILL.—Lord J. Manners has nominated the select committee on this bill, consisting of Lord J. Manners, Sir B. Hall, Mr. Whitmore, Sir J. Shelley, Mr. Stirling, Mr. Byng, and five members to be added by the committee of selection.

THE POSITION OF THE NATIONAL ARMORIES.

SOME years ago I addressed you on the subject of the proposed establishment of a museum of art at Brompton, and suggested that a collection of ancient Armour should form a portion of it, the nucleus of which might be derived from the ill-arranged and uncared-for mass of valuable specimens in the Tower of London. That letter, as you may remember, led to a very sharp correspondence, the result of which was confirmatory of the negligence and incapacity of the persons entrusted with the custody and management of the antiquarian portion of the Tower armories. The motion of Mr. Gregory, M.P. to appoint a committee of inquiry for the enlargement and re-organization of the British Museum has induced me once more to take up my pen and endeavour to enlist your services in an attempt to attain an object exceedingly desirable for the interest of art and the progress of archaeological science.

The great and deserved success of the museum at Brompton has proved the increasing taste of the public at large, and their appreciation of well-arranged and classified collections, whether of the productions of art or of nature, superintended by competent persons and the approbation so generally bestowed on the first attempt to display a strictly chronological series of armour and weapons in the Exhibition of Art Treasures at Manchester, despite great local and other disadvantages, has shown what might be accomplished under more favourable circumstances, and how much it would be appreciated by the many who are desirous to acquire some information on this subject, but find it impossible to do so while hurried through the national collection by an ignorant beef-eater. I therefore venture to hope you will urge upon the gentlemen who may be appointed to inquire into the state of the British Museum, the propriety of removing from the Tower the more instructive and artistic portions of the national armory, and of placing it with the kindred antiquities now in Great Russell-street, under the care of an antiquary, in one of the compartments of that noble institution. Why should the ancient British shields and battle-axes, the Anglo-Saxon and Danish spear-heads, the Anglo-Norman swords—that fine one popularly attributed to Hugh of Avranches, Earl of Chester—and many other relics of early English warfare now in the glass cases of the Ethnological room at the British Museum, be separated by half the length of the town from the later specimens in the Tower armories? Why should the student, desirous to follow up the links in the chain, be compelled to take a positive journey to the other end of this monstrous metropolis—pay sixpence for admission, and be walked through a long lumber-room—it deserves no better appellation—in company with a dozen or more sight-seers or holiday makers, who, however intelligent, are not allowed ten minutes for the examination of any particular object? I have no doubt that, for a special purpose, he would, on proper application to the chief storekeeper, who is *ex officio* the custodian of these treasures, be courteously accommodated; but I am looking at the great object of public collections—the instruction of the masses, who pay for their support, and not the convenience of individuals.

In the debate upon Mr. Gregory's motion of Thursday in last week, the distance of the Brompton Museum was casually alluded to. Compare that, I beseech you, with the position of the Tower. There are hosts of omnibuses by which you may be set down at the very door of the former for 3d. 4d. or at the most 6d.; but there is no approaching the latter by land or by water in any public conveyance less expensive than a cab. London-bridge by a boat, or the Fenchurch-street station of the London and Blackwall Railway by omnibus, are the nearest points attainable. I know it to my cost.—I do not mean of pocket, but of time. Deeply interested as I have been for years in the study of this particular branch of archaeology, I find, as an occupied man, a visit to the Tower almost impracticable for any benefit I could derive from it. The time occupied in reaching it—in waiting till a sufficient party is assembled for admission, and the impossibility, without a special permission, of examination or drawing, render it a hopeless undertaking.

At the British Museum I can stand for an hour, if I please, before any object that interests me without being obliged to "move on;" and, if necessary, there is to be found an intelligent person who will give me all the information I can reasonably expect concerning it. This latter advantage is, of course, out of the question at the Tower.

There, as I have already stated, the principal storekeeper for the time being is the guardian by virtue of his office, and is neither required nor expected to know anything about ancient armour. He has important duties to fulfil, for which he no doubt possesses the necessary qualifications; but, as curator of the national armories, he is at the mercy of the dealer—one day purchasing a forgery, and the next rejecting an inestimable gem, which speedily finds its way to Paris, Russia, or some private collection.

That, notwithstanding the very limited number of antiquaries who have specially devoted themselves to the study of ancient armour, a large proportion of the public would take considerable interest in it, were they allowed a chance of becoming acquainted with its authenticated history, I feel convinced, from the continual inquiries I hear made upon the subject; but the extreme indifference of the Government is an obstacle which I despair of seeing removed except by "pressure from without," which can only be caused by public remonstrance in the columns of influential journals. I need not, I am sure, apologize for requesting the assistance of yours.

* * * The present position of the national collections of armour and weapons is most despicable to us: not one complete collection, chronologically arranged, and presided over by intelligence, is there to which painters, sculptors, writers, or students can resort with certainty and satisfaction to solve a doubt or increase their knowledge. If this were formed in a more accessible place than the Tower, a sufficient collection for the mere sight-seer might still be left there, and should be. If not moved, then a fresh arrangement should be made at the Tower, a proper custodian should be appointed (the best knowledge that can be obtained should be brought to bear upon it), and steps taken to perfect the collection as opportunities occur, and to render it as extensively useful as possible. We repeat that the present position of the national armories is a disgrace to us.—ED.

A TRUCE BETWEEN ITALIAN AND ANGEVINE GOTHIC.

WILL you permit an ardent lover of Gothic architecture, in all its national and provincial developments, to enter a friendly protest against the "savageness" which seems to have taken possession of the breasts of some of its advocates? Few amongst the pioneers of the study and revival of our old architecture have greater claims upon our gratitude and regard than honest John Henry Parker; and few among its practical revivers have given it more devoted study, or brought to bear upon it more artistic skill than Mr. Street. Why, then, should your columns be made the arena of an internecine war between these distinguished labourers in the same cause, merely because they chance to differ in a slight degree as to the amount of attention which should be paid to the Transalpine variety of the style to which both are devoted? Mr. Street has, certainly, detected a few inconsistencies between Mr. Parker's statements in different papers he had written, and pointed out some ludicrous slips into which his hostility to Italian Gothic had betrayed him; but what matters this? Every one blunders when he gets into an *ex-parte* argument. Mr. Street was unquestionably too severe upon these little errors; but surely Mr. Parker is acting most unbecomingly in speaking of men who have dedicated their highest energies and talents to the study of the same subjects with himself,—men who are known to have devoted to its practical development, as well as to the study of its ancient productions, a degree of labour, zeal, and earnest love, which has seldom been exceeded; and who have beaten foreign architects in open combat, and on their own ground, and their own most distinguished antiquaries being among the judges,—in terms of the most presumptuous contempt, and bringing against them accusations ridiculously puerile and untrue. Much as we may respect Mr. Parker, I deny that he has any claim or right to speak in such a tone. His own knowledge is extensive in its way, though his power of bringing it to bear upon practical questions is comparatively deficient, and even on the point on which he lays so much stress—the difference between the systems of vaulting in England, the Isle of France, and in Anjou—he is evidently in a misty state of mind, while it is clear that his opponent has given it more attention than himself, and is fully his equal in antiquarian knowledge. But let all these questions pass, and let us learn how to treat one another with the respect and deference due to each, and not abuse one another merely

because one set of examples may chance to have struck some of us more or less favourably than others. Both Mr. Street, in the letters in question, and Mr. Scott in his volume on "Domestic Architecture," and in his last lecture at the Royal Academy, have publicly disclaimed all wish to introduce Italian Gothic, though claiming for it a fair share of attention as a portion of a great whole. If Mr. Parker will dispassionately consider the subject, he will probably see that their views are fully as philosophical as his own, and that the difference between them is, after all, but slight; and I am quite sure that they will not yield to him in the interest which they feel in the examples of architecture, in that district of France to which he has more especially directed his attention, though they may dispute the exclusive claims set up in its favour.

One thing is a little startling in Mr. Parker's last paper. I refer to his mention of the Museum at Oxford, as distinctively *English* in its character. I am glad to find that it is so, as it confirms a theory I had entertained, that during the thirteenth century the secular styles of England, France, Germany, and Italy, were in essentials very much alike. I confess, however, I had imagined that the Oxford Museum had been somewhat Italian in its tendencies, and its talented architect a devoted follower of Mr. Ruskin; and certainly, after putting it forward as distinctively English, and as especially showing forth the capabilities of our own style, we may hope from Mr. Parker a little share of his charity in cases where he sees, or thinks he sees, a Transalpine leaning in the works of those who enjoy less of his personal favour. At any rate, let me beg that we may not have, from either party, any more of these displays of Gothic "savageness."

PAX.

LARGE IRON FORGINGS.

At the Institution of Civil Engineers on March 1, a paper was read "On the Co-efficients of Elasticity and of Rupture, in Wrought Iron, in relation to the volume of the metallic mass, its metallurgical treatment, and the axial direction of its constituent Crystals," by Mr. R. Mallet.

Iron was formerly entirely worked under tilt-hammers; the process of rolling was then introduced, and now, in consequence of modern engineering requirements, masses of iron, of considerable magnitude, were produced by fagotting together, under heavy force hammers, from large numbers either of bars, or slabs grouped together. The masses were not, however, found to possess ultimate strength, in proportion to the number of bars of which they were composed; in fact, it appeared that the strength of the mass became less in some proportion as the bulk became greater. This was admitted as a fact, but no one had hitherto attempted to show experimentally what function of the magnitude was the strength of a given kind of iron, manufactured in a given manner; or how the same forged mass, when very large, differed in strength in different directions, with reference to its form; or how the mechanical part of the process of manufacture of the same iron affected its actual strength, either as a rolled bar, or as a forged mass.

Addressing himself to this investigation, the author dealt generally with three points of the inquiry, viz.:-

1st deg. What difference did the same large bars of unwrought iron afford to forces of tension and of compression, when prepared by rolling, or by hammering under the steam hammer?

2nd deg. How much weaker, per unit of section, was the iron of very massive hammer forgings, than the original iron bars of which the mass was composed?

3rd deg. What was the average, or safe measure of strength, per unit of section, of the iron composing such very massive forgings, as compared with the acknowledged mean strength of good British bar iron?

The proper measure of the strength of iron, or any imperfectly elastic material, was the "work done," whether by extension, compression, rupture, or crushing, due to any force applied to it. The co-efficients T_e and T_r were designed, by Poncelet, to express this "work done," by an extending or compressing force upon any elastic prismatic body, at the point where its elasticity became permanently impaired and its form distorted, and at the further point where rupture occurred. The method of arriving at these co-efficients was then given, and it was shown that, though they were not sufficiently attended to in practice, yet that they were the true measures of the safe and ultimate resistance of materials,

when applied constructively in machines or otherwise.

It had long been admitted, that large forgings became weaker in proportion as their bulk was increased, but as no definite ratio was recognized, it became of importance to fix the conditions of strength in wrought iron, under various circumstances. The author was enabled to undertake this investigation, under the authority of the Minister of War, and with the concurrence of the Royal Society, when making the forgings for the two 36-inch wrought-iron mortars, constructed on his designs for the Government; he then selected specimens of iron, upon which the experiments of tension and compression were tried.

In cutting and boring into the massive cylindrical forgings, to obtain the pieces of iron from the various parts, it was invariably found that there existed, internally, large transverse rents, with jagged and crystalline irregular surfaces, the opposite faces of which were counterparts, and presented distinct evidences of having been torn asunder by contraction from the centre towards the circumference, as the mass cooled. The rationale of the phenomenon appeared to be, that this action was simply due to the contraction of the external shell, before the temperature of the centre had been perceptibly lowered; this in its turn was cooled, and in contracting produced these visible rents, or fissures, and no doubt caused other minor dislocations which detracted from the general strength of the mass.

The practical illustration was, that almost all cylindrical shafts of wrought iron, exceeding 12 inches in diameter, were found to have one or more of these rents in them, thus having their strength impaired. This reduction of strength was altogether distinct from any deterioration of quality of the metal, arising from its being alternately heated, and cooled, and hammered.

The remedy for this play of molecular forces was to construct and work the large forgings hollow. This course had been pursued with success at the Mersey Iron Works, Liverpool. When a cylinder had a large concentric cylindrical hole along its axis, it cooled at the same time, though not equally, on both the internal and the external surfaces, and thus the extremes of internal strains were avoided, and the hollow centre yielded more readily to the forcible compressive grasp of the exterior.

The very weakest wrought iron of all those experimented upon was found to be that cut transversely from the end of a very heavy cylindrical forging, which had been exposed to heat and percussion for nearly six weeks. Exposed to tension, its elastic resistance was only $\frac{3}{4}$ tons per square inch, which was less than the average of cast iron: thus, as regarded pressure, it was the very weakest iron produced by any method of manufacture; whilst the fagot bars, of which the mass was built and welded up, bore a tension of upwards of 12 tons per square inch before losing their elasticity, and of nearly 23 tons at rupture, and a pressure of nearly 21 tons before losing elasticity, and of nearly 27 tons at the point of total distension, or crushing, thus proving the fact, that the extreme weakness of wrought iron, in heavy forgings, was not due to any metallurgical alteration in the constitution of the metal, but to changes in its state of aggregation, induced by the process of forging, by the long-continued and unequal heating, and by the hammering.

Hence was deduced the conclusion, that practically the iron of very heavy shafts, forged guns, huge cranks, and other similar masses, might be expected to become permanently set and crippled, at a trifle above 7 tons per square inch, and to give way by fracture, at about 15 tons per square inch by tension, and to completely lose form at pressures of from 15 to 18 tons per square inch. Therefore it followed that, allowing a deduction of one-half, as sanctioned by practice, from the elastic limits of tension and of pressure, for the margin of safety, the iron of such forged masses should not be trusted, for impulsive strains, exceeding about $\frac{1}{2}$ ton per square inch of pressure, or for passive tensile strains of $\frac{3}{4}$ tons per square inch, or for passive pressure beyond 9 tons per square inch.

THE GLASS-BLOWERS' STRIKE.—The *Greenock Advertiser* states that the glass-blowers' strike has come to an end, and that the men—11,000, laid aside to support the strike having been spent—resume work upon Monday next, without any advantage.

FASHION IN ART.

It has long been a question with many who have been conversant with English art, to what extent the great mass of the educated public have during recent years advanced in the real appreciation of art, that is to say, how many pictures and other works are purchased in consequence of a particular fashion, or in consequence of their having a fixed mercantile value, and how many from a real feeling of admiration on the part of the purchasers. It has been remarked, that some of the best efforts of our modern painters, which they have little, if any, excelled, have been produced under circumstances of difficulty, and sold for the most trifling sum in comparison with their present value. The first pictures painted by Wilkie in London are striking examples,—for those works, if now sold, would produce as many pounds as they did shillings during the early career of this artist. This and many other similar instances might be mentioned, which have been quoted for the purpose of showing that great artists, in consequence of the want of general appreciation, have not, until a fashion has been set, met with that admiration which their merit deserved.

In considering this matter, we glance at the career of a number of artists, some of whom have rapidly risen to great fame: with others, the progress of success has been slower; but we remember but few instances in which true talent has not by persevering industry met with its true reward. There are such brilliant examples of genius as those of Wilkie, Maclise, Sir Edwin Landseer, and others, whose names and works have with surprising rapidity been brought into public esteem: in other artists, the early promise has been less distinctly fulfilled.

Years of ill-hanging, in exhibitions, &c. have caused difficulties which have only been surmounted by long periods of energetic work. In those cases art has been progressive: by careful comparison of their works with those of others; by study from nature, and otherwise, the works of those men have grown in merit, and, consequently, in the general esteem. This, however, is not, in the first instance, so much owing to the public appreciation of their improvement as to the advantages which arise from the opportunity which is afforded by brother artists of properly exhibiting their works, and by the placing them in companionship with those whose value is established, and thus giving them a position which causes them to claim attention.

The Royal Academy, the Exhibition in Suffolk-street, and those of the Water-colour Societies, &c. are a chief means of recognizing talent of the right description, of selecting between mediocrity and higher qualities, and thus at once placing those whose pictures bear the right impress amongst the list of those whose works will as surely bring a certain amount either at the picture-dealer's or the auctioneer's.

When once talent has met with this recognition from men practised in the principles and knowledge of art, it is almost a certain test that they have passed the somewhat narrow barrier between those higher qualities and mediocrity to which we have alluded. Narrow as this boundary is, the difference is distinctly marked, and the eye of taste and education in art readily recognizes the pictures of one class from the other.

Amongst the pictures of artists whose performances are just verging on the standard quality there are pictures which show an observance of nature; high mental qualities; a feeling for colour and light and shadow; an appreciation and ability to a certain extent to delineate character, &c. which give future promise, but are marred by particular defects. There are other works which are not far from being good, which show that they are the matured works of peculiar minds, and that little, if any, improvement can be expected. The pictures by these artists are ranged at great elevations in exhibitions; they crowd auction marts, where they produce little, if any more, than the cost of the frames; and great and continued are the difficulties with which this class of professors are beset if they do not engage the ability they possess in teaching, or some other useful employment; and it is to be noticed, that these are the artists who most loudly complain of the want of public taste and appreciation of art. Notwithstanding, we admit that but for the expression of the opinion by artists, in the first instance, and then the enlightened notices of artistic reviewers, a large mass of the educated public would not at the present time recognize the more refined qualities of art.

Owing, however, to the value which good pictures possess, it is seldom that they can be bought for

inferior prices. The pictures by Sir Joshua Reynolds, Hogarth, and other English artists, are yearly increasing in value: the accredited works of modern artists (both oil and water-colour painters) are now producing sums which would surprise the artists of the last generation.

In 1758, David Garrick bought Hogarth's pictures of the "Chairing of the Members," from the artist for 200*l*. In 1823 Sir John Soane bought them at a sale by auction for 1,620 guineas; and, no doubt, if now brought to the hammer, they would bring extraordinary sums. At the present day the price of 2,000*l*. for a picture by a living artist shows that high art is not without noble patronage. It is true that some painters who now have a good position, and whose pictures bring good prices, have for years had difficulty to exist. In some cases the early works have been bought at small prices by persons of capital, which have, on the strength of the reputation afterwards achieved, sold for considerable sums. We have carefully examined many of these works, and noticed their visible inferiority to those now produced. Under certain circumstances, some of these pictures have been nearly repainted. The early drawings of Turner, and some of those by Girtin, curious as they are as examples of experiments in what might then be considered a new art, and exhibiting, as they do, instances of future eminence, would not be valuable, except in connection with the names attached to them; and similar instances might be multiplied. Our object in these short notes is, however, to show that there is a marked distinction between good and inferior art, and that while the latter fails to procure for its professors even a bare livelihood, the former, with prudence, is a certainty of competence; and although it may be that numbers rather purchase pictures in consequence of the fashion being set by others, there is hope, from the general advancement of artistic knowledge and taste, that the works of good painters, which would at any time bring their price. As time goes on, the works, even those now fashionable and admired, will find a level lower than their present position; while others will, by the judgment of time, be raised in position, and in the succeeding generations numbers of pictures will descend into comparative oblivion, while others, like the pictures by Reynolds and Gainsborough, of the past generation, will stand out in bold relief, and become more precious than fine gold and jewels. AN ARTIST.

THE ARMSTRONG CANNON AND OTHER WAR APPLIANCES.

THE Government appear to be resolved if possible to preserve the new ordnance invented by Sir William Armstrong as a secret for the public behoof of this country, while the press is equally intent upon gratifying the public curiosity in respect to it, whatever be the upshot as regards British supremacy. We have no desire to pry into the secrets of the Government on such a subject, but it can do no harm for us to record briefly what has already been published in regard to the Armstrong gun. From engravings of its supposed form in the *Mechanics Magazine*, it would appear to approach much nearer than any other to the relative proportions of the rifle. In other words, it is long, and comparatively to its length, of slender calibre. The bore is rifled, so that it is, in fact, to all intents and purposes, an enormous rifle. Bolts, properly speaking, rather than bullets, seem to be the missile to be chiefly shot from it, although shell and other forms are also spoken of. The implement is breech-loading. Sir William Armstrong has presented his patent to the Government, and it has therefore been suppressed. They must have been obliged, General Peel, the War Minister, acknowledges, to have given him almost any money for it; yet no condition or restriction was insisted on by the inventor; and although he will receive in the next ten years a sum of 20,000*l*. Sir William will do onerous duties, as the Government Engineer of Rifle Ordnance, for the 2,000*l*. a-year thus given him, while engaged in revolutionizing the army and navy ordnance. The new cannon will be only one-third the weight of the old, and it is asserted, it will literally realize the scouted idea of "the long range." Thus, in this as in so many other instances, the contemptuous sneer of yesterday becomes the congratulatory smile of today. The Armstrong will carry bolts no less than five miles and upwards; and, at shorter distances, its aim is so accurate that it strikes the object aimed at fifty-seven times for one of the old cannon. The power of artillery will by its

aid be multiplied no less than fifty fold. There is talk of still more tremendous war appliances since this truly strong arm of the service became so renowned; but of the merits of these there is no authenticated account. A cannon is spoken of capable of firing once in three seconds, or 1,200 rounds an hour, without even unduly heating; it seems to be made of cast-iron, and cannot, therefore, have the advantage of lightness and portability possessed by the Armstrong, which is of wrought iron. A "Marine English Bull-dog" is also talked of, which is said to be "capable of destroying, in half an hour, the largest ship of war and her crew." Another terrible engine is said to consist of a leaden shell, charged with "liquid fire," which may be shot from rifles and set fire to ships, &c.

As for Sir William Armstrong, we have long regarded him as a distinguished inventor, and have frequently pointed attention to his hydraulic cranes, and his hydro-electric engine, for which he was made an F.R.S.; and we have no doubt that the Armstrong rifled cannon must have sterling merits of its own, over and above the insinuated objects of the Government in bringing it and its inventor into notice in the way they have deemed it proper to do.

Mr. Armstrong was, till within the last ten or twelve years, a solicitor at Newcastle-upon-Tyne. Thereafter he became one of the most extensive engineering manufacturers on the Tyne. His partners are to be employed by the Government in constructing the Armstrong gun, and the extensive Elswick engine works are to be greatly enlarged for this purpose.*

TAR AND LIME.

ONE of your correspondents, "A Builder" in your last number, asks how he should mix gas-tar with lime in order to make a mortar impervious to wet. I have always adopted the following method:—Provide a square wood-trough, say 8 feet by 4 feet by 1 foot 4 inches; put a quantity of fresh lump lime in; add water quickly. When the lime is well boiled, having assisted that operation by frequent stirring, add the tar (the heat of the boiling lime melts the tar), stir it well, taking care that every part of the lime is intimately mixed with the tar; then add sharp sand or crushed clinker, and stir well as before, after which, in about twenty hours, it will be fit for use.

I am not certain as to its beneficial qualities, and would be glad if any of your correspondents would go into the chemical part of the question.

SPHINX.

ELECTRO-TELEGRAPHIC PROGRESS.

THE Academy of Sciences has received an important communication from Professor Wheatstone, containing a full description of his Automatic Writing Telegraph, by which 50,000 letters may be printed off per minute. It consists of four distinct contrivances; viz.—1. A perforator, for the purpose of piercing holes in a long slip of paper, the relative position and number of these expressing the letters of the alphabet. 2. A transmitter, which receives the perforated slips of paper, and transmits the electric currents, produced by a voltaic pile, in the order and direction determined by the holes in the paper. 3. A receptor, or apparatus, which, at the receiving station, marks on a paper certain black points, corresponding to the holes already mentioned made in the paper at the transmitting station. 4. A translator, or machine by which the telegraphic marks or spots are translated into the ordinary alphabet. The translator has eight keys, placed in two rows of four each, with a ninth key in a separate place. By a proper combination of these keys, a wheel in connection with them may be made to present to the paper which is to receive the impression any letter required. The ninth key prints it. All the contrivances are made to work together by means of various details, which do not admit of description here. Professor Wheatstone states that by means of this apparatus he can transmit five times as many signals to moderate distances as by the usual methods. The chief advantage of the system appears to be, that the manual operations it requires are extremely easy, and require scarcely any intellectual effort.—It is proposed that poplar-trees be planted along all our railways and used as telegraph-posts.—At a meeting of the Atlantic Telegraph Company, the chairman stated that he had received intelligence of the success of the negotiations with the Government, and that

* An interesting memoir of Sir William Armstrong appears in the *Gateshead Observer* of the 12th of March instant.

a guarantee will be given of 8 per cent. on 600,000*l*. for twenty-five years. The guarantee will not be unconditional. The cable remains in exactly the same state as at the previous meeting. The directors having no adequate funds for lifting and repairing, a new Act will be obtained, in order to raise the necessary capital.—At the time of the failure of the Atlantic cable, we urged, among other suggestions, the desirability of further experiments, with india-rubber as an insulator instead of gutta-percha; and we have since occasionally observed that the subject is obtaining the public attention. Some experiments have just been made at the india-rubber works of Messrs. Silver and Co. of Silverton, on the Woolwich line of railway, and which were witnessed by upwards of 200 scientific and other gentlemen interested in the subject. The result was the production of an insulating covering of india-rubber, so impermeable to water as to be capable of withstanding a hydraulic pressure of 1,000 atmospheres, and so little apt to be injured by softening under heat, that it was put into boiling water without affecting the insulation.—It is said Mr. Henley is preparing, at the Newfound-land end of the Atlantic cable, for renewed attempts to resuscitate the line, when it can be under-run in the advancing spring.

The Red Sea telegraph has passed Madeira on its way in two screw steam-ships, the *Imperator* and *Imperatrix*, to Suez, whither Messrs. Newall and Gordon, the contractors, are to proceed shortly to superintend the laying of it down.—Mr. Lindsay, of Dundee, has been sending messages across the Victoria Dock there without any cable: the breadth of the dock is 500 feet.—The proprietors of the St. Rollox Ironworks have caused a telegraphic wire to be laid between their Glasgow establishment and the works at Motherwell. This, we believe, is the first instance in Glasgow of a private telegraph being adopted.

CHURCH-BUILDING NEWS.

Cardiff.—St. Mellon's Church has been very much restored to its original style and character. Mr. Freeman, of Lanrumney, who paid the cost, employed Mr. Scott as the architect. The interior has been entirely new ceiled, and the wood-work left exposed: at the termination of the ceiling a cornice has been run round the walls, and the old oak carvings in the Virgin Chapel have been retouched and given their original appearance. The principal of the exterior works are the partial restoration of the roof, new coping of the western gable, running from a cross centre piece, and an entire new porch. The whole has been carried out by Messrs. James and Price, of this town. Re-paving is contemplated: at present part of the seats are the old settles of the thirteenth century, and there are some old high pews. The improvements cost about 350*l*.

Liverpool.—The foundation-stone of the new church in Finch-street, to be called St. Mary Magdalen's Church, has been laid. The site is on the south side of the street, and the land, which has been purchased from the corporation, was formerly covered with houses of the worst description, all of which have been pulled down. The design of the church has been entrusted to Messrs. Hay, of this town. The style will be Gothic of the Decorated period, and the materials of which the edifice is to be erected will be chiefly brick of three colours, and white stone for the tracery and mullions of the windows. The elevation to Finch-street will present four large three-light windows, with lofty gables over each, the westernmost being surmounted with a bell-turret and floriated iron cross about 80 feet from the ground. The church will be 70 feet long by 47 feet wide, and the nave and aisles, the aisles with high arched gables running in at right angles against the nave. There will not be a clerestory, but a gallery round the three sides, which, with the ground-floor, will accommodate about 800 worshippers. The chancel will be formed by means of traceried screens on the north and south sides, one of them enclosing the vestry, and the other fronting the organ. The roof will be of open and framed carpentry, which, together with the pewing, will be all stained and varnished. On the north and south sides will be four larger three-light windows, filled in with geometrical tracery. Immediately under these are three-light segment windows to give light below the galleries. Economy has been studied throughout, and the contract is taken for 1,700*l*. by Mr. John Pooley, of Liverpool.

Malton.—The foundation-stones of the two chapels in the new cemetery at Malton have been laid. The architect is Mr. John Gibson,

Malton: the contractors for the buildings are—masons' work, Messrs. Dove, Scarbro', carpenters' work, Mr. Martin Dodsworth, Malton; smiths' work, Mr. Shonksmith, York; painters' work, Mr. Wm. Wilson, Norton, Malton. The ground is laid out after a design by Mr. George Wm. Slater, of Malton; contractor, Mr. J. Bowker, of Scarbro'ough.

Shildes.—The Methodist New Connection Zion Chapel, Laygate-lane, South Shields, has been completed and opened. The facade stands obliquely to Laygate-lane. The architects have availed themselves of an irregularity of site to give greater apparent space in front of the chapel, as it is approached from Commercial-road. The block of buildings extends 136 feet westward, down Palmerston-street, and comprises a chapel 58 feet by 43 feet 6 inches, and 31 feet high (inside dimensions); a school-room, 45 feet by 30 feet; and three vestries, with the usual outbuildings. Over the vestry, &c. three rooms have been provided for the chapel-keeper. The walls are of brick, with Prudham stone dressings. A flat ventilating roof has been adopted, running only to two-thirds of the height that would have been required had the sides been sloped up to a ridge. The style of the building is modified Italian. The principal feature of the interior is the pulpit platform. It is supported on ornamented iron columns, with pierced iron columns, forming a railing round it. Immediately under this platform is the communion space, enclosed by polished oak rails supported on wrought-iron standards. The artificial lighting of the chapel is by means of two sunlights in the ceiling, with wall brackets under the galleries. The heating is effected by means of gas-stoves. The chapel will accommodate nearly 700 adults, one-fourth free. The school-buildings are similar in character to the chapel—ventilation and light being primarily attended to. The height of the school is 19 feet to the wall-plate, and 25 feet to the ceiling in the centre of the room.

STAINED GLASS.

Ripon.—A new monumental stained glass window, by Messrs. Hardman, of Birmingham, has been placed in the north aisle of the nave of Ripon cathedral. The window is of three lights; style, late Perpendicular. Under white flowered canopies are these subjects:—The centre is a picture of the Last Supper, our Saviour at the head of the table, and at the foot, Judas with his money-bag. The compartment to the left or east of the centre figures, represents the Resurrection. The other division has the Ascension. In the small upper lights are the four prophets and angels holding a scroll. At the foot, in ornamental black letter, is the inscription in memory of members of the Waddilove and Oxley families.

Manchester.—Another stained glass window has been placed in Manchester Cathedral by Messrs. Edmundson and Son. The subjects represented are the following:—The Transfiguration; type, Elijah taken up to heaven. The Raising of Lazarus; type, The raising of the widow's son. The Triumphant Entry into Jerusalem; type, David crowned at Helbon. The Last Supper; type, the Paschal Lamb. The upper part of the window is filled with tabernacle work, and canopies with niches containing figures of the four evangelists, surmounted by angels bearing scrolls. The inscription at the foot of the window reads as follows:—"To the honour and glory of God, by a citizen of Manchester, once a chorister in this church: A.D. 1859." This is the fourth gift of a like order by the same gentleman. It is placed on the south side, next the Chapter-house. The Dean of Manchester selected the subjects.

Bakewell.—The middle window of the Vernon Chapel, in Bakewell Church, has been filled with stained glass as a memorial to the late Duke of Rutland. The work was entrusted to Messrs. Hardman and Co. of Birmingham. The subject is "The Resurrection," treated allegorically. In the centre light our Lord is represented in a white draped robe, edged with gold, and standing triumphant on a tomb of Gothic design, his right-hand held up in the attitude of benediction. It is surrounded by a glory of ruby colour, with angels' heads in the margin. In the lower part of each of the side-lights three Roman soldiers are represented. A cloud stretching across these three lights "conceals from their Pagan eyes the glorious signification of the Resurrection as revealed to our Christian faith." In the upper part of each side-light is seen one of the witnessing angels descending towards the tomb; whilst in the lights of the head a choir of angels celebrates the glorious event. In the highest light of the head of the window the Holy Spirit is

seen descending as a dove surrounded with a glory. Beneath the window is a brass with the inscription.

PROVINCIAL NEWS.

Cambridge.—The Guildhall Committee, aided by the Committees of the School of Art and the Public Rooms Fund, have succeeded in obtaining 4,000*l.* towards the new public rooms. The rooms are for county as well as for town and university purposes. The subscription list remains open, as the committee desire to present 4,000*l.* to the Corporation, free of all deductions.

Ely.—The new national schools erected in Walpole-lane, in the parish of St. Mary's, and Broad-street, in Trinity parish, are now completed. The first stone of the Walpole-lane buildings was laid in April last, and those in Broad-street, in August last, by the late Very Rev. Dean of Ely. There are class-rooms to the Walpole-lane schools, and also residences for both schools. The buildings are intended for boys, girls, infants, and adults, and are constructed with stone jambs and heads to the doors and windows, stone strings, copings, &c. &c., all of Ancaster stone. The walls are built with Ely white bricks. The roofs are open, and timbers stained and varnished. The play-grounds are divided with walls, and regard has been paid to the drainage and water supply, which have been carried out under the rules of the Board of Health. The architect is Mr. S. S. Tenlon, of London, and the whole of the works have been carried out by Mr. Freeman, of Ely. The cost of the works (exclusive of sites) is 4,000*l.* which sum has been raised by grants from the Committee of Council on Education and donations from the Dean and Chapter, who presented the sites of each building and a large sum. The deficiency has been raised by subscription.

Rochester.—Watt's Almshouses are approaching completion, but the flooring is not all down yet. The style of the building, which is described as a kind of bastard Elizabethan bordering on the grotesque, is said to have elicited much comment. The staircases at different parts of the building are stated to be very narrow and rickety, and to have been planned seemingly after the style of the disagreeable circular staircase in Rochester Castle. The outline of the building is broken by petty details and peaks and pinnacles. The architect is Mr. Charles Ross Ford.

Weston-super-Mare.—Archdeacon Law has given to his parishioners in Weston-super-Mare the sum of 4,000*l.* for a town-hall, ball and concert room.

Yeovil.—The new Corn Exchange building, recently erected, has now been formally opened. The new building stands in an obscure situation, on a piece of land between the back of the Town-hall and the Cheese-market. It is a light and lofty room, about 34 feet square: the glass roof is supported by transverse iron girders, manufactured by Mr. Rowe, ironmonger, Shipbourne. The building for pitching the corn in is immediately opposite the Corn Exchange, and is 35 feet long, the roof of which is also composed of glass iron girders, manufactured by Messrs. Hannan and Gillett, of Yeovil. The erection of the building was entrusted to Mr. Chant, builder, Yeovil.

Newport.—At a meeting at the Town-hall for the examination of the tenders sent in for the new markets, that of Mr. John Cobb, of Newport, was decided upon.

OPENING OF JARROW NEW DOCKS.

The formal opening of the second dock of late years constructed on the River Tyne has now taken place. The North-Eastern Railway Company are the proprietors of these docks, which are situated at Jarrow Slake, Shields, near Newcastle. They were begun in 1855, and have occasionally been already referred to in our columns. The Northumberland Docks of the Tyne Commissioners occupy a site at Hayle, on the opposite, or north side of the river. The accommodation consists of a water area of 15 acres, and four shipping jetties, each having shipping places for nine large vessels, and about 12,000 tons of coal per day may be shipped at these docks. Lines of railway several miles in length have been laid adjacent to the docks, as standage accommodation for waggons. There will also be two shipping places in the river for loading river craft with coals, &c., for manufacturers, and a jetty for discharging ballast from vessels by means of hydraulic cranes erected by Sir Wm. G. Armstrong and Co., of the Elswick Ironworks, Newcastle. Another jetty is to be constructed for the goods traffic. For the jetties, 400,000

feet of Baltic timber have been required, and 600,000 cubic feet of Ashlar, in freestone, from Yorkshire, for the docks. There have also been used nearly 20,000 feet of Aberdeen and Cornwall granite. The tidal lock is 100 feet wide, and 250 feet long, and has entrance gates 60 feet wide. The gates at the tidal entrance have been made by Messrs. R. Stephenson and Co., of Newcastle: they are 80 feet wide, and weigh nearly 600 tons. They are worked by hydraulic machinery, supplied from the establishment of Sir W. G. Armstrong and Co. The docks have been enlarged from time to time during the progress of the work, in anticipation of increased traffic. Mr. T. E. Harrison, C.E., was engineer in chief of the works; Mr. R. Hodgson, resident engineer. The engineers for the contractors were Messrs. T. Scott, P. Stewart, and T. Dakin. Messrs. T. Scott and John Milburn were the inspectors of the works for the company. The contractors for the whole works were Messrs. Jackson, Bean, and Gow. Sub-contractors—for the locks, Mr. Jos. Greenwood; for the quay wall, Messrs. Heaps, Kelly, Milburn, and John Ramsey; for the excavations, Messrs. J. Hill and William Briggs.

KENSINGTON GORE ESTATE.

In the early part of last year the Commissioners decided upon pulling down Gore and Grove Houses and the old wall in front of them, and an opportunity was thus afforded to the public for seeing the grounds in the rear, the extent of which formed the subject of remark by every passer-by. During the winter months operations have been going on towards filling in the upper part of the property, to form a sort of raised terrace. It is curious to note the extraordinary distances from which the dry rubbish has been brought at Kensington Gore. It has been carted from Bermondsey, King's Cross, Holborn, Gray's Inn-lane, Camden-town, St. John's Wood, Oxford-street, Marylebone, Fleet-street, Vauxhall Bridge-road, Chelsea, and Hammersmith. Nearly one hundred thousand loads have been already so deposited.

THE NEW HOSPITAL FOR THE COLDSTREAM GUARDS.

SIR,—You have given us so many good and beautiful examples of architecture in the *Builder*, that I think I am really laying you under a great obligation to me by pointing out to you a specimen of the most extraordinary architecture (at the new Coldstream Guards Hospital, in Vincent-square) I have ever seen. Do go and look at it, and give us a wooden of it in the *Builder*. Two huge brick tubes, or shafts, containing fireplaces, pass through the room!

It is quite worthy of having public attention directed to it; for never, surely, since Nebuchadnezzar, or some of the kings of ancient Egypt, was anything built like it. One expects to see Rameses the Great, with his hands on his knees, to complete the decoration; or a furnace with Shadrach, Meshach, and Abednego, in it.

Is it the invention of the unassisted genius of the Guards?

SHAKO.
The effect of the two huge brick cylinders passing from floor to ceiling in the centre part of the room is certainly startling, if not beautiful. There is doubtless some recondit motive for the strange disfigurement, and we shall be glad to have some information on the subject. Whose was the directing mind? The team that sped these shafts ought to be known to fame!

COMPETITIONS.

Perth.—The committee of the parochial board having obtained three plans and specifications for building a new poor-house,—one by Mr. Heiton, cost 7,140*l.*; the second by Mr. Readdie, cost 7,346*l.* 3s. 2d.; and the third by Mr. Smart, cost 8,700*l.*; all which plans were exhibited for a week in the council-room, that the public might have an opportunity of inspecting them,—submitted Messrs. Heiton and Readdie's plans to Mr. Mathewson, architect to the Board of Public Works, Edinburgh, who gave his decision in favour of Mr. Heiton's plan. The board appointed Mr. Heiton as architect to superintend the erection of the building.

Manchester.—According to the local *Examiner*, upwards of 500 architects have applied for instructions relative to the competition for the new assize courts to be erected in that city! We further hear that it is the intention of the committee of the proposed building to give the public an opportunity of seeing such designs as may be

forwarded; at any rate they should do so, and at once.

Rose-hill Schools, Dudley.—This was a limited competition, confined to Dudley architects, and upon the envelope bearing the motto of the successful design ("Progress") being opened, it was found to be by Mr. William Wigginton. The buildings, we are told, are to be proceeded with forthwith. In this competition a premium was given to the unsuccessful, as some little compensation for services rendered.

SANITARY IMPROVEMENT OF CHURCHES.

At Marylebone Police-court, Mr. Knight, receiver of rents of pews in St. Mark's Church, Hamilton-terrace, St. John's-wood, attended before Mr. Long, on a summons obtained against him by Dr. Thompson, Medical Officer of Health for Marylebone, at the instance of the vestry of the parish, the said summons setting forth that the church, for want of proper ventilation, was injurious to health.

Dr. Thompson stated that, in consequence of numerous complaints which had been made with regard to the insufferable nature of the atmosphere in the church, particularly in the summer, he had made an examination of the structure, and found that the ventilation was defective, so much so as to be calculated to injure health.

The Rev. Mr. Bellew, doing duty at St. Mark's, gave evidence as to the injury and inconvenience caused to the congregation by the condition in which the church was.

Defendant, on being asked what answer he had, replied that he merely received the pew-rents, and handed them over.

After the further proceedings, an order was made for the proper improvements to be carried into effect within twenty-eight days.

INCOMPETENT FOREMEN AND THE PRENTICESHIP SYSTEM.

Sir,—Will you permit me to offer to the consideration of the building community some remarks relative to the above subjects, noticed recently in the *Builder* (p. 158). Reference was made to the constant complaints of the incompetency of builders' foremen. One can hardly suppose such complaints to be unfounded, but whose is the fault? If employers, as they generally do, keep from all personal contact with their men, issuing all orders and receiving all reports, including the capabilities of their workmen, through their foremen, they must expect sometimes to have incompetent men thrust into these responsible situations.

With all due respect, I say that if employers would treat us with a little less of that freezing dignity so often seen, and by personal observation make themselves acquainted with the qualities of every *employee*, they would have little difficulty in selecting steady, capable men, who are now passed over, simply because they happen not to be the friends of those whose recommendation is followed by the "governor." But, unfortunately for all parties concerned, most employers appear to deem it *infra dig.* to pass a word with, to elicit an explanation from, or give an order to, a mere journeyman.

But employers not only suffer from incompetent, but still more so from drinking, foremen. To say nothing of the direct neglect of duty from this cause, it is well known that vast numbers of dissipated workmen are kept in employment because they are boon companions of the foreman, or constantly standing treat for him. We often have been, and still are, charged with being fonder of the pot, the pipe, and the idle alley, than attending mechanics' institutes and pursuing mental culture. Why, sir, here is a direct premium offered to antagonistic habits. I venture to say there is scarcely a workman who has been sober a year or two but knows perfectly well that sober habits and moral conduct are no recommendations to a by no means small portion of metropolitan builders' foremen.

It is not presumption on my part, I would respectfully counsel employers to promote sober, intelligent, industrious workmen, those they by personal observation know to be such. Let it be distinctly understood by the entire body of men, that these are essential for regular employment and future elevation to responsible positions. If we depend upon it, we should soon see a marked improvement not only in the habits and manners of men, but in the execution of their daily work, thus proving a source of satisfaction as well as profit, instead of being, as is too often the case, a source of considerable annoyance and positive loss to masters.

I now turn to the letter of "An Architect and Well-wisher." This gentleman traces the redundancy, especially of indifferent workmen, in the building trades, to the practical abolition of seven years' apprenticeship. He mournfully asks, where now are the skilful artisans, such as flourished in olden time? Let me assure him that even in these degenerate days, where good and well-paid work is to be done, good workmen are to be found to do it. Of course it would be invidious to mention names, but I dare affirm that there is work now executed in no respect surpassed by the best executed of the past. I do not, however, confess, large numbers of indifferent workmen in the building trades, especially amongst carpenters; but has not the modern mode of *running up* (not *building*) houses, as seen in suburbs, where the work is done by day-labourers, put on such villainous timber-work as is to be found in the outlying districts of London, and the best of workmen will inevitably become deteriorated, and ultimately be reduced to the level of the day-labourer? Here, then, is one cause of the redundancy of indifferent workmen in all branches of the building trades, a cause which we, the operatives, are not responsible for, but rather the victims of. Unfortunately, without any immediate remedy for this mad rage for cheapness, we can only hope that day-labour experience will convince the public of the folly of pretentious slap-dash building in preference to the substantial work of former years.

In these remarks I do not intend to deny that a change in the apprenticeship system is necessary. On the contrary, I think improvement is imperatively required, but not in the direction indicated by our "Well-wisher." Observation convinces me that it is morally and physically

wrong to place a boy of fourteen years of age at hard work, and exposure to the ordinary influence of an English workshop. At that age the human frame is not sufficiently knit and solidified to sustain the ordinary toil of building trades without injury. When the boy has merged into the full-grown youth of sixteen, he is physically able to enter upon the serious duties of life. And this, in fact, is the age at which lads generally are put to the bench, even if apprenticed when fourteen years old; the interval being spent in running errands, cleaning knives and forks, boots and shoes, sweeping out shops, and similar jobs, exposed to the kicks, cuffs, and blasphemous expletives of brutalized, intemperate workmen,—within hearing of the filthy talk, ribald jests, and profane language unfortunately too common. This is the preliminary trade-teaching of those who it is desired should turn out first-class workmen. Now, instead of these two years being spent in so profitless a manner, I suggest, that for the raising up a race of superior, intelligent mechanics, this time be devoted to an elementary trade education, where the youth would become initiated into the application of geometry, drawing, mensuration, &c. to his future trade, and the theoretical part of everything necessary to constitute a first-class artisan: at the same time habits of steady industry should be inculcated, as well as settled moral habits, to resist the gross temptations of the workshop.

We require a new order of things: the interests of humanity demand it.—

New times demand new measures and new men: The world advances, and in time outgrows The laws that in our father's days were best; And, doubtless, after us, some purer scheme Will be shaped out by wiser men than we, Made wiser by the steady growth of truth: We cannot bring Utopia at once.

Nevertheless, we may consistently strive to realize some of our imaginings. Utopia, though it may appear to many. But some will inquire, Where are the means to embark in so comprehensive a scheme as you propose? "An Architect" very appropriately calls attention to the wealthy guilds or companies in the City. Some of them have enormous revenues, which, if wisely appropriated in the direction I have indicated, would, I believe, do far more good in one year than centuries of protecting and monopolising arrangements. I certainly agree with our "Well-wisher," that it is a disgrace the old hall of the Carpenters' Company should be perverted to such a use as this. What a glorious educational institution it would make! Here is the first essential, "a local habitation," ready to hand, with that it would, if we could not succeed in diverting some of the useless income to the purpose contemplated: these, with well-digested plans, trades subscriptions, and other available means, would furnish machinery to carry the foregoing suggestion into practical effect.

Working men of London! are the thoughts here put forth worth consideration? Are they worth being resolved into the actual and real? If so, let us have our aggregate trades' meetings, and endeavour to evolve some prudent and conciliatory plan of action, that will test the soundness of our "Well-wisher's" belief in the growing disparity of the influential men in these guilds to fall in with the onward progress of the age, and help forward the social and intellectual elevation of our order.

WILL KILLPLANE.

Books Received.

Sketch of the Civil Engineering of North America. By DAVID STEVENSON, F.R.S.E. and C.E. &c. Second edition. London: Weale, 59, High Holborn. 1859.

THE author of this little volume has been induced by Mr. Weale to republish it after a lapse of some twenty years, the treatise being revised, and the purpose being chiefly its application to new countries, and particularly to India, where, no doubt, engineering works on an extensive scale will soon be in full operation. Indeed, we quite agree with Mr. Weale in thinking that this treatise, though its examples are mainly or altogether American, might, with strict propriety, be styled a "Sketch of Civil Engineering Practice, applicable to new Countries."

It treats of harbours, lake and river navigation, steam navigation, fuel and materials, canals, roads, bridges, railways, waterworks, house-moving, and lighthouses. The examples of harbour formation comprise remarks on tides, quay construction, jetties, cranes, graving, screw, and hydraulic docks, landing slips, &c. with examples of harbour engineering, at New York, Boston, Philadelphia, Baltimore, Orleans, Quebec, Montreal, Halifax, &c. The chapters on lake and river navigation of course relate to the great American lakes and rivers chiefly, and that on steam to the practice on these waters. The building materials, treated of in the fifth chapter, are brick, marble, granite, woods, &c. An interesting account of the great inland canal navigation of America is given in the ensuing section; and on the subject of roads, we have all about the primitive "Corduroy roads," as well as the "National roads" and the Macadamized and other roads of America. The subject of American bridges is an interesting one, as we have had occasion now and then to show: various special bridges are described, as well as the "patent lattice" and "patent truss" bridges, &c. Perhaps no portion of the treatise will apply more strictly to India than what is said of the railways, roads, and bridges of America, particularly the first of these, and this constitutes one of the principal divisions of the book. In the chapter on Waterworks, descriptions of the Croton and

Washington, the New York and Boston, Montreal, Philadelphia, and various other waterworks are given. "House-moving in America" is rather a curious subject, and, like most of the other species of engineering works treated of, is illustrated by engravings.

Altogether, and with reference to our colonies, and the opening up of our Indian empire especially, this is a timely, well-adapted, and useful little treatise.

Recent Practice in the Locomotive Engine: comprising the latest Improvements and a Treatise on the Locomotive Engines of the United States. By DANIEL KINNAR, C.E. London, and ZERAN COLBURN, C.E. New York. Blackie and Son, Edinburgh, London, &c.

THIS work is being issued on about eight parts, of which four are now before us. These consist of imperial quarto plates, with explanatory letter-press and wood-engravings, the whole forming a portion of an elaborate and important professional work upon the anatomy and physiology of the iron horse, and its development up to the present day. The treatise is also in some measure supplementary to the work already issued on "Railway Machinery," and which was some time since noticed in our columns.

Rudimentary and Practical Instructions in the Art of Paper-Modelling in Architecture. By T. A. RICHARDSON, Architect. London: Weale.

THAT which is worth doing at all is worth doing well. Architectural modelling in paper may be much more ornamental than useful; but at least let it be ornamental, and a well-constructed model, with its adjuncts of imitation lawn and shrubberies, fields and groves, may be admitted to be no mere trifling or paltry ornament: it may even be more useful than a mere perspective view, in presenting an idea of an architectural design, whether of church or mansion, farm-stead or villa, especially to a non-professional capitalist or landlord. But it can be neither truly useful nor really ornamental, unless constructed with such exactitude or nicety as is here very distinctly and clearly instructed. The little volume is illustrated by explanatory woodcuts, which will greatly aid the student, as will the description of modelling implements also given.

Miscellanea.

CONCENTRATION OF THE LAW-COURTS.—In reply to a question in the Commons put by Mr. B. Hope, Lord J. Manners, as first commissioner of works, stated that the Government are not prepared to take any steps in this matter, in consequence of the great differences of opinion on the subject; but it was, he remarked, a very proper one for an inquiry, and the only question was, whether that inquiry should be by royal commission or select committee. His lordship promised to communicate the views of the Government on the subject.

SPACE AT BRITISH MUSEUM.—In the House of Commons, on the 21st inst. Mr. Gregory gave notice that he would on an early day move for a select committee to inquire into the means of obtaining increased space for the extension and arrangement of the British Museum. He had previously brought the subject under notice, but in too thin a house. There was then a majority of twenty-one to two, however, against the addition of a clause as to the best means of rendering the various collections available for the promotion of science and art.

THE PROJECTED TOWN-HALL AT CROYDON.—For the erection of the projected Town-hall and Literary Institution at Croydon, several plans from various architects are before the committee of the Croydon Town-hall Company. Of the various competing plans, one proposes, at a cost of 2,200*l.* the erection of a hall to accommodate 700 persons, with galleries to accommodate 200 more, and offices for the Literary Institution on the first and second floors. A second plan suggests a hall to accommodate 1,030 persons, exclusive of 70 sittings in the orchestra, and of standing-room in the aisles and vacant places; the Literary Institution being a separate building; the former involving a cost of 1,560*l.* and the latter of 1,100*l.* The architect adds that these sums exceed the prescribed cost (2,200*l.*), and alleges that it is impossible to build a large hall capable of accommodating 1,000 people, and give the various offices required in the particulars, for the limited amount proposed—namely, 2,200*l.*

TESTIMONIAL TO AN EMPLOYEE.—We are asked by the workmen in the employ of Mr. Stevens, builder, of Southampton, to mention the presentation to him of a resolution of thanks on their part for his liberality. It was illuminated by Mr. W. C. Clark, of Southampton, and was presented by a deputation on Saturday evening last.

BUILDING AND SANITARY PROGRESS AT LIVERPOOL.—From the 21st annual report of Mr. Rishton, the building surveyor to the local health committee, it appears that during the past year 1,717 new houses have been erected, with accommodation for 10,302 persons, and that only 84 of these houses are in the form of courts, but that these courts are well ventilated and supplied with conveniences for removal of refuse, &c. The water-closet is now general throughout the town, not only for small cottages, but even for cellar tenements. Since 1838 there have been 31,204 houses erected within the borough. In 1841 the number was 1,761; in 1845, 3,728; in 1851, 837; and in 1857, 1,520.

NEW BUILDINGS FOR THE PATENT OFFICE.—A report from the Commissioners of Patents to the Treasury has been prepared, in which authority is asked to apply a sufficient portion of the surplus now derived from the fees paid on patents for the erection of a museum for the preservation and exhibition of the models deposited with the commissioners, and for the erection of suitable offices. In 1855, the commissioners established a free library: it has gradually become a collection of great interest and importance, and a largely increased accommodation is urgently required. The balance-sheet of income and expenditure for 1858, prepared and shortly to be laid before Parliament, shows a surplus on the year of 5,900*l.* thereby increasing the total surplus to 11,900*l.* The work of printing the old specifications being completed, the expenditure on that head ceases altogether, and, consequently, the surplus income of the current year is estimated at 21,600*l.*; so that leaving a margin of 3,500*l.* the sum of 30,000*l.* may be safely estimated as available for building purposes at the end of 1859, and the surplus in each subsequent year will be about 20,000*l.*

MAJOR FITZMAURICE'S NEW LIGHT.—Wonderful things are alleged as to this "new light," and the gas companies may look out; but so many new lights have failed to keep the promise of their warnings, that there may be a hitch here too. Meantime we may state that on the 15th of March, the Hon. Major Fitzmaurice is said to have visited the Penrhyn Slate Quarry, near Bangor, North Wales, for the purpose of exhibiting his newly-discovered light; and that the results were "most extraordinary." The numerous steps of the quarry, some even at a distance of 800 and 900 yards, "were as clearly seen as in daylight." This light, it is said, is applicable to a variety of purposes. The colours of furniture, dresses, &c., are rendered unusually vivid, and photographs can be taken in ten seconds. It is free from injurious fumes, and consequently does not affect paint, gilding, or articles of delicate colour. It is also easily manufactured, and very cheap. A light equal to that of thirty candles can be produced at a cost of one halfpenny an hour. If all this be correct, the objects our old correspondent J. E. D. had in view in the invention of that mode of lighting which is called "sun-light"—exclusively from ceilings or from above the level of the objects illuminated—would appear to be now realizable to a high degree of splendour and perfection. On J. E. D.'s views [see *Builder* of 1847, p. 281], "the whole flood of light should primarily descend from above;" and the result, as realized in the lighting of the stage of a provincial theatre, by the clearing away of all foot-lights, and "the bold substitution of a central congeries of lights in the very body of the house, and almost in the place usually occupied by the chandelier, with a reflector sufficiently large and powerful to turn the whole flood of light upon the stage, at about an angle of 45 degrees," was the infusion of "an unusual brilliancy, and yet a pure and chastened serenity of general effect," especially on the countenances and the drapery of the *dramatis personæ*. Of this peculiar effect of the "sun-light," every one can, even now, to some extent judge, since so many public halls, churches, &c. are being more or less strictly lighted on J. E. D.'s principle; and it only requires a really brilliant and vivid light to realize it in all its perfection; but whether the Fitzmaurice light be destined to do so, remains to be seen. There were hopes of the electric light doing so; and the effect, when tried in Her Majesty's Theatre, a few years since, was very fine, as we noted at the time; yet nothing more has come of that light hitherto.

INSTITUTION OF THE FINE ARTS; PORTLAND GALLERY.—The twelfth exhibition of this society, now open, includes 599 pictures, and one piece of sculpture by Ebenezer Bennet. Wanting in works of a high order of merit, presenting rather the aspect of a collection of enlarged landscape photographs in colour, it is nevertheless an agreeable, indeed interesting collection, and will call for more detailed notice hereafter. Mr. Rossiter, Mr. Henry Moore, Mr. A. Montague, Mr. Carrick, Mr. R. H. Mason, Mr. Smalfield, Mr. H. Moore, Mr. L. J. Wood, Mr. John Thorpe, Mr. C. Pettitt, and Mr. J. G. Naish are the most successful contributors.

FALL OF NEW BUILDINGS IN COVENTRY.—An alarming accident has occurred in Ford-street, Coventry. A new three-story house was being built at the end of a row of some ten other houses. The house in course of erection had so far progressed towards completion that the persons employed on it had begun to roof it in; but it appears, according to the local *Herald*, to have been built in so slight a manner as to be unable to stand the slightest shock. A rather strong gust of wind caught the house and tore a great part of it down. The party-wall—or at least the greater part of it—fell, carrying with it the party-wall of the upper part of the adjoining house. No one was injured, as the workmen fortunately were at dinner.

INDURATING STONE.—Sir: I have from time to time noticed in your paper the statements relative to the numerous patents for "preserving stone." Any information upon the subject will, probably, therefore, be interesting to your readers. In the years 1856-57 the corn-exchange in this town (Chelmsford) was erected under my superintendence. The front being almost entirely of Bath stone, Mr. F. Ransome, of Ipswich, applied to me to be allowed to dress it over with his composition. I hesitated at first, but eventually allowed him to treat the top of the cornice and the balustrade. This was done in the spring of 1857, and at that time there were two pieces of the capping of the balustrade which were rapidly disintegrating, and which the builder was to replace. I was somewhat alarmed one morning upon going to the building to find the balustrade had apparently been whitewashed, and repented having given my consent. However, this appearance soon went off, and upon an examination of the work the other day, I found the whole of the stone which had been dressed perfectly hard and round, and the disintegration in the two defective pieces arrested. I think this last fact proves the efficacy of the operation.—FRED. CHANCELLOR.

SOCIETY OF ARTS.—On Wednesday, March 16, Sir Richard Bethell, M.P. in the chair, a paper was read "On Trade Marks," by Professor Leoni Levi. The author pointed out the importance of the British manufacturer continuing to maintain the high character he had gained in the markets of the world, and for this purpose it was necessary not only that no deterioration should take place in the quality of the articles produced by him, but also that no idea should gain currency that such deterioration had taken place. The imitation of a trade mark was illegal in this country, though there were cases in which the law had been evaded, some of which were mentioned. In some foreign countries, however, such palpable frauds took place, owing to the imitation of many of our trade marks, that serious loss, both of profit and character, was sustained by the British manufacturer. The country where this might most be said to have become a system was Prussia; and whilst our English courts of law gave the fullest remedy to the German manufacturer against similar attempts here, there were at present no legal provisions in Prussia against this grievance. France had already entered into treaties with various other powers to prevent such proceedings, and it was incumbent upon the Government of this country to use every endeavour to remedy this serious evil.

THE GENERAL POST-OFFICE YARD.—You inserted some little while back a paragraph on the disgraceful state of the yard of the Post-office: in consequence of that and various other letters in several papers, the authorities have actually boarded up some part of the railing, to annoy if they can the inhabitants who have justly complained of the nuisance. The boarding erected is of no earthly use (and I doubt if it is done by the architect's orders) in fact, after dusk, the pavement on that side of the way is a perfect common nuisance. A word, sir, from you will perhaps have some effect.—OBSERVER.

* * * Why should the area be used as a rubbish yard? Surely some other place might be provided as a receptacle.

DISCOVERIES NEAR BETHLEHEM.—A letter from Jerusalem, in the *Gazette du Midi*, says,—"a very important discovery has been made in the neighbourhood of Bethlehem, near the spot where the angel appeared to the shepherds. Some workmen, when employed in making an excavation, found the ruins of an immense convent of the period of St. Jerome. The cisterns are very large, regular, and in a perfect state of preservation. The mosaic pavements of several rooms have been already laid bare, and the workmen are on the trace of the marble pavement of the church."

TENDERS.

For erecting and finishing St. Paul's Church, Broke-road, Haggerston. Mr. A. W. Blomfield, architect. Quantities supplied by Mr. T. M. Rickman and Mr. J. A. Bunker:—

Hocken	£7,740 0 0
Child, Son, and Martin	6,900 0 0
Patman	6,475 0 0
Myers	6,235 0 0
Browne and Robinson	6,146 0 0
Treharne and Son	6,073 0 0
Holland and Hansen	5,983 0 0

For residence, out-offices, farm-buildings, and lodge, for Mr. Singlehurst, Eathorpe, near Leamington. Mr. R. Clarke, architect, Nottingham:—

Oldham, Leamington	£3,600 0 0
Green, Warwick	3,300 0 0
Dalton, Coventry	3,204 0 0
Bromwich, Rugby	2,895 0 0
Chambers and Hilton, Birmingham	2,653 0 0
Gascoigne, Leamington	2,645 0 0
Norman, Leicester	2,640 0 0
Parnell, Rugby	2,535 0 0
Clifton, Leicester	2,387 0 0
Rooke and Clarke, Nottingham (accepted)	2,350 0 0

For building two villa residences at Sydenham for Mr. R. Murley. Mr. Low, architect. Quantities not supplied:—

Elston	£2,900 0 0
Heritage	2,300 0 0
Wells	2,630 0 0
Walker and Neave	1,865 0 0

For second portion of the Master Bakers' Provident Institution Almshouses, Lea-bridge road. Mr. T. E. Knightley, architect:—

Perry	£1,267 0 0
Amos	1,231 0 0
Clark	1,195 0 0
Keyes and Head	1,198 0 0
Wood and Son	1,080 0 0

For alterations and repairs to the Somerset Hotel, Strand, for Mr. John Sinclair. Messrs. Finch Hill, and Paraire, architects:—

Turner and Son	£1,782 0 0
Higgs	1,519 0 0
Patrick and Son	1,468 0 0
R. Lawrence	1,429 0 0
Elston	1,400 0 0
Selick	1,260 0 0

For new dwelling-house, No. 5, Market-street, Oxford-street. Mr. C. Eales, architect:—

Starr	£1,146 0 0
Clemens	1,089 0 0
Jackson	1,039 0 0
Arey and Bellingham	908 0 0
Higgs	897 0 0
Elston	874 0 0
Wilson	911 0 0
Keyes and Head	918 0 0
Batterbury	895 0 0
Sanders	860 0 0
Rudkin	830 0 0

For residence for Mr. Thomas Keavley, at High-cross-road, Tottenham. Mr. Rowley, architect:—

Carter	£473 12 0
Clarke	470 0 0
Powell	307 0 0
Rivett	305 0 0
Child	305 0 0
Humphreys and Son (accepted)	345 0 0

For alterations and additions to the Sturt's Arms Tavern, Hoxton, for Mr. Robert Hart. Messrs. Finch Hill, and Paraire, architects. Quantities furnished:—

Patrick and Son	£750 0 0
Turner and Sons	718 0 0
R. Lawrence and Son	739 0 0
Elston and Son	690 0 0
Smith	648 0 0

For building two houses at Enfield. Mr. George Low, architect:—

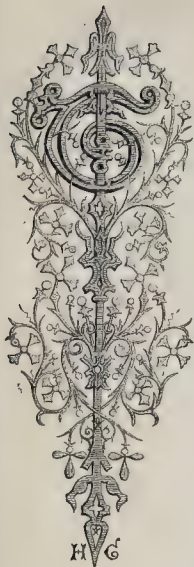
Tully and Son	£695 0 0
Walker and Neave	697 0 0
Elston	626 0 0
Hobbs	595 0 0
Packman	589 0 0

For the drainage of West Cliff-terrace, Ramsgate, Kent, for the Rt. Honble. David W. Wire, Lord Mayor of London. Mr. W. H. Skyring, architect:—

Taylor, London	£569 0 0
Elgar, Ramsgate	482 0 0
Wallington, London	452 0 0
Fowler, London	411 0 0
Smith, Ramsgate	389 0 0
Williams, Putter's Bar	340 0 0

The Builder.

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Grave Doings in Hereford Cathedral.

HERE is an old maxim that "the exception makes good the rule;" but, to establish its veracity, there is a contradiction of terms and facts, which makes it difficult to determine how a rule can be proved by its exceptions. Many are wise in their own conceits, and if they effect in their own generation what they conceive to be an improvement on the past, they are perfectly satisfied to leave their posterity to determine, alter, remodel, or reconstruct, as may best suit the taste of the age in which they may live. Thus, for example, a race of

churchwardens, which is happily now almost extinct, took a great pride in covering with coats of whitewash, repeated again and again, the walls of our parish churches; plastering up old monuments, defacing old paintings, ceiling beautiful groined roofs, cutting up screens, making large pews, and effecting countless enormities in their respective generations, when ecclesiologists were few in the land, and archaeological societies had not even the germ of existence. Nor was this vandalism confined to churchwardens only; but deans and chapters of cathedrals either set the example, or followed in the wake of this precept, which an inferior order of officials (perhaps under the guidance of clerical notions of comfort and cleanliness) had suggested. It has, however, been left to our own age to condemn this want of taste—this desecration of the beautiful and hallowed records of the past—this barbaric ignorance which had long concealed their beauty, and enshrined in thick coats of lime relics of the piety of a bygone age,—brasses and tablets, monuments and tombs of cardinals, abbots, bishops, crusaders, and other eminent personages, both lay and clerical. We can now scarcely go into a village church but we see traces of restoration. Some fine old marble monument, which for many years has been a convenient lodgment for church brooms and old bell-ropes, for the grave-digger's spade and pick-axe, a repository for old worn-out hassocks, and all the rubbish which had no better locality for it to moulder away in, is now cleaned and burnished up. The mason has been at work supporting and repairing. The inscription has been re-engraved, and the once forgotten and neglected object is now one of the most striking features in the church. To allow a finger to be broken would, in these days, amount to an unpardonable sin. With veneration and respect are they preserved, and we honour the spirit that prompts our age in this care for the works of the past. We look upon every such act of reparation as a tribute to the memory of departed worth and ability, to show to our own and future generations the power, the truthfulness, and the hopes with which the living are inspired, and whereby the fabric has commemorated their faith by these memorials thus transmitted to posterity. This spirit of revival and commemoration has shown itself with remarkable zeal in other ecclesiastical

edifices besides our parish churches. Take the metropolis for instance, and let us walk through Westminster Abbey or St. Paul's Cathedral. Each monument is duly regarded and preserved. It has been our custom to bury our great men with funeral pomp and honour in these particular churches, and erect monuments to their memory, not so much to record their actual worth, as to stimulate others to look upon this record of a useful life, whether in defence of their country's honour, or in administration of their country's laws, or in the vigilant pastorship of the episcopate, in the revelation of the fruits of intellectual talent and genius in poetry, history, or any science in which the human mind has manifested a more than ordinary power, or in the details of a charitable life, saying with greater force than language could express to each reader, as he scans the beauties of the tomb, "Go and do thou likewise." But we are to remember that not only every city and every town, but also almost every village, has in its respective church mementoes of the mighty dead; and a desecration of their tombs we should look upon as a desecration of our country's pride. We can never enter within the precincts of a cathedral without conjuring up a thousand thoughts on the variety and distinction of character of those who lie buried around us. Every thing seems to savour of the past, and awakens within us the most hallowed and solemn reflections. In the niches around the walls there lie the effigies of pious founders and contributors to the grandeur of the cathedral church. Beneath our feet the very marble and the time-worn slabs of stone which indicate their graves induce a feeling that commands us to revere the memory of the dead. This may be the rule of decorum, this is the natural and the religious view which most people take of such a subject when, either for the purposes of devotion, for curiosity, or for religious contemplation, they visit a cathedral. But all these highly-wrought conceptions must vanish in disgust if the exception to that decorum is to prove the rule of its existence.

Hereford Cathedral is undergoing a process, not of restoration, but of renovation, with a vengeance. A portion is said to be restored, and a greater contrast between the past and the present cannot well be imagined. The fine old Norman pillars and arches in this portion are now supporting a roof which is painted and decorated to resemble St. James's Hall, Piccadilly, or rather one of the singing-halls or galleries with which our metropolis abounds, while all that once was venerable on its tessellated floor—tessellated with slabs of stone and marble, bearing inscriptions which should cease their existence only with the existence of the cathedral itself—stones in which brasses are inlaid, and which no other in this or any other country could surpass,—has vanished. Ranged along the walls, a few lie scattered as so much useless rubbish: others lie broken and battered in the adjoining churchyard, and substituted in their place is a red tile flooring, made, we presume, to correspond with those which prove so efficient at the different stations of the Hereford and Gloucester Railway. But herein tastes, perchance, may differ! Passing through this portion of the cathedral, we are bidden by texts from Scripture to remember that we are "on holy ground"—"to keep the head uncovered." Yes, we are within the precincts of the dead, and who would dishonour that reflection? The Dean and Chapter, moreover, invite us to such a contemplation, but what withal do they sanction and allow? We hear the masons and others busy at their work: we are cautioned to hold no communication with them, and they are strictly enjoined to have no converse with visitors who might interrogate them: a solemn silence is enjoined. But now comes the startling climax of our observations—the contradiction of terms and facts, the sickening spectacle at which humanity revolts, and religion sheds a tear for shame.

"The evil which men do lives after them:
The good is oft interred with their bones."

We are left to conjecture which preponderates the most, the good or the evil; but there lie side by side the effigies of several former bishops of this see, to be restored, we are told—that is, the marble and the stone which represent these

benefactors to the cathedral church of Hereford. Is the effigy, we ask, preserved as a memorial of their evil deeds, and their disinterred bones scattered on the dust-heap to elucidate the syllogism, and, because of their former goodness, to restore their long-buried mortality to the world? On a heap of rubbish, filling up the foundation of the old Chapter-house, lie skulls and human bones, exposed to every desecration, and which have been disinterred from what was supposed to be their last resting-place by this work of restoration, as it is termed. Well might the workmen be commanded to keep silence, and the visitor to be still; but it may be a question whether it were not better even to leave the restoration of the fabric to a future age, than that decency should be thus outraged, and the dwelling-places of the dead defiled. Some future ecclesiologists, in another generation, may visit this cathedral, and vainly look upon the renovated effigies of those great ones who were buried here, but whose remains have been cast to the dogs and the manure-heap, "drawn forth without the city, and re-buried with the burial of an ass."

THE ARCHITECTURAL EXHIBITION, CONDUIT STREET.

So many erroneous views regarding the architectural talent of our day, based on hurried examination of such evidence as is afforded by the Architectural Exhibition, are promulgated annually, that we were anxious in our last notice of the drawings, to again draw prominent attention to the circumstance that the collection did not adequately represent the most important buildings of the year. We find no illustration of the Speaker's Residence at the Palace at Westminster; no view of any of the new theatres, except one of the Britannia Theatre at Hoxton—the exterior (357), the least satisfactory part of that building; no representation of the Leeds Town-hall, opened in September last; and none of the Wellington College, Sandhurst; the Museum, and the new buildings at Exeter College, Oxford; or the premises of the Life Association of Scotland at Edinburgh; or of the National Discount Company's Bank, Clothworkers' Hall, and some other buildings in the City, besides those in Chancery-lane; not to mention various corn-exchanges and insurance-offices, and monuments more or less of architectural character. It is true that several of these works are not such as show that part of the decorative character of our architecture in which the chief cause for congratulation may exist. The names, however, indicate that the material for an opinion on the present state of our art may be elsewhere than in Conduit-street. A strenuous effort to avoid the short-coming in this respect of the Exhibition, should be made in future. Photography could be brought in aid, where the views, plans, and sections might not be procurable by other means. As regards one of the buildings we have named, the Wellington College, good illustration was peculiarly important,—because, whilst the merit it has, is the result of elaboration, as well as that study of detail which, as we have said, valuable otherwise, enters more than is recollected into the character of design suitable for general effect, such elaboration is precisely what has not been presented to the public in the illustrations published lately, which are incomplete and bad in the drawing of details, as they are faulty in that of general outlines.

Still, whilst we have rather put by the claims of designs made without reference to execution, and ascribe secondary importance to such designs for churches and other buildings as are mainly imitative of old examples, there are many drawings besides those which we have referred to, which would claim notice, besides some illustrations of executed works of merit, though not of the first public importance, and other drawings of works of restoration,—a branch of architects' practice requiring very peculiar qualifications—it is hard to say whether those of the artist,—considering that if appreciation of the art is required, in one respect certainly is not, the exercise. Without effort at classification, we come to the illustration of the "New Chapel in the Royal Dockyard" (7), by Mr. G. G. Scott, one of two chapels at Woolwich, erected or designed, of which drawings are exhibited. The present design is Early English, with apse, and gables to the bays of the aisles. The other, the "Congregational Church now erecting," by Messrs. Lander and Bedells, appears to be inferior to some of their works, before exhibited; and, as

to the tower and spire, to the additions which they have made to the Church of St. Mary Tolmers, Hertfordshire (161). The tower in the latter church terminates in an octagon lantern stage, with trefoil openings, and with a spire, the body of the tower having pinnacles. In the "Congregational Church," the exterior view (168) shows that the tower has buttresses without any sufficient termination, and a not elegant arrangement of the stage at the base of the spire. It is gabled in the centre of each side, for the clock face; and the octagon spire does not spring well from the square of the tower. Porches or external corridors are added, each side, to the entrance under the tower. The interior of the church (169) is very unsatisfactory in details; the roof is not structural, and the polychromy on the ceiling not in good taste. Mr. Street, besides photographs from the drawings of his design for the War Office (9), and of his design for the Foreign Office, to which a premium was awarded (386 and 389), has a view of a church to be built in the parish of St. John, Westminster (160). In the last, the design has the piquancy of detail and the clever treatment of common brickwork with stone, which characterize Mr. Street's work, along with disproportionate size and blankness in the outline of the tower. The tower is terminated by a peculiar capping—a combination of a truncated pyramid with a cluster of four angle pinnacles, and a larger spirelet in the centre, an arrangement which, under modifications, appears to be in some favour. It may be discovered in a design to be mentioned shortly. The same architect exhibits also a "Design for a Pulpit" (167), and an "Elevation of the Campanile at Florence" (313), from sketches and measurements. The last drawing, good as it is, will give to few an idea of the merit which has been discovered in the work at Florence.

Mr. Colling's church, now erecting in Hooton Park, Cheshire, well shown in a south-west view (151), and an interior view of the chancel (135), we were acquainted with, though not from the same drawings. The design is mainly Lombardic (perhaps not the architect's choice), and though imitative and helping to increase that prevalence of many different styles, imitatively used for the most part, which has been an error, and is the danger of our time, it has some features in which taste and original thought appear. The sandstone used is both white and red, showing internally, and the arches are supported on red granite columns. The plan is cruciform, with apse and ambulatory; the transepts, however, are of very slight projection; and there is a western porch, and a campanile-tower joined to the church by a covered way. The crowning feature in the design, an open lantern with pyramidal capping, is well treated; but it is not clear from the drawings, how the lighting indicated in a sketch of the lantern internally, could be managed without glazing or some arrangement different to that which we can gather from the external perspective. Speaking of the feature last named in the design, we may mention that there is a clever treatment of the dome, richly decorated on a Gothic tower, in "The Palace of Art" (99), a drawing illustrative of some verses in one of Tennyson's poems. Requiring the best light, it has unfortunately got placed in a corner of the west room, the ceiling of which is flat at the sides, and the light of the room thus not so good as by the arrangement of the galleries shown in our recent view. The drawing has several elaborate spire-capped towers; and the whole may be considered a poetical composition, though it be hardly belonging to the practical architectural character of design for which we contend.

Mr. Goldie's "Design for St. Peter's and St. Paul's Church, Berne, to which a gold medal was awarded" (17), still, like other works of the branch ecclesiastical, has, we think, more than is desirable of the appearance of imitation, though it be here, of continental models. The tower is characterized by the long, narrow lights in the main upper story, and a pyramidal tiled roof. Another design, before alluded to, rather to be ascribed to Messrs. Hadfield and Goldie—"The Roman Catholic Church of St. Patrick" (35), now erecting at Bandon, is chiefly remarkable for the square tower crowned with four octagonal pinnacles, or spirelets, slate-covered, clustered round the larger feature of the same kind in the centre. Mr. Goldie's "Studies for Works in Progress" (350), as well as his "Studies suggested by Scott's 'Secular and Domestic Architecture'" (349), testify to his possession of a clever hand, and perhaps a still higher order of mind than he has manifested in the churches named; but the design (Hadfield and Goldie) "for Memorial Altar and Reredos, St. Vincent Roman Catholic Church, Cork" (384), may

rank with the best Gothic works of the class. The church at Gerard's Cross, Bucks, designed by Mr. Tite (369), is of very different character to most of the churches of recent date, since it has a central dome, and apparently, Italian details; but the model exhibited by the clerk of the works is worse than useless; and we may here say, applying the remark even to the far better model of Heckington Church, that the mode of representation by model can be of little worth, unless the modelling be executed in manner equal to that of the very best models that have been produced. If not so, the model fails, by the details, in those points which, as we have shown, are absolutely part of what the representation professes to show, and what the object requires in regard to the question of the general effect.

The restorations of which there are illustrations exhibited, include those of the "West Front of Winchester Cathedral," in progress (13), by Mr. J. Colson; the "Central Tower" of Durham Cathedral, the upper stage of which is to be shortly commenced (127), by Mr. G. G. Scott and Messrs. Walton and Rolson; "Walsoken Church, Norfolk" (18), by Mr. W. Smith; the "church at Saling Magna, Essex" (116, 117, and 118), as partly rebuilt, and with proposed restorations; the "church at Pantfield, Essex (repaired and partly rebuilt)" (319 and 320); and the "church at Llanllawen, Pembrokeshire" (311), all by Mr. R. J. Withers; "Watton Church, Herts" (170), with good woodwork, and "St. Peter's Church, Thame" (172), both by Mr. J. Clarke; and "St. Luke's Church, Heywood, Lancashire; about to be rebuilt" (331), also by the architect last named. We have difficulty sometimes in forming opinion as to works of this class, from the absence of more explicit information by the architects, whether the works are mere restorations, or rebuildings on the former plan and design, or whether the "re-building" is to new design; for, on such data only, can the value and merit of the work be determined. Thus, the very long chancel of the Heywood Church may be right in a work restored; but we have lately seen reason to doubt how far such adherence to association (call it traditional) is justifiable in new churches—use of a building being considered. The fact that the churches of South Lancashire are mostly Late Perpendicular, would lead to the inference that the present architect's work, which is Early English and Decorated in character, is not according to any old design.

In relation to the subject of plan appropriate to churches, Mr. Treadwell's "St. George's Temporary Church, Tuffnell Park, Holloway, with sittings for 900 persons, erected in six weeks, at a cost of 7000," raises questions that are interesting. It is a many-sided building, nearly circular, timber-framed, with conical roof, lantern and skylights at the top, the seats stepped up in concentric ranges from the pulpit as a centre. The roof has a span nearly equal to that of Westminster Hall, without cross-tie. The half-trusses butt near the top, but in a peculiar manner, against a ring, formed in very short lengths of timber, connected by angle pieces of iron or straps. Each half-truss is composed of principal members or rafters, perhaps 10 or 15 feet apart at the foot (seen in the section), and there connected by a tie or horizontal member, the whole resting on the posts of the weather-boarded external inclosure, and of a corresponding circuit internally; the two posts being also connected by diagonal bracing, but at the feet, below the flooring of the seats. The rafter next the roof covering is in a single piece: the inner member or series of rafters, in several pieces, is strengthened by a continuous strap of iron. The experiment was a bold one; and the method of construction demands examination. In a roof of low pitch, it is very questionable whether the heads of rafters could be safely framed to no other support than a mere circle or curb of timber, and accordingly in the roof of the lecture-theatre at the South Kensington Museum, where there is no cross-tie, the idea of butting the rafters at the top against any curb was dismissed, if thought of, in favour of the existing arrangement, in which they meet at the apex. In a roof of high-pitch, and where there is a system of trussing, the same necessity may not exist; but the power of the wind would seem to call for extraordinary provisions at the feet of the rafters. The provisions in the Tuffnell Park Church, confined to the diagonal bracings at the feet of the posts, and the short strap like that in an ordinary truss, at the foot of each outer rafter, seem scarcely sufficient. However, the success of the arrangement for a temporary building may be considered proved, by the test of high winds. Regarding

the plan, considered in relation to purpose of the building, it is obvious that if any arrangement of seats, similar to that in the present case, be adopted by congregations more or less holding to the doctrines of the Established Church, as an arrangement which arises naturally from the requirements of an auditorium and preaching-room; and if, in the majority of temporary churches, obstructing piers and elongated chancels are never thought essential, it follows that the usual plan of churches is kept up solely on the score of associations, and those such as many friends of the Church are of opinion that it is undesirable to encourage, as well as at a disadvantage in regard to what we may believe to be the chief object in a Protestant church. This at least we know, that there can be no practice of church-building that will prove satisfactory to all classes, till after churchmen have agreed on questions of ritual, or agreed to differ; and that there can be no ecclesiastical architecture possessing the higher attributes of the art, till after such time.

We should have mentioned Mr. Aspitel's "Designs for Restoration of St. Margaret's, Westminster" (121), wherein a spire of open-work is proposed, together with aisle-windows of combined Decorated and Perpendicular tracery, and a clerestory of later Perpendicular, with much external panelling.

We must now glance at some drawings of works of actual execution, which have escaped previous notice. Amongst them are Mr. Knightly's designs (15), including schools at Greenwich and Enfield (with minister's house); a parsonage, De Beauvoir Town; a villa at Caterham, and a chapel at Islington. They are cleverly sketched, and are enclosed in the same frame, with ornamental borders to each subject. Mr. R. H. Shout's "Darwick House, near Yeovil, as altered and enlarged" (22), is characterized by some of the more eccentric features of the Jacobean style, as in the case of the decoration over the windows. Mullions are omitted. Mr. A. M. Dunn exhibits (29) a view of "the Stephenson Memorial Schools, erected at Willington, near Newcastle-on-Tyne, upon the site of the cottage in which George Stephenson lived and Robert Stephenson was born." They are Gothic, of red brick and stone. The "Albert Institution," Gravel-lane, Blackfriars, now in progress from the original design of Mr. J. W. Papworth, at a cost of about 1,350*l.* (50), with the other "sketch" (51), showing addition "of top story, as proposed, if 150*l.* additional can be collected, is too important from its subject, and as the work of a hard-working and clever man, to be passed over; though the design will not command general admiration. In No. 64—"Photographs of house erected at Colchester"—and (67) a drawing of the entrance of the same building, we recognize a work by Mr. C. F. Hayward, which we have seen before. As compared with the majority of the Gothic works, it is remarkable for the originality combined with merit of its details. The "Entrance Porch, about to be erected at Swaffham Prior Vicarage" (69), by the same author, has a peculiar pent-house shade in front, hipped on to the main roof, so as to leave a small gable at the top. Mr. Withers's "Parsonage, erecting at Saling Magna, Essex" (68), has more of the imitative character; and we notice that in entering, the kitchen door must be passed in order to get to the parlours. This disadvantage, however, may have been deemed unimportant, as compared with the advantage of a prospect from the study, placed in what otherwise would have been the better position for the kitchen. Mr. Withers has a considerable number of works altogether, in the collection. One of the best of them is the "Glas Painting Works and Studio, Endell-street, Bloomsbury, erecting for Messrs. Lavers and Barrad" (174). The character is produced by the high-pitched roof; large windows at the top, with pointed arches and gables, well grouped; windows of the third story as an arcade; and relieving arches in yellow and black brick, in combination with the red brick of the general walling, which has no recesses or projections. These last available features of effect, however, are well managed in the same author's designs—ten, or eleven, numbered 189*a*; and these also have much freshness of character, combined with excellence; and the drawing is evidently that of a practised hand. "The Public Buildings and Markets, erecting at Cardigan" (353), also, characterized by much that is needed in all good architecture, should be looked at. "The 'Llwyn' House, near Oswestry" (76), by Mr. J. Blake, is well managed as to the recessed centre, with loggia and crowning attic, but is injured by heavy terminations to the chimneys, and by repetition of the same character in the roof covering, in two

stages, to the tower at the side. "Pentwern, near Oswestry" (82), is still less successful: styles are mixed not in the manner which is allowable for the sake of novelty, but so as to produce discordance of character; and a gablet which there is in one part of the design, appears to terminate no portion of roof, but to be merely for support of a vane and exhibition of some coat of arms. Objects such as these last, should, according to all good principle of architecture, be attained in some other way than by the mimicry of features associated with uses, structural and otherwise, of a well-understood and defined character. The correct principle is a very simple one: it should be never forgotten in any work of architecture or of decorative design; yet it is singular how frequently it is still contravened, and at a time when so much should have been learned from the Gothic. "The Pumping House and Boiler House" (85), for the South Staffordshire Waterworks Company, near Lichfield, faced with Staffordshire blue brick, with a cornice of small arches and other decorative features in red brick, and the tower enclosing the stand pipe or safety-valve (96), it is difficult, perhaps, to appreciate as they deserve, because the general colour is so unfamiliar to us. The tower, however, appears to be a good plain design, whilst effective and not inappropriate to the purpose. Judging from what has been produced of late, difficulty is found in distinctively marking the character of such towers, as well as chimney-shafts, as distinct from the Italian bell-towers from which they have been too often directly copied.

The "New Borough Dispensary, Newport, Monmouth" (94) and the "New Public Rooms now building" (97) by Mr. W. G. Habershon, are of Gothic character. High-pitched roofs, windows with pointed arches, and *tympans* set with black and red bricks, herring-boned, and an upper range of windows as half-dormers under gablets, are the main features in these works. The same architect's drawing of "Designs for Villa Residences to be erected on the Estate of Sir Culling E. Eardley, Bart. Belvidere-park, Erith" (192), is beyond reach of discriminating sight. Gothic mansions lately completed, are exhibited; one at Ballygar, Forfarshire (70), by Mr. H. E. Coe, and one at Nutfield, Surrey (123), by Mr. J. Norton. The house built for Mr. C. R. Coxwell, Great Malvern (132), by Mr. Webb, has an excellent constructed site raised in double terraces, and has a certain degree of effect; but the combination of the castellated features with the Domestic Gothic, is not harmonious.—Imitation is still more the character, and the picturesque the effort, in the "Two Cottages erected near Gloucester" for Mr. T. G. Parry (139), by Messrs. Huggall and Male. They have half-timbered upper stories, overhanging.—There is good arrangement of the features in Mr. J. Mackland's Schools and Master's House, for the Trustees of the Charity Estates of Sutton St. James, Lincolnshire (145),—though these elements, red brick and black stripes, recessed centre, bell-gable, and wooden porch, present little variation that can be described in words.

It is impossible to avoid noticing at this stage in our examination of the drawings, along with the love of brickwork in patterns, the more general use of the pointed arch, rather than the lintelled head, to openings, in the buildings which adopt the Gothic style of architecture. We have still to look at some of the drawings, and the whole of the competition designs.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting, held on Monday evening, the 28th of March, Mr. Hussey, V.P. in the chair, Mr. John Bell read a paper of some length "On the Composite vital Forms of Art, in relation to Architecture, Painting, and Decoration, and as Symbols; being an Attempt at a Sketch of their Art-history," and illustrated it with a number of sketches and tracings of winged human figures, or angels, cherubim, and sphinxes, including some sketches by Mr. Bell, showing his idea of the cherubim in the Temple, founded on the description by Isaiah of the angels with six wings. The paper treated at considerable length of the Egyptian, Assyrian, and Greek sphinx. The Egyptian sphinx, the lion's body and the man's head, the symbol of intellectual and physical strength, he regarded as the noblest symbol used by the ancient world. For the Anglo-Saxon race he added the eagle's wings, and exhibited a model of such a sphinx, suggested to hold each end of the Atlantic telegraph when successfully laid.

Mr. M. D. Wyatt, to open the discussion at the conclusion of the paper, pointed to the Draconian

and other forms of the pre-Norman and Mediæval periods, to which another paper would have to be devoted.

Mr. Layard, with reference to Mr. Bell's restoration of the cherubim in the Temple, said that he had adopted a type of art that did not then exist. It was like the restoration of the Shield of Achilles, in which artists had indulged; availing themselves of all they knew of Greek art, which was not perfected till a much later period. Of Jewish art we know nothing: not an example remains. Josephus says the body of the cherubim was that of an animal, and he believed they were much like the winged forms found at Nineveh. The Assyrians were allied with the Jews, who had from them all their art. He doubted the practicability or desirability of using the sphinx in our architecture: a nation could not satisfactorily use a form in which it had no credence. Mr. Layard spoke of the effect the winged figures had upon him when they were first dug out in Assyria, and said, as to the restoration at the Crystal Palace, that though the lower part was accurate, he did not agree with the colouring adopted—it was overdone. He did not think any one could judge of the effect of colour in ancient buildings, or sculpture, from what we saw done at home. Paint on plaster looked very differently from paint on alabaster; and moreover we did not know what description of colours the Assyrians used.

Mr. Woodthorpe said the diminutive and cramped way in which we were forced to carry out our works prevented the use of such forms as Mr. Bell had indicated. English architects had no chance, and the general mind became accustomed to mean and petty details.

Mr. Twining and others also took part in the debate, and thanks were voted to Mr. Bell.

At the ordinary general meeting to be held on Monday evening, the 4th of April, the chair will be taken by Earl de Grey, president, when the medals will be presented, and the following paper will be read—"Some Account of the Life and Works of Baldassare Peruzzi," by Mr. S. Angell, Fellow.

THE ARCHITECTURAL MUSEUM.

PRESENTATION OF PRIZES.—COLOUR.

WEDNESDAY EVENING last, March 30th, was set apart for the presentation of prizes to art-workmen. In the absence of Mr. Beresford Hope, M.P. Mr. George Godwin introduced Mr. George Scharf, who delivered a discourse "On the Application of Colour to Form, and their distinctive Properties." We will give the heads of his lecture on another occasion. Mr. Scharf assumed as settled that ancient statues were painted, and inclined to the belief that modern sculpture might be so improved. He thought that no modern endeavour in that direction had been carried far enough to test its value. At the close of his address,—

Mr. Godwin said it had, quite accidentally, devolved on him to present to the successful competitors the prizes offered last session through the Committee of the Architectural Museum. Mr. Beresford Hope had so conclusively shown the interest with which he regarded the proceedings in the Museum, that it would at once be felt that his absence on that occasion was caused by circumstances beyond his control. It would be remembered that a prize of 5*l.* 5*s.* was offered by the Ecclesiological Society, through the committee of the Museum, for a coloured decoration. For this there were six competitors, and the prize was ultimately awarded to Mr. A. O. P. Harrison, of 337, Euston-road. For wood carving, a prize of 5*l.* 5*s.* was offered by Mr. Beresford Hope. Two competitors came forward, and a diminished prize of 3*l.* 3*s.* was awarded to Mr. John Chapman, of 23, East-place, Lambeth. For drawings from specimens in the Architectural Museum, 5*l.* 5*s.* had been offered by himself. For this there were but two competitors, and a diminished prize of 3*l.* 3*s.* was awarded to Mr. Edmund E. Kirby, of 14, Buckingham-street. It had to be owned that the committee were surprised that the response to this invitation had not been more full. For reasons, doubtless good ones, the committee had not awarded the whole sum. The second competitor was a working man, John Dalglisch, who had executed his drawings under great difficulties; and he (the speaker) thought he should best carry out the views of the committee, by handing to him the remaining two guineas in acknowledgment of his efforts. For the premium of 2*l.* 2*s.* for modelling in plaster from natural foliage, offered by Mr. Joseph Clarke, their honorary

secretary, there were three competitors; and the premium was awarded to Mr. William Doel, of John-street, Chelsea. Mr. Clarke, he regretted to say, although now able to leave his bed, was still too ill to attend on that occasion, much as he had desired it. A prize of 10*l.* had been offered by the committee of the Architectural Museum, for a piece of hammered work in iron, but for this there were no competitors. This was to be regretted: a demand for iron-work of good class was growing. The principles which should guide its production were studied; and there were many men who had artistic command over the metal, and who, if they could have been induced to compete, might have advanced their reputation by the publicity success in that place would have given them.

The premiums were then presented to the several competitors, accompanied with an engrossed certificate in each case, and some words of good wishes on the part of the committee. Mr. Godwin said he had further to announce the offer of other prizes. The Committee of the Architectural Museum proposed to give to art-workmen two prizes (5*l.* 5*s.* and 3*l.* 3*s.*) for the most meritorious specimens of carving in wood, being the enrichment of a hollow moulding, either in natural or conventional foliage, with or without animal life; and a prize of five guineas was offered by the Ecclesiological Society through the Committee of the Architectural Museum, for the competitor who would show himself most successful in colouring, according to his own judgment, a panel from a tomb in the church of S. Giovanni, in Verona. It contains a figure surrounded with foliage on a flat ground in low relief, and enclosed in a narrow border.—Mr. Beresford Hope, would, further, give three guineas in one or more extra prizes if any work appeared deserving of being so rewarded. The general conditions would be published and might be obtained at the Museum. He had then, he continued, only to propose a vote of thanks to Mr. Scharf for his interesting discourse. The advisability or otherwise of colouring statues was still an open question. Although it was certain that the ancients did colour statuary, it was equally certain that some of their finest statues were not coloured; so that so far as precedent went, we were still called on to use our own judgment on the subject. It had been urged by some, and he thought with force, that all the ancient sculpture discovered with colour upon it had formed part of architectural compositions. For his own part he was not anxious to find sculptors resorting to the use of colour in statuary of the highest class: he would rather it trusted entirely to form; but as regarded sculpture forming part of buildings, in which capacity it was to be hoped it would be more and more used, colour might most usefully be employed to heighten its effect, and harmonize the whole. Thanks having been voted, the meeting separated.

LECTURES AT THE ARCHITECTURAL EXHIBITION.

THE first lecture of the course arranged by the committee of the Architectural Exhibition, Conduit-street, was delivered on Tuesday evening last, by Mr. Sydney Smirke, A.R.A. and was on the Use of Colour in Architecture. The chair was taken by Mr. A. Ashpitel, who stated that Sir Charles Barry was unavoidably prevented, through indisposition, from being present.

The substance of Mr. Smirke's lecture was read by him at the Royal Academy in February of last year, and was then printed by us entire.* In commencing his address, Mr. Smirke said:—"I cannot do so without first complimenting the members of the Architectural Exhibition on the important and conspicuous place which the Association has achieved for itself in the public eye, and on the brightness of its future prospects. The spirit of friendly emulation in which this Exhibition is conceived is most honourable to the profession, and well adapted to raise it in public estimation. It is productive of this further advantage, that it enables us the better to appreciate ourselves. To know oneself, *γινῶσθαι αὐτον*, has at all times been held to be an important acquirement; and upon these walls the architect learns at once the valuable lesson of his strength or of his weakness. An Exhibition like this is admirably calculated to give encouragement to modest merit, and sometimes, perhaps, to bring down to its own right level the flattering estimate that some may have formed of their own powers. The liberal tone of sentiment which prevails in this annual exhibition finds further illustration in the practice which the

* See vol. xvi. p. 139.

members have established within its walls of addressing each other on subjects connected with our common art. The interchange of ideas and opinions becomes thus far more complete and effectual when we thus frankly lay before each other not only the efforts of our pencil, but the results also of our own reflections and inquiries.

It is with this latter object in view that I now propose to address you. I do not hope to tell you anything that is new to you on the subject of colour, but if I succeed in assisting your studies on this interesting subject, by bringing together, into a collective form, scattered truths, and insulated facts; laying them before you, and explaining their mutual bearing, so as to render them more palpable and evident, I shall, indeed, be well pleased, for I shall then have accomplished all that I have ventured to propose to myself now to do.

How and why it is that the peculiar quality, colour, which is inherent more or less in every visible object, should please or offend the eye, has engaged the attention of many philosophic inquirers; but I shall not regard it as any part of my business here to-night to detain you with such theories,—theories which, if well founded, might seem almost to reduce the pleasures of the eye to a mathematical formula.

It is enough for me, here, to say that it has pleased the Creator to endow colour with certain attributes which it behoves every artist, whatever may be the particular branch of art he cultivates, to make himself thoroughly acquainted with, inasmuch as those attributes exercise a powerful influence on all the arts of design.

The reading of the paper being concluded,

The Chairman said, according to custom, it now became his pleasing duty to propose a vote of thanks to the lecturer for his able lecture. However difficult the subject was in itself, and however confused it might be rendered, from what had been frequently said and written by others, he was sure the meeting would agree with him that the lecturer had treated it not only in a full, complete, and scientific, but also in a most lucid and comprehensive manner. It was not their custom, as the assembly were aware, to enter into a discussion, or for the chairman to offer any opinions of his own. He might be pardoned, however, for making two observations,—one of these had reference to a matter which had been made a subject of lament by the learned professor in the course of his lecture, namely, that sufficient attention was not paid to the facilities of combination which colour sometimes afforded. The colouring of the room in which they were then assembled was admirable for its purpose, and was one which would be generally adopted for rooms; but it had been selected as affording a happy contrast and a happy set-off to any pictures or drawings which might now be hung upon the wall. It was simply an adaptation of, perhaps, the cheapest and commonest colour they knew of—the ordinary purple brown of commerce; and he thought the meeting would agree that, for its present purpose, it was most successful. The other point was one which was connected with their Exhibition. The other day, when the Prince Consort did them the honour to visit their Institution, and to look round their drawings and architectural designs, that distinguished personage had expressed his approval of these, and more particularly of the interior department; and had added the expression of his opinion that, in a vitiated and smoky atmosphere like that of London, it appeared to be a great desideratum in the way of colour that a material of such a nature could be procured; that, if it became blackened with smoke or other causes, by means simply of a fire-engine or other agency for the application of water, the surface could be washed clear again. It appeared to him that the study of colour on vitrified surfaces was most important object at the present day. He mentioned these matters as objects of concern to the community generally, rather than in relation to the treatise which the able lecturer had given; and, offering the warm thanks of the assembly to that gentleman, he had only further to announce that the next lecture would be given on the 5th of April when a paper would be read on Italian Pointed Architecture by Mr. Street.

ENLARGEMENT OF OFFICERS' MESS-HOUSE, CHATHAM.—Government has granted 3,000*l.* for enlarging the Royal Engineer officers' mess at Brompton Barracks. It is proposed to add a new wing to the present mess-house, capable of accommodating from 100 to 150 officers, with other necessary apartments. The Government architects are to prepare plans and specifications.

ON ARCHITECTURAL REFINEMENT.*

THE period, succeeding the decline—we may say the temporary extinction—of classical architecture is one of great interest, and notwithstanding the debased state of art in general, it was not altogether devoid of architectural refinement as regards construction and composition. To this period belong two buildings as opposed to each other in their principles of composition as in their destination, as well as their actual destiny. Each possesses a sublimity peculiar to itself, and each gives the idea of unlimited space more than any other building I have seen. The one is a Christian church turned into a mosque; the other is a mosque turned into a Christian church. You will perceive I am speaking of S. Sophia, in Constantinople, and the cathedral of Cordova in Spain. The grandeur of the first is owing to its unity of design, and the subordination of all its parts to one great feature, the dome. The plan of this church consists of a square area of upwards of 100 feet in width: over this a dome rests on four arches, each the full width of the square, with pendentives which form portions of a sphere. To the east and west are large apses, from which three smaller ones radiate. Beyond this area is a large space covered by lower roofs than those of the main central structure. This gives fine combinations of pillars and arches, and prevents the sight from falling too suddenly upon a boundary wall, as it does in the case of S. Basil's Cathedral, much to the diminution of its apparent magnitude. The columns are mostly of rich and beautiful marbles, and present a great variety in size as well as design, while the harmonious tone of the noblest and the heaviest Byzantine capital is often deficient in grace; while, as regards construction, the want of transepts is a serious defect, which has caused many parts of the interior to be only remedied by very heavy and clumsy buttresses, which, however picturesque to the sketcher, cannot have left to the exterior that outline and general aspect which the architect intended. Still it is one of the noblest and most valuable edifices in existence, and the architect will do well to study its plan, composition, and arrangement, and not merely those elaborate details which are too apt to absorb the whole of his attention. The other building, the cathedral of Cordova, as designed, as I said, on a totally opposite principle. Here sublimity is attained, not by actual size, nor by subordination to one leading feature, but by number. The building consists of a long oblong rectangular area of about 315 feet by 325 feet. It is divided into a number of aisles or passages, of which the widest or principal one is about 25 feet in width; those adjoining it somewhat narrower, and the others narrowest of all. The aisles are divided from each other by columns or shafts, of a size that you would rather expect to find in ornamental arcades, or the triforia and higher stages of a cathedral, than among the principal supports of a roof. The character, however, is that of a late Roman or Byzantine character, having been taken from earlier buildings, are connected by horse-shoe arches of small span, very much less than the width of the aisle; and above is another tier of open round arches. The roof was originally a timber one, but it is now vaulted in the revived Italian style. At a distance of ten arches from the south, the whole building is crossed by an arcade of larger horse-shoe arches, and the columns are those to which antique columns are attached. At the south end of the principal aisle, which is, in consequence of an enlargement of the plan at an early period, nearer than the others to a square than the eastern, is a beautiful domed alcove with a recess to the southward. Similar domes terminate the two adjacent aisles. These are enriched with exquisite mosaic work, finer in its colour, I think, than even any thing in S. Mark's, and also have arabesque patterns elaborately carved in marble. The alcoves are screened from the aisles and from each other by very curious interlacing foliated arches. Corresponding with these alcoves, there seem to have been three square domes, of which only one, the easternmost, now remains. It rises above the roof, so as to be seen externally, as also are those of the alcoves. The other two, if they ever existed, were destroyed at the erection of a Gothic church within the area of the mosque, probably in the fourteenth century.

The present choir, for the introduction of which alone the Moorish work has been demolished, is a rich specimen of the Early Revival; still retaining pointed arches, and ornamented with patterns of foliate of almost an Early English character. It rises considerably above the Moorish work, and is in the form of a Latin cross with a dome at the intersection. As it is in great measure open to the area of the mosque, it gives variety, and by no means destroys the general effect of the whole; the addition consequently will be less regretted by the artist than the antiquary. I have mentioned that there are foliated arches in the old work: some pointed ones also occur, which, if of the same date with the rest, would clearly establish the Eastern origin of this feature. I do not suppose that the horse-shoe arch offers any advantage over the plain round or pointed arch, but, when the eye becomes reconciled to the form, it is not unpleasing. That it does not, however, bear to be copied, a new church in Gibraltar, built in the Moorish style (probably for some good reason of which I am ignorant), is a very decisive proof.

Neither the Early Christian style in Rome, nor the Byzantine, altogether rejected the Greek system of construction, namely, the column and entablature. But they never attempted to disguise arcuated construction, whenever it was adopted; nor, if it really was the first that they made it appear subordinate. This was a decided improvement in architectural principle; and, therefore, notwithstanding the low state of art at that time, the architecture cannot be said to have been wholly devoid of refinement. And the Byzantine use of the dome and pendentive led the way to some of the finest forms of churches which are presented to us, both Romanesque, Gothic, and Revival.

But a change was soon made, which, however dictated by convenience, was certainly in itself no refinement, which prevented the Romanesque, while it lasted, from obtaining any near approach to perfection as a style, and which ultimately caused it to be superseded by the Gothic. This change was in the form and treatment of the column. Hitherto the column had been an integral feature. Even when engrafted into a wall its shape and proportions were preserved. These had been established within certain limits, by the careful study and refined taste of great masters; and, though circumstances might call for some occasional variation, as, for example, the expansion of the Corinthian capital at Spalatro, yet the rules had never

been wholly disregarded: both the tapering form and the general proportions were preserved; so that, wherever a column was used, it could be said to be designed. But, at an early period of Romanesque art, the column was treated simply as a portion cut off from a shaft of unlimited length and uniform thickness; the tapering form was almost entirely lost, and the thickness in comparison with the height was adopted at pleasure. The massive round Norman pier, though not without grandeur, always suggests the idea of a rude and somewhat barbarous architectural element. The clustered shafts that run up to the roof can be looked upon with pleasure only as being the precursors of the beautiful Gothic system of clustered shafts and mouldings. Where the classical proportions were nearly preserved, the want of the tapering form has a most unpleasing effect: this is noticed in the fine church of St. Saviour, near Poitiers, which is well known to antiquaries from its curious fresco paintings. The piers of Tewkesbury and Gloucester are less pleasing to the eye than those which are much shorter in proportion to their length, and consequently further removed from the Classical type.

Setting aside this mark of debasement, and also the rude character of its sculpture, the Romanesque style is not deficient in refinement. It attains dignity, sublimity, and the effect both of height and space, without exaggeration, a praise which always may be claimed by its Gothic successors. Its exteriors are most satisfactory: in no style is that noble feature, the central tower, more worthily treated. As the Gothic style advanced, the central tower was mostly one and altogether in the largest French churches, except in Normandy; while in England, though preserved, to the great beauty of our cathedrals, it partook too much of the character of a belfry, and was seldom left unadorned, instead of the character of a lantern, intended to form a feature in the interior. There are, however, splendid exceptions. The central tower of York Minster is one of a lantern, and not a belfry, and yet has sufficient height and massiveness to sustain its pre-eminence over the other towers, which are seldom left unadorned. On this account the style is better studied from continental examples. The traveller through parts of France, Germany, and Lombardy, will meet with a marvellous variety of elegant and beautiful buildings, which range from the beginning of the eleventh to the end of the twelfth century. Some are probably earlier than the first-named date, but the bulk of Romanesque work will, I think, be found to belong to the twelfth century. In the northern parts of France, perhaps the tower itself presents the greatest variety; in the south of France, the group from which it rises; and in Germany, the combination of towers which enrich each end of the structure.

We will now consider a few general principles connected with architectural refinement. Architecture is an expensive art, and every appearance, even the least suggestion, of stint or undue saving, whether in material or labour, must be avoided, as inconsistent with its very spirit and character. This consideration shows the necessity of economy: not the curtailment of expense, but its judicious direction and application. A building that has cost less than was reasonably to be expected is very likely to prove a failure. A building which appears to have cost less (I mean to a person who judges from something beyond mere superficial ornament, and yet has cost more, is most indisputably a failure; and so, also, is a building which, after adequate cost and labour have been expended on it, does not most fully answer the purpose for which it was assigned. If the style chosen presents an insuperable obstacle, then it should be either abandoned or modified. This modification, when effected without sacrifice of beauty, or of the general character of the style, is itself a refinement, and a proof of life and vigour.

Mr. Garbett, in his able treatise on the principles of design, adverts to the economy of material displayed in the construction of arches and arcades, and has a remark on a matter that was not conducive to the strength and durability of the edifice was carefully cut away. This adaptation of means to requirements marks the Gothic as a highly-refined and judicious style. The system may be carried further, and space economized, as well as material. Continental architects did this to a considerable extent, especially in the later periods of Gothic. The deep buttresses which were used in the vaulting of the nave, and the enclosed large spaces, which, when they were entirely external, were of no use whatever, as far as the purposes of the fabric were concerned. The wall of the church was therefore often placed at the outer, instead of the inner, boundary of the plan of the buttresses, and thus a number of spaces, otherwise useless, were added to the interior in the shape of chapels, which, according to the form of worship for which the church was designed, were very useful, if not indispensable. In the northern French cathedrals this filling up of the spaces produces rather a feeble and meagre external effect, as we cannot fail to notice in Paris and Amiens; but in the south of France, and the north of Spain, the arrangement is treated with much greater simplicity, and the effect is extremely grand. In Barcelona there are some very fine examples. The outer wall is plain up to the height of the vaulting of the aisles, and the windows in it being, few and of small size, it has the character of a solid basement, above which rises the clerestory with its buttresses.

The use of the deep buttress rendered practicable a vast span in the end of France we find naves of 40, 50, and 70 feet span, unbroken by aisles. The principal church in Perpignan is about 60 feet in width, and has the lateral chapels. It is vaulted, and its interior is extremely grand and lofty. The cathedral of Carcassonne is about 70 feet in width, also vaulted. The cathedral of Gerona has a span of about 80 feet under a stone vaulting. The exterior of this church is ugly (more the pity, as it is magnificent in its interior), and the classical front and steeple, and it has been finished according to its Gothic design, it would have been a noble structure. Its interior is wonderfully solemn and grand, notwithstanding some faults in proportion, which might easily be avoided if it were adopted as a model. There is a good example of this kind of church at Mirande, in the south of France, on the road between Auch and Tarbes, though the part which would be selected to be copied is the eastern tower and porch. Now, might not the English architect, whatever be the style of his choice, study these examples with profit? It must again repeat, what I have already said more than once, that unless our

* See p. 215. Read by the Rev. J. L. Petit.

English ritual demands or suggests that a considerable portion of the congregation should be shut out from the sight of the minister during any part of the services, the erection of a chancel with aisles and a deep chancel is a barbarism. To those who believe that the spirit of our liturgy is best consulted by such exclusion, I have nothing to say. They are acting according to their own views, following strictly the precedent left them by an age in which similar ones were entertained; but any one who believes that our services were intended to be performed in the sight and hearing of the whole congregation, will admit that the great object of the church architect was the attainment of a large unbroken area in front of the minister, in whatever part of the service he is engaged. Our Medieval ancestors, notwithstanding the different names of their ritual, have left us an abundance of examples which might instruct us on this very point, and which, with our appliances and means for roofing large spaces, we could adopt with the greatest ease; and this adherence to the model is least suitable to our purpose, and the rejection of those which are admirably adapted to it, is to me a strong proof that we are studying the Gothic in a spirit of servile imitation, instead of treating it as a style to be refined upon and improved.

In Italy, the wide nave is usually roofed with timber; we might use iron for the purpose, and in either case, the thrust upon the walls being avoided, the necessity of buttresses is superseded. But suppose the stone vault, with its array of buttresses, to be preferred, the lateral recesses have spoken of would no disparagement to the plan in an economical or utilitarian point of view; for, although, if all were fully occupied by the congregation, many persons would be out of sight of the minister, yet, as the minister might be seated in the chancel, not having this disadvantage; so that, to say the least, some of the space, which, if excluded by the walls, would be altogether useless, is turned to account; but, besides this, they might be used for the purpose of a library to the church. One might be surmounted by a belfry; another might be used as a vestry; another might hold the organ; and others staircases to galleries, which are not to be regarded as inessential to the value of every parish church, or for increased church room. I say, then, that such churches as those I have cited (and many similar specimens may be visited by the tourist in the south of France) suggest to us structures admirably adapted to our purpose, and capable of a breadth of treatment accordant with the true spirit of architecture. A modern English church, with transepts, also appears to me a barbarism, unless crowned with a central dome; for in this case the feature may well be justified as a sacrifice of space; but the architect will devise means of rendering the sacrifice as small as possible, and providing that all the places intended to be occupied by the congregation are valued, and the number to which I have adverted, or at least that the number of exceptions should be very small. The combination of beautiful form and composition with convenient arrangement for the most of the features of architecture, and refinement, will, therefore, now say something of the Byzantine style, or rather of the construction and general design prevalent among those examples I have mentioned. I shall not treat the subject at length, as I read a paper on this last year before the Institute of British Architects; but I cannot pass it over altogether. The type I shall describe is that of Athens and its neighbourhood. The ground plan is square below, cruciform above, the dome being the central feature. This is supported on four arches, being portions of as many cylindrical roofs, springing from masses of masonry, which rest upon four columns of classical proportions; generally, the square space of the dome is covered by a cylindrical vaulting, and the square central space covered by a domed lantern on pendentives. The squares at the angles are roofed either with a dome, or a conical vault, or a gable, or a broken only by four columns of small diameter. In some cases the columns may seem too slight for the mass above them, and a little artistic skill will be wanted to correct this fault; but in reality much of the weight rests not so much on the columns as on the outer walls.

Some Byzantine churches have a larger dome, adapted to the square they cover by arched. Romanesque pendentives, and again to the octagon so formed, by spherical pendentives; I mean those which are parts of the surface of a sphere, and are used in supporting domes of a circular plan. Each side of the square has three arches, instead of only one, and in the example I visited (Daphni, near Athens), massive piers are used instead of classical columns; but the column might be employed in this as well as in the smaller and simpler church, and the result would be a plan nearly identical with that of St. Stephen's, Walbrook. I have requested my friend Mr. Hill to work out a design upon this basis; but whatever you disapprove in it you must put down to my score, not, I believe there is no doubt of its practicability. As regards construction, if the outer walls are sufficiently strong and solid, the arches will be convenient, and but little broken by the columns beneath the dome. Both the outside and inside appear to admit of a pleasing arrangement of forms, and might be carried out in a classic style freed from its architectural trappings. I need not say that I offer it merely as a suggestion, on which something better might be grounded.

There is yet another way of treating the central tower or dome, which I have not considered. It is to give a general outline very analogous to that of good Romanesque churches; but belongs principally to the Revived Italian, examples of which are numerous in parts of the south of France. Its characteristic is a very low central tower, with chancel and transepts only long enough to form abutments to the great dome, which support it. These parts of the structure are sometimes half domes, but not really half domes, which not infrequently falls into that of the tower itself; but in many cases, however, it leaves the cornice of the tower free, except on the side of the nave, the side of which is not so high, and thus causes an interruption. In some instances, the lean-to roof on three sides forms a continuation of the central roof, thus leav-

ing the tower altogether undeveloped. Even in this, the heaviest and least graceful form the composition can take, the central tower is not necessarily offensive to the eye; and, where the cornice of the tower is left clear, though it be only at the angles, the arrangement of lines, unpretending as the design may be, has always struck me as being of a very pleasing character. The tower, with great plainness, it is evident that such buildings admit of the introduction of rich and delicate ornament, both in the cornices, and in connection with whatever windows may be placed in the fronts. A belfry tower or spiral, placed at the side of the nave and connected with the front, or with the central tower itself, gives character and variety to the outline of the church. Sometimes two or more are attached to the building. The roof is generally cylindrical, with lateral vaulting cells falling into it below its highest level; the intersection is covered with a dome, to which the square tower forms an outer case.

Now, what recommends this kind of church to our notice is, that it admits those fine features, the central tower externally, and the dome internally, and yet preserves an area, which, from the shortness of three limbs of the cross, offers the least possible obstruction to sight and hearing. I could not help exclaiming, when I went to the Museum at Seville, a daisied conventional church, "Why, this is the very thing we want; a noble architectural composition, and a building in every way suited to our services." The peculiar mode of treatment, entirely does away with the idea of disproportion; indeed, any material deviation from the proportions generally observed in this class of buildings would be a defect. The best style in which such a church could be carried out is the Revived Italian, which might be worked in great purity. I do not say that it is impossible to adapt it to the Gothic; but, in attempting to keep up the spirit and character of that style, we might spoil the proportions, or sacrifice the peculiar advantages of the design. The pointed arch, the ribbed vault, the flying buttress, and the gable of the nave might have a Gothic pitch, as, in fact, it has in some examples; but the central tower with its roof must be kept low; no attempt must be made to rival the spire of a cathedral, or to rival the dome and the predominance of the horizontal line, throughout that part of the fabric, must be strongly marked. If the Gothic be used here, it must be of a southern character, the Romanesque style, which is employed, however, and transepts ought to be avoided, as being more in accordance with its character; this plan would give nearly, though perhaps not together, the advantages of the rectangular one. As an example, I give a small sketch of a church at Geneva, one of the very few Romanesque buildings I have noticed in Spain. Here the central tower is octagonal, on a square base.

Where the dome is not pierced for light, the tower need not be so high, and the dome may be used to ensure a free circulation of air; but where the dome admits light, dormer windows in the tower roof are well introduced, which vary the outline, and admit of ornament.

You may not think it is a waste of economy to case up a dome in a tower? Not at all, since the tower gives protection, and consequently, durability, to a dome which may be as light as you please in its construction and material, and will always be as light as you please. And I need not observe that, in adopting this plan, we do not bind ourselves down to the use of a dome at all, or of vaulted roofs. A square central lantern, and flat or coved timber roofs, might be substituted with perfect propriety.

I have dwelt upon this subject, because I am convinced that unless we set ourselves to work in earnest to find out the plans and forms most suitable for the purposes to which our buildings are devoted, we shall never advance or refine the art of architecture. We shall never either revive an old style, or strike out a new one worthy of our age. All we will be fancy-work, or slavish adherence to precedent. It is very possible that I may not be pointed out to you the best forms, and have overlooked points which readily occur to professional men; but this is of little consequence, if I can succeed in impressing upon you that there are other standards of excellence besides fancy and precedent.

I have a few words to say on the subject of ornament. It is, unless I am mistaken, frequently asserted, and I have much fear of contradiction, that ornament can be good or pleasing, unless it is taken, more or less, directly from nature. Now, this is an assertion, the truth of which I am not disposed altogether to take for granted. I am ready to admit, however, that if we take as a guide, we are not likely to go very far wrong in ornament; but I am not prepared to say, either that the beauty of fine forms consists in their recognition of natural objects, or that nature leads us up to the attainment of the finest forms, unless it be by a somewhat circuitous route. I am inclined to think that a thing is natural because it is beautiful, rather than that it is beautiful because it is natural.

Mr. Ruskin, in his first volume of the "Stones of Venice," has shown the coincidence between certain architectural lines, and curves, exhibited by natural objects; as the outline of a mountain, or the form of a leaf, or bough of a tree. We cannot fail to be struck with the beauty and value of the remarks to which I allude; yet, I think, we can hardly found upon them a positive restriction, in architectural design, to such forms as are habitually presented by nature, or evidently suggested by her. If the architect is able to discover a beautiful form, I cannot suppose he is debarred from using it, before he has found that it has been sanctioned by a thing in nature. It may be more pleasing to the eye to him; but it is not the less beautiful or pleasing, even though it should never be exhibited by some natural object. I question very much whether nature ever does present to us the most perfect types of form, or whether she invariably leads us up to the circle, or to certain other conditions, she gives us the other concave sections and the cycloid. If we furnish her with a perfectly flexible and uniform chain, she gives us the catenary. Perhaps the law of growth in some shells may produce strictly geometrical spirals.

I am not aware that any more can be added to the list of the mathematical lines which nature definitely and providentially presents to the eye, and which we are to be used and conchoid, curves of the highest beauty, and whose names are derived from natural productions.

She does not present us with the cycloid, a curve of the most graceful form, and abounding in most extraordinary geometrical and mechanical properties. If there is such a thing as a maximum line of beauty, it probably has never been presented in its integrity, either by geometry or nature. But this does not prevent us from endeavouring to discover it, and feeling that we are approaching to it. I began my paper by remarking that perfection in art never had been, and was never likely to be reached, but that the very essence of refinement consisted in our constant efforts to attain to it.

Again, nature rarely, I may say never, sets before us a perfect type of her own productions. Whoever would find the characteristics of such a type, must adopt the method of Zeuxis, and study many specimens. We are never left in doubt what to look for, and are never permitted to find it in a single specimen, without some blemish or defect. From the above considerations I am led to conclude that we are justified in trying to discover other forms of beauty besides those which are habitually exhibited to us by nature; that the discovery and right application of such forms is a proof of high artistic genius, and that those styles are not necessarily the most refined that draw the most exclusively from well-known natural objects their systems of ornament.

I have spoken of the Medieval Gothic as a style of high refinement, but it does not follow that modern revived Gothic must be equally so. If the style has already reached a point of excellence beyond which it cannot be carried, it is more likely that its progress is arrested by some insuperable obstacle, than by the attainment of the highest standard of perfection. The very faults of the Romanesque style, provided they are not inherent and irremediable, mark it as a style capable of growth and advancement. That they are not so essentially a part of the system as to involve in their removal the destruction of the whole, I am convinced by the pursuit of many examples, which still retain their character unimpaired. The Florentine palaces are an instance of this. Had the feeling which pervades them extended to church architecture, a standard would have been reached not inferior to that of the finest examples of Gothic.

It is not to be wondered at that Gothic architecture should excite so general an interest, or that such earnest efforts should be made towards its revival: its actual beauties, and the associations which it carries with it, give it a fascination which it is not easy to resist. But its great charm and value consist in its being the expression of the spirit and character of an age which cannot be expressed in interest, and of which no circumstances can cause the recurrence. It is the poetry of that age, the language in which it speaks to us more than by words, or by any other branch of art. That age was a struggle between the softening and refining influences of Christianity, and a fierceness of nature amounting almost to barbarism. Thus the architecture expresses the struggle of harmony and order with roughness and savagery (the characteristic so happily applied to it by Mr. Ruskin), wild, imaginative, impulsive, acted upon, for good and for evil, by overstrained and exaggerated feelings, yet withal animated by that practical energy which ensures a constant advance in the right direction. The Medieval age may have been more truly represented than in those marvellous and mysterious piles which, in the course of three or four centuries, were thickly scattered throughout Western Christendom; could those centuries have been, the feelings and genius would return to which owe these creations, and Gothic architecture might be revived. But as they are passed away for ever, it were well to consider whether the language in which the thoughts and feelings of our ancestors are conveyed to us by one which we can pronounce with proper emphasis; whether the instrument to which they gave such tone and power be one from which we can extract music, or even sound. We may measure proportions with exactness; we may copy mouldings to a nicety; we may carve foliage which in the true rendering of the natural type will vie with the best Medieval examples; and yet our work, when complete, may be tame and lifeless, or at best, the reflection of an age very different from our own. That it should be this, appears to me the highest point at which the Gothic architect of the present day can aim; and if he succeed, we must admire his talent and genius, but at the same time regret that he has not directed it towards the illustration of his own age instead of another. I cannot at all understand the argument of those who adopt Gothic as being a national style. We may, on national grounds, prefer the Early English rather than the Early French, or the Perpendicular in preference to Flamboyant. But Gothic, in the abstract is not a national style, for it was universal throughout a great part of Christendom; it flourished everywhere during much the same period, and its decline in different countries, if not altogether simultaneous, was sufficiently so to preclude any one country from asserting a peculiar claim on account of its prolonged retention of the style. The particular phase of Gothic most in favour, the geometrical decorated, has the least right to be called national, since it is the most universal, and in our own country passed away more rapidly than in any other.

While we contemplate the architecture of the Middle Ages in the spirit of an artist or antiquary, we have no wish to find fault: every trait is valuable, to the one as furnishing the elements of that picturesqueness in which he delights; to the other, as illustrative of the spirit of the age. Nor need the architect find fault, when he looks to the Gothic as an inexhaustible fund of resources and suggestions in his art. But when we propose to bind ourselves altogether to its adoption as a national style, the case is different. We must then criticise it severely and minutely, and with reference to its accordance with our own period, rather than that in which it flourished. Looking at it in this light, I should say that it makes rather too much parade of constructive devices; that it is favourable to the expression of restlessness instead of repose; that it leads to the production of a confused and broken effect, rather than one of breadth and unity; that, although in many cases, and at Rhinens, it may have attained sublimity by means of just and fine proportions, and in endeavouring to counteract this tendency, we are in danger of giving it a tame and common-place character. That its "savagery" and its air of mystery, which constitute its greatest charm, are wholly out of place in this age of refinement and realities. In our hands it must either exist, as it were, in a state of utter isolation, free from every other production of the age, or else it must lose its very essence, for it is not, like the Classic, calculated to receive the impress of any period or nation on which it may fall. Nor does it appear to me to be calculated, as was the Classic, to form the groundwork of any new and independent style, though it must influence, to a very great extent, any that succeed it.

It cannot be denied that in an age remarkable for intellectual expansion, vigour, and refinement, and when the arts were making a decided and rapid progress, the Gothic style was abandoned, and the Classic was accepted, we may say by universal suffrage, as a universal style. It was worked out by men of the highest genius, who saw it was essentially a great style, fitted for representing its faults, to embody the noblest thoughts of the architect; capable of endless variety; admitting of the severest simplicity, or of the most fanciful redundancy of ornament. Its beauties are those which properly belong to architecture in the abstract; and not to any particular age or country; and it by no means excludes such as may be impressed upon it by the feeling of the nation or architect who adopts it. It worked out with spirit, it is sure to assume a character of its own, and become a national style. There is as much difference between the revived classical architecture of different countries and periods as between the different aspects presented by the Gothic; and it would be quite a mistake to suppose that it must of necessity be devoid of all picturesque. Such an idea would vanish at the first sight of any town in Spain or Italy, where the Gothic was superseded at an early period. No doubt a vast deal of poor, tame, uninteresting classic work has been produced, where the only aim has been the imitation of certain models and the observance of certain rules; and a vast number of vile and hideous fabrics have resulted from a determination to achieve something new, at the cost of all harmony, congruity, and right proportion. Now, if the architect works with the full intention of advancing the style by removing to the best of his power, its blemishes and defects, while he does not reject the guidance of those rules and usages which were observed by his ancestors, and which the greatest masters of the revival, and at the same time exert himself to discover what further beauties yet remain to be developed, or what may be introduced into the system with propriety from other sources, he will be sure to possess originality and interest. He will find that he can easily adapt it to the spirit of an age marked by invention and rapid progress. He can make it really belong to the age. I cannot see that Roman architecture expresses any peculiar characteristic of the people among whom it originated except their power and greatness. Now power and greatness are the very elements of good architecture, and surely not incompatible with expression of an age like the present. Romance, vivid imagination, over-wrought feelings are, as I remarked, interwoven with the life and spirit of Gothic architecture, and these are not the characteristics of our age. If they were, our genuine works would be sure to express them.

And now let me say a word about genuine work. A short time ago I spent a few days in Tangier, and was beyond measure charmed and interested. The manners, and habits of the people—all I saw was new to me. In its architecture, every thing struck me as right and consistent, as well as highly picturesque. Some parts of the castle, from their purity of design, I should have attributed to the thirteenth or fourteenth century. I was told, however, they were not two centuries old. Still I was not the less impressed with their beauty, nor with that even of buildings erected within the memory of man. Now the charm of the scene did not consist so much in its novelty and strangeness to one acquainted only with European towns, as in its evident reality and genuineness. There is no effort to assume or present to the spectator the marks of a different age. If architectural forms as well as the dress and habits of the people are nearly identical with those of a much earlier period, it is because the spirit of the age, the prevailing tone of mind and feeling, is also nearly identical; and therefore an unchanged style is equally expressive of both. The mosques, fountains, painted alcoves, roofs of carpentry, doorways, belonging to the present day are but little inferior in interest to those of former ages. If we can give the same interest to our modern Gothic structures, so that they can be pointed to as expressions of the present age as well as the monuments of the past, then we are right in attempting to revive the style; but if our efforts in that direction simply show a wish on the part of many or of few to return to Medieval fashions, I cannot see that such a tendency is worth any durable monument. I have myself no prejudice against Gothic: if I had any prejudice in the matter, it would have been in favour of the style, for it has been my greatest pleasure for the last forty years to study its best examples. I still return to them with increased interest, and never visit a specimen, even if it be one already familiar to me, without finding that I have still very much to learn; and I may say that ninety-nine out of a hundred specimens of classic architecture I pass by without deriving from them the slightest gratification; but from those few which have attracted my attention, I feel that it is a style which has many solid merits, though too often obscured by very serious faults, and that it may be accepted as the groundwork or nucleus of a living, expressive, national style in any country; that it is capable of the highest refinement, and presents no insuperable obstacle in the path towards perfection; that it is not debared from appropriating to itself, without inconsistency, beauties derived from every quarter; and that it may be adapted to every purpose. It admits freely and unhesitatingly of derivation from nature, as well as those forms which are more obscurely suggested by her, and which the artist has to find out for himself. And if the enthusiasm of the ancients is to be adduced as an argument against the adoption of their architecture, I would remind you that the examples we should study are not so much the temples as the works of a secular character, which are sufficient to assure us of the excellence of an element of ornament and solemnity highly suitable to religious purposes, while the spirit of a false religion do not stand so prominently forward as to render difficult the application of the style to the requirements of a true religion. The church of the revived classical style exhibits as little the aspect of a pagan temple as does the purest Gothic edifice.

I trust I have stated clearly my reasons for believing that we are more likely to arrive at a great national style through the medium of classic than of Gothic architecture. It is probable that a great majority of those I am addressing hold a directly contrary opinion. I am aware that a totally different view of the case is taken by many persons whose taste, judgment, and talent I truly respect, and from whose works I would be the last person to withhold the praise which is so justly their due; and I do not expect that anything I say will effect a change in their opinions, which they have doubtless formed after the most careful consideration. I shall be content if I can point out to you that there are two sides to the question, and that art will not be advanced by our taking it for granted that the Gothic is the only style in which anything great

or solemn can be designed, and that the Classic must be altogether discarded as unworthy of attention. Had the popular fashion or feeling been for the unreserved adoption of Classic, and the condemnation of the Gothic as barbarous, I should very likely have stood up for the latter, since its exclusion from our architecture would have been the means of perpetuating all the faults of the Classic, and tied it down to a dull round of repetitions, instead of developing its energies and powers of advancement. The Gothic movement has unquestionably done much towards arousing the slumbering genius of architecture, but the utter exclusion of the Classic would only have for its result a series of equally tame repetitions of another sort. We naturally want feeble reflections of Michelangelo, Palladio, and Wren, not yet of Steinbach, Walsingham, and Wykeham. What we want is a real, living, expressive style of our own; and as a new style is not a thing to be invented whenever we happen to feel the want of it, we must take as our groundwork that which affords us the best hope and promise, and work upon it steadily, carefully, judiciously; refining and correcting whenever we find an occasion; studying how it may be best adapted to the requirements of the age; how it may be cleared of defects without the sacrifice of excellencies; how it may be made to preserve and combine all the qualities of true architecture—unity, variety, consistency, grandeur, breadth, durability, repose, together with that grace and elegance which we have a right to expect in works of art belonging to the present age. If the architect is fully conscious of the nature of the task before him, he will surely condescend to the work on a groundwork with an unbiased mind, and weigh carefully the merits of each style brought before him; not merely its actual beauties, as presented to him in existing examples, but also its capabilities of improvement and progress; and if he meets with any that already bears the marks of high refinement, even though it should abound in faults, and that it is evidently still capable of further refinement and advancement towards perfection, he will not hastily reject it, unless he finds that its faults are absolutely incurable, or that the style itself is wholly unsuited to his purposes.

METROPOLITAN IMPROVEMENTS.

THE adjourned discussion at the Institute of Architects, on the 21st March, on the subject of the improvements at present under consideration, and which are contemplated for the advancement of the metropolis, was commenced by

Professor Donaldson, who said that a considerable time had been already devoted to the consideration of this very important question, though not more than its magnitude deserved, involving, as it did the questions of the general distribution of the City, and the general principles which would be applicable in the carrying out of any improvements in the metropolis. Referring to the plan which displayed the cobweb sort of appearance that the City of London now assumed, he said, in the way of skill, of arrangement, and of simplicity, it was evident that the design of the City was inferior to that of a cobweb, which always exhibited some continuity and regularity; but in the metropolis the intricacies were sufficient almost to baffle the ingenuity of any person. He would say that, in building the City of London, the form had been adopted which was found most compatible with the public convenience of the moment, and not with any regard to strict mathematical rule. This led him to the very valuable observations made by Mr. Haywood, in the discussion at the last meeting: he laid down broad principles: he made statements which were of the utmost public value; and he felt that he had placed this discussion on a proper basis. That gentleman had entertained no narrow views on this subject, but looked at it largely; and he considered it in the way in which it ought to be entertained by all public bodies. He believed that it was only by looking on broad principles that they could entertain such a subject as was now before them in a manner at all useful. He had been looking at Vitruvius that evening to see if he laid down any principles on this subject on which they could rely, but he was sorry to say that author had lost himself in such considerations as—how the winds ought to blow, and how a city should be protected from the influence of the winds; and had forgotten that really in a city one could not enter into these minute details, but should rather look to the traffic and to the internal communication of the city from one part to another, than to whether the aspect of the city itself should be north, south, east, or west. According to his view, in large cities, already established, they must look to such main considerations as the points to and from which the internal traffic must be directed. There were two of these points to be considered in London—the inland and the maritime: the maritime might be taken as all that came from the seaboard to the great city; and the inland as that which came from all parts of the country; and what it was necessary to provide for were the stoppages, as it were, in the circumference of the city, where the traffic must always rest on coming from the outer parts, in order that it might be regularly distributed into the city. It was necessary, he maintained, to consider these resting-points in the first instance, without considering

merely the distribution of the streets which existed in the interior. In this particular matter an immense revolution had taken place within the last few years: since railways had been established the aspect of the question had been altogether changed. Thirty years ago he did not think there was a railway station in London; and, therefore, the question merely was, at that time, how persons should arrive from the Docks, perhaps, to the West End, or Piccadilly, and from the few localities where stages came in from Islington on the north, from White-chapel on the east, and from the Elephant and Castle on the south. These seemed to be the great central points; but in other respects there were no particular matters to which they had to pay attention. But now this question assumed a much graver aspect from the points to which the traffic was conveyed. From the west they now found the Great Western railway arriving at Paddington: from the north-west they had the line coming to the Euston-square station: from the north they had the terminus at King's-cross. The Angel was now a place of utter insignificance, and was left far behind in point of communication between the country and the metropolis. Then at the other side they had the Direct Eastern and South-Eastern lines, as well as all the Kentish lines coming to London-bridge; and then they had the South-Western line going to Southampton, and ultimately, perhaps, to Exeter, and joining the Cornish and Devonshire railways. It was in relation to all these points, and the necessity for establishing communication between them and the Docks, and between these termini themselves, that attention should be mainly directed; and, in doing this, it was impossible to confine themselves to the merely existing streets of which the citizens now availed themselves. Now, on looking at the plan which had been prepared with so much care that the eye almost indicated the direction which these lines ought to take in order to form valuable communications, they would at once see that, in going from the Eastern Counties railway to Oxford-street, one was obliged to go long way south to the Bank, which was altogether out of the line; instead of which there ought to be a line immediately to Oxford-street. That was the philosophic way of regarding such communications. Then, also, in getting from Tyburnia to Charing-cross one was obliged to pursue a most tortuous course, getting into Oxford-street, and then down Regent-street. Nothing could have been worse conceived; for, according to this mode, the streets which were intended solely for traffic from west to east, and which ought to be confined to that communication, were, from the present condition of circumstances, obliged also to subserve to traffic that should go direct from north to south. Let them go to the Euston station, and what means of communication was there from that quarter? It appeared to him that a totally different view should be adopted with regard to all the additional lines of communication that might now be taken in hand, and that they ought not to be limited or controlled by mere established thoroughfares: they should set these on one side, and immediately take in hand a new and vigorous line. In the same way, in London, it would be found that all our streets were wide enough, if special thoroughfares were only provided for the purpose of relieving the ordinary passages from the traffic created by the railway stations. Then arose the question, where were the railway stations to discharge their goods and passengers? It appeared to him that Charing-cross would be one of the most suitable points. It must be noted, too, that the accommodation with regard to bridges was most scant and imperfect, and not at all fitted for the largely increased demand which the growth of the metropolis had raised up. Between Waterloo-bridge and Blackfriars-bridge, another was required, as also between Blackfriars and Southwark bridges: there was likewise a bridge wanting at Lambeth. He perceived that Mr. D'Almeida had been obliged to attend before his Board, and to explain his estimates in consequence of a statement which was issued by the Central Board, showing that some seventeen millions would be required for the purposes of metropolitan improvement; and it seemed that the local authorities were rising up in arms on the question of where the money was to come from. His idea was that a few millions laid out on producing these improvements in the metropolis would ultimately repay itself. They must not fail to recollect that the city of Paris had itself laid out five millions in improvements, and why should London, which claimed to be the first commercial city in the world, do less than their neighbours, or grumble over the expenditure of a few millions? On the contrary, remembering the number of foreigners who annually came to London, it ought to be the

study of Englishmen to render the metropolis as salubrious and attractive as possible.

Mr. Mathews said, Professor Donaldson had compared what the Emperor of the French had done with what had been done by the English people; but the fact was that, while the population of London had doubled in thirty-two years, that of Paris had actually decreased since these alterations commenced, and political economists had come to the conclusion that these expensive and extravagant outlays, which he might call absolutely reckless, had been the means of bringing the country to the verge of ruin, which at one time threatened France. He believed that the great objection to the present system of thoroughfares was, that they carried traffic which did not properly belong to them: Oxford-street, for instance, running east and west, should not have any traffic running through it, which was intended for north or south; and he believed, if an amendment to this extent could be carried out over any large surface of London, a great deal of inconvenience would be got rid of. But the making of large and expensive communications, at a cost of seventeen millions, at a time when they were going to spend millions on the drainage of the Thames, was a proposal which he believed the Government would never sanction the Board of Works in carrying out.

Mr. Bell said it had occurred to him that as London differed so much from all other capitals on account of its size, it should require different treatment, and ought to be operated on almost as an aneurism, by being opened out at the centre. It would be almost impossible to carry out the idea, he had no doubt, from the number of checks; but, if it were possible to make Charing-cross on one side, and the Borough on the other, a species of double Place de la Concorde, by opening out both, building a bridge between, and leaving a clear vista of half-a-mile across the Thames from the National Gallery, it would not only add greatly to the beauty of the City, but would accomplish many other purposes besides. He only ventured to throw out this idea in consequence of what Professor Donaldson had said as to the necessity for crossing the diagonal lines at some special point.

Mr. C. Smith, referring to a recent article in the *Times* on metropolitan improvements, selected one or two of the projects put forward, which appeared to him the most important and the most feasible. The suggested widening of Hungerford Suspension-bridge, and the formation of a new bridge to the West Strand and Charing-cross, would, doubtless, afford the utmost accommodation, and would be the best line which could be selected. If there was a bridge in that place, there could be no doubt that it would greatly relieve the traffic to that part of the City, and would be besides the direct line from all the open spaces about Trafalgar-square to the other side of the river. The right direction from the Obelisk to Piccadilly would be across a bridge in that locality. Another place which was specially pointed out in this list was the widening of Upper and Lower Thames-street. His idea was, that Thames-street formed an excellent example in miniature of what should be carried out along the Thames. From such a street as he proposed, there should, of course, be a certain number of ramifications northward, but by way of not cutting up the town too much, they should, as much as was possible, follow the inclination of the existing line of streets.

Mr. Fowler said a great number of schemes in which the Thames embankment figured prominently had from time to time been put forward, and they had presented a most favourable appearance; but they all proved to be very disappointing when they came to be inquired into. He himself had an opportunity of seeing the plan which was submitted by Colonel French, having for its object to improve the Thames along the north side by forming a very magnificent line of communication from the West End to the City. The drawings were got up with great skill and taste, and altogether it was a most captivating project; it was backed by a great deal of influence in the Government and at Court, but not in the City; there, there was a deficiency. Setting aside any question as to the practicability of construction, the enormous sacrifice of property which such a scheme would involve formed a complete extinguisher to the plan; for, if they spoke of making use of the ground which now lay waste as mud, they were at once told that the mud which they proposed to occupy was the frontage of a large property in quays and wharfs; and, if any one proposed to interfere with it, the owners would come forward with claims for thousands and thousands of pounds. It was absurd, therefore, to speak of forming a long street along the bank of

the river, for the men behind would exclaim,

"What is to become of our property?"

Mr. Mathews expressed his opinion that in the course of a few years the docks would all be moved away from London.

Mr. Haywood controverted this assertion, maintaining the docks nearest the centre would always pay the best.

Mr. Kerr and Mr. Digby Wyatt having made some observations, thanks were voted to Mr. Rickman for the paper on which the discussion had been founded, and the meeting was adjourned.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE fortnightly meeting of this society was held on Wednesday night, the 23rd, in the Royal Institution. The chair was occupied by Mr. H. P. Horner, president. The paper of the evening was to have been "On Working Men's Villages," by Mr. Charles Vereist; but in consequence of that gentleman's indisposition it was postponed, and Mr. Frank Howard responded to the call for assistance from the secretary, and read a paper on "Invention and Taste." This was a continuation into detail of his paper recently read before the same society on "Criticism." Invention, he mentioned, was the result of active imagination—the action of the mind upon the memory, and was in proportion to the knowledge of the artist. Taste was the regulating quality which selected from the materials provided by invention and controlled the execution so as to produce works calculated to refine the mind, and thereby become works of fine art. Taste would also be in proportion to knowledge.

RE-ARRANGEMENT OF THE NATIONAL GALLERY.

As it has been decided that the Royal Academy is to vacate the part of the National Gallery building which they now occupy, it will be necessary to devise some method of remodelling the building, so as to adapt the whole interior for the reception of the national pictures only. Various propositions have at different times been made, as well in our own pages as elsewhere. We have before us drawings illustrating a proposal by Capt. Francis Fowke, showing how the National Gallery building may be fitted to hold three times the present National Gallery collection, at a cost of 31,000*l*.

The floor of the present picture galleries is 23 feet 6 inches above the foot pavement of the street: if the floor of the central hall, then, be raised to this level, sufficient height would be obtained for an entrance-hall under the additional gallery so formed. By removing the present external steps, the entrance from the street will be at each side under the present portico floor, the flagging of which will be replaced by a light glass and iron ceiling, so constructed as not to be seen from the square in front: the space under the portico will then form a well-lighted vestibule to the hall.

Four staircases, each stair 8 feet wide, will lead from either side of this hall to the galleries above, of which the centre would consist of a tribune, or "salon carré" of fine proportions. From a deep recess at the sides of this tribune openings would lead each way into an uninterrupted series of rooms; and by bringing the doorways of these rooms in one line, and increasing them to 12 feet in width, an effective vista the entire length of the building (450 feet) would be obtained, and which might be treated with columns and arches as in the case of the similarly situated openings in the galleries of the Vatican.

On the lower floor the only room now available for exhibition is that in which the Turner drawings are stored, a room containing 900 square feet floor area, and, from the unfortunate circumstance of the entrance being down a descending and dark stair, the public impression has been that the lower rooms were merely a superior kind of cellars. Capt. Fowke urges that "by the arrangement proposed a space will be obtained available for exhibiting drawings, of 12,000 square feet, that is capable of displaying a collection of old masters' drawings of far greater extent than that at the Louvre; and by the fact of these rooms being entered at once from the entrance-hall, and by an ascending stair, the disagreeable impression above alluded to would be avoided."

The alterations to the exterior are of no great extent, the principal being the removal of the central and two secondary domes, and the substitution for the former of an attic story, carried over the whole central portion of the building.

WATER SUPPLY OF MELBOURNE.

INSTITUTION OF CIVIL ENGINEERS.

ON March 22nd the paper read was on "The Water Supply for the City of Melbourne, South Australia," by Mr. M. B. Jackson. The population was, in December, 1857, nearly 95,000 souls, for whose use the supply of water was very inadequate, not exceeding 3½ gallons per head per diem, at a cost of not less than 105,000*l*. per annum. After various propositions, Mr. Blackburn recommended the river Plenty as a source for the water supply, and, finally, in October, 1853, it was decided to adopt that river as the source of water supply for 20,000 persons, at a daily rate of 30 gallons per head.

Mr. Blackburn was appointed consulting engineer; and, up to the period of his decease, in 1854, the utmost cordiality and unanimity existed between him and the author, to whom the execution of the design was confided.

The distribution of the water commenced at about 10 miles' distance from Yan Yean, and at present there were (including these 19 miles of main) about 104 miles of pipes laid, varying from 24 inches to 3 inches in diameter.

In all the streets of more than one chain in width a main of pipes was laid on each side; whilst, in those under that width, the pipes were laid in the middle of the street. All the pipes were 9 feet long, and with the old spigot and flange joints. The service pipes were of lead, lined with tin. There were 1,700 of Bateman's fire-plugs, and the hydrants were manufactured by Messrs. Guest and Chirnes, a quantity of vulcanised India rubber hose being also provided. The saving of property in cases of fire had proved to be enormous, and the rates of insurance had fallen 10 per cent, since the establishment of these water-works.

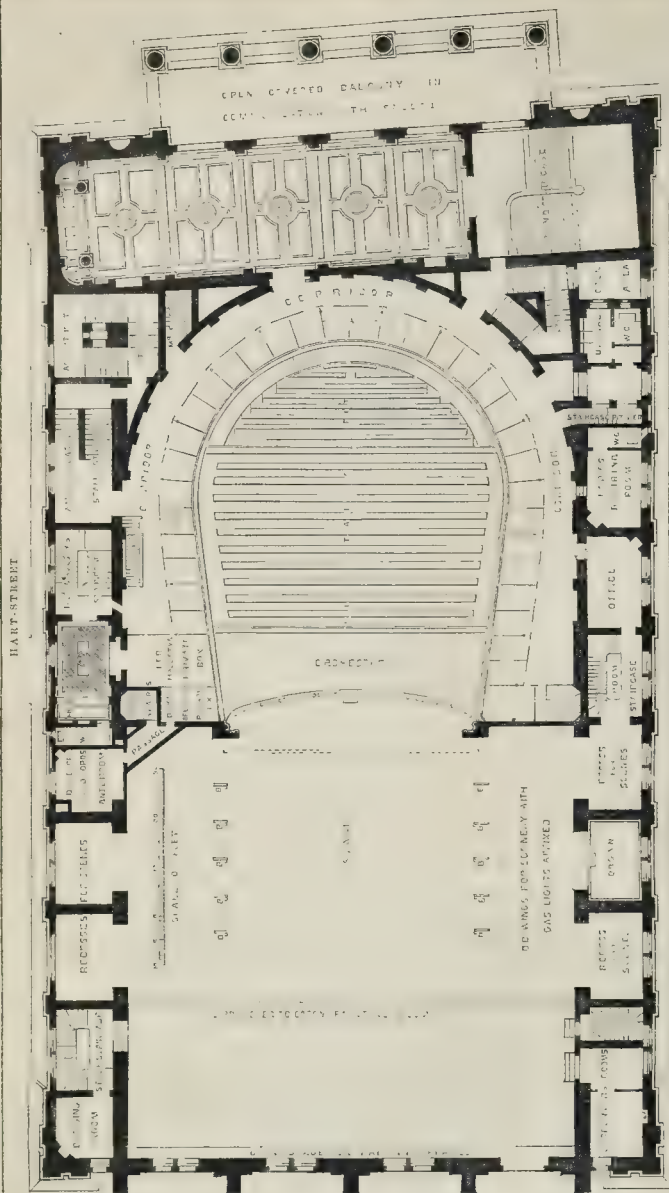
The gross cost of these works was stated to have been 661,452*l*. 1*s*. 2*d*., but that sum included several large items which would eventually be charged to other works; so that the net cost, up to 1st January, 1858, should be stated at 571,816*l*. 17*s*. 3*d*.. These works were commenced in December, 1853, and were completely opened for public use in December, 1857.

A compulsory rate was to be levied for meeting the interest of this capital, and to form a sinking fund for redeeming the capital. During the period of the execution of the works the rates of wages were:—Masons, 3*s*. 6*d*. per day; labourers, 1*s*. 8*d*. to 2*s*. per day.

THE ROYAL ITALIAN OPERA-HOUSE, AND NEW FLORAL HALL, COVENT-GARDEN.

THIS week, the Opera-house, Covent-garden, re-opens for the season, with several improvements in the staircases and exit-ways, to which we have lately alluded, made, or in course of completion. In our volume for 1857, we gave a view of the exterior as then designed; and in our last volume, in several notices, we fully described the general disposition of the house, and the details of the construction. We now give a plan of the building taken at the level of the grand-tier of boxes, along with a better representation of the interior than we were able to get prepared, last year, during the incomplete state of the works. We shall give in an early number a longitudinal section; and thus, with some further particulars subjoined, shall have afforded to our readers means of information as to the whole arrangements and character of the building. The new Floral Hall, which will form an important adjunct to the building, as to the market, cannot be completed for some weeks.

Looking first to the matter of exit-ways, as of chief importance, we find that for the ground story, south side, two additional ways will be provided or made available, leading into the Floral Hall, one of them from the end of the entrance-hall by way of the box-office, and the other directly from the pit-corridor. There will also be an iron staircase down into the Floral Hall as an exit-way from the landing of the grand staircase of the principal tier of boxes. On the north side, the improvements of similar character consist of a new external doorway for the staircase of the amphitheatre stalls. At the first opening of the theatre, the access was from the pit-corridor; and the staircase was made to serve for communication between the different tiers of boxes,—the visitors to the amphitheatre stalls passing up the gallery stairs. The objections to this arrangement were remarked upon by us, at the time. The now-intended appropriation of the staircase mentioned, to the purpose for which it was designed, however, has seemed to render necessary



THE ROYAL ITALIAN OPERA-HOUSE, COVENT-GARDEN.

Plan on level of Grand Tier.

an additional staircase to serve exclusively for communication between the several corridors—pit and boxes—on that side the house. This latter staircase has now been completed. It is constructed of iron, and is carried by the girders of the flooring. As there was no space for turning the stairs, they are planned in unbroken flights; and consequently it was necessary to cut one of the girders at each floor, and again form the connection between the portion of the girder carried by the column, and the original bearing on the wall—an object which is attained simply by the introduction of a piece of the form required for head-way in the one flight, and for support of the flight above.

On the exterior of the building, on the same side, that is in Hart-street, all along, a pent-house covering over the foot-path has been constructed, of thick glass, on cantilever bearers. It has an

iron eaves-gutter, and a valance depending therefrom; below which canvas would be suspended, if allowed. The covering otherwise is scarcely wide enough for protection in all cases; but will be of service. South of the Floral Hall we observe that a space of ground has been left unoccupied. This it is, perhaps, intended to appropriate for an entrance from the Piazza of the Covent-garden Market, in a similar position to one entrance of the old house. One front, however, of the Floral Hall is towards the Covent-garden Market—or on the side thereof, near the angle—so that entrance-way might be got from the Piazza to the Opera-house, through the Floral Hall itself, if all open at night.

The Floral Hall on the general plan might be described as having the form T; but the upper arm, that which extends to the Covent-garden Market side, is scarcely developed externally. The area

of plan at the meeting of the arms, where the columns are coupled at the angles, will be covered by a dome considerably above the general roof, and terminated by a spire-capped lantern. The length on the ground is about 230 feet, and the width 75 feet. The roof is carried in three spans, by iron columns, and by the south wall of the theatre; but the columns of the outer range, south side, of the Floral Hall, are built up in an external wall of brickwork. The centre division, roofed over in semicircular form, is 50 feet from centre of column to centre of column, and the side portions, or aisles, with sloping roofs, are each 12 feet 6 inches. The aisle-roofs and the main cornice of the centre division, are carried by arched ribs springing from the columns; and the arched principal ribs of the main roof, at the higher level, are carried partly by a bracket above each column; which is part of the same casting as one half of the arched rib of the aisle-roof. Otherwise, each arched rib whether in the length of the hall, or across the aisles, may be described as of two castings. The principal ribs of the main roof will be described shortly.

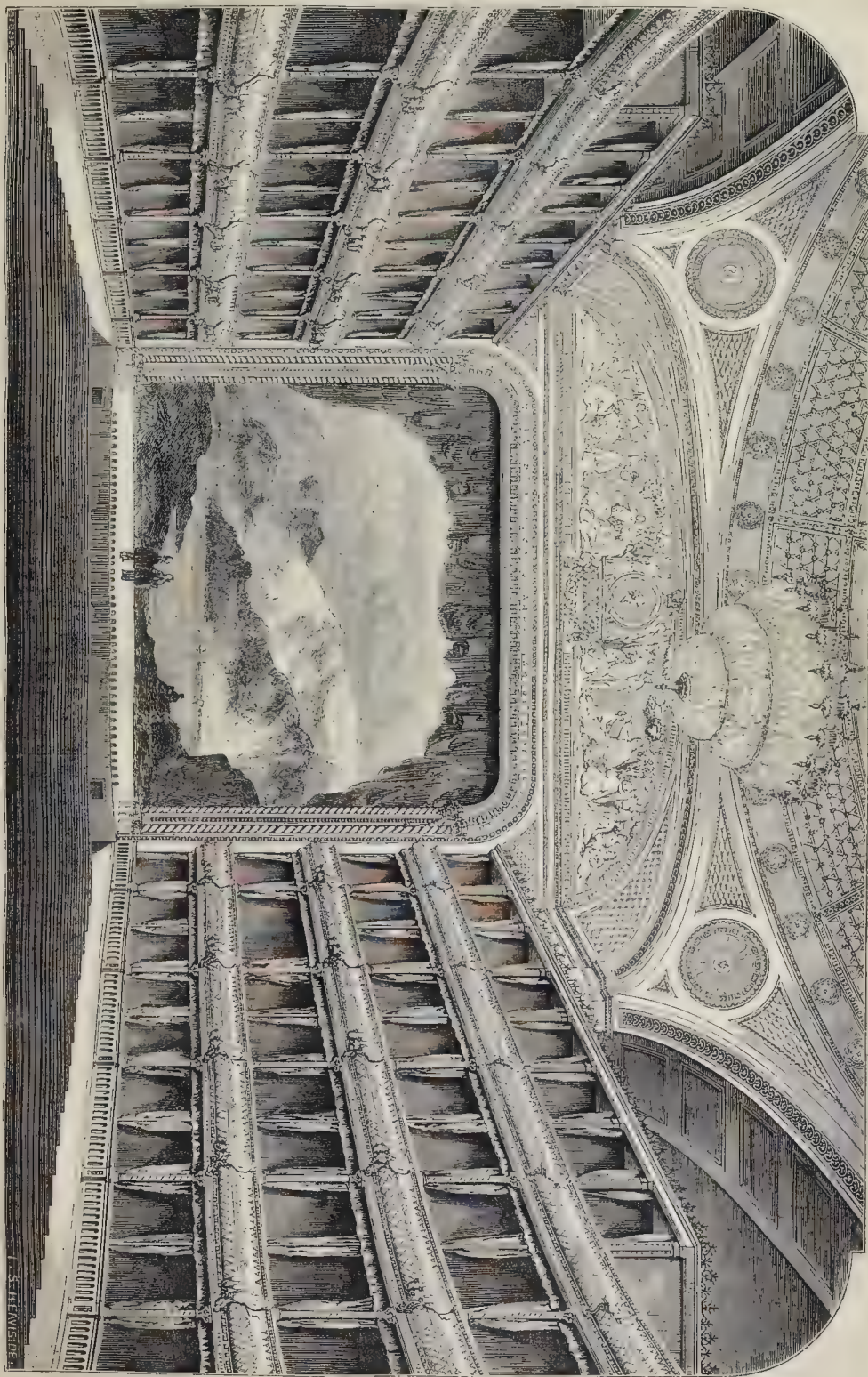
The ground is excavated below the principal floor, so as to afford a basement story, 16 feet in height, which may be divided into two stories. The lower level is reached by steps, at the south-east, externally. The basement is divided by four rows of columns, 16 feet 8 inches apart, and the external walls. The columns carry main girders, lengthway of the building, and these carry smaller girders, about 4 feet apart, for tile arches, on which concrete will be laid, and sleepers for a boarded floor. The longitudinal girders have a bearing of about 20 feet; they are 1 foot 7 inches deep in the middle; have a top flange, 6 inches by 1½ inch; bottom flange, 1 foot 3 inches by 2½ inches; and middle web, 1½ inch thick; and are proved to 24 tons. They are bolted end to end, by 2-inch bolts, through box-heads of the columns. The smaller transverse girders, with a bearing of about 15 feet 6 inches, are 1 foot deep throughout, and have top flange 2 inches by 2 inch; bottom flange, 8 inches by 1½ inch; and middle web, 2 inch; and are proved to 4½ tons. They are bolted end to end, through the longitudinal girders. The columns in the principal floor, 50 feet across the building, as stated, are 21 feet 5½ inches (centre to centre), lengthway of the building. They are nearly 19 feet in height, or to the springing of the arched ribs before described. The capitals are somewhat of "semi-Norman" character; the bases are octagonal; and a portion of the shaft, terminated by a head and a nail-head ornament, is fluted and reeded. The longitudinal arch-ribs, as well as the brackets carrying the roof-principals, have their spandrels filled in with tracery and cusps, Gothic in character. The cornice, to its main line, to be crowned by a row of antefixæ, is about 27 feet. At this level, at the point above each column, springs the arched principal of the centre roof. It is formed of two semicircles of ¾ of an inch T iron, 3 inches by 5 inches, in segments, riveted at the junctions, the two struts apart by ornamental bars of cast iron, forming radiating divisions of the arch, and connected by diagonal bolts, which are screwed to a central ring. These principal ribs carry rolled-iron purlins, which themselves carry iron sash-bars, pieces of angle-iron as saddles being screwed on or riveted, at all the intersections, to allow of the support and the riveting or screwing to such pieces. The gutters next the walls will be carried partly on ornamental brackets. The height from the floor of the hall to the crown of the arch will be 53 feet 6 inches, and from the bottom of the columns in the basement it will be 72 feet. Along the crown of the arch there is a raised portion, filled with louvres, for ventilation.

In the portion of the Hall which is next Covent-garden Market, there will be a small gallery over the Piazza, ranging with balconies of the houses each side.

The end elevations are chiefly made up of simple facing-castings, panelled and ornamented, with circular forms, lattice-work, and perforations, and terminating the main divisions of the plan and of the semi-circular roof, to which will be added a fringe of antefixæ or floriated ornament, or around the latter, as well as on the horizontal cornices which terminate the aisles. Possibly a low pent-house roof may be added along the Bow-street end. The iron-work has been executed by Mr. Henry Grissell, of the Regent's Canal Iron Works; the general contractors being Messrs. C. and T. Lucas. The architect, as our readers know, is Mr. Edward M. Barry.

The building seems likely to be well adapted to its purpose; and the interior promises to be highly effective.

THE ROYAL ITALIAN OPERA-HOUSE, COVENT-GARDEN.—MR. E. M. HUNT, ARCHT.



SCHEISSIDRE

PARIS.

At present they are removing, from the Park of St. Owen, a number of trees of a sufficient size for the new boulevards. A few days ago, while uprooting an elm tree of thirty-five or forty years growth, a cavity was discovered containing a quantity of human bones belonging to a distant period.

In the opening of a new street that may be called a prolongation of the Rue Lafayette, the Faubourg Poissonnière will lose some houses, but it will be usefully and directly put in communication with an important centre, formed by the quarters of the Faubourg Montmartre and that of St. Lazare.

Since the Paris butchers have obtained that freedom from police interference which enables them to treat directly with their customers,—thanks to the Emperor's good management of Paris,—many vast establishments have been opened in that city. We can cite one at the corner of the Rue Tronchet and the Rue Neuve-des-Mathurins. Upwards of thirty metres in length, it is entirely filled up with white marble or supports of porphyry. The counter is of white marble on silver Caryatides. A fountain plays in a basin 6 feet diameter in the centre of the shop, and vases of flowers and shrubs are dispersed about with a certain degree of taste. Thirty-nine persons are employed in the establishment, which offers for sale, each morning, twenty oxen, twenty calves, and sixty sheep.

The Academy of Beaux Arts, on Saturday last, elected M. F. de Mercey as member, in the room of the Count de Houdeiot. The other candidates were MM. Eugene Flaudin, De Caumont, and the celebrated novelist Arsène Houssaye. The majority for M. de Mercey was very great: out of 43 votes he obtained 40.

It appears that the Paris improvements demand a new Palace, and it is said that M. Lefuel, architect of the Louvre, has presented to the Emperor plans for the complete reconstruction of the Palace of the Tuileries, excepting the central portion erected by order of Marie de Medicis. Seven million francs are named as the estimated cost of the new structure.

A considerable number of engineers and architects are at present employed in Paris making surveys for a new Ordnance Survey or "Cadastré" of the new additions to the town. These plans are to show the alignment of projected new streets, also proposed plantations, monumental structures, new "Mairies" about to be constructed, details as to paving and lighting with gas, &c.; in short, a general plan of the works required to be executed and their estimated cost.

SOCIETY OF BRITISH ARTISTS.

THIS Society's twenty-sixth Annual Exhibition, now open in the Suffolk-street Galleries, comprises 822 paintings and drawings, and seven models and pieces of sculpture. The principal works are by artists whose names have long been known in connection with the Society, and with whose style and capabilities the picture-loving public are so well acquainted that the mention of the subject almost enables them to guess the aspect of the picture. As a whole, the collection compares well with those of previous years, and this the buyers have already recognized, forty-six pictures having been disposed of at the private view, and producing about 1,500*l*. The sums of money now spent in England, in works of art, is very remarkable. On the same day pictures were sold at Christie's for about 11,000*l*, when the portrait of Mrs. Hoare and her child, by Reynolds, brought 2,550 guineas; and a landscape, by Sir Edwin Landseer, the size of a dish, 440 guineas!

The two principal works contributed by the president of the society, Mr. Hurlstone, are from "Hamlet" (59) and "Othello" (226). The latter, which pleases the more, is a good specimen of his style; but Othello will probably not accept the head of Othello as that of a Moor. Mr. Pyno has a very charming view of "Genoa from the New Terrace," a large picture, and more completely satisfactory than anything he has exhibited for some time. As a portrait of the place it may, perhaps, be objected that the houses, of which the upper part is seen above the terrace on the right hand, are, in reality, less lofty. Amongst his other pictures we should especially commend 262, the "Isola Piscatore, Lago Maggiore." Mr. Cobbett shows great improvement in his figures. No. 11, "Heather Belts," and "A Bit of Luncheon" (488), are amongst the most satisfactory works in the exhibition. Mr. H. J. Boddington's landscapes still please. His "Autumn" (487), is a charming picture of its class, and several others might be selected for the same praise.

Mr. Salter has wisely given up dancing nymphs, and has essayed a passage in English history,— "The Consecration of Sir Walter Raleigh's Estate" (70); and Tennant, Clint, Cole, and Baxter, hold their own, to say the least. The "Scene from Abou-Hassan, the Wag, and the Sleeper awakened" (450), is a remarkable piece of manipulation, dealing rather more with the outer than the inner man. The principal figure is the least successful part of the picture. The dwarf on the right-hand side may be also seen in Mr. Hopley's curious "Birth of a Pyramid" at the British Institution. Of an entirely different character is No. 113, "News from my Lad," by J. Campbell, jun. where the interest centres in the countenance of the old man reading a letter from his son. Not attractive by its general tone, and marred by the drawing of the right leg of the figure, it is, nevertheless, a work of thought, and merits examination. No. 126, close by, a picture by E. N. Downward, from Keats's Isabella,—

"He knew whose gentle hand was at the latch,
Before the door had given her to his view,"—

should have been on the line. Mr. Buckner's portrait of the Hon. Mrs. Edmund Phipps is a great improvement on some of his previous works, and has high qualities. "Little Red Riding Hood," by Baxter, is a pretty picture, but has not the red cloak of the village. In 173, "The Opinions of the Press," Mr. J. Roberts represents a young artist prostrated by the refusal of an intending buyer to complete the purchase, in consequence, we are to suppose, of an adverse criticism in a journal. This and his 48, a child playing with flowers,—

"Fit emblem of human life,"—

will advance Mr. Roberts in public estimation.

35, "Entrance to the Port of Havre," J. J. Wilson; 49, "The Wearied Shepherd," J. J. Hill; 108, "The Mountain Path," by I. Henzell (who has made advance); 206, "North Coast of Devon," by W. West; 233, "A quiet Spot on the Thames," 293, "A Fresh Breeze," by E. Niemann (the water excellent); 340, "A Welsh Mill," by E. A. Pettitt (though wanting in atmosphere); and 445, "On the Lugwy," by J. P. Pettitt, will all repay examination. The Water-colour Room, too, has several pleasant works: amongst them, 652, "A Grassy Bank," by R. Collinson; 748, "Scene from Twelfth-Night," by F. Fenton; and 766, "Doorga Pooja, Hindoo Festival," by W. H. H. Hutchinson, have points of interest of their own.

METAL-WORK.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting held on the 15th ult. a lecture was delivered by Mr. Skidmore, of Coventry, on "Ancient Metal-work applied to Domestic Purposes, and the Uses of Iron in reference to the new Museum." In the course of it he put forward the theory, that metal foliage was the model for the early foliage in stone of the thirteenth century.

The secretary called Mr. Skidmore's attention to a building more ancient than the Middle Ages, and of an authority higher than any which would support his theory of the use of metal-work in artistic decoration. He meant Solomon's Temple. He was not aware of stone carving described there: the walls, the cornices, with their carved pomegranates, were covered with gold; and the great brass pillars had capitals of molten and wrought brass. Allusion was made to the new Toronto Museum, for which a much larger sum was granted by that University than by that of Oxford for its museum.

On the 22nd the subject was discussed. Mr. Parker, the president, said that Mr. Skidmore seemed to think that not unfrequently shrines were original models of churches, first made in metal, and then serving for the general idea of a church. He considered this not an improbable view, and one which was supported by facts of which we were aware, namely, that metal workmanship went in advance of stone.

Mr. Lowder said,—The views of Mr. Skidmore were so novel, and yet so plausible, that though at first he disliked the notion of metal foliage being the model for stone, yet on considering the subject more carefully, he felt persuaded that very much in this view was true. He did not confine his remarks to Mediæval work: he would go back to the more ancient styles of architecture, and he thought that we should discover that the carving of stone capitals would resolve itself into two classes—those of essentially stone character, and those which were derived from metal. Of the former were the Egyptian class of capitals, and the Grecian Doric of the latter, all capitals of the Corinthian type; and he begged attention to the

circumstance that Corinthian brass or bronze was at one time the most famous in the world. Our earliest foliage followed the Corinthian type: it then developed into the stiff-leaved foliage of the thirteenth century, deriving itself, if the views here put forward were correct, from the metal ornamentation in gold, silver, or copper; the feeling by which the architects were actuated being that of wishing to represent in commoner materials the choice work of their noblest metals.

ARCHITECTURAL ASSOCIATION.

THE first *conversazione* given by the Association in their new home, Conduit-street, will be held this Friday evening, when doubtless the members and their friends will muster strongly.

At the meeting of the class of design, on Friday evening, March 25th, Mr. Randall Druce was unanimously re-elected president of the class. The sketches contributed were for "labourers' cottages." The half-hour's sketch was "a cottage doorway." At the next meeting of the class on Friday evening, April 8th, the removal to the new premises in Conduit-street will be inaugurated by an address from the president, and the reading of a paper on "The future Development of Architecture in England," in addition to the usual subjects of the class.

MONUMENTAL.

New Mural Monument in York Minster.—A mural monument has been erected in the south aisle of the choir of the cathedral. The monument, which is of brass, is 8 feet 3 inches in length, and 3 feet 9 inches in breadth. It is in memory of the officers, privates, &c. of the 19th Regiment of Foot, who fell in the Crimea. Gothic tracery work constitutes the head of the memorial, immediately below which is a representation of the resurrection of our Lord. On either side of the Saviour is an angel kneeling with expanded wings, and underneath are two other angels facing each other, and blowing trumpets. Beneath these is the inscription. On the left-hand side of the monument, near to the top, is the figure of St. Michael the Archangel, in the act of triumphing over the fallen angels. Beneath St. Michael is a representation of Gideon, one of the judges of Israel; and below this figure is another, consisting of Judas Maccabeus, the great warrior and Jewish deliverer. To the right are three similar figures. The first is St. George, overcoming the dragon; the second, Joshua, the great leader of the Israelites; the third, a Roman centurion. Except St. Michael, the whole are attired as warriors after the antique. The monument is encircled with a moulding of black marble. It has been designed by Mr. John Powell, of Birmingham, architect; and has been executed by the Messrs. Hardman, of Birmingham. The monument has received a thin coating of a chemical preparation perfectly transparent, in order to protect it from the influence of the atmosphere, and to preserve the colour of the brass, which, it is said, will be maintained for a great number of years without the necessity of a second application of the solution.

Miscellaneous.—A committee, including nearly every name in the Academy, is labouring to provide a public memorial of the late Thomas Stothard. It is proposed to erect, in the National Gallery, or some other public institution, a statue or bust, as the amount of subscriptions may warrant. We wish the enterprise success.—The Marquis of Lansdowne is about to erect, in Romsey Abbey Church, a monument to the founder of his family, Sir William Petty.—At a meeting held at Glasgow, the Acting Committee on the national Wallace monument have, by a majority of ten to five, declined to approve of what occurred at the meeting on the 1st of February, and resolved not to proceed in terms thereof. The committee have also resolved to extend the period for receiving models and designs to 1st June, the designs to be exhibited in Stirling, Edinburgh, and Glasgow, for ten days, and a committee meeting thereafter to be held at Edinburgh to consider as to the design best suited; and, if twelve persons be present, to decide thereon.—A monument, in Caen stone has just been forwarded to Ireland, from Mr. Richardson's studio, to the late Earl of Bandon. It consists of a full-length portrait statue of the deceased peer, in the coronation robes, on a table of Gothic tracery, containing the armorial bearings and supporters of the house of Bandon. It is to be erected in the south transept or aisle of Bandon Church.—Arrangements are in progress for erecting in St. Paul's Cathedral a monument

to the memory of Vice-admiral the late Lord Lyons. An influential committee has been formed.—The foundation-stone of a statue to the memory of the late Daniel O'Connell has been laid at Ennis, in the presence of a great concourse of persons.—The church of Yazor, eight miles N.W. of Hereford, which was erected by Sir Robert Price, bart. has had placed in it a monument to his memory, executed by Mr. B. Jennings, jun. sculptor. The monument is affixed to the western wall, between the pulpit and the communion rails. The plan is that of a marble tablet inclosed between parallel jambs, and under a double canopy, ogee-headed with crocketed pinnacles, and in the Decorated style. The pinnacles are set on edgeway, and the light falls upon the monument from the painted window over the family pew, which is directly opposite. The monument is supported on corbels, representing angels' heads.—Upwards of 4,500*l.* have been subscribed for a "Stephenson Monument," to include a statue; and 5,000*l.* is the maximum sum. That sum, remarks the *Gateshead Observer*, may not suffice to erect a free library and provide a statue; but the ratepayers of Newcastle have the means in their own hands of supplying all deficiencies: there is a permissive Act, under which they may impose a small rate for a free library; and, if the statue and its adjuncts be contributed by the public subscription, a very small additional amount will do the rest. A meeting of the subscribers will be held at Easter, to determine the questions yet open as to the monument.—The inauguration of the monument to Mungo Park, the distinguished African traveller, has taken place at Selkirk, amid enthusiastic demonstrations.—A committee of the City Council of Edinburgh are considering as to the best means to have the room in the Scott Monument in Princes Street-gardens—the windows of which were recently filled in with stained glass, and which was intended as a museum for objects connected with the author of "Waverley"—fitted up in a suitable manner with a view to have that purpose carried out.

CHURCH-BUILDING NEWS.

Peterborough.—In the cathedral choir a portion of the work is now exposed to view. Every portion of the ribs, bosses, and groining is decorated with gold or body colours. The groins, which spring in compartments of a somewhat square shape from the Norman shafts, are being lightly painted, the ribs and capitals being highly gilt and coloured, while the interstices have a light ground with gilt stars, and at the point where the ribs expand to the widest is a circular medallion in every compartment, eight in each of the square groins. These are painted on prepared canvas, affixed to the wood. The whole is designed on the principles of heraldic colouring, and executed by Mr. Castle, of London, under the direction of Mr. Scott, architect to the cathedral.

Windsor.—Clewley Church has been reopened, after undergoing considerable extension, alteration, and repair, both external and internal, at a cost of 1,000*l.* to which her Majesty and the Prince Consort contributed 100*l.* The new alterations afford an increased accommodation for upwards of 100 persons.

Manningford Bohun.—The consecration of All Saints Church, Manningford Bohun, took place on the 1st ult. The cost of the building, including boundary walls, formation of churchyard, &c. amounts to 1,350*l.* of which 250*l.* are still unprovided. The church is from the design of Mr. Whitley C. Clacy (son of Mr. J. B. Clacy, of Reading, architect), the architect who was selected to furnish the plans and superintend the erection of the building. It is in the Early English style, and consists of nave, chancel, porch, and vestry. The walls are of Twerton stone, random worked, and jointed with grey mortar, contrasting with the freestone dressings. The roof is covered with slate. The west end is surmounted with a bell, and the east with a stone cross. In the interior the roof is open, showing the framing, and the timbers are of deal, stained dark oak colour. The benches are open, of deal, also stained oak colour. There is a stone font at the east end. The pulpit, also, is of stone, circular in form. The floor is of black and red tiles. The chancel is entered through a massive pointed arch, and the altar railings are of oak, on foliated iron standards.

Hampton Lovett.—The parish church of this place has been re-opened for divine service after undergoing restoration. The chancel and other portions of the works are not yet finished, but the general restoration is pretty well completed.

The expense is to be borne by Sir John Pakington, the lord of the manor and patron of the living. Mr. Perkins, architect for the dean and chapter of Worcester, carried out the work according to Sir John's intentions, and has succeeded in cleansing the fabric from accumulated rubbish, strengthening its walls, and fitting it up anew. The entire walls of the church have been scraped, and buttresses erected externally for their support. A feature of the restoration is the opening an arch on the north side of the nave to render the chapel accessible to the congregation. This chapel (the burial-place of the Pakingtons for centuries) has now been fitted up with seats. The curious erection which stood at the south-west corner of the nave, answering the purpose of a gallery above and a coal-cellar below, has been cleared away as an unsightly excrescence. The carvings are by Moyson, of Birmingham. One of the chancel windows, now re-opened, as also the east window, will be filled with stained glass by Hardman. The west window and others have been supplied with new tracery. The stone for the church restoration was obtained from Hadley. The contractors for the works were Messrs. Wood, Brothers. The church is warmed with a hot-air apparatus by Haden and Son.

Swansea.—The foundation-stone of a new Jewish Synagogue has been laid here. The building is to be in the Italian style of architecture. The principal front will be set back from the line of Goat-street, and will present an ornamental appearance; the facing, mouldings, and ornaments being of Bath stone, from the Comb Down quarries. The ground-floor area for the pewing will be 47 feet 9 inches in length, and 25 feet in width. The height of the synagogue internally, from the ground-floor to the top of the sloping ceiling, will be 31 feet. Ventilating flues will be built in the walls, under the gallery ceiling, and will have iron ornamental working or sliding plates. The number of sittings which will be provided will be 178.

Crickhowell.—A Gothic reredos of early English style, the chief material being Chen stone, has been erected in the parish church of Llanguenny. The reredos is surmounted by the east window, and both have been given by the pastor as a family memorial. The design was furnished by the Rev. G. J. Davies, of Llanguenny. The sculptors were Evans and Son, of Crickhowell; and the painting of the tablets was intrusted to J. Jones, painter, also of Crickhowell. Other improvements are in contemplation.

Stratford-on-Avon.—The following estimates for the restoration of the Independent Chapel, have been sent in, the committee accepting the tender of Mr. W. Holtom for 122*l.* 10*s.* Mr. T. Hewins, 124*l.*; Joseph Mills, 133*l.*; John Roberts, 133*l.* 10*s.*; W. Bennett, jun. 145*l.* 6*s.*; John Meads, 165*l.* 10*s.*; James and George Callaway, 172*l.* Mr. Joseph Lattimer, jun. is appointed architect.

SCENERY AT THE PRINCESS'S THEATRE.

MR. CHARLES KEAN closes his eventful management of the Princess's Theatre with the revival of Shakespeare's "King Henry the Fifth," and in it has given, we need scarcely say, a remarkable picture of the incidents and shock of war. If a breach of our relationships with France had occurred (let us hope it never may!), nothing could have been executed more likely to stir the people and inflame their ardour. Viewing the matter in a scenic point of view, we should have preferred a play, to end with, which would have introduced us to Rome, say "Coriolanus," or, better still, "Anthony and Cleopatra," involving Rome and Egypt. Either of these would have admitted of extraordinary illustration, and have made his series complete in an architectural and ethnological point of view.—Egypt, Assyria, Greece, Rome, Peru, and Great Britain in the pre-Norman age, the fourteenth century, and the Tudor period. However, let us praise our manager for what he has done rather than lament what is left undone. There seems no reason, indeed, why he may not, on some other and larger stage, complete this view of Universal History. Mr. Kean says, in his introduction to "Henry V." that "Wonderful as have been the yearly receipts, yet the vast sums expended,—sums, I have every reason to believe, not to be paralleled in any theatre of the same capability throughout the world,—make it advisable that I should now retire from the self-imposed responsibility of management, involving such a perilous outlay; and the more especially, as a building so restricted in size as the Princess's renders any adequate return utterly hopeless." We believe we are not far wrong in saying that some of these revivals have cost as much as 4,000*l.* each, besides

involving a large nightly expenditure, so that his statement as to inadequate returns will not surprise. In a larger house this would not be the case; the expenditure required would be little more, but the returns might, of course, be very much greater.

"Henry V." follows up the view of Mediaeval life, costume, and architecture, presented in Richard II. The great scene of the play, in this point of view, is the siege of Harfleur, at the end of the second act, when an attack is made on a breach of the walls, and repulsed by the French, who close it with fascines and other contrivances. The walls built up on the stage, and the rush of a mighty crowd of picturesque warriors, produce an effect which, in its way, has never been equalled. In this scene, too, the king delivers admirably the stirring speech ending,—

"Cry, God for Harry! England! and St. George!"

The chorus, in order to admit of Mrs. Kean's assistance in the revival, takes the shape of Clio, the Muse of History, in lieu of that of Time, and very elegantly does Mrs. Kean deliver the poetry assigned to her. The chorus is first seen beneath a monopteral Ionic temple, polychromed, which jars somewhat at first with the Mediaeval character of the play, but viewed in relation with the Muse of History is defensible. Tableaux are introduced to illustrate the chorus, and in one of these, where the French are seen playing hazard for the English prisoners (not yet taken), Mr. Cathart, who personates the *Dauphin*, putting aside the affected attitudinizing into which he has fallen, displays much natural abandonment and hearty vivacity, and closes the scene with applause. An historical episode, illustrating the chronicler's account of the reception of the king in London, after the battle of Agincourt, permits of a view of the foot of London-bridge, the shipping at the side, and of a "pageant" of kings and angels; while for the last scene we have a view of the interior of the Cathedral of Troyes, in Champagne.

We sincerely hope that Mr. Kean will not be allowed to terminate his career, as manager of the Princess's, without some tangible testimony of general approval; and in the meanwhile the public will best show their appreciation of his energetic and now long-continued endeavours in their behalf, by flocking to see his last Shakespearean revival, "King Henry the Fifth."

GLASGOW ARCHEOLOGICAL SOCIETY.

THE last meeting of the winter session of this Society was held on the 21st March, Mr. J. Baird, architect, in the chair. Mr. Francis T. Dollman read a paper on "Ancient Scottish Domestic Architecture," which was illustrated by a large number of drawings, and which gave rise to some interesting conversation. It was observed that, although Mr. Dollman was correct in noting the absence of pointed arches as a characteristic of Scottish domestic architecture, there are, nevertheless, many beautiful examples of its use. Two of these, in the neighbourhood of Glasgow, were mentioned, namely, Bothwell Castle, entirely in the Pointed style—a magnificent ruin, not yet illustrated; and Carrick Castle, on Loch Gail, where all the openings are pointed, the large windows being simple equilateral arches, and the small ones trefoils.

THE REMOVAL OF THE REMAINS OF DR. HUNTER FROM ST. MARTIN'S-IN-THE-FIELDS TO WESTMINSTER ABBEY.

BY the time this goes to press the spacious crypt of the church of St. Martin-in-the-Fields will have been cleared of between 2,000 and 3,000 dead bodies, which have for long been allowed to taint the atmosphere of the church and neighbourhood. A large number of the coffins, which were stacked in the usual manner, have been put below the ground, and covered with concrete. Several bodies have, however, been removed by relations to other places. Amongst these all that remains of John Hunter, who in his day did so much to advance the study of anatomy, has—chiefly in consequence of the exertions of Dr. Frank Buckland, the son of the late Dean of Westminster—been removed to the north aisle of Westminster Abbey, to a spot close to the remains of a poet whose grave is marked by the words, "O Rare Ben Jonson."

It is worth while to notice that, up to about twenty years ago, interments were allowed to be made at St. Martin's in wooden coffins; and it is found that while the bodies confined within leaden coffins are in a dangerous state, those which have been placed in wooden ones have become dry

ones; all that remains, in most of these instances, not weighing more than five or six pounds. Of course, the gases, &c. have been distributed around, and finally decomposed.

Some idea of the extent of the interments here may be gathered from a glance at the stones in memory of those who have been here placed to rest. In a short time the spot may be safely visited by the curious, who will be interested in some of these records.

COMPETITIONS.

Roman Catholic Church of SS. Peter and Paul, Cork.—Some time since the Building Committee advertised for designs for the above church. In answer to their appeal they received responses from the following architects:—Messrs. Pugin, John Jones, Hadfield and Goldie, Wigley, Nichol, Richard R. Brash, Murray, John Hurley, William Atkins, Phillips, Patrick Morris, John S. Butler, and Henry Hill. The designs were exhibited, for a fortnight before the award was made, in the Rotunda of the Athenaeum. The following is the official announcement of the committee:—1st premium, Mr. John Hurley, Cork; 2nd ditto, Hadfield and Goldie, Sheffield; 3rd ditto, William Atkins, Cork. The design selected for execution is that of Mr. Pugin, of London. The award in this case is something like the usual awards of building committees. It has been made without any reference whatsoever to the instructions issued to competing architects. —ONE OF THE HUMBLED.

Inverness New Poorhouse.—The special committee of the Parochial Board of Inverness, having opened the sealed packets referring to three designs for a new poorhouse, given in by Mr. Matthews, Mr. A. Ross, and Mr. Rhind, all local architects, the plans of Mr. Matthews were preferred by the committee. Mr. Ross's designs being considered next in merit. With reference to the report given of this matter in the local *Courier*, Mr. Ross has requested the local *Advertiser* to say that it was not from "not feeling himself quite certain of current prices" that he refused a guarantee of his estimate of cost, but because he was required to give, during the meeting of committee, a guarantee off-hand, which is not customary, and was not stipulated for in the instructions to architects, and that his estimate was simply a probable one.

East Grinstead New Central Union Workhouse.—On the day appointed, March 16, twenty-one sets of designs were sent to the clerk of the union, as desired by the advertisement which appeared in our paper. On the following day, at the meeting of the guardians, six sets of designs were selected for further consideration on the following Monday, when they were again reduced to two; one by Messrs. Peck and Stephens, of London and Maidstone; and the other by Messrs. Sass and Cox, of London; both parties being invited to meet the guardians on the 20th, on which day Mr. Fred. Peck attended on the part of Peck and Stephens; and Messrs. Cox and Sass were both present. The guardians, after hearing the explanations of different portions of the designs, decided upon carrying out the design by Messrs. Sass and Cox, subject to certain suggestions made by the guardians, and the approbation of the Poor-Law Board. Messrs. Peck and Stephens are at present erecting the Chatham Union Workhouse.

DAINGEROUS STRUCTURES IN THE CITY. REPORT OF WORKS BY COMMISSIONERS OF SEWERS.

THE report upon the works executed during 1859, by Mr. Haywood, has been printed. In it, under the head of "Dangerous Structures," we find the following:—

"The results of the passing of the Metropolitan Buildings Act of 18 and 19 Vict. cap. 129, which placed the control of buildings ruinous and dangerous within your hands, may be best gathered by the following abstract of the Act became operative on the 1st of January, 1856, and has therefore now been in operation three years:—

	1856.	1857.	1858.
Number of structures reported upon by the surveyors appointed by the commission.....	286	448	268
Number of cases heard before the magistrate.....	24	105	37
Number of buildings shored up during the year.....	150	77	37
Number of cases certified by the surveyors as being completed.....	170	388	257

It is worthy of remark, that with all the increased supervision of structures in the City and in the metropolis generally, accidents by the falling of the entire structures, or portions of them, seem to be more numerous than before. Whenever these accidents occur, a cry generally is raised for augmented powers to be given to the district surveyors, or other public officers, or for an increased

number of them, and for the more vigilant and constant supervision of buildings; and this expectation of guarding against all possible calamities by official care and inspection appears to be very general. Now I do not propose here to attempt to give opinion as to the limits to which official inspection of buildings can be advantageously carried; but I am convinced, from a careful consideration of the circumstances attending those accidents which have come specially under my notice, and a perusal of the evidence adduced upon others, that no amount of official inspection will prevent their occasional occurrence, but, on the other hand, it is greatly to be feared, that by leaning so much upon official supervision, by attempting to lay the onus of guarding against these calamities upon the district surveyors, or other functionaries, which onus, it may be seen by the verdicts of juries, rarely seems to be fixed upon them when most needed, the sense of personal responsibility of owners, occupiers, builders, and architects, especially connected with the buildings, will be weakened; and anything which has a tendency to weaken that sense of personal responsibility, on the part of those most intimately concerned, must be fraught with much evil, and tend rather to increase than to diminish the number of accidents."

We learn from the same report that permission has been given to erect sexagon lamp pedestals, which, serving the purposes of those who erect them as advertising columns, are at the same time to serve the public with letter-boxes, a clock, street-fountains, mileage-posts, and other things, the applicants undertaking to keep them brilliantly illuminated throughout the night: none have as yet been fixed.

THE TABERNACLE COMPETITION.

MAY I request that you will give insertion to the following letter, just received from the Rev. C. H. Spurgeon, as I think it due to myself, no less than to the committee, and the author of the second premiated design, that some explanation should be given concerning the awards in the late competition for the new Tabernacle, in completion of the whole subject thereof, more especially since it will henceforth constitute rather an important precedent in the history of architectural competition.

E. C. ROBINS.

"To Mr. E. C. Robins.

"Dear Sir,—I am requested by the committee to forward the enclosed cheque for £60, as the first premium. "In so doing, allow me to congratulate you upon the architectural taste which is so manifest in your drawings. "In my own personal selection, yours was one of three which I considered to be pre-eminent among the many."

"We have inspected the designs with great care and long deliberation, and although we are compelled to prefer Mr. Pocock's design as the best basis for our future building, we could not but regret that we were thus compelled to lose your services in the erection."

"You may not be aware that we have received from private friends of yours, and persons for whom you have erected buildings, the most flattering testimonials of your ability. Since these were unsolicited on your part, and probably unknown to you, we thought them worthy of the highest consideration, and should have felt great pleasure in entrusting our great undertaking to your hands."

"Wishing you every prosperity, I am, &c.

(Signed) "C. H. SPURGEON."

STAINED GLASS.

Chelmsford.—The new east window of the parish church of Chelmsford has now been finished up as a memorial to the late Lady Midlmy. The object of Mr. Chancellor in the design was to make the eastern end of the church harmonise with the other portion of the edifice. The window is a three-light perpendicular, with carved caps to the columns, and carved bosses to the labels. These have been chiselled, and the whole of the stonework executed by Mr. Hardy, of Chelmsford. The window, from its style, is narrower than the old one, but reaches much lower, occupying part of the space before blocked up with wood, and there are 5 feet of additional glass, the whole now extending to an area of about 90 feet. This space has been filled by Messrs. Clayton and Bell. The centre light is occupied with a representation of the Crucifixion, the left with the Agony in the Garden, and the right with the Resurrection, in the two first of which the Divine Spirit linked to suffering and dying humanity, and in the last the triumph of the Godhead, are represented. Beneath these, in smaller type, are three other scenes in the life of the Redeemer—the Feeding of the Five Thousand, the Sermon on the Mount, and the Raising of Jairus's Daughter. In the upper compartments of the window are the Four Evangelists; and around the canopies are the Twelve Apostles. The cost of the glass was about £500. A further improvement is being made at that end of the church by slightly raising the space within the rails. The two eastern windows of the northern and southern aisles are also to be filled by Messrs. Clayton and Bell.

Sandbach.—Messrs. Edmundson and Son, of Manchester, have completed a memorial stained-glass window in the parish church of Sandbach. It is a three-light window, containing six subject's,

namely:—Jacob's vision of the ladder reaching to heaven, with angels descending and ascending; the putting of Joseph into the pit; Joseph making himself known to his brethren; Jacob blessing his sons Ephraim and Manasseh; the finding of Moses; and the passage of the Red Sea, with the overwhelming of the hosts of Pharaoh. The upper part of the window is enriched with canopy work and tracery.

Slaitwaite.—A memorial window has recently been completed for the church of Slaitwaite, Yorkshire, from a design by Mr. Charles Evans. The architectural style of the window is Venetian, and forms three divisions, the centre light being occupied by "The Good Samaritan." The lateral divisions are filled with foliated diapered glass, in the centre of which, on either side, are "Alpha and Omega," and the whole is surrounded by an interlaced border, on a coloured ground. The window was executed by Mr. David Evans, of Shrewsbury.

DECISIONS UNDER THE METROPOLITAN BUILDING ACT.

DIVISION OF WAREHOUSES.

AT the Westminster Court lately, Mr. Arnold gave judgment in a case of importance, involving a large expenditure, at Messrs. Elliot and Watney's brewery, Westminster. The magistrate said the defendants were summoned under the 4th rule of the 27th section of the Metropolitan Building Act, 18th and 19th Victoria, cap. 122, which enacts that "Every warehouse, or other building used either wholly or in part for the purposes of trade or manufacture, containing more than 216,000 cubic feet, shall be divided by party-walls in such manner that the contents of each division thereof shall not exceed the above-mentioned number of cubic feet."

The facts admitted on both sides were as follow:—The building in question, independently of a vault or vaults upon the basement, forming no part of the question before him, consisted of two floors or stories, the upper divided from the lower by a horizontal partition of wrought iron and concrete. There was no communication from one story to the other, and access to the upper floor was to be gained by an external staircase. Each story contained less than 216,000 cubic feet, though the two stories together would contain much more than that measurement; but stories were to be used for the purposes of trade, and the real question for decision was, whether the two floors were to be taken as one building, so as to require a division by party walls. It was contended, indeed, by Mr. Clark, for the district surveyor, that if the external measurement of the building were adopted, each floor would contain more than the prescribed number of cubic feet; but this point was satisfactorily answered by Mr. Bodkin for the defendants, that the internal measurement must be taken in the same way as if mention were made of a vessel containing so many gallons, it was clear that the thickness of the vessel would not be computed in the measurement of the gallons. Mr. Bodkin, on the other hand, contended that the horizontal division of the two stories was a sufficient compliance with the Act, and was in reality a party-wall. It was certainly competent to the Legislature to enact that for the purpose of the Act what in ordinary language was called a floor should be construed to mean a wall, but in the absence of such an enactment it would be doing violence to language to adopt such a construction, and it seemed manifest, from various parts of the statute, which it was not necessary to particularize, that the popular distinction between a floor and a wall was recognized. The question then really would be, whether within the meaning of the Act of Parliament each story could be considered as a separate building. A note of a case decided by Mr. Burcham, at the Southwark Police Court, reported in the *Builder* for the 22nd of May, 1858, had been handed to him (Mr. Arnold), and appeared to decide the very point in question. It would therefore be sufficient for him to say that he should feel bound by the authority of that decision; but he would add that he entirely concurred in it. It was clear that the word "building" was used in different senses in different parts of the Act, either to signify the whole of a structure or fabric, or different tenements forming portions of such fabric. That appeared by the 2nd rule of the 27th section, but the question under consideration was entirely set at rest by the provisions of the 3rd rule, "If any building in one occupation is divided into two or more tenements, each having a separate entrance and staircase, or a separate entrance from without, every such tenement shall be deemed to be a separate building for the purposes of this Act." The magistrate concluded,—"the 'building' in question, that was, the whole structure, was in 'one occupation' was 'divided into two tenements, each having a separate entrance from without,' and, therefore, each tenement was 'a separate building for the purposes of the Act.'"

Mr. Howell, the district surveyor, expressed himself perfectly satisfied with the judgment, and said that he had merely, in the proper discharge of his duty, brought the case there for the magistrate's decision.

HOUSES IN TWO DISTRICTS.—DIVISION OF FEES.

AT the Police-Court, Wandsworth, on Tuesday, the 2nd March, Mr. Taylor, district surveyor of Battersea, appeared on summons before Mr. Ingham, the magistrate, to show cause why he claimed the whole of the fees for buildings alleged by Mr. Hiscocks, the district surveyor of Wandsworth, to be partly in his district. Mr. Lewis Angell, the surveyor to the Wandsworth Board of Works, was called as a witness. He produced a plan of the boundary of the parishes, from which it appeared that the houses in question were partly in one parish and partly in another. Mr. Ingham, therefore, ordered Mr. Taylor to divide the fees in the same proportion.

ASTON HALL AND PARK, BIRMINGHAM.—Ward and other meetings are being held in aid of a movement for the purchase of Aston Hall and Park, and a *fête* is to be held in June next, for which 231,000 shilling tickets will be issued, and from this number 11,000 A shares are to be allotted, thus giving one subscriber in every twenty-two a chance of becoming an A shareholder for his shilling. We are glad to observe that the Birmingham people have been roused into a determination to wipe away the disgrace in which this Aston-park affair had threatened to plunge them.

IMPROVED GAS-BAKING OVENS.—To prevent the injury to pastry, &c., from smoke and soot, complained of in reference to some of the modes of baking by gas, a new invention has been patented by Mr. S. Harrison, of Clave-market, in which the gas circulates with the smoke through the flue, in a serpentine direction, round closed ovens or compartments, two, three, or more of these being placed over each other, and separated by the winding flue; implanted in which latter is a gas jet for each compartment or oven, consuming the smoke from below, and sending its own to the next above, the resultant vapours having their exit at the top, so that no portion of them can have access to the articles in the several compartments; nor, indeed, can any one kind of these be tainted by the emanations from others in a different compartment or oven. The jets are seen to through side openings, with valves or doors, and the oven boxes have doors closing them in front of the stove. If only one oven be required, a single burner suffices; or if two, one for each, and so on. The heat is wholly confined to the stove, and so economized, that very little gas, it is said, will heat the whole.

BUILDING SOCIETIES IN LIVERPOOL.—Building societies commenced in Liverpool about the year 1820, and have increased there in greater proportion to the population than in any other town in the British dominions. According to a local paper there are now existing in Liverpool 142 Building Societies, 15,052 shareholders, and a paid up capital of 1,047,670*l.*; being an average amount saved by each member of 69*l.* 10*s.* 4*d.*; each society having an average capital of 7,378*l.*, supplied by 160 members. Of these 142 Building Societies ninety-four are on the original or "terminating" plan; these again are subdivided into thirty-seven "redemption," and fifty-seven "non-redemption" societies; the remaining forty-eight societies are formed on the "permanent" plan, in forty-five of which annual dividends are paid. From 1820 to 1830 the "redemption" terminating societies alone existed, when in the latter year the "non-redemption" terminating plan was commenced, and, as will be seen by the above, now numerically preponderates. This was followed in 1846 by the "permanent" plan, which has secured a large share of favour, especially from that numerous class of the community who could not clearly comprehend the working of the original systems.

PAYMENT OBSTRUCTIONS: OVERHANGING LAMPS.—A summons was taken out at the Marlborough-street Police Court, at the instance of the vestry of St. James's, against Messrs. Gabriel, surgeon-dentists, 110, Regent-street, for refusing or neglecting to remove "a certain lamp and lamp-iron placed against their house, so as to be an annoyance in consequence of the same projecting into the said street," whereby a penalty of 5*l.* has been incurred, under the Metropolis Local Management Act, besides 40*s.* for every additional day after notice. The magistrate said it was a case of too much importance for him to decide of himself, and he, therefore, deferred judgment till he conferred on the point at issue. On the 24th Mr. Bingham gave judgment, imposing a nominal fine of 1*s.* and advising that a case should be submitted to the Court of Queen's Bench. Whatever be the merits of a question which relates to a lamp fairly overhanging the street, there can be no question as to the dangerous nature of those which are thrust downwards in front of the windows of drapers, jewellers, &c. for the display of their goods. These lamps and irons are but too often below the level of the heads of passengers, and are decided nuisances and obstructions. So also are many of the sun-blinds which protrude from shop windows; and it is astonishing how long these have been suffered to continue. The writer of this was seriously struck in the temple a few weeks since by the iron tackle connected with one at the corner of Little Queen-street, Lincoln's Inn-fields, and has frequently had his hat knocked off by others. The beams of some are so low as to risk even the smashing of faces.

THAMES TUNNEL.—For the week ending the 26th of March, 53,248 passengers passed through the tunnel, and paid 221*l.* 17*s.* 4*d.* Some additional attractions had been provided.

FREE DISPENSARY FOR STRATFORD.—Mr. F. J. Alexander, M.R.C.S. has offered 100*l.* provided 1,900*l.* more be raised in aid of erecting a free medical dispensary at Stratford. He will also give one year's professional services to the dispensary.

GAS.—The Shrewsbury Gas Company are erecting an additional gasholder, 60 feet in diameter, and 24 feet in depth, upon the double or telescope principle, and capable of containing 135,000 cubic feet of gas. Mr. J. Holmes, of Bomere-heath, has taken the contract for its erection, which will cost about 2,000*l.*

THE HANLEY SURVEYORSHIP.—Mr. J. S. Forbes of Hanley, has been appointed to the office of surveyor to the town council of Hanley. There were thirty-four candidates, from whom six were first selected, and, ultimately, the election lay between Mr. Ward of Hanley, and Mr. Forbes, the latter of whom was elected by the casting vote of the mayor.

THE LATE MR. HAMILTON, ARCHITECT.—At a meeting of the friends of the late Mr. Thomas Hamilton, R.S.A. Architect, held in Edinburgh, it was resolved:—"That, as a mark of respect for his memory, and a tribute of admiration of his genius, as an architect, a sum, not less than one hundred guineas, be raised by subscription, and applied to the purchase of the Water Colour Picture of one of his works—the High School of Edinburgh—which was exhibited in last year's Exhibition of the Royal Scottish Academy, and is now in possession of Mr. Hamilton's family;—the Picture to be deposited in the National Gallery, or some other public place to be fixed upon by the Committee."

BIRMINGHAM SCHOOL OF ART.—It appears from the report of the committee of the Birmingham Society of Arts for the past year that the number of students who attended the central school during the year 1858 was 320, and the number of children and adults who attended the classes in public and parochial schools, the diocesan training college, and the district school in Spon-lane, was 1,163, making a total number of 1,983 individuals who received instruction through the Agency of the Birmingham School of Art. The annual examination of the works of the students of the school has just been held by Mr. Bowler, the Government inspector. Twenty-five medals have been awarded to twenty-one students for works executed in conformity with regulations of the Department of Science and Art.

PULLING DOWN A CHIMNEY STALK, AT DUNDEE.—The brick stalk at Murray's stone-planing works has been taken down, in consequence of the works being in course of removal to the other side of the railway. The height of the stalk was about 80 feet. The operations were conducted by Mr. William Anderson, bricklayer, Dundee. He began about two o'clock in the afternoon to make a breach in the masonry of the pedestal, and laid the whole mass over a little before six. The stalk fell about half the distance entire: it then yielded in the centre and broke in two. Mr. Anderson had his hand on the building when it gave way. No accident happened, and, remarkably, few of the bricks were broken.

MEDIEVAL MASONRY.—A paper on this subject was read by the Rev. F. Warre at the last meeting of the Somerset Archaeological Society at Taunton. In the course of his remarks, the reader said,—"I do not pretend to any scientific knowledge, but I believe the theory of mortar is this: lime, under the action of fire, loses, together with certain gases, its cohesive power, and when slaked falls into powder. This powder, mixed with sand and other materials, is used as mortar, and after a time recovering from the atmosphere those constituent parts which were dissipated by burning, the mortar becomes, in fact, a stone; and, of course, its goodness or badness will depend upon whether the materials of the mortar are of such a nature as to compose a hard and compact, or a soft and perishable limestone. Now, the common sand of our county is the *débris* of the new red sandstone, and the practical masons, whether rightly or wrongly, I know not, say that from its extreme sharpness, it will not, except with the very best lime, form a durable limestone, however hard and good it may appear at first. It was probably to counteract this property of the natural sand that the Romans mixed pounded brick or burnt clay with their cement; and this unfortunate defect in our sand may be the cause of the comparative scarcity of buildings of the earlier style in this immediate neighbourhood."

THE RUINS OF CARTHAGE.—The spade and the pickaxe daily demonstrate the fallacy of the hitherto universally entertained opinion that the very ruins of Carthage had perished. During the last few weeks M. Beulé, professor of archaeology at Paris, has been actively occupied in making architectural researches among these ruins. The greatest possible harmony exists between him and the English excavator. M. Léon Roche, the French Consul-General, has placed his house near the ruins at M. Beulé's disposal, and defrays the expenses of ten workmen out of his own pocket.

THE STREET-FOUNTAIN MOVEMENT.—A fountain, the gift of Alderman Padmore, has been erected nearly in the centre of the market-house, Worcester, at a cost of about 200*l.* The basin in which it stands has an internal diameter of thirteen feet, and from the centre of the basin rises a hexagonal sub-plinth. Both basin and sub-plinth are of Darley-dale stone, a kind of white grit used in the formation of the basins of the fountains at Witley Court. The sub-plinth rises to a height of nearly three feet above the level of the pavement. On this is placed a hexagonal iron pedestal which supports a basin between six and seven feet in diameter. The faces of the pedestal are ornamented with lions' heads, each of which will deliver a stream of water into the lower basin. The basin itself is also ornamented with smaller lions' heads, each of which will deliver water. An iron basin of still smaller diameter is supported above the other by dolphins, and in the upper basin two Cupid-like figures support a central jet. From the pavement of the market-hall to the top of the fountain the distance is about fifteen feet, and the central stream thrown up will, if necessary, reach the top of the building.—A fountain has been fixed at Stourbridge, opposite the market-house. It is of cast-iron, painted, and bears the following inscription:—"Let him that is athirst come." The casting consists of a basin and a cup. The waste water is conveyed to a second basin, at the foot of the pillar, for the use of dogs. Mr. Martin, C.E., has offered to supply the water gratuitously. The water will not run continually, but must be turned on by the person requiring it. The castings have been executed at the works of Mr. W. O. Foster, M.P. under the superintendence of Mr. Williams.

PROGRESS OF THE WROXETER EXCAVATIONS.—Mr. Thomas Wright, the antiquary, gives a description of the excavations now in progress at Wroxeter, in Shropshire, the site of the Roman City Uriconium, one of the earliest Roman cities in Britain, and mentioned by Ptolemy. About the centre of the area a large mass of Roman masonry, above 20 feet high, stands above ground, and has been known from time immemorial as the "Old Wall." The digging began to the north of this wall, and came upon what appears to have been some large public building. In the middle of it a square enclosure, about 40 feet wide, by more than 200 feet long, was paved with small and narrow red bricks, set very neatly in herring-bone fashion. At the eastern end of a passage to the north were found two or three tessellated pavements of very fine work, which would seem to have belonged to small rooms. The workmen came upon a street paved with small round stones. Thence doors led into a new series of rooms and courts, and to the south the excavators came upon the remains of rich dwelling-houses. The first of these was a large room, about 35 feet by 25 feet, the hypocaust of which (a very remarkable one) is in good preservation; but the floor is broken up. Another hypocaust was found adjoining this to the east, and other apartments of more or less interest have been partially opened to the south of the old wall. The workmen came upon a massive flight of stone steps, which led down to a very nicely-arched entrance to the hypocausts. In a square space at the foot of these steps rubbish seems to have been thrown by the "last of the Romans," and a great number of coins, objects of various kinds, in bronze, iron, lead, glass, pottery, &c. were found among it. These are to form a local museum. Quantities of stucco from the walls show the fresco paintings remarkably fresh, and in tasteful patterns. Pieces of window-glass were strewn about the floors, all rather thick—about the thickness of our common plate glass,—so that the windows of the Roman houses must have been well glazed. The houses seem generally to have been roofed with micaceous slate, set lozenge-shaped, so that from a distance, when seen in the sunshine, the Roman city must have glistened like a city of diamonds, such as are sometimes described in Eastern romance. Traces of burning are met with everywhere, and human bones have been found scattered about.

SURVEY OF NORTHFLEET.—At a meeting of the Board of Guardians of the North Aylesford Union, on Thursday in last week, Mr. John Davis Paine was appointed to the survey and valuation of the parish of Northfleet, juxta Gravesend, with the concurrence of the churchwardens and overseers.

A MOVABLE HOUSE.—At the Sussex Assizes, in re Stevens v. Gourley, an action was brought for 28*l.* balance for work done in the erection of a structure in the garden of Dr. Gourley, 1, Bentinck-terrace, Regent's-park, on a specification for 58*l.* of which 30*l.* had been paid. In defence it was shown that plaintiff had undertaken to erect this building in such a manner as to evade the Metropolitan Building Act, and which he set about by rendering it portable. Before the building was fully erected, however, the district surveyor brought the subject before the magistrates, who ordered its removal within forty-eight hours. Verdict for the plaintiff 28*l.* with leave to enter a verdict on a plea referring to the Metropolitan Building Act.

THE FIRST DRINKING-FOUNTAINS IN LONDON.—Two public drinking-fountains have been opened on the incline leading to the South-Eastern Railway Company's Terminus, at London-bridge, and will afford great accommodation and convenience to the passengers thronging the London-bridge Railway Terminus during the summer months. From the evidence given before a committee of the House of Commons, now sitting, it appears that nearly fourteen millions of railway passengers pass through the station annually. Other railway companies, and public bodies generally, would do well to follow this good example of the South-Eastern directors.

SKETCHES AND DRAWINGS BY MR. DAVID COX.—Those who have learnt to appreciate and enjoy the works of David Cox—and very remarkable works these are, marvellously large in grasp,—will find a rich treat at the German Gallery, New Bond-street. One hundred and seventy or more of his sketches and pictures have been gathered together, and it is stated that the exhibition is in no sense a commercial speculation; any surplus of the receipts that may remain after paying the expenses will be handed over to "The Artists' General Benevolent Fund."

WORKMEN'S QUESTIONS.—The operative masons of Newcastle and Gateshead have pledged themselves to endeavour to obtain an advance of wages from 4*s.* to 4*s.* 6*d.* a-day, and a reduction of labour-time from ten and a half to ten hours a-day.

A considerable number of the masons about Dumfries have struck work to prevent the masters from getting blocks of stone hewed at the quarries instead of cutting them in the rough. The navies on the Dumfries contract of the Castle Douglas and Dumfries railway struck work for an advance of wages from 15*s.* to 17*s.* a-week, but were shortly thereafter obliged to return to work from want of means to prolong the strike.

METROPOLITAN BOARD OF WORKS.—At a late hour, at the meeting before last of the Board, Mr. Leslie succeeded in carrying a resolution which had the effect of abrogating the functions of the committee of twelve members formerly appointed by the board to deal with the important subject of the main drainage of the metropolis. This seems to have been a surprise on all hands, and the greater portion of last meeting was engaged in the discussion of a motion of Mr. Legg's for the reappointment of the committee. The discussion created a strong sensation, but ultimately Mr. Legg, in deference to the feeling of the majority, withdrew his motion. The main drainage committee, previously appointed, is, therefore, now merged in the committee of the whole Board.

THE METROPOLITAN GAS SUPPLY AND THE PARLIAMENTARY COMMITTEE.—The Select Committee of the House of Commons, appointed to inquire into the supply of gas for the metropolis, have been hearing evidence on the subject. Mr. Hughes, civil engineer, of Westminster, stated it as his opinion, that in consequence of the districting system the price of gas *ought to be* cheaper to the consumer. The present estimated rental of the gas companies was 1,238,000*l.*, and if they raised the price to 6*s.* it would raise the sum by half a million. He considered that with an illuminating power of twelve sperm candles, 4*s.* 6*d.* per 1,000 feet should pay ten per cent. to the companies. The gross capital of the companies was 4,735,976*l.*; the share capital, 600,843*l.*; and the average per cent. paid on the capital of all the companies during the past year was 6*l.* 9*s.* per cent. Should the committee recommend that the price of gas be fixed at 4*s.* 6*d.* per 1,000 feet, with an illuminating power on the standard of twelve sperm candles, it would yield an ample profit to the gas companies.

CAST SHAM HINGES.—Permit me to call the attention of yourself and architects, generally, to the now very general practice of substituting, on the doors of churches, chapels, schools, and other public offices, the "cast shams" in lieu of wrought-iron hinges and furniture, which you will, I think, agree with me in considering must be a great discouragement to art-workmen in iron; and also detract greatly from the general interest a practical man takes in observing the details of any structure. Being an admirer of "good wrought iron-work," and making it a practice when from home of taking notes, and making inquiries, in order to ascertain the *locale*, &c. of the artist of any particular piece of handiwork, I have very frequently had occasion to regret the practice I complain of, and do not fail to have sympathy, and hear breathings of regret from many a "local smith," who would rather have wrought what he would consider a kind of "monument" to embellish his village church or school-door, at prime cost, than see the only place where he is likely to have an opportunity of showing his "craft" to future generations, loaded with a heavy casting; which, of however elaborate a design, fails to be of any note-worthy interest, and on examination, invariably causes disappointment to the practical man.—SCB.

MORTALITY OF SCOTTISH TOWNS.—The report of the Registrar-General for Scotland, for 1858, shows that during the year there were registered in the eight principal towns of Scotland 32,555 births, 23,420 deaths, and 6,563 marriages. The deaths exceeded by 59 those of the previous year—a proportion below what might have been expected from the increase of the population. The proportion of deaths was 265 in 10,000, or 1 in 37, being below the proportion of 1857, but it greatly exceeded the death-rate in the country districts, which was only 164 in 10,000. The mortality was lowest in Aberdeen, and highest in Glasgow. Of the 23,420 deaths 11,290, or 48·2 per cent., were children under five years; and that this very high proportion might be lessened by moral and physical means, was evident from the variation of the death-rate in the different towns, it being 31·3 per cent. of the deaths in Aberdeen, and 58·8 per cent. of the deaths in Glasgow. In Glasgow there died 13·08 children out of every 100 living under five years of age; in Aberdeen the mortality was only 4·83 out of 100 children. From whatever cause or causes it may arise, infantile mortality is nearly three times greater in Glasgow than in Aberdeen, and consequently Glasgow is a much more unhealthy town than Aberdeen; for it has been proved that, as a general rule, "the less the proportion of deaths among children under five years, the greater is the healthiness of a town or locality." The report, in stating the causes of death, shows that the deaths from consumption were much greater in the towns than in the country districts, and that among the towns the lowest proportion was in the more exposed, and, therefore, better ventilated towns, such as Edinburgh and Aberdeen.

GAS.—A dividend of 5 per cent. for the half-year last past has been declared by the Wolverhampton Gas Company, and an announcement made of a reduction in price of 3*d.* per 1,000 cubic feet. At Rochdale a meeting of residents outside the political borough has been held, at which dissatisfaction was expressed that a difference of 1*s.* per 1,000 cubic feet, should be charged according as the supply was made inside or outside the borough. The York Gas Company has declared a dividend of 4 per cent. for the last half-year. The works of the Longton Water Company have been opened, and the town lighted. Since then the old company have announced a reduction in price, from 4*s.* 6*d.* to 3*s.* and the Stoke Company the same. Mr. Laidlaw, of the firm of R. Laidlaw and Son, of Glasgow, has just returned from St. Petersburg, having executed the plans and obtained the contract for supplying and erecting the entire apparatus and pipes required for the St. Petersburg New Gas Works, which are to be of great magnitude, and constructed upon the most improved principles. There will be four telescopic gasometers, each 100 feet in diameter, and two each 60 feet, with ample accommodation to double this number when required. The main-pipes will extend to upwards of 200 miles in length, the largest of which will be 36 inches in diameter. At the 44th half-yearly meeting of the Cardiff Gas Company, the usual dividend of 10 per cent. on the old capital, and 8 per cent. on the new, has been declared. The directors have agreed for the purchase of 4½ acres of land, situate between Cardiff and Penarth, for the purpose of extending the company's works in that populous locality.

TENDERS.

For completion of a pair of semi-detached villas, Norwood, Surrey. Mr. Arthur S. Newman, architect. Quantities supplied:—

Brass and Son	£2,665	0	0
Winder	2,495	0	0
Higgs	2,487	0	0
Brown and Robinson	2,442	0	0
Macey	2,510	0	0
Downs	2,275	0	0
Crawley	2,150	0	0
Coleman	2,149	0	0
Freese	2,004	0	0
Marsland	2,090	0	0
Thompson	2,045	0	0

For alteration at the Roath Spa Hotel, for the Hydro-pathic Institute, and Hotel Company:—

Houghton	£1,047	0	0
Seagrave and Bl. field (accepted) ..	1,040	0	0

For alterations, alterations, and renewing of the parish church of Sheepy Magna. Mr. Robert Jennings, architect, Athercote:—

Young and Co.	£1,327	0	0
Broadbent	1,215	0	0
Haddons and Merdell ..	990	0	0
Lilleys and Elliott ..	954	0	0
Fox and Brothers	947	0	0
Potter	817	2	0
Spencer (accepted) ..	796	7	0

For building a new church, for the district of St. Luke, Bedfordshire, Bedford. Mr. Norton, architect:—

Norris	£5,780	0	0
Willcox	5,670	0	0
Baker	5,400	0	0
Brook	5,277	0	0
Hughes	4,897	0	0
Brown (accepted) ..	4,795	0	0

For building two houses, Upper Norwood, for Mr. W. Mayhew. Mr. Dargfield, architect:—

Gannon	£2,570	0	0
Mills and Sons	2,660	0	0
Wardie and Baker	2,570	0	0
Dawson	2,265	0	0
Patrick	2,259	0	0

For building dwelling-house, warehouse, and premises, on ground belonging to Newington Estate, for Mr. E. H. Rabbits. Mr. R. Suter, architect. Quantities supplied by Messrs. Marsh and Marsland:—

Tarrant	£6,940	0	0
Carter	6,870	0	0
Woodward	6,800	0	0
Asby and Horner	6,750	0	0
Colls	6,570	0	0
Higgs	6,548	0	0
Thompson	6,442	0	0
Munday	6,290	0	0
Asby and Son	6,260	0	0
Rider	6,190	0	0
Downs	5,995	0	0
Marsland, Son (accepted) ..	5,950	0	0

For the erection of a set of farm-buildings, at Weston, Here, for Mr. Robert Clutterbuck. Mr. J. Bailey Denton, architect:—

Richardson and Farr, Baldock ..	£1,275	0	0
Hardy and Son, Uxbridge	1,195	0	0
Gibbons, Buntingford	1,140	0	0
Bates and Warren, Stevenage ..	1,100	0	0
Kirby, Henlow	1,067	0	0
Gimson, Royston	1,067	0	0
Seymour, Hitchin	1,063	13	7
Rollings, Cherryborton	1,018	11	0
Bennett and Son, Whitteale ..	964	2	0
Oates, Cambridge	895	0	0
Smith, Dickleburgh (accepted) ..	890	0	0

For the construction of sewers and drains, and the formation of roads and footpaths, on the Great College Estate, Steyne. Messrs. Reeves and Butcher, architects:—

	Sewers and Drains.	Roads and Sewers.	Total.
	£. s. d.	£. s. d.	£. s. d.
Rowe	725 3 0	1,064 0 0	2,399 0 5
Webb	75 0 0	1,418 0 0	2,233 0 0
Emor	719 0 0	1,443 5 0	2,152 5 0
Wood	671 13 4	1,226 0 0	1,897 13 4
Pound (accepted) ..	696 5 6	1,144 0 0	1,840 14 6

For schools, Monk Bretton, Barnsley, Yorkshire. Mr. James G. Stapleton, jun. architect:—

Whole Works	£695	0	0
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Cameron, Barnsley

Bricklayer's and Mason's Works:—

Robinson

Plumber, Glazier, Slater, Smith, and Zinc Works:—

Wood

Carpenter and Joiner's Work:—

Roper

Plasterer's Work:—

Johnson

Painter's Work:—

Stephenson and Charlesworth ..

Total

Carpenter and Joiner's Work:—

Seagrave

Plumber's Work:—

Hall and Jenkinson

Mac Mahon

Painter's Work:—

Tidler

* Accepted.

The Builder.

VOL. XVII.—No. 844.

Social Science.—Medical Stumbling-blocks.—
The "Potteries."—Jacob's Island.

SOCIAL Science will be advanced by the circulation of the portly volume of "Transactions" just now published by "The National Association" for its promotion, and which consists of the papers read and reports of the discussions which ensued at the meeting held in Liverpool last October. It contains an immense amount of valuable information,—the opinions of men who have long studied the matter, and bodies of facts confirmatory of their views. Some of the papers are being issued in a separate form, the papers on Liverpool already mentioned by us, and Mr. Roberts's essay on "The Dwellings

of the Labouring Classes." Miss Nightingale's admirable papers on "The Defects in the Construction of Hospitals," fully bearing out all that has been advocated in the *Builder*, are also being reprinted, in conjunction with some papers from our own columns, and will demand the serious attention of architects. Although we would confine ourselves at this moment to mentioning the appearance of the volume, having another object in view, we cannot resist extracting a paragraph with reference to our recent discussion with Dr. Greenhow. It will be remembered that Dr. Greenhow found fault with us for stating that certain, so-called, contagious diseases might be lessened, if not prevented, by sanitary arrangements, and almost placed himself on the side of the opponents of sanitary reform in his anxiety to support the unfortunate traditions of his profession. Hear, then, what Miss Nightingale, as the result of her dearly-bought experience, says on the subject of "contagious diseases."—"The obvious practical result of this view of infection is, that abundance of pure air will prevent infection. All my own hospital experience confirms this conclusion. If infection exists it is preventable. If it exists, it is the result of carelessness, or of ignorance. 'Contagion,' as a doctrine, on which distinct practical proceedings have been taken, appears to be of very modern invention; but it has been none the less injurious to civilization and humanity, from the loss of life which has from time to time followed from the practices which it inculcates, and from the immense tax which it has entailed upon commerce."

Deeply is it to be regretted that stumbling-blocks in the way of progress, arguments for the obtuse, obstinate, or interested opponent to improvements that lessen sickness, save money, elevate the character, and lengthen life, should be provided by individual members of the medical profession.

Look, for example, at a book recently published by Dr. Parkin, called "The Causation and Prevention of Disease," wherein the author, while pretending to be "a strong advocate for sanitary reform," is the defender of dirt, bad drainage, pestiferous manufactories, overcrowding, intramural burial, the retention of putrescent matter amongst the living,—in fact, of every infamous abomination that sanitary reformers have long been fighting against, and are gradually conquering. Will it be believed that a man writing M.D. after his name can, in the face of the overwhelming evidence extant, write "That the congregation of man and animals in a limited space, as in a town, cannot

be productive of disease, may also be shown by a consideration of the changes that take place in the air by respiration!" If we did not know the effect a desire to advance a particular theory has upon the mind, we should ascribe the statements of the book to profound ignorance, or something worse. In either case the book will be mischievous in the proportion of its circulation, and should be protested against in the strongest possible manner.

Were it not for the assistance afforded to them by such writers as this, the opponents of common sense and science could scarcely resist the body of evidence now brought to bear upon the subject.

We have before us, amongst other similar documents, a return of the mortality in Carlisle, from the time of the application of the Public Health Act until the close of the past year, on the average rate for each thousand of the population, together with a similar return for Preston, Liverpool, Blackburn, and all England, extracted from a publication of the Preston Local Board. In this it is seen that since the sewerage works were commenced, in 1854, a gradual improvement has taken place in the rate of mortality, and even an absolute decrease in the number of deaths (notwithstanding the increase of population), so that for the year just expired the rate of mortality in Carlisle is very much lower than in any of the three towns named, and exceeds that of all England, including the rural districts, by only a fractional amount in each thousand of population.

Dr. Letheby's Report on the Sanitary Condition of the City of London, brought up on Tuesday last, shows that while in one part of the City only nineteen persons die in every 1,000, in another division of it thirty in every 1,000 die for want of proper arrangements. To use the reporter's own words:—

"During the last quarter the death rate of the whole City was in the annual proportion of 23·6 per 1,000 of the inhabitants. In the central division it was but 19·6, in the eastern 24·8, and in the western 29·8; whereas in the southern subdivision it was 30·3. The death rate, therefore, of this unwholesome locality is rather more than 33 per cent. above the rest of the City, and it is more than 53 per cent. above the central districts of it. This is not an unusual condition of things; for by reference to the first table in the Appendix it will be seen, that while the rest of the City has been slowly and steadily improving from an average death-rate of twenty-seven per 1,000 to rather less than twenty-three, the southern and northern sub-divisions of the Western Union have been nearly stationary at about twenty-nine per 1,000. This is due to a variety of circumstances, as the density of the population, the over-crowded state of the poorer dwellings, the closeness of the courts and alleys, the low-lying bed of the river, and, perhaps, also, the unwholesome influences of certain manufactories. Altogether, indeed, the district is in an unsatisfactory condition, and requires the constant supervision of your sanitary officers."

Strengthened by such advisers as Dr. Parkin, parts of the metropolis long since pointed out as disgraceful and dangerous remain little changed, and obstacles of all kinds are thrown in the way of amelioration. We inquired the other day, for instance, of the medical officer of health for Kensington, Mr. Godrich, jun. what had been done at the noted "Potteries," and learnt that his endeavours had met with but little success. The "Ocean" is much diminished in size, and the drainage from pig-sties has been entirely cut off. Thousands of loads of clay have been thrown in, so that it exists now merely as a small pond, consisting principally of surface water from the road and ground adjoining. But pigs still flourish in great numbers. Many cases have been prosecuted at the Hammersmith police-court, and in every case an order was made on the occupier to remove the pigs, and a prohibitive order preventing their return. Several orders were, however, evaded by the occupiers of the premises nominally changing the ownership. At last it was arranged that one average case should be selected by Mr. Godrich and the pig-owners, with a view to appeal to the Quarter Sessions. One of the best cases was selected, and the sitting magistrate made his prohibitive order. The case was then taken to the sessions

at Westminster, and the magistrate's order was quashed on account of an alleged informality. After this several other cases were selected with a view of obtaining an order differently drawn up, but the magistrates discovered that there was a clause in the Nuisance Removal Act, whereby certain trades (as candle manufactories, melting-houses, soap-houses or buildings for boiling offal or blood, or places used for trade causing effluvia) were protected, and he ruled that the keeping of pigs came under that section, and refused to make any order. Thus the matter stands at present, and there seems to be no way of doing much good unless the Vestry agree to try the question by the expensive and uncertain proceeding of Indictment at Common Law.

Not long ago we paid another visit to Jacob's Island, Bermondsey, an account of which was given by us some years ago. As we have before shown, it has lost its right to the title of island, the ditch which surrounded this portion of what was once marsh and bog being filled up. At a time—in past years, when land in this neighbourhood was valuable—buildings of much consequence had been erected, and those who, with good worldly means, were living in Jacob's Island did not think of the necessity for drainage, pure water, and other arrangements which are so necessary for the proper preservation of life. This unwholesome place, in which strange conditions still exist, has been much improved. Substantial warehouses are rising near the Thames, which contrast curiously with dilapidated dwellings close by: the timber house, engraved in an early number of the *Builder*, is gone. There are, however, still a considerable number of timber houses remaining in a very dilapidated condition, and others are in such a state that it seems wonderful that people will risk the danger of living in them. Some of the houses have no right owners, but, when the island was less under the care of the police than it is at present, were taken possession of by families who were strong enough to hold what was not their own. Some of these houses are undrained and entirely without water supply except what can be obtained from neighbouring houses which are attended to in this respect, or from the Thames. As might be expected, the people are of the most squalid appearance. In courts, reached by narrow entrances, unpaved, and littered with filth, there are large populations of the dangerous poor. Here vice and crime are carefully nurtured.

In Blue Anchor-lane many additional houses have been built, since our visit, along the line of the open ditch, which is more foul than formerly. The little cottages west of the ditch still remain, and the same complaint is made of loss of health. To add to the discomfort, the roadway is abominable; in parts the water was not less than a foot deep, and presented the appearance of a small river.

As bearing on the same point, we may mention that Captain Harris, the Assistant Commissioner of the Police of the metropolis, specially charged with the control of common lodging-houses, has made a report on the condition of single rooms occupied by families in the metropolis. The report is dated the 7th ult. The details disclosed by it are such as we have made our readers tolerably well acquainted with. "It is evident from the cases adduced," concludes the report (and they might be greatly multiplied), "that all the evils which the Acts 14th and 15th Victoria, cap. 28, and the 16th and 17th Victoria, cap. 41, were intended to remedy still exist, almost without abatement, in single rooms occupied by families; single rooms so occupied being exempt from the operation of the Act. In many cases the law is, doubtless, evaded, a false tie of consanguinity being set up by lodgers and landlords; but even where any relationship exists, and many adults are herded together like animals, night and day, all decency, as the report observes, must be lost, and frightful evil is the consequence." The causes are the avarice of owners and the poverty or debasement of occupants, and the Legislature is loudly called upon to interfere. The occupant of a room in Richard's-place, Old-street, St. Luke's, said to the inspector:—

"I was a strong healthy man when I came into this court four years ago. I am now fast sinking into the grave. I have scarcely had a day's health since I have been here."

We quite agree with the reporter, that unless some legal provision be made, there is reason to fear that the operation of the Common Lodging-house Act will be very incomplete, and that single rooms will continue to be fertile causes of degradation.

In spite of such writers as Dr. Parkin, the truth must make its way; the consequences of inattention to sanitary arrangements will be understood, and man will have the opportunity given to him of exerting to the full his moral and physical energies.

THE ARCHITECTURAL EXHIBITION, CONDUIT-STREET.

WHILST writing the preceding notices of the works at the Architectural Exhibition, it has seemed to us so important to preserve in the recollection of the public the view of the essential character of an architectural design,—that it should be not merely capable of execution, but should have reference to existing circumstances or some requirement of building,—that we have so far, passed by certain drawings in the Great Gallery and the West Gallery, that might otherwise have been mentioned from particular merits, or their prominence on the walls. To these we may return after having looked at the competition-designs in the East Gallery. We do not deny indeed the value to the student, at any time of life, of sketches and studies of old examples, or of mere exercises in design—far from it. But, it is that character *edificatorial*, shall we say, in *architectural* design, which just now requires to be pointedly insisted on,—that is, the decorative character as united, absolutely and apparently, with all provisions for convenience and strength, in a special case, and as in harmony with feelings of the actual time. Of other attributes which should pertain to existing, real and practised architecture, much might be said. We, here, only ask a section of the profession—amongst whom some of the higher qualifications of the architect are largely developed, to recollect that it can be no object in such architecture as we have spoken of, to produce buildings which can be mistaken any ways for works of the Middle Ages, or for works of otherwise than British production. The true artist will gather materials, or lessons, from all styles—regardless, though, of the need of subordinating them, and of harmonizing them. Such, however, for the most part, is still not the spirit in which old examples are used and the history of architecture is read.

It was shown in Mr. Street's lecture, at the Gallery, and Mr. Scott's address on the occasion that much of the questionable imitation of Italian-Gothic, which is now common, would be at least repudiated by leaders of the Gothic school. If a positive Italian impress, rather than any that is English, be made to characterize our architecture, let us recognize the fact of the indebtedness of all modern architecture to Italy, and not deny as foreign, that particular Italian which became national in the architecture, only as in our poetry, in our learning and science, and in our commerce and which, in fact, constituted these what they now are. If there is need in architecture, of old association, it is the time of the consummated Reformation, and the revival of classical learning, that we should regard with interest,—the epoch which, by its intellect and its actual works, has had the chief influence on the later course of our refinement and our greatness—a greatness thus owing even what is regarded as its nationality, in no small degree to Italian sources. The claims of Italy on the grateful recollection of England, have yet to be acknowledged. As regards the New World, it is curious enough to be worth noting, that whilst the Scandinavian discovery was so far profiles, that the fact of it has been certified only in recent years, that later knowledge, whence America dates whatever she has now of greatness or of hope, was due to Columbus the Genovese, Amerigo Vesputius the Florentine, and John Cabot of Venice, or his son Sebastian.

The architecture of the future founded whether mainly on the northern Gothic, or on the Italian-Classical, would be equally English. But the transplantation of the Italian-Gothic, to which is

* Read on Tuesday, the 5th.—Subject—"Italian Palace Architecture." As it is about to be published, in connection with other papers, we yield to the lecturer's request, and do not report it. Mr. Scott presided, and addressed the meeting.

the present tendency, can result neither in architecture which is national, nor in that which is good by any standard,—particular, of Gothic; or general, of aesthetics. Like the other extravagance, of gaudy colour (also we are glad to find, discontinued), the tendency forms part of that taste for mere novelty which, as we have shown, does not suffice to produce good art, but induces in lieu of progress, mere changes of fashion, presenting often, really, not actually the novelty.

The present critical position of the art is, we apprehend, owing in some degree to the prevalence of competitions. It is in these cases that the *drawing* tells, sometimes even on architects, in the way in which it should have only secondary claim to notice. Competitors feel the like, and act accordingly. The manner in which the design first strikes the eye, the mode in which drawings are coloured or mounted, the medium by which they come to hand, or the position in which they are placed in an exhibition-room, our experience leads us to think have as much to do with the selection as the practicability and merit of the design itself. The only safeguard is the fact that good drawing and good design often occur together: the best design, however, may be passed over through accidents of the medium of its exhibition. That, however, which just now we are most concerned in showing is, that exaggeration of forms and colour, with no higher aim than to catch the eye, and questionable changes of style, are being fostered by competitions.

To the result once anticipated of checking the decisions of committees, little further approach is made: and we need not repeat our opinion that the annual exhibition in Conduit-street will not go far in this direction. The designs for Mr. Spurgeon's chapel, for example, which were sixty-two in number, or upwards of 450 drawings, are represented by portions of only four of the sets, including a photograph of the design which had the first premium, or in all cases perspective views without the drawings which are essential to opinion. Messrs. Hill and Paraire's design (255 and 256), not described by us at the time, had some advantages of arrangement, and but one tier of galleries: the ornamentation of the arched ceiling, however, is not satisfactory, and the construction of the roof in iron, seemed to us questionable. Mr. G. H. Tait exhibits a design (251) not sent in, for the same building. Some of the columns appear not in true proportion; but the plan of the portico, with internal columns, and flanking columns forming the base of the towers, may be mentioned as good in combination. A somewhat larger proportion of the designs for the Chelsea Vestry Hall are shown, including the Elizabethan design by Mr. H. M. Eytton (209), the Italian design, "One of the three selected" (210), by Messrs. Green and De Ville, interior and exterior views; the Gothic design which we engraved (212), by Messrs. H. and S. Godwin, with plans (213); and the Italian design (211), for which the first premium was awarded to Mr. W. W. Pocock. The tower in the centre, in the upper stage, is well composed in details: those of the principal windows are not so satisfactory. An entirely different design is, we believe, to be carried out.

Towards examination of the other competition drawings, we have less assistance from the catalogue than would be desirable. We suggest that in future, the principal "condition" should be printed as heading to each group of designs, and that the authors should be restricted to uniform titles—unless where a design had to be indicated as having received a premium. Generally, this portion of the catalogue would be improved by revision of the titles sent in,—to admit of no mistake as to the selection made. The "Design for New College at Rawdon" (190), by Mr. F. T. Gompertz, does not show the same skill as may be discovered in the Gothic "Design for a Cathedral" of the thirteenth century (11), by the same author, the blocks with raking mouldings over the windows, have simply inferiority to the more common Italian details, and offer, therefore, no justification for their introduction,—though, we doubt not, much gain would accrue in the modern practice of Classical architecture, from the pursuit of it by those who have well studied the Gothic—imparting to the former the correction of principles, and the new matter, which have been lately its wants, and which could yet constitute of it a new and vigorous style. Another design for the same building is exhibited (258). It is better, though "correctly cold," in the style prescribed; but does not exemplify what are the capabilities.

Designs for the Wakefield Church Institution are exhibited by several architects. Mr. E. C. Robins's design (191) is Gothic of Decorated cha-

acter, and has a square tower, with high roof capping, incorporated with the porch attached to a gable end. Mr. F. Mew's design (195) certainly, is Italian Gothic of red brick and stone construction under a favourable aspect. The several features are well grouped; and the details have an apparent freshness of character. The difficulty we have is to show without drawing, the difference between one such design and many others: for, though the pointed arches; the partly-coloured materials in vousoirs, and often in bands and patterns on wall surface; the labels, and the cusping and central shafts to windows, would be found in both cases, the differences are often of the utmost importance in point of art. Verbal description is quite inadequate to set forth the exact nature of an architectural composition. The parapet with corbel stage of small arches, and the weathering to the set-off of the principal story, are simple features well used in this design, and such as might be harmoniously combined with accoutrements in any style of architecture. Mr. James's design (196) also is not without merit. It has less character of the Italian Gothic, and has buttresses, but preserves the pointed arches, tracery, and shafts; and black and white vousoirs. There are two gables effectively placed; but the iron railing to the chimney attached to one of them, is a slight mistake. It tends to misconception of actual use of that on which it is fixed, and therefore it is opposed to good principle of Gothic or of good architecture in general.

Mr. T. C. Sorby's design (197) is of red brick and stone and a round-arched style, though black brick is introduced in patterns, and to the windows—not, however, in the best taste. There is good general effect in the stone basement, and other parts; but the pediment with very slender mouldings, but no horizontal cornice, is out of proportion to the general cornice of the building. Mr. Sorby's "Design sent in Competition for Hanley Cemetery" (194 and 208), Gothic, and red brick and stone with black brick in patterns, is in better taste, as well as effective; but the author falls into a now common error, of exaggerating the drawing of finials. Those in No. 208, if they could be executed as drawn, would soon be broken off by the weather from the sharp points on which they are fixed. Mr. Robins's design (202) for the same subject, is one of the best of the class. It presents sufficient distinction between the two chapels, along with the general uniformity which is desirable when they occupy corresponding positions; and the tower and spire are not made so prominent as to dwarf the chapels, and to resemble the tower of a church. The same author's design for the Middlewich Cemetery Chapels (201) is not quite so successful. For these last-named chapels Mr. Eytton has a design (206). Mr. C. H. Cooke has achieved better things than the imitative Norman of the design for Worcester Cemetery Chapels (198), to which the third premium was awarded. It is those styles, often, from which much matter may be derived, which it is least desirable should be imitated or copied. There is nothing new in Mr. Hewitt's design for Cemetery Chapels (199), though the prose, not the art, is respectable.—Mr. Tait's design for a similar subject (200) is one of those having the tower and spire too prominent; and there is an unfortunate effect in the near approach of the arch in the entrance gateway to the roof covering.—Mr. Messinger's design (201), with residence in centre, and a square tower, with timber belfry stage and lofty tiled capping, is respectable Decorated Gothic.—Mr. R. Wheeler's Lithograph (207) of the Chapels at the Brighton Cemetery, consecrated in December, 1857, shows a tower and spire over the entrance gateway, verging near to the objectionable resemblance with church-towers; the details, however, appear to have been studied with care.

Before passing to other subjects, occupying a considerable portion of the space, we should name the perspective sketch of the Aldershot Market (203), now in progress under the direction of Mr. T. Goodchild, of Guildford. It is weak in the details, and bad in proportions: there are a yawning centre arch; a parapet or balustrade-rail, with large oblong openings between the pedestals; and tall finials to the vase or globular terminations, which could not be executed in stone. A "Competitive Design for a Fountain to be erected at Bordeaux" (211), is shown by Mr. G. Corson. It is better in general design than in the details.

We have not yet finished.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS. This society held its third *convention*, on Tuesday last, at the French Gallery, Pall-mall, when several interesting matters were brought forward.

PRESENTATION OF THE ROYAL MEDAL,
AT INSTITUTE OF BRITISH ARCHITECTS.

The ordinary general meeting of the members of this Institute was held on Monday evening last, at the Society's Rooms, Grosvenor-street. At eight o'clock the chair was taken by Earl de Grey, president of the Society.

The noble President proceeded to present the medals and other prizes in conformity with the award of the special general meeting of the 14th of February last. The silver medal of the Institute was presented to Mr. Payne, on behalf of Mr. George Wightwick, who was unfortunately prevented from attending by illness.

The President next presented the Institute medal, and a purse of five guineas, to Mr. Edward Hughes, for designs for the restoration of Kilmallock Abbey, in Ireland.

The Soane medallion was presented to Mr. Thomas Vaughan, for a design for a circus; and The Students' Prize Book to Mr. Sams.

In presenting the Royal medal to Mr. Scott his lordship observed, that he had had on many occasions the pleasure of presenting medals to foreign architects as well as to English architects, and it always gave him pleasure to do so, because it showed the impartiality of the Institute. On the present occasion he had to present it to one who combined both characters. Mr. Scott was not merely an English architect, but he had executed some of his principal works abroad. There might be differences of opinion as to the varieties of the style of art to which gentlemen directed their attention, and he hoped it would long continue so; but he unfeignedly said he never had greater pleasure in presenting any medal than in handing this to Mr. Scott.

Mr. Scott briefly returned thanks for the honour which had been conferred upon him. It was needless to say how proud he was to accept a medal of this kind—a medal presented by the Sovereign. He had his own opinion as to the style of art which ought to be pursued; but, although other gentlemen held different opinions, and followed different branches, still they felt that the stem was one. He thought there was a growing feeling of the unity of their art. He had intended to mention another subject, but he would postpone his remarks to a future occasion. There was a most interesting paper to be read, and he would not therefore interrupt the proceedings by any further remarks of his. He would only assure his brother artists, that he entertained a high sense of the honour which had just been conferred upon him, and of being associated with the noble list of those who had already received the royal medal. He had only to express his thanks to the noble chairman, individually, for the kind manner in which he had presented the flattering mark of his brother architects' approval to him. (He was greeted with loud applause.)

Mr. S. Angell (Fellow) then read an interesting sketch of the "Life and Works of Baldassare Peruzzi," illustrated by many drawings and engravings of his works.

A vote of thanks having been passed,

Earl de Grey said that having gone through the duties of the evening, they should now adjourn. He believed there was to be an official meeting to be held after their adjournment, for the purpose of carrying out the details of the Institute, and appointing officers; but the next general meeting for the ordinary transaction of business would not take place until the 16th of May, and he therefore adjourned the meeting until that day. He might take the opportunity of saying that he had had the honour of presiding there on some few of those public occasions, and that he always derived the greatest pleasure from so doing. It gave him the means of seeing gentlemen whom he had no other opportunity of seeing; it gave him the opportunity of renewing old friendships and forming new ones. He had the greatest hope and expectation that their next great meeting would be held in a place which they might call their own. The Institute had had a considerable success. The room was crowded, and there was barely room for the numbers they wanted to admit; but they had no tenure of those rooms, and they were not at all sure that they would be able to meet there that day week, for they were in the hands of persons who might give them notice at any moment. In the course of a short time they would be able to get into a place which would be more worthy of them, and which might honestly be called the domicile of the Institute of Architects. He had visited that building a few evenings before, and he then saw the rooms that were to be appropriated to their services, and he could not help feeling they were very

superior to anything the Society had hitherto enjoyed. He hoped, when they would have the opportunity of again meeting, to see even a larger assemblage than the present in their new quarters, and he could only say that he wished every success and prosperity to the Institute of British Architects.

OPENING CONVERSAZIONE OF THE
ARCHITECTURAL ASSOCIATION.

A conversazione of the members of this Association and their friends was held on Friday night, at their new premises, the Architectural Union, 9, Conduit-street, on the occasion of their removal from the former place of meeting at Lyon's-inn Hall.

The president of the Association, Mr. John Norton, said, it was with no small pride that he filled the office of president during the present year, when such an important event occurred as their removal to these new premises; and it was to them a matter of very great congratulation to have been able to accomplish this satisfactorily. It was not contemplated to have any regular lecture or debate that evening, beyond a general expression of opinion as to the desirableness of the change, and there were many kind friends of the Association present who would be better able than himself to point out the advantages of the course which had been taken. He desired, however, briefly to refer to the early history of the Association, with a view of showing that with a very small beginning they had at last attained a position from which they might hope for greater things. It was only so lately as the year 1846 that some few young men, wishing to form a society for the purpose of mutual improvement, united to form an architectural school of design, and an association for the junior members of the architectural profession. Mr. Godwin, Mr. Kerr, and other gentlemen, cordially sympathized in the project, and it was arranged to open negotiations with the Architectural Draughtsmen's Society, with a view of getting a reconstruction of that society on a more extended basis. Eventually the amalgamation of these two bodies took place, and a new society was constituted, called the Architectural Association; and the code of laws which was then framed was still in existence. The number of members had originally been thirteen, and when these had formally connected themselves with the new society, the total number scarcely exceeded twenty-five. Their first meetings had been held on the second floor of the house, 33, Southampton-street, Strand, in a room only 18 feet square and 9 feet high. However, no sooner had the Association fairly started, than a great increase of members took place; so much so, that it was found absolutely necessary to vacate their original place of meeting, and to seek one more commodious elsewhere. After some difficulty, the new Association removed to Lyon's-inn Hall, the members continuing steadily to increase: this was in the autumn of 1847, and from that time to the present the Association had grown and prospered, until it now consisted of 150 members. Whilst on this subject, he might mention the names of several gentlemen who had been submitted as new members to the Society. These were as follows:—Proposed by Mr. Norton, and seconded by Mr. Penfold—Mr. Ashpitel, Mr. James Edmeston, Mr. Charles Mayhew, and Mr. Lysaght, of Bristol; proposed by Mr. Bunker, and seconded by Mr. Herring—Mr. A. W. Bloomfield; proposed by Mr. Herring, and seconded by Mr. Graham, Mr. Oliver, of Sunderland. The chairman concluded by expressing a hope that the centralization of the different societies which had now taken place would be attended with advantage to all, as well as increase the usefulness of the profession at large. So far as the Architectural Association was concerned, it had done its best to meet the views of the promoters of the scheme of the Architectural Union; and, after some opposition from without, they had been able to accomplish the very desirable end of removing to these new premises.

Professor Donaldson said he accepted with pleasure the call, made on him by the chairman, to address a few words to the assembly. In the first instance, he desired to congratulate the society on the vast difference between their present position and that which it occupied some few years ago. They were not to judge of the ultimate success of any individual or body of men from the moderate beginning they might make at the outset; and instances of this were afforded in his own experience. He recollected himself having gone to learn drawing at the studio of a painter, who afterwards distinguished himself highly, but who at that time

had a very modest studio indeed, in an attic where, surrounded by his casts, he used to paint. He now referred to Mr. Sass, who afterwards established a very fine school of painting, and had several studios for young men. He recollected likewise the humble beginning of another painter, who acquired great eminence, and whom he had gone to see at work in a hay-loft; but there he studied laboriously and vigorously, and he afterwards achieved success. It was these very humble circumstances that called out the energy of a young man, if he was good for anything; his courage enabled him to go through great privations, to overcome almost insuperable difficulties, and afterwards by the very schooling of those difficulties which he had to overcome, to achieve a great success. Therefore it was that this society, with such a humble beginning, meeting in a room 18 feet square and 9 feet high, but founded by a few young men of generous feeling, and inspired by a desire of self-improvement, had progressed, as he was sure it would continue to progress; and, in those more capacious apartments to which it had now removed, he trusted they would carry on their studies with even greater energy. Societies like theirs were extremely useful, being not merely composed of architects, but of all persons in society who took an interest in kindred subjects, and who wished to acquire principles of high art, and to cultivate in themselves a degree of improvement and intelligence in these matters. And though these latter were of course subordinate to the higher leadings of professional studies, it was of great advantage to bring together minds of different thought and calibre, and the circulation of different opinions could not fail to be most advantageous to the progress of art. He fully agreed in the principle laid down by the chairman for their proceedings of that evening, that there should be no lengthened speeches; and, therefore, with these few hearty words of congratulation, he would conclude by expressing a hope that the augury of this meeting might be kept up to the end, that the society might flourish and possess a goodly number of members, and that it might achieve great things in the progress of architectural knowledge.

The President announced that letters had been received from several of their friends, who were prevented, by various causes, from attending. Among these were the Earl de Grey, Mr. Wyatt, Mr. Scott, Mr. H. T. Hope, &c.

Mr. Kerr likewise congratulated the Association on the removal to their present premises, and considered that the profession should be very much indebted to the Architectural Union Company for the success which had attended their efforts. The movement made by that body had been one of the best that could be made for the objects proposed by them, which was not so much a concentration of the several parts of the profession into one focus, as the co-operation, and, as it were, the confederation of brotherhood on the part of the several societies, which, in the present state of public opinion and public effort, had naturally arisen in the architectural world. They had lately heard, on more than one occasion, that it would be very desirable if these various societies could be combined into one. He did not hold with that view himself; on the contrary, he thought they ought to be very well satisfied with that co-operation which had been already secured, by various circumstances that had been brought to bear, and more particularly by this admirable movement of the Architectural Union Company. When they bore in mind the number of societies which existed in connection with the profession, he contended that, instead of lamenting the supposed want of unity which existed, they ought to take courage from the consideration of the fact that this diversity in circumstances, like those of England at the present day, was the sure sign of mental vigour, and of youthful life and vivacity. There existed at present the Royal Academy, the Royal Institute of British Architects, the Architectural Exhibition, the Architectural Union, the Publication Society, the Photographic Society, the Benevolent Society, and their own society, the Architectural Association. It was very natural that with this great number of societies some persons should say that their existence must prove a want of energy, and that their different efforts could only be made in a small way, instead of being carried on to the large scale which they would admit of if all these were concentrated into one focus. But they should reflect the principle which had led to the success of England politically and socially, and by which the policy of England, the policy of Anglo-Americans, and the policy of English colonists, all over the world, was still guided and regulated. That policy was, that individual action should have full scope, and should not be coerced by the central power. The policy of a neighbouring country, under all changes of dynasty, and under all differences of superficial operation, had been the reverse. The well-known fable of the bundle of faggots was applicable to their case, so far as it recommended unity of purpose and mutual co-operation; but it was not by any means a necessary consequence that all these small sticks should be subordinated into one. It was said that they had two parties in their profession. That was quite true; there were two parties, to almost everything; and he hoped they would long continue to exist, for he regarded these as the sure guarantees for the existence of energy and vitality. It was true there was an axiom, "Happy is the people that has no history;" but, for his part, he hoped they would long have little disturbances and differences amongst themselves, for it was a very poor thing indeed when the few of one way was to live from all a different way. There was nothing to record. He congratulated the society on its removal, and he was sure the move would be a good one; he was also very happy to hear

the names of Mr. Ashpitel and others proposed as members, although he must say that he for one would be inclined to vote against their admission, on the principle he was about to state. He had always contended, at former meetings of that Association, that its primary object was to congregate together students and young men connected with the profession, for the purposes of mutual instruction; it was a principle universally established, at least in this country, that when young men arrived at the age of early manhood, the best possible system of education was that of mutual instruction; in other words, by the system of a debating society. And, therefore, this system had been adopted twelve or thirteen years ago, at the foundation of this society. It was not contemplated to establish anything analogous to any other body; but the Association was set on foot simply for the benefit of the young men engaged in study, or for beginners in life. They came into that room—no one daring to make them afraid, and with no one to snub them for conceit—because, of course, conceit they all were, and ought to be, for he had never known a young man, who was fit for anything, that was not conceited: they came into that room with as much conceit as they liked in a modern way, and which did no harm to any body as long as it was confined to themselves; and he maintained, that it was better that the great bulk of the society should be confined to young men, because they would begin to learn, soon enough, the checks and snubs that the world would put upon them, and the instruction with which their opinions would be treated by their elders. He would conclude with a suggestion to the Architectural Association, and was always a good friend when a society was in a position to have suggestions made to it: the suggestion which he was about to offer, was that, in connection with the removal of the Association to these elegant rooms, a committee be sent, and an appeal should be made to the young men connected with the profession at large, who existed in London to the number of, probably, 500, and who were nearly all persons eligible for membership. He was convinced that a properly organized appeal would be made to that large body of young men, and that the existence and objects of the society were fairly laid before them, the report would result in a very large accession of members. The day was quite gone by for supposing that there existed in that Association any antagonism to the Institute of British Architects. That body, on the contrary, by its individual members, had encouraged the Association in the most admirable way. Year ago, when they had all been young men together, Mr. Donaldson and Mr. Godwin were the very first to give it a helping hand; these gentlemen had come to their opening meeting, and Professor Donaldson made, as he always did, a speech with the utmost taste and kindly feeling; and, moreover, when the Architectural Exhibition was set on foot by the Association, as soon as they were able to get into a position in which they could claim support for it, as an institution likely to thrive, the gentlemen belonging to the influential part of the Institute of British Architects were the first to support it. The first support which the Association had received was most gratifying; the attendance that evening, particularly of the ladies, manifested the estimation in which it was held; and he believed that now was the time to come before that great body of young men, with a comprehensive scheme which would have the effect of increasing their number, and of greatly extending their usefulness.

Mr. Billings, on behalf of the Association, returned thanks for the expressions of congratulation and approval to which they had just listened. He could not, however, agree in the sentiments uttered by Mr. Kerr, with regard to parties, for his earnest wish was that they should all be united. Had the assembly ever heard of a Kilnsey dog that had a divided duty, and that never got to the end of his journey? He believed he spoke the sentiments of a large body of architects, when he said that of all the liberal professions, theirs was the most liberal, and the most in want of union. He might, however, congratulate that assembly on its remarkable bond of union. There was another point in which he differed from Mr. Kerr, and that was as to the admission of members. The present members were getting old, as a matter of fact, the Association itself; and, if it was to be purely one for young men, what were they to do—were they to resign? He hoped that course would not be necessary, and he for one intended to stick by the ship; and he hoped, moreover, that the elder members of the profession would continue to come in, and give them encouragement and countenance, and what was a great point to be considered, "the Queen's countenance" as well as matter which had all along been the source of the greatest satisfaction to him was the advantages indirectly resulting from the operations of the society. It was very well known that he himself had not begun as a practical architect, nor had he any intention of becoming one, as he believed rather that he should have been an artist—not that there was anything incompatible in the two, for they might depend upon it that an architect ought also to be an artist, or he only half knew his profession. To return to what the society had effected. At its original formation the members were combined with draughtsmen, and it had certainly been the means of bringing about very great progress in the science of architectural drawing, which at the time was greatly needed; for, to his own knowledge, there were formerly architects who could not draw, whereas now architects were fit to take their places as men or less as artists. This was a very great triumph; and on this ground, if upon no other, the Architectural Association was entitled to gratitude. A man was but half an architect without he understood the principles of light and shade, for he could not tell how to use his materials; because, of course, a light-coloured stone required different treatment from a deep red sand-stone, and every properly instructed architect knew that on such points there was necessary to study even the minutest details.

Mr. Edmeston said, as the negotiations on the part of the Architectural Union with the Association had been conducted principally through himself, he wished to take that opportunity of expressing the very cordial way in which the Association had met their views. Deliberations of course had very properly taken place, as the step was one of great importance, and fraught with such a variety of serious consequences to the Association; but as soon as the desirability of making the move had been clearly shown, they had heartily concurred in the proposition. Although but a guest on the present occasion, he might be permitted to express the satisfaction which the architects and all the leading supporters of the Architectural Union felt at seeing the Association within these walls. The object which the Union had in view would have been inconceivable, had they been shut out, and that great interest which was felt in bringing all these bodies with a

kindred aim together would have been defeated if anything had occurred to prevent the Architectural Association from being included in those professional bodies whose business was now transacted within that building. He trusted that they were justified in looking to yet more important results for the future, for there was a great need that had worked so hard as the architectural had done of late years for the advancement of their particular art, in proof of which it would be only sufficient to mention the museum which they had got together by their efforts, and the number of talented lectures that were given on subjects connected with architecture. These efforts had not been confined merely to London, but were general all over the country, and there had been a great expenditure of money and labour; and that not merely for the advancement of the members of the profession, but for the general advancement and interests of art. One thing only was required, and that was a concentration, a bond so tight there might be no longer a divided action; and he trusted that the time was not distant when such an alliance might be effected. He could not concur with Mr. Kerr in his observations regarding the elder members of the profession, and as his own name was among those who were proposed for admission, he hoped that somebody would be found to oppose the views of that gentleman. Not merely was there necessity for the sines of war, but he ventured to say it was a great mistake to suppose that the elder members of the profession would snub or interfere with whatever society they might be connected. He himself had considerable experience of the way in which the seniors of the profession would act, and he should be wanting in gratitude were he not to pay a tribute which he was sure would be more eagerly received in carrying out the important objects of the architectural union. The importance of these objects could not be over-estimated, for the assembly might depend upon it that the architectural profession was now obtaining a position which would lead to results of the utmost consequence.

One of the Vice Presidents of the Society, in moving a vote of thanks to the visitors who had honoured them with their attendance, and who were certainly to be spoken of in favour of the admission as members of the heads of the profession, who possessed large influence over the younger members, and through whose countenance and approval alone they could hope, in any many cases, to induce these junior members to join their ranks.

Mr. Mayhew, in returning thanks for the visitors, said, if he were fortunate enough to be elected a member, it would be the last thing he would consent to do for the purpose of "snubbing" younger men, if he did snub anybody it would be Mr. Kerr. He was very glad to see the young men of the profession joined together in such a society, and he agreed to do his best to join it, as there was nothing in its composition antagonistic to the Institute of British Architects. So highly, however, did he value unanimity, that he should greatly like to see them all joined in one body; he should like to see them all joined in one body, and the profession legalized, so that its members would be acknowledged by the country as gentlemen, in every sense of the word. He was delighted to see the architectural union taken the step which they had brought the architects under one roof, they would be able to carry their laudable exertions one step further, and unite them in one body.

MILITARY HOSPITALS IN TASMANIA.

I HAVE always been a diligent reader of your invaluable Journal, and have been greatly indebted to it for much useful information on sanitary science. Your last September numbers, however, of all others, gave me the most satisfaction. In the excellent leaders, "On the Sites and Construction of Hospitals," I found the views which I had always, and very recently, advocated in this hemisphere, amply supported and corroborated.

The Government and inhabitants of Tasmania are very desirous that this island should be made a sanitarium for India. To demonstrate the advantages it offers for such a purpose, a "Government commission" was appointed in July last. Its president was the colonel commanding of the Royal Engineers. Another officer of the same corps was one of its members, together with an Indian officer of Artillery, the officer in command of the detachment of the 12th regiment, the officer at the head of the commissariat, the officer in charge of military stores, the comptroller-general of convicts (who is also sheriff), a junior medical officer of the convict service, whose life experience has been almost confined to the city of Hobart. The only unofficial member of the board was a legal practitioner of great private worth and long Tasmanian experience. The fruit of the researches of these nine gentlemen was embodied in a printed quarto "report" of forty-four pages, embracing numerous tables, some lithographed diagrams, and minutes of examinations of witnesses. Unfortunately, scarcely a statement was made, a table given, a conclusion drawn, or a proposition advanced that was not flagrantly erroneous. For example, it was proposed that hospitals for the invalids from India should be established in the city of Hobart, notwithstanding that the evidence of recent "Parliamentary returns" showed that the rate of mortality in Hobart exceeds that of the city of London, and is more than double that of the average of all the country districts of Tasmania. But without encumbering your pages with a recapitulation of the legion of mistakes the commission perpetrated, I will confine my animadversions at the present time to the most unpardonable and mischievous error of all, as it bears directly upon the subject

you have so ably and zealously descanted upon in the articles in the September numbers I have alluded to.

These commissioners state that two blocks of buildings situated on the wharf (used for military stores) offer good accommodation, *adventagously* situated, and well adapted for a hospital for the Indian invalids. Four rooms are pointed out as being capable of accommodating 300 men, at the allowance of 1,000 cubic feet of breathing space for each. The commissioners subsequently observe that, "owing to the nature of the climate and buildings, and considering the convalescent condition in which the greater number of the men would in all probability arrive, it is presumed that the above accommodation would be sufficient for 50 per cent. more invalids than estimated."

All of these rooms in their inside measurement (the commissioners have only given the length and breadth of the outside, omitting height altogether) are 105½ feet long and 40½ wide. Two of them are 11½ feet high from the floor to the rafters. The other two are 9 feet high. In each there are twenty-two pillars of wood about 16 inches square. The rooms have each twenty-two windows of the dimension 3 feet by 4 feet: they are unced: the rough stone walls are unplastered: the entrance to each apartment is by ladders. They are without fire-places, ventilation, or fittings of any kind adapted for the sick. In fact, in no respect are they superior to ordinary mercantile warehouses, except that they have so many small glazed windows. At the back and ends, 40 feet from the buildings, a wall 20 feet high surrounds them, erected on the abrupt slope of a hill which immediately overtops the buildings, and screens them from the winds coming from the healthiest quarters of the compass. The buildings are directly facing the harbour, and exposed to the influence of those winds which come from the most unhealthy points of the compass, and which exceed in frequency and force all other winds which blow at Hobart. Before these winds reach the military stores, they must pass over the most filthy parts of the city. A battery of nine guns is only a few yards distant, on the hill, above the level of the top of the buildings.

I do not think this description at all justifies the commendatory epithets the commissioners have applied to these blocks for the object contemplated.

It will be obvious, too, that the arithmetical calculations of this Board were very faulty. By my summing, the rooms above mentioned—were even every inch of space, from wall to wall and from floor to rafters, available as breathing-room for the inmates—could only afford, at the allowance of 1,000 cubic feet for each man, accommodation for 175 invalids, instead of 300. Were 450 patients stowed in these apartments, they would have each 388 cubic feet of breathing-room! Contrast this allowance with the 2,100 feet proposed by you for the patients in a hospital, or the 1,760 actually allotted to each in the Laribosiè Hospital, at Paris; or the dimensions of a ward which you think should be built for twenty patients,—80 feet long, 25 feet wide, and 16 feet high;—and you will perceive, sir, that such instructions as your Journals afford on these important subjects are much wanted by the officials of Tasmania. There can be no excuse for such lamentable and dangerous blundering on the part of the commissioners. The error they were committing was pointed out to them by one of their own body; and a minute of the measurements, and the number of men that could be quartered there, was laid before them. What terrible consequences might follow, were the authorities at home, or in India, to adopt, untried, the recommendations of the Tasmanian commissioners? The hospital horrors of Nootari might be repeated at the Antipodes, in one of the most salubrious climates of the world.

I hope, sir, that this plain statement of facts will elicit, from your powerful pen, some appropriate remarks on the subject of such vital importance to the welfare of our brave Indian army. Your opinions and strictures will have weight in quarters where my humble voice may be unavailing.

Believing, as I do, from upwards of five and twenty years' medical experience in this colony, and fourteen years more, previously, in England and Ireland, that this island offers many peculiar advantages to invalids from India, I was chagrined beyond measure when I found how seriously the commissioners had failed in proving it, and I lost no time in endeavouring to counteract their errors in the proper quarters.

In the October number of the "Australian Medical Journal," published in Melbourne, I re-

viewed the commissioners' "report" at length, and did my best to advance the interests of Tasmania, of science, and of humanity, by a candid exposition of the real advantages this island possesses for establishing a "Sanitarium for India."

E. SWABRECK HALL.

Hobarton, Tasmania, January, 1859.

TO ASPIRING VOLUNTEERS.

At no period has the architectural profession numbered so many members as at the present moment; and of this great array by far the larger number are young (I was about to say, raw) recruits, who may be divided into two classes, volunteers and mercenaries. To the first, the volunteers, I, a volunteer myself, would address a few words—words from the studio; thoughts which, arising while the pencil is busy, find utterance during the pauses of work, and are bonds of love between fellow-labourers. By the mercenaries I mean those who have taken up a noble art, as a trade, merely as a means of getting their bread and butter. To these I have but little to say, therefore will say it at once. It is,—Give up art immediately, for if you are not artists for love of art, you will never be good artists. If you entered the profession with the idea of making a large or rapid fortune, you are egregiously mistaken, and the sooner you repair your blunder by leaving so circuitous a route, and getting into one that leads more directly to the object of your ambition, the better for you and the better for the profession. We applaud your desire to get on in the world—but you are not the sort of men we want. Having washed our hands of these gentlemen, let us return to our volunteers.

It is a pleasant thing to see the earnest and simple love of their art which many of them are possessed, and to notice their eager desire to avoid the errors into which their predecessors had strayed during the grievous darkness that long laid so heavily on the land.

It is ever a difficult undertaking to throw off a yoke which has been long borne, but this effort has been made, nay, is being daily repeated; one deeply-rooted abuse after another disappearing; and as the ground becomes cleared, the tender leaves of the true plant show themselves, though somewhat timidly, peeping through. Amongst the many good signs of the day, must be noticed a very decided inclination for truth, simplicity, and propriety of style. If at present there is not originality, there is that which is perhaps better, as indicating a careful study, and due appreciation of the noble achievements of past generations, viz. readiness and felicity in the adaptation to the exigencies of modern refinement of forms and arrangements used by people, comparatively speaking, only semi-civilized; the modification, to suit the severity of the climate, and the wants of the comfort-loving inhabitants of our island home, of arrangements adopted in more genial climes; and the application to our simple form of worship of the architecture of a religion of pomp and pageantry. And this I consider a great step made in the right direction.

It is simply absurd to talk of inventing a new style of architecture, as though a revolution of such magnitude could be accomplished by a generation, much less in a day: such a thing never has been and never will be done. All art is necessarily either progressive or retrograde—slow in its progression, rapid in its decline. It is to my mind the grossest presumption for a people only just emerging from the most profound ignorance (as a people) of all connected with art, to think of ignoring the genius, the knowledge, and the skill displayed in the glorious monuments of antiquity. Why, these are the books, from which we are to learn; and it is only the most stupid self-conceit to think that we can produce works of equal, much less of surpassing, merit without having even studied them.

Living architecture as the phrase is—that is to say, architecture replete with life—must be founded on common sense, and the men who will do most are those who, having carefully and reverently studied the wonderful monuments which the genius of the past has produced, profit by the experience of those who have lived and died; and, throwing aside prejudice, obey the dictates of common sense, and accept and make use of all that is capable of adaptation to our modern requirements. But think not that I advocate a mere reproduction of ancient works: nothing is more opposed to my views; for the barefaced, though unconfessing, copyist and soulless reproducer, we must feel the most sovereign contempt;—but what I say is, that, to surpass the works of the ancients, we must first learn

what they did, and how they did it: their experience is offered for our benefit; and, so long as we do so honestly, it is legitimate and right to make use of it on every available occasion.

Do you, young architects,—who feeling strong within you a true love for, and generous desire to emulate, the noble monuments of antiquity, be they Classical or Medieval,—listen to these words:—"If you would do likewise, you must first understand them; and then know how they were accomplished." Go, therefore, and study them. Climb the ladder, mount the scaffold, rule and pencil and note-book in hand,—let not bodily fatigue nor soiled clothes deter you, for your labour will be repaid. You will gain more sound knowledge in rambling for a week thus armed, about some old cathedral, than in a month spent in the office (though that also is a quite essential part of an architect's education).

Moreover, bear ever in mind that the art which you aspire to practise holds a peculiarly honourable position: it is hers to rank first and foremost amongst the arts. As first-born, it is her special province to foster and cherish her sister arts, painting and sculpture. It is her function to encourage, either directly or indirectly, all peaceable arts, sciences, and art-manufactures. Keep this fact before you, I say; for whether she performs these functions well or ill, or not at all, depends on us her representatives; and it behoves us as individuals to remember that it is in our power, not only to assist, but also to impede her in the performance of them. Let us then strive to the great work of raising our beloved art, from the degradation and neglect from which she is but now emerging, to that noble and exalted position which is hers by right. It has been said that three determined men can accomplish anything. One can do much; and a phalanx like that of the Architects should be equal to the task before you.

Let us now consider what are the means by which this consummation is to be obtained. In the first place (although it may seem somewhat irrelevant) a good architect must be a man of the strictest honour, and most severe probity: a jealous love of truth should animate his every action and thought. To commit an architectural untruth should be to him no less impossible than to tell a falsehood.

He should treat as insults the petty attempts at bribery, which manufacturers and others not un-frequently make in the shape of offers of "allowance to architects,"—a practice which cannot be too highly reprehended. His studies cannot embrace too wide a field: those which tend to exercise the reasoning powers and the memory, will be of special service; for it would seem that the constant and fixed attention of the mind to near objects, as in the case of artists, tends to the deterioration, or at least, prevents the development of the latter. In his professional practice his own interest, must, of course, be identified with his clients'; but, in the defence or advancement of that interest, he must never forget his self-respect, nor the respect due to the knowledge and experience of his professional brethren.

In the preparation of his designs, he is bound to spare no pains, no amount of study; remembering the words once uttered by Professor Cockerell, within the walls of the Academy, that "All great things, like the young of the elephant, are long of gestation, difficult of parturition." No detail, either of construction or ornamentation, must be beneath his notice. He must remember All the many conditions to which a design must conform to be really good. In the first place there is propriety, that is to say, suitability to the purposes of the building, and to the site on which it is to be erected. 2ndly, Structural truth. 3rdly, Picturesqueness and breadth in the general form, and in the grouping of the several parts and good arrangement of plan. 4thly and lastly, Purity, and right application of detail.

With regard to the first, a practice has of late become common amongst the younger architects in preparing designs submitted in competition: it is that of preparing the drawings without ever having seen the site, or knowing anything of the locality. This practice is open to the strongest objection, for there is scarcely a site which does not present some accidental features, which have a bearing for good or for evil on the proposed building. Not unfrequently they are of the first importance, and if properly appreciated and turned to good account, will, indeed, be the key-note of the whole design, giving it vitality and harmony with the surrounding scenery. Study, then, the site *in situ*; do not merely go and look at it, or verify the dimensions; but ponder over it;

examine it from all the approaches and all the neighbouring eminences; consider its aspect; mentally photograph all the accidental combinations of the scene, and the style and position of the neighbouring edifices; and, furthermore, make yourself acquainted with the geology of the district (if rural), the materials produced therein, and the customary mode of applying them; for very often such local peculiarities of workmanship or construction may be advantageously employed. So much for suitability to site. With regard to propriety of the design to the purposes for which the building is to be employed, I would lay it down as a rule that every building should at once tell its tale to the beholder; and in all good faith I believe this quite possible,—that is to say, I believe that every building, by its treatment (and I care not what be the style) may be made so thoroughly characteristic, its costume so appropriate to its station, that a glance will indicate to the beholder the class of building to which it belongs, often even the especial service to which it is destined, whether it be for Divine worship, for education, or for pleasure; whether it be public or private; whether a palace or a hospital, a museum or a barrack, a prison or a poorhouse. The art is certainly capable of this: surely the artist should be equal to it. This metropolis offers numerous examples, both *pro* and *con*, of the truth of this: space, however, will not permit me to enumerate them; besides which, a portion of the task would be invidious. But, as one of the most recently-erected public buildings, I will mention Mr. Barry's Covent-garden Theatre as possessing this merit to a considerable degree: a theatre also at Viterbo, near Rome (probably known to many of my readers), erected a few years ago, though plain, struck me as being particularly good in this respect.

For brevity's sake, I might perhaps pass over "structural truth," by referring to my previous remark, that an architect should have the same repugnance to commit an architectural untruth as to utter a falsehood, but I will add that he has no more necessity to do the one than the other. Ardently as I admire our unrivalled St. Paul's, I cannot excuse Sir Christopher Wren the duplicity of that upper story. Beautiful as is much of the brick detail of some of the great sham *Régnades* of Northern Italy, I much prefer to see the plain, honest, unfinished brick, as in the west fronts of the Duomo and St. Lorenzo in Florence, Santa Giustina in Padua, and so many others.

But, ye young architects, while it is your duty, in cases where it is a question between difficulty and untruth, never to hesitate for a moment, but to buckle on your armour, and combat the difficulty until it is solved (for there is always at least one alternative which study will discover), yet, at the same time, you are not called upon ostentatiously to parade your truthfulness by the adoption of disagreeable or grotesque forms nor unnecessary appliances.

I could say much on this subject, but must pass on to "Beauty of Form and Grouping." *
W. L.

THE CITRUS WOOD OF THE ANCIENTS. THE CALLITRIS TREE.

The wood which has been submitted to me for examination, judging from its appearance and properties, as well as from the history given me of the tree that produces it, is, I have no doubt, one which occupied a very prominent place in the domestic economy of the ancients; being no other than the celebrated citrus wood, which Pliny informs us was considered one among the elements of more civilized life,—"*inter pauca nitidiores vite instrumenta*."

Of all the ornamental woods of which we have any record, none has ever enjoyed so great a celebrity as the citrus. The Greek and Roman writers make frequent mention of this wood.

It was one of the accusations directed by Cicero against Verres, that his cupidity was unable to withstand the attractions of a citron table in the possession of a fellow-citizen.—"*To maximam et pulcherrimam mensam citream*,"—a Quinto Lutatius Diodoro, *Lilybui, abstulisti*," was the charge preferred by the orator, who was himself no bad judge of a citron table.

Martial, by comparing this wood with gold, would imply that it was esteemed the first of all precious materials:—

"*Accipe felices, atlantica munera sylvas;
Aurea qui dederit dona minoris dabit.*"

In another of his epigrams the same author

* To be continued.

represents a maple table addressing a more aristocratic citrean one thus:—

"Non sum crispa quidem, nec sylve filia Maure."

It is apparently with the admiration of a connoisseur that Petronius exclaims—"Ecce africa ceras terria citrea mensa;" while Tertullian, with due Christian austerity, in alluding to the vast sums which Cicero and others were known to have sacrificed to the fashion for fine tables, sneers at the extravagance:—"Hem! quantis facultatibus estimaverit tigneas maculas!"

But it is to Pliny that we are indebted for the most minute and interesting account of the citrus, and the part played by it, in the luxury and refinement of ancient Rome. "To Mauritania and its peculiar citrus tree," he says, "we owe the mania for fine tables, with which the women reproach the men when they complain of their expenditure on pearls. There is preserved to the present day a table which belonged to M. T. Cicero, and for which, notwithstanding his comparatively moderate means, he gave no less a sum than 9,000*l.* sterling. Two tables also were sold by auction, which had belonged to King Juba; the price fetched by one was 10,800*l.* sterling, and the other something less. * * * * The largest table that has ever yet been known, was one which belonged to Ptolemaeus, king of Mauritania; it was made of two semi-circumferences, joined together down the middle, being 4½ feet in diameter, and a quarter of a foot in thickness. * * * * The Emperor Tiberius had likewise a table, which exceeded 4 feet in diameter; this, however, was only covered with a veneer of citrus wood. * * * *

"The citrus tree resembles the wild female cypress in its foliage, smell, and appearance of the trunk. It is the tuberosities or burrs, formed of curly wood, which are the parts used for ornamental purposes." * * * *

"The principal merit of the tables made of this material is to have veins arranged in wavy lines, or spirals, like so many whirlpools. In the former arrangement the veins run in an oblong direction, for which reason the tables presenting this appearance are called *mensa tigrina*; while in the latter the marks are circling and spiral, and hence give rise to the appellation *mensa pantherina*. Next in esteem to these is the wood with a small mottle, representing, as it were, a surface covered with dense masses of grain; *aplata* is the term given to these. But it is the colour of the wood which is the quality held in the highest esteem; that of red wine mixed with honey (*mulsum*) being the most prized, the figure coming out in such with particular brilliancy. After colour, size is looked to; at the present day entire trunks are greatly admired, and sometimes several are united in a single table."

"These tables are best kept in order, and shine with the greatest lustre, when merely rubbed with the dry hand, especially just after bathing. As if this wood had been created for the behoof of wine, it receives no injury from it."—*Pliny's Nat. Hist.* xiii. 30.

Pliny's account is confirmed by Strabo, who, in describing Mauritania, observes—"It is this country which furnishes the Romans with their tables, made of large pieces of wood presenting the most beautiful figure."—*Geog.* viii. 3; iv.

The citrus formed one of the principal sacrificial woods of the ancients. According to Theophrastus, Citrea was said to have employed it in her enchantments, and it was, no doubt, the same material that Homer meant by the wood *buva*, with which he represented Cytherea inaugurating her groto. Citrus was also the wood of which were made the wine-tables consecrated to the feasts of Bacchus. Theophrastus states, that the raftering of the ancient temples used to be made of the citrus tree, and that its timber, when employed in roofs, is proof against all decay. He likewise says that no wood is so full of figure, and that there is no workmanship more precious than that made of this material, several of the most venerated statues of the gods known in Greece being carved in it. Few substances, therefore, were more closely connected with the worship of the gods. What was the significance of the name "*cybipelia*," originally given to this tree, and still retained in modern times to designate an allied genus of exotics to the old world, it is not easy to determine, but probably the term had its origin in something hidden and mysterious connected with its peculiar properties.

It has long been a puzzle to find the tree which in the present day the citrus of the ancients was to beget. E. L. In considering it to have been furnished by a variety of wild cypresses, and that the tree producing it belonged to the family of the

cupressineae, is clear, from the description given of it by Pliny. It was a native of Northern Africa, where many species of the very interesting group of the cypresses are found in perfection. In addition to the other individuals of this family, botanists and travellers have made us acquainted with one peculiar to the northern shores of the African continent, which they have distinguished by the name of *callitris*, and taken as the type of a new genus, of which, to use the words of the late Dr. Royle, "about twenty species occur in Australia, and a solitary one on Mount Atlas." This Atlantic species, which has been the subject of considerable discussion, has, from the character of its fruit, been denominated *quadrivalvis*.

According to Broughair and Schawboe, it is from this tree that is obtained the fragrant and resinous substance, called gum sandarach. Captain S. E. Cook, and Mr. Drummond Hay, in the year 1829, were at considerable pains to prove that the *alerce* wood, of which is composed the roof of the famous mosque, now the cathedral of Cordova, erected in the ninth century, was not as had generally been supposed, the timber of the larch, but, in fact, that of *callitris quadrivalvis*. The following remarks of Captain Cook on this subject, are worth quoting:—"The original woodwork of the roof has now the colour of old oak or chestnut. This is the *alerce* of old writers, which has hitherto baffled inquiry as to the tree which produced it. It is resinous and fine-grained, quite unlike the various pines which I subsequently found to form the woodwork of the Alhambra, the Alcazar of Seville, and other Moorish buildings, or that of any pine I am acquainted with. The *alerce* is not a wood indigenous to Spain, and the subject of its origin is one well worthy of inquiry, as few woods are known capable of resisting the effects of a period of more than nine centuries, the specimen I speak of being perfectly preserved."—*Cook's Sketches in Spain*, vol. i. p. 1.

Mr. Drummond Hay, H.M.'s Consul General for Morocco, was the first to point out that the *alerce* wood came from *callitris quadrivalvis*; and to illustrate his views on this point he sent to England, in 1830, a plank, measuring 1 foot 8 inches in width, of the timber of that tree, which was deposited in the rooms of the Horticultural Society of London. This circumstance is mentioned by Mr. Loudon, in his "Arboretum," who describes the wood as "highly balsamic and odoriferous; the resin, no doubt, preventing the ravages of insects, as well as the influence of the air." This sample of *callitris* wood probably not being remarkable for its ornamental qualities, it did not occur to Mr. Loudon, nor yet to any other of the numerous persons who examined it, to suspect that it might prove to be the celebrated citreus wood of the ancients. Dr. Lindley, in his "Vegetable Kingdom," also makes mention of a plank, two feet wide, of the wood of *callitris quadrivalvis*, which he had seen, but without throwing out a hint as to its possible relationship with the famous "*cybipelia citrea*." Indeed, in no botanical work have I succeeded in meeting with anything to show that *callitris quadrivalvis* was supposed to be the tree from which the citreus wood was procured.

In the same way as those authors who have treated of the known *callitris* have failed to recognize in it the citreus tree, so the writers who have had occasion to speak of the unknown citreus wood have never thought of looking for its source to the Atlantic *cybipelia*. In the ninth volume of the "Transactions of the Society of Arts" is a well-known paper, by Dr. Aiken, on ornamental woods, written in 1831, no inconsiderable portion of which is occupied by the history of the ancient citreus wood; but the author does not even venture a guess as to the tree from which it was obtained. The writer of the article, "Citrus," in Reece's "Cyclopædia," however, points out that the "*cybipelia mensa*" could not have been made, as was generally believed, either from the citreus tree or the cedar, but of a wood peculiar for its fineness, and very different from both. Nevertheless, in the volume on Greek and Roman antiquities, forming part of Lardner's "Cabinet Library," and published in 1833, the precious citreus is confidently stated to have been the wood of the cedar or citron, in many citreus *alerce*, a tree whose wood is totally destitute of figure and colour.

Botanists knew the *callitris* tree to be the wild spreading cypress of Mount Atlas, and its wood had been particularly noticed as not only possessing the chief qualities stated by Theophrastus to be those of citreus wood, but as having received, comparatively modern times, and with extraordinary advantage, one of the principal applications specified by him to have been anciently reserved for citreus. It only required the discovery in it of those beauties of figure, colour, and lustre so

greatly extolled by the ancients, to complete the proofs of the identity of the citreus with the *callitris*. Recent investigation has shown that the latter tree is subject to excrescences or burrs, which correspond exactly to Pliny's description, and that those growths, in their internal structure, display characters in all points agreeing with those of the burrs of which were made the citrean tables. There can, therefore, hardly exist any reasonable doubt that in the timber of *callitris quadrivalvis* we possess the true citreus wood.

Considering that the ancients employed citreus wood principally for tables, it would, I think, be well in the first instance to re-apply it to that use; and the more so, that there has prevailed for some time in this country a "mania for fine tables," which, however, is very moderate, when compared with that under which the Romans gave such enormous prices for a single piece of furniture, and, to our certain knowledge, prevailed in Rome from the early days of Cicero to the time of Nerva—a period of full 150 years, including the reigns of ten emperors. The Roman citrean tables were apparently circular in shape, and supported on feet composed of ivory and other precious materials carved to represent griffons and the legs of animals.

The table mania of the present day has shown itself in favour of walnut-wood, obtained from burrs, similar as regards their structure to the tuberosities of the citreus tree, and producing a curly wood which has the same "tiger" and "panther" peculiarities of figure. Walnut-wood, likewise well known to and extensively used by the ancients, had till quite recently been too much neglected in this country, and the beautiful specimens of it now sent us from Southern Europe, produce a very pleasing effect on the eye, long accustomed to the sombre rosewood and the too uniformly marked mahogany. A comparison of walnut and *callitris* will however show, that while the latter does not yield to the former in the quality of figure, it surpasses it greatly in the warmth and liveliness of its colour, which, combined with a depth and lustre, almost capable of vying with those of the mineral gems, entirely eclipses the dead-looking walnut, and stamps it as the noblest ornamental material of the vegetable kingdom. * * * *

COLOURING STATUES.

AFTER recapitulating the well-known existing instances of colours remaining on fragments of antique sculpture, and going through the arguments usually adopted, to show that polychromy was in vogue during the best periods of Greek art, Mr. Scharf, in his lecture at the Architectural Museum mentioned last week, expressed his conviction that the application of colour to form in plastic works, and especially to sculptures of the human figure, was a very desirable combination, and one that, as far as existing specimens might be adduced, had never yet had proper care or sufficient talent brought to bear upon it. The painted sculptures displayed in the Crystal Palace, at Sydenham, he considered to be not only unsatisfactory, but to have a very injurious effect upon further opportunities being obtained for the sculptor-colourist, where better material, larger scale, and a favourable disposition of light and shade would be required. A fixed position, with a considerable prominence of shadow and bright lights on particular parts, are the conditions which Mr. Scharf considered to be quite essential towards a successful polychromatic application. Various objects and surfaces surrounding the sculpture in question must also partake of certain prominent colours, so as to secure a general harmony or tone which all painters consider with justice to be one of the first requirements. The mode in which the tints and markings or patterns are applied by the brush demands as much care and mastery as in the forms and markings that had previously been left by the chisel of the sculptor. Unless these two

* Sir,—I have received from abroad some pieces of a rare and beautiful wood for the purpose of being tried by me in the way of business, and I am told it is a wood of great value to classical scholars, as well as one of the finest materials that have ever been used in cabinet-work. At my request, a gentleman well acquainted with the subject, has drawn out the accompanying account of the wood in question. You will observe that he has no doubt of this article being the same with a wood which was very celebrated for its beauty and other good qualities in ancient times, such being the case, I think I may venture to add a translation to the following notice, in order to inform you after such a great lapse of time. Acting on the suggestion contained in the paper, I have employed the wood chiefly on table tops. Several of these I have now in a finished state by me, and shall be happy to show them to any one who may desire to see them.—I am, Sir, &c.

11, Cleveland-mews, Fitz-roy-square. C. Cross.

operations are combined in an equal degree of mastery, the result can only be a failure. Painting statues on a small scale might be all very well; but a doll-like effect could scarcely be avoided, with objects so movable and variable in point of light. It was on larger subjects that he desired to see experiments made, and he instanced some full-length monumental figures in our cathedrals with a steady, unchanging light; and among them the monument to Huskisson, in Chichester Cathedral, only that more ideal drapery and an earlier costume would be preferable. Even in Greece, and still more in the tropical countries, colour seems indispensable as a relief to the eye from the glare of a white surface. Pliny mentions a statue in the Temple of Diana at Ephesus, the keeper of the sanctuary used to warn visitors not to gaze upon too long, as the intense whiteness of the marble might injure their eyes.

In all modern instances of paint applied to statuary a heavy opaque colour was employed, but the lecturer believed that a tinted varnish or glaze,* applied delicately to the marble, so as not to destroy the transparency of the material, would produce a very different effect. Even stippling certain parts with fine touches of pure colour to produce a variety, and varying some parts also by *scumbling*, or applying a few touches of an opaque colour laid thinly upon the glazed surface, are only artistic means clearly open to the experimentalist. Most of the painted details of the eyes, lips, hair, &c. have been too harsh and defined. Hitherto, professed sculptors alone have taken a practical part in the question, and, from being their first study, and, in most instances, their only real objects, very favourable results could hardly be expected; but it was to be wished that some of our eminent colourists would, as painters, take up the subject, and try their hands at enriching a statue with their peculiar gifts. Mr. Gibson, from what had been seen, was not likely to do himself justice. That the practice and judgment in applying colour to such surfaces required a peculiar skill and first-rate pencilling artist, we might feel certain, from Pliny's passage relating to Nieme. The statues of the ancients, whether for worship or as honorary memorials, were in fixed localities, and it would be most injudicious to prosecute any further experiments without having first secured for the work a favourable architectural position.

Mellowness of colour also is as desirable a point of consideration for painted statues as for shaded pictures on flat surfaces, whether of stone panel or canvas.

GERMAN RAILWAYS.

Last year, in March, M. Hauchecorne, general manager of the Cologne railways, published some very interesting statistical tables on the working results, for the year 1856. He has now published one on the results of the working of the German lines during the year 1857. We cannot follow the author through the innumerable facts which he has so carefully collected, and so lucidly explained; so must confine ourselves to mentioning some general data, which alone cannot fail to interest our readers.

At the end of 1857, there were 4,369 kilometers of Prussian railways open for traffic, of which only 1,361 had a double line. At the end of the previous year, the lines in traffic were only 4,003 kilometers, 1,127 of which were double lines. The construction, &c. of all these lines, cost 957 millions of francs, or 21,900 francs per kilometer. The rolling stock comprises 1,096 locomotives, 1,763 passenger carriages, and 20,350 goods waggons. The useful effect of each locomotive was, on an average, during the year, 19,390 kilom. travelled. The number of passengers averaged nineteen millions and a half, and the number of tons of merchandise transported, was 12,271,000. The total receipts were 130,011,385 francs, and all expenses of every sort, 58,796,870 francs: that leaves in round numbers a net profit of seventy-one millions of francs. At the end of the year 1857, the reserved funds were increased by nineteen millions of francs.

The German railways, out of Prussia, including the Swiss lines and the Lombardo-Venetian, amounted, in length, at the end of 1857, to 7,365 kilom. of which 1,643 were double lines of way. The cost of construction on an average amounted to 233,000 francs per kilom. The rolling stock consisted of 1,500 locomotives, 3,374 passenger carriages, and 22,275 merchandise vans.

* The tint or glaze upon the surface would still display the granulation of the marble, and leave an accidental spot glaringly conspicuous, as noticed by Lucian, in his account of the Venus of Knidos.

For these German lines, without Prussia, the receipts were 171 millions of francs; the working expenses, 76,700,000 francs; the net profit, 83,629,000 francs; and, at the end of the year 1857, 13,243,000 francs were added to the reserved fund.

The Swiss railways produced 5,702,000 francs, and their working expenses were 2,405,000 francs. The net profit was 2.97 per cent. on the capital embarked. The receipts of the Lombardo-Venetian lines were 3,150,000 francs, and expenses for everything 4,577,000 francs.

A dangerous fire broke out on the evening of the 8th ult. at the railway works of the bridge over the Rhine, at Kehl, threatening to destroy the fruits of five months' gigantic works for the temporary bridge. About eight o'clock in the evening the fire appeared, from an unknown cause, on board one of the boats, containing a steam pile-driving engine, moored close to the temporary bridge, and in an instant the flames took the scaffolding, and communicated with the main work, which burned fiercely. Owing to the zealous assistance afforded by the *employés*, the workmen (who yet lingered about the works), and the pontoon men, the burning vessels were enabled to be drifted off, and the temporary bridge on fire extinguished, in a short space of time, with no very serious damage.

ART ABROAD.

AN Art-Union, in connection with the Paris Exhibition of Works of Fine Arts, is being organized, the Count de Morny president: the subscription is to be but *one franc*. The Emperor sent for particulars of the working of the London Art-Union some time ago. The jury have rejected an immense number of works submitted for exhibition.

The Society of Emulation of the Department of Doubs has decided that an exhibition of manufactured and agricultural produce shall take place on the 1st of June, 1860, at Besançon, for works of art and productions of labour. There will be a contest between the watchmakers of Geneva, the clockmakers of Padua, and those of the Black Forest, in Germany.

The Belgian Government, desirous to assist in leading to the practice of monumental painting, are about to ask a grant from the Chambers, with that end in view. Meanwhile they have invited the artists of France and Germany to send to Belgium for a few weeks the cartoons of their more successful frescoes.

A church in the Pointed style, is to be commenced shortly in Cologne, dedicated to St. Maurice, from the designs of M. Statz. A citizen of Cologne has given 10,000, for the purpose. The *Revue des Beaux Arts* says, this will be the sixtieth Gothic church that M. Statz has built within the last fifteen years.

A monument is about to be erected in Seville, to the memory of Murillo, the prince of Andalusian painters, and a subscription has been opened in Seville, and in Madrid, for the purpose. Senor Medina is to be the sculptor.

FALL OF A CHURCH TOWER AT BASFORD.

THE inhabitants of the village of Basford, near Nottingham, were thrown into a state of great consternation on Sunday last by the fall of the old church tower. The church, which is a very large one, and one of the best specimens of Early English architecture in the county, is undergoing a restoration at the hands of Mr. Arthur Wilson, architect, of Nottingham, under whose directions the north aisle has been rebuilt, and a new north porch added, the clerestory rebuilt, and new roofs added throughout.

At the commencement of the restoration it was not thought to be necessary to take down the tower, but as the works proceeded it became evident that, owing to the bad material of which it was built, and the insecure and boggy foundations, it would give way if something were not done to prevent it. Under these circumstances a new tower arch was advised by the architect as the only means of averting this catastrophe. It was while the tower was being prepared for the reception of the new arch that the fall took place. On Saturday evening, when it became evident that nothing short of a miracle could save the tower, and that it was inclining towards the church, several strong shores were fixed by the direction of the architect, inside the building, to throw the pressure the other way. It fell shortly afterwards, and the above precautions probably saved the nave, clerestory, and new roofs. As it was, only

one bay of the south arcade and the west end of the south aisle fell with the tower.

When the old tower arch was taken out, the remains of two former ones of different dates were discovered in the wall, and three very strong buttresses had been built against the west face, and a doorway blocked up, making it evident that from the first erection the work has been unsound, and has often undergone extensive repairs. Very fortunately no one was hurt. Happily happened a few hours sooner, or a day later, many of the workmen would probably have perished in the ruins. There are three fine old bells, which have escaped unharmed. The building committee are entering with spirit into measures which will enable them in a short time to erect a new tower.

NEW CHURCH, NEWINGTON.

THE first stone of the new church to be built in Charles-street, Newington, was laid on the 30th of March by the Lord Bishop of London. The church is dedicated to St. John the Evangelist, and is to be of the Early English style of architecture, and will consist of nave, 75 feet long by 24 feet 6 inches wide; north and south aisles, 16 feet 3 inches wide; chancel, 25 feet long, and 20 feet wide; organ-chamber on the north side of chancel, and vestry on the south side, with a tower at the west end of south aisle, and a porch at the side of north aisle. The nave is divided from the aisles by five bays.

In lieu of the stone shafts usually placed between the nave and the aisles, the architect has introduced coupled cast-iron columns, 7 inches in diameter, with a space between them to admit of the officiating clergymen being seen. The church is to be built with Kentish ragstone, with the dressings of Bath stone. In the exterior the architect has introduced gabled chancel-roofs, pierced with cinquefoils of different designs, the whole to be surmounted by wrought-iron crosses. The church will be made to accommodate 1,000 persons, at a cost of 5,000.

Mr. Jarvis, of Newington, is the architect; and Mr. Wilson, of Great Suffolk-street, is the builder.

PROPOSED EXHIBITION OF ARTS AND MANUFACTURES AT BARNSTAPLE.

WE would direct our readers' attention to the projected Exhibition at Barnstaple. The Council of the "Bath and West of England Society for the Encouragement of Agriculture, Arts, Manufactures, and Commerce, founded 1777, A.D." (building on the steady progress of their agricultural gatherings, on the increased business done in the sale of agricultural implements, on the improved demand for education and scientific instruction which has arisen in the west of England, and on the complete organization and harmonious action of the Society) have opened a new department of "Arts and Manufactures" for exhibition and sale. A special fund has been raised for a moveable building, to be used next year at Dorchester. A plan has been furnished by Mr. Nicholson, agricultural engineer, of Newark, and the support of the principal local dealers and manufacturers has been obtained.

Mr. T. Dyke Acland, jun. the chairman of the committee, in a letter to us on the subject, says—"Whatever tends to illustrate the principle, and to make known the improvements, disseminated through your columns, will be acceptable at our exhibition. Plans of farm buildings and cottages have long found a place in our show-yard, and in our journal. But our extended exhibition will awaken a demand for beauty of form and colour, to which some local attempts have already directed attention."

Entries have already been made of some articles tending to illustrate the suitable use of stone, wood, iron, and colour, in their application to building and furniture; but the shortness of time has prevented the plan being very widely known beyond the circle of those acquainted with the promoters, and we would gladly extend that circle. The exhibition will open on the 30th of May, and will include a collection of paintings and drawings. The secretary is Mr. St. John Manle, of Wood-street, Bath.

DRINKING FOUNTAINS.—The erection of the drinking fountains provided by the Sunderland Corporation is now proceeding. Fountains have been erected in the following places: At the entrance to Bishopwearmouth Church, in the High-street; adjoining Alderman Hartley's works, Hylton-road; and at the Ferry-boat landing. A fountain is also to be placed in the wall adjoining the Park from Old Building-hill-lane.



THE UNIVERSITY MUSEUM, OXFORD.

A BIRD-EYE VIEW OF ROME.

LAST week a lecture was delivered at the Apollonian Hall, to the members of the Philosophical Society of Dover (in connection with the Institution of Arts), by Mr. J. J. Aubertin, on "Rome." Additional interest was imparted to the lecture from its being illustrated with a valuable collection of photographs.

Having narrated the effect which a close approach to the city of the Caesars had upon his mind, the lecturer proceeded to describe the Piazza del Popolo, with its Egyptian obelisk, being one of two erected by Rameses in front of the Temple of the Sun at Heliopolis. The other still remained there. It was computed that this obelisk dated before Moses, who was 1,550 years before Christ: the age of the obelisk, therefore, could not be less than 3,400 years, yet the ornamentation it bore was as sharp and well defined as the day on which it was cut. Twelve obelisks were brought to Rome at immense cost and trouble. The scene of the Forum and the Via Sacra; the Capitol and the Via Triumphalis were turned to account; and, after all the various remains (including the roof of the old Rostrum) had been dwelt upon in outline, the whole scene of a Roman triumph was traced through them; the

spot where the captive monarchs were turned off to the Mammertine prisons was pointed out; and the particular triumph of Paulus Æmilius over Perseus was adopted to realize the illustration. The Arch of Titus, connected with one of these triumphs, viz. that of Titus over the Jews, A.D. 72, was particularly pointed out, with its entablatures, representing on one side Titus in his triumphal car, and upon the other his Roman victors carrying the Jewish spoils.

COMPETITIONS.

Sheffield.—The competition for the new Union Workhouse at Penistone, near Sheffield, has been decided in favour of Messrs. Lockwood and Mawson, architects, of Bradford. Twelve designs were submitted. The plan adopted is calculated to accommodate 130 inmates, divided into six classes, besides the provision in the entrance buildings and infirmary. The exterior is of a simple style of Italian architecture.

Quistor Parochial Schools.—Forty designs were sent in. Messrs. Maughan and Fowler, of Louth, obtained the first place; Mr. Murray, of London, the second.

Assize Courts for Manchester.—We understand

that about one hundred sets of plans have been sent in to compete for the assize courts for the Salford Hundred. No person will be allowed to see them before the decision is made.

THE OXFORD UNIVERSITY MUSEUM.

THE new Museum is approaching completion, and we publish in our present number two views of the exterior, from photographs of the actual building. In our volume for 1855 we gave a plan of the intended building and a view of the entrance-front, together with some descriptive particulars.* We gave also an engraving of the intended ironwork for the roof of the central court. We reserve a critical account of the building. In the meanwhile, let us say that the cloisters display a remarkable collection of marble shafts, arranged on a geological scheme, and intended as illustrations. The granites and serpentine occupy prominent places. The quadrangle will ultimately be roofed over. The roof first put up was found to be insecure, and was removed. The roof of the lower corridor is vaulted in brick: the upper has a simple wooden roof. Messrs. Deane and Woodward are the architects.

* See vol. xiii. pp. 291, 312, 319.



THE UNIVERSITY MUSEUM, OXFORD.—MESSRS. DEANE AND WOODWARD, ARCHITECTS.

THE NILOMETER AT CAIRO.

I OBSERVE, in Mr. T. Hayter Lewis's lecture on Cairo, printed in a recent number of your journal, this passage:—"There is no view of the Nilometer I believe here, and a sketch of it was, until lately at least, a work of some danger. Mr. Roberts got one, but at the risk of his life; and it seems from the drawing to be a plain fluted column without a capital, its lower part in the water, and surrounded by a ruined Arab building." There is now lying before me an engraving, which has been some years in my possession, of the "Interior of the Nilometer at Cairo; from the designs of Luigi Mayer," and, as it may interest some of your readers, I will endeavour to describe it (although in no way connected with Architecture myself, it is always a pleasure to me to read or see anything concerning it). The external building is circular, walled for about two-thirds of its height, the upper part being windows very much in appearance like ordinary strong-framed sashes; above these rises a domed roof, ornamented with a sort of diaper pattern, lozenge shaped, with a round knob in the centre of each lozenge. Within this building there is a square inclosure of about (say) 15 feet; this is composed of heavy beams, supported at each corner by plain square uprights, and between these by two columns of the Tuscan order. The lower half of each side of this inclosure is composed of lattice work, the upper of frames similar to those in the external building. At the right-hand corner is a door from which you step on to a steep flight of twenty-five steps, and by which you descend, to what for distinction sake I shall call the floor of an excavated apartment, some 10 feet below the surface. This floor then, with the exception of the width of the steps on the side they are placed on, is still further excavated to the extent of some 3 feet, forming a large basin, with a bold moulding or string course around the edge, and steps to descend into it. In the walls on the floor level, in front and to the left, there is an equilateral arched passage 6 feet high; and some way inside that a similar passage is seen, in its side, on the left hand: over these passages, and that of a small lancet-shaped one on the side of the steps, there are tablets with some sort of characters thereon. There is also a similar but smaller passage through the steps. From the bottom of the basin rises the Nilometer—an octagonal column with a sort of double base, plain on the surface, and with a Corinthian capital, some 20 feet in height. The column is kept in its position by a heavy beam, which passes from one side to the other of the enclosed space, and rests on the framework of the enclosure; from this beam a short block descends and is attached to the top of the column. The measures I have given will, I think, be something nearly correct, although there is no scale attached to the engraving. I adopted a very simple process to arrive thereat: I assume the door to be 6 feet, and make that my standard for all the other parts.

ROBERT ESSELY.

CHURCH BUILDING NEWS.

Loughborough.—A large and highly respectable meeting has been held in the Town-hall, Loughborough, to take into consideration the present dilapidated state of All Saints Church, with a view to its restoration. Appropriate resolutions, including one appointing a committee, were unanimously passed.

Christchurch.—Mr. Ferrey having been requested to survey the Priory Church at Christchurch and report thereon, it being determined that efforts should be made to repair the edifice and restore some of the architectural features of the building, he has presented his report, which commences by stating that the external stone-work is now in such a critical state that any further delay in arresting the mischief going on must be attended with the most serious results.

Bishop's Castle (Salop).—The work of taking down the old parish church has now commenced, and in a short time the site upon which it stands will be cleared and the trenches prepared for receiving the foundations of the new church. The old church had become very dilapidated, and the paving rotten, in consequence of the floor being 4 feet under the surface of the ground. With the exception of a mutilated south doorway, it contains not one feature of interest to either the architect or antiquary, attributable, no doubt, to its having been built at a comparatively recent period, to replace a former church, said to have been destroyed by fire during the civil wars. The new church is to be built from the designs of Mr. T. Nicholson, diocesan architect, Hereford, and will be a much more spacious structure than the

one it supersedes, comprising, in plan, a clerestoried nave and transepts of five bays, with north and south aisles; an apsidal chancel, having also north and south aisles of two bays, screened off for children on the north, and for a vestry and organ chamber on the south. The style adopted is the Geometric. The body of the church will be provided with pitch-pine benches to seat about 700 persons. The roofs will be of open timber construction, covered with Delabole slates, and the wood and timber work throughout will be varnished. The warming will be effected by means of hot water. The works have been undertaken by Mr. Cartwright, of Oswestry, for 4,300*l.* and the materials of the old church, which are valuable; but in this contract the tower is not included.

Byton.—Some three years ago the parish church of Byton, in the county of Hereford, was destroyed by fire, and the destruction was so complete that of the nave the mere shell only was rescued. The chancel partially escaped: the walls, however, that remained were severely shattered. Workmen are now engaged in the removal of these remains preparatory to the erection of the new church, the design of which is almost of Cistercian simplicity. After the Lancet type of English architecture, it comprises a nave, chancel, and south porch. The west front is bisected by a buttress, having a lancet on either side, and terminates with a double bell-cot. The north and south sides have similar though smaller lancets, varied towards the east end with a double lancet under a containing hood, pieced in the tympanum, and ascending through the eaves. This portion of these elevations is arranged under a gable flanked with buttresses, producing the effect of a transeptal arrangement. The porch is on the south side, and will be built with oak timber of a massive construction. The chancel has a triplet window in the east end, finished internally with two orders of mouldings resting upon the foliated capitals of Purbeck marble columns. The roofs are of open construction, and the chancel is divided from the nave by an expansive and lofty arch of three orders of mouldings, springing from carved corbels, and having a stone built upon the north jamb. The nave will be fitted with low open benches. The design has been prepared by Mr. T. Nicholson, of Hereford the diocesan architect, and will be carried out under his superintendence by the contractor, Mr. Bannister, of Hereford, builder.

Chester.—The Rev. Canon Slade is having a new painted window placed in the nave of Chester Cathedral, as a thank-offering for his recovery from a dangerous illness.

Walsall.—Wesley Chapel, in Ablowell-street, Walsall, having been too small, a new chapel is to be erected from the designs of Messrs. W. and S. Horton, of Wednesbury, architects, and the foundation-stone has been laid. The exterior of the building will be of brick, with stone pediment, cornice, window and door dressings, &c. The length within the walls will be 85 feet, and the width 58 feet, and the height from the floor level to the ceiling, 32 feet. The pulpit and vestry will be at the end next the entrance. The floor and galleries will seat 1,700 people. It is intended to convert the present chapel into day and Sunday schools.

LIGHTHOUSES AND BEACONS.

At an ordinary meeting of the Manchester Philosophical Society, March 8th, Mr. W. Fairbairn, president, in the chair, a paper was read by Mr. Richard Roberts, entitled "Proposed Improvements in Pharology." After adverting to the remarkable fact that the great majority of wrecks and collisions occurred in the immediate vicinity of the beacons intended to guard against them, Mr. Roberts said the idea had occurred to him that the principle of gyration might be advantageously employed to neutralize the action which the wind and waves exert upon floating-light ships.

After briefly describing the principal features of the catoptric and dioptric systems, Mr. Roberts stated that the latter was inapplicable to floating-beacons, owing to their great oscillation, and that they were, therefore, still furnished with 12-inch reflectors, whose power was comparatively small. He felt convinced, however, that the more fully the system of Mons. Fresnel became understood, the more certainly would it be preferred to the catoptric system.

It was, however, essential to the adoption of this system, that the light apparatus be kept upright and free from oscillation, to attain which desideratum Mr. Roberts proposed entirely to change the form of the vessel, making that portion

of it which was immersed hemispherical, and that which was above water the frustum of an inverted cone.

In the centre of this float Mr. Roberts proposed to build a tower (whose lower end should project through the bottom of the float to serve as a keel), carrying a lantern as in shore lighthouses, and containing the necessary accommodation for the light keepers; and within this lantern he proposed to place a dioptric apparatus of the second power, whose light being placed 45 feet above the water-line, might be seen at a distance of nine miles. Immediately below the light apparatus he would place a fly-wheel suitably mounted on gimbals, and driven through the medium of certain wheels and shafts by a small engine, which, with its boilers, would be placed on the third deck of the float, or this wheel might be caused to revolve at its proper speed by two relays, each of three men. The engines and steam might be used for a variety of purposes, as to sound bells or whistles, hoist coals aboard, prevent the adhesion of snow to the lantern, &c.

THE ACCEPTED "TABERNACLE" DESIGN.

SIR.—Your plan and elevation of Mr. Pocock's tabernacle show an auditory square-ended, indeed (as you described it), externally, but having the nave and its roof apsidal. I must, therefore, retract all I said about the acoustic difference from the Surrey Music-hall, as it was to the two apses of the nave or central space in that building—to the semi-domes, in fact, and corresponding concavities of gallery fronts, and not to any thing in its external walls,—that I ascribed its acoustic success, compared with others of the same materials—as Exeter Hall; and this for reasons quite different from any I can understand of Mr. Pocock's, but which it would be an insult to the science of the *Builder's* general readers to detail, as any schoolboy might deduce them from what he is commonly taught of sound and of reflection in general, and to some elementary lesson-book on these subjects it is to be hoped Mr. Pocock may be induced to apply himself, before pushing any farther his theories of "parabolic spheres, so to speak," "centres of new parabolas," &c. &c. Little as the subject may be advanced, still I would humbly suggest the possibility that even so great a man as Mr. Pocock, thus breaking ground therein Adam-like, wholly on his own resources, may fail to learn quite so much of it as the united efforts of all civilized generations have established without him. At least, I am quite sure he will not succeed till confining himself in his reasonings to words whose meanings he can define. Such new expressions as "parabolic spheres" may be quite necessary in thus enlarging the boundaries of our knowledge, but then he who introduces must define them.

However, whatever is intelligible in his new acoustic theories is so plainly mistaken and fundamentally false as to destroy faith in the rest. To multiply the waves "in number and direction" does not render them "powerless in their rebound to interfere with the original sound," but just the contrary; and their non-interference (or harmless interference) with it, depends neither on number nor direction, but simply on their not having travelled above 100 feet farther (*i.e.* above one-tenth of a second longer) than the direct sound, before crossing it at any auditor's place; and, as for the voice being "already spent before it reaches" the ends or any other parts, then it must be spent before reaching the seats of these parts; and what business has the architect building or designing spaces and seats which he maintains to be useless?

It is really a pity such a reasoner should have blundered into a form that happens (for reasons he never dreams of) to be acoustically good. I do not mean because it is a pity an heretical preacher should have the means of being so well heard, but only that the present deplorable state of logic among us, the superstition that makes men dependent for so much on architectural brahmins, should receive such a bolster.

On reading, in your description, of the "rectangular ends," I did not overlook the possibility of this union of them with a round-ended nave, but passed it by as too improbable, for this reason. On one hand, I knew that to make this combination with any tolerable grace or dignity is somewhat of an artistic problem, or at least involves more work, more real design, than any of the Tabernacle competitors are likely ever to be capable of so much as understanding or forming a conception of. Indeed, though really ashamed to give it quite so serious a name as an artistic problem, I doubt if, in the present state of things, you have three professional architects in England

who could solve it *decently*, and certainly not one (unless perhaps Mr. —) could solve it *well*.—I mean as well as an average bricklayer in healthy times). On the other hand, that any who might so utterly ignore aught beyond "bare utility," or rather "sheer necessity," as to pitch down the round work within the square, in that dashing, that thoroughly Paxtonian manner Mr. Pocock does, without adjustment of any kind, and coolly throwing all the work of design upon the carpenters (as architects were said, by a satirical exaggeration, to do fifty years ago*)—that any design of this sort should be accepted, even of a Victorian English committee, never entered my calculations; but it daily becomes plainer that, lower our standard in this "art" as far as we may, it can never be too low for the judges with whom we have to do.

Having been obliged to resume this subject now, but intending it to be for the last time, I must beg space to correct the chief errors of *fact* in Mr. Pocock's communication. To sift those of *reasoning* merely would need a paragraph on each line or two. First, then, it is not a fact that in his sort of architecture "utility is the first consideration." If it be, let him show any single point of design, from the form or placing of the whole plan down to any the smallest detail, that is as useful as the labour expended thereon could make it. No matter of fact admits easier settlement. I ask to be shown one single thing, one form, or line, or dimension, or feature, or member, that is not made less useful than it might be for the same money. The placing on the ground is made less so, for, after all his talk about "trudging through the wet," some ten poles of land are left between the building and street totally shelterless, which would have been more useful behind in the school playgrounds. The plan's outline is equally far from the most useful, for at every re-entering angle a quantity of wall is employed in walling out space that a less quantity would have walled in. Descending to the other end of the scale, the pews are not an instance, for several taper from a greater width than any sinner requires, at one end, to about half what the committee's instruction laid down, at the other end. And the passages are, confessedly, not an instance, as we are coolly told that, to give them their most useful form, involves "practical difficulties." The way in which a matter is flatly shut up by these magic words, indeed, seems to imply that Mr. Pocock's "art" and my "art" are two ideas about as reconcilable as going east and going west; for I was so ignorant as actually to imagine a "practical difficulty" began my work instead of ending it! that, in sitting down to design, my whole business was with "practical difficulties," and I was neither wanted nor employed on anything but solving them!

Well, but suppose Mr. Pocock could not only point out some one thing made as useful as it can be (which I challenge him to do), but could prove every thing to be thus utilitarian, except those rather important ones which are confessedly (by the defence he has written of them) made for some reason of "aesthetics" or "fine art" or "practical difficulty," less useful than they might be conceived; as, for instance, the portico less so than if it had lower openings, sheltered more doors, and protected people all the way to the street.

If any portion of utility is thus sacrificed to something else—to those "noblest sentiments" of which Mr. Pocock's portico is to be "expressive"—then plainly utility is not the *first*, but the *second* consideration. And if he deny that any is thus sacrificed, why does he refer as a parallel to my chimney-pot hat? The parallel, I confess, is perfect. My hat and his portico are precisely similar works, of the same kind of art, the same origin, *motif*, style, primary purpose, and secondary purpose. And so are his lowers and everything he proposes not of "sheer necessity," except the statues (which I suppose are not to be his). But just think of the defence! A temple sheltering itself behind the precedent of a hat!

G. to P.—You have persuaded this large congregation to sink thousands in rendering their temple less useful than it might be, less accessible, its schools darker, &c. and nothing any handsomer withal.

P. to G.—*Tu quoque*.—You walk about in a coat and hat made less useful than they might be for the same money, and no handsomer withal.

Most profound P.! Did I design my hat and

* "The architect is anxious to present a fine object; and a very simple outline discusses all his concerns with the roof. He leaves it with the carpenter, whom he frequently puzzles (by his arrangements) with coverings almost impossible to execute. It is not surprising that the draughtsman (for he should not be called architect) runs into every whim."—Prof. Robison's *Mechanical Philosophy*, article R. & J.

coat? Suppose I did, have I persuaded thousands of people to waste thousands of money in carrying out the same design? Does my ugly hat cost other people 712l.? Or does it cause hundreds of poor children, of several generations to come (even if heretics' children), to spend all their school-days in gloomy cellars?

Next, how does Mr. Pocock make out that the architects of the thirteenth century had "no appreciation" for "the noble remains of antiquity?" He asks why they had none. I flatly deny any such deficiency. Let proof of it be brought, but such proof, observe, as would be required by geologists if you told them fossil men had been found in granite. I believe Mr. Pocock will sooner prove to the world that such fossils have been found, than that men who could themselves do as nobly as the builders of the thirteenth century, ever encountered "poble remains," or anything noble, without appreciating its nobleness considerably better than he, or any person of the modern "architect" calibre.

Next you are told, his seats *not being meant to be executed as they are drawn*, I am "wrong in supposing a needless expense intended to be incurred to save the artist's time" (the error, if any, I fear, sir, I must throw on you—the atrocious error of calling seats circular on the mere authority of drawings, and not reading his whole specification before venturing to suppose lines drawn circular might be described as meant to be circular). But first, am I wrong? Let us see. Pray is the sacrifice of a sitting any "needless expense?" But where two of your "short cants or tangents" meet, can each of the sittings next the junction be "not less than 2 feet 5 inches by 1 foot 7 inches" (see *instructions*), without wasting some space and wood? Now, if this "needless expense" is not "to save the artist's time," pray what is it for?

"Do I," Mr. Pocock asks, "believe architects and engineers intentionally or indolently flinch their clients, to fill their own pockets?" Certainly not. You honestly practise the art you have honestly learnt of honest masters, and that this happens to have been rendered rotten, by a custom introduced before even their time, can be no fault of yours. I simply defy an ordinary man, so taught, to design any one thing not as plainly marked as the above with the stamp of outlay-paid design; not as demonstrably different from what every architect-owner of average capacity did or would naturally design for a like purpose; and as demonstrably differing precisely in this, that economy of *thought* has taken the place of economy of *labour*, or money (which is the same thing as labour); and I call an art in which this is the case utterly rotten and a public bane, however honest the artists; nay, I call it *more* thoroughly rotten where they design thus, like poor Mr. Pocock, with the best intentions and quite unconsciously, than if they were knaves, and did so intentionally. It shows there is less thought, and that the iron is gone deeper into our soul; that it infects every imagination of the thoughts of the architectural heart (if thoughts, indeed, be a term applicable to office traditions); it shows that, were all outlay-paid designing to cease to-morrow, very little difference would be seen for the next generation or two. Indeed, how could it, when the system has infected not only the wrong thoughts but the wrong thinkers—the wrong men in the wrong places universally?

What can I say to such assertions as the next, that the centre of a wayside building being "your centre of gravitation" the nearest way there is through the middle of the street front? Are two sides of a triangle longer or shorter than the third? Or was Euclid or his critic right, who ridiculed him for putting in a proposition, "evident even to asses," as he said?

"Have not many animals two legs behind as well as before?" Yes, but not two identically like them, as an architect's one pair of mock bellies to his other pair.

"Mr. Garbett is wrong in intimating that the two ends of the building have not the same use. In this case, at least, they have." Indeed! Then a planner must be very foolish to design them at all different. Which half of your printed plan, the half containing the pulpit, or that with the portico, represents the design Mr. Pocock means to serve for both?

"The four towers are all alike staircases and ventilating shafts." The building, then, it seems, is an artificial mine above-ground, dependent for air on shafts to get it down and up again. (This truly modern and national idea seems to have wonderfully profited architects of late, to judge by the numerous towers of inconceivable design, dubbed "ventilating shafts.") Well, but none of

these four will be an upcast shaft, for none has communication with the roof-top, the only place (as I suppose even Mr. Pocock knows) where the used air can be got out. All four, then, are down-cast shafts. What a comfortable purpose to combine with that of a staircase! The staircase needs some shelter *at* top; the shaft is best without any; and I suppose it is the compromise between such opposite requirements that creates the upper 50 feet of tower, with all its pseudo-porticos, &c. But those using the stairs will sell me thank you for those spacious openings overhead, that are to bring in the air for 6,000 people and their lights!

"Animals in the East," I can inform Mr. Pocock, have not both ends alike, and (what is more to the point), neither have Greek churches nor Greek temples. For, though I said nothing of the latter, seeing most of them were so far from resembling anything of ours in use, as to have central doors at each end and two chapels within, joined back to back; still, inasmuch as these were not equal or similar, neither were a front with "the Birth of Minerva" and another with "the Naming of Athens," each in some fifty colossal figures, "identically the same," as Mr. Pocock tells his readers. Were it worth while, I flatly deny that even their outlines were alike in any view, unless you can produce the acroteria, those six important stones that did the work of Mr. Pocock's four towers. But the whole is beside our question. As for the Greek churches (which come strictly within it) not only is it false that any have "four sides equal in extent," but from all such as are street-side erections, Mr. Pocock might learn both the common sense treatments of the portico, narthex, or other covered access to a way-side place of assembly, and also (as from many Latin and even modern English ones), whether "central" or corner entrances have been held the more "main requisites of utility to the primary objects of the building." Indeed, a reference to any Christian churches of the fifteen centuries before there were out-lay-paid artists, will show any one of ordinary sense why the classic temple front was never reproduced? Congregations were too much interested in their churches, too logical and too exacting of the very best and directest utilitarian design, ever to tolerate so absurd a misapplication. An artist might as well have proposed to build a sham obelisk for a spire: in fact, it was taken for granted that to make anything in any respect less utilitarian than it might be, was "bad art," i. e. bad "fine art," observe,—bad "aesthetics," if Mr. Pocock prefers the word. The aesthetics of a building designer, every one knew to be the making of "useful things in beautiful form," *not* the substituting for them *less* useful ones because dead men had given them beautiful forms. That would have been scouted as the mark of a sham artist, one who could not make the things that were wanted beautiful, and, therefore, had practically no "fine art" at all!

"Of what noun does the pronoun 'they' supply the place?" Of "rational creatures," where I have not expressed otherwise.

The "two or rather five" lecture-room windows under the portico are not apparent in your engravings. I suppose they are in its pavement. An ingenious union of two purposes (though rather cross purposes) such slabs effect; killing, indeed, two birds with one stone, if glass may be called a stone, or promising to do so in more senses than one.

"So many [90] feet width of entries into the covered part of your premises," and "not half so many from the streets into your *whole* premises."—"Stay," cries Mr. Pocock, in triumph, "my gateways together measure 64 feet." Indeed! Will they introduce us to the "*whole* premises." How do you get to those four doors (24 feet of doorway), from the south and west of the south (top) half of the plan? The engraving gives the defile leading to them, a width of just 7 feet, or if the boundary-wall stands, as I believe, within the engraved line, 5 feet 6 inches! The way to the four corresponding north doors appears about 2 feet wider. Total, to the 48 feet of doorway not in the front, 13 feet! Is that "half so many," or not?

I am sorry to hear the insurance question is "not to our present purpose." But till I know of what noun that pronoun "our" supplies the place (which I shall be glad to hear), any remarks might be out of place.

If "the whole space between the floor of Tabernacle and ceiling of schools" can be any practicable amount of external openings be made to receive air enough to supply the congregation properly, this space must be most wastefully high. The basement windows should have extended to the top of it; and, to use all this well-lighted space

for such a purpose, instead of the dark and unilluminable middle of the basement, useless for any other, is absurd.

"But why may not air come through the walls and roof, so that all six sides of the cube are free for its admission?" Truly, why not? And why have a roof at all? I for one would far rather listen to a sermon without any than in such a cube.

The last mistake is calling me an "ironmaster." Our lath-and-plastermaster may be sure no ironmaster would ever propose to make fewer iron pillars. What! not to make more iron necessary in "horizontal supports?" No, Mr. Architect, because any "horizontal supports" in iron are wasteful and absurd, and could no more occur to the mind of any but outlay-paid designers, than "horizontal supports" in stone did to the masons of the Middle Ages. Things that nature has made in long fibrous pieces, as sticks, are handy (among more important uses) sometimes for horizontal beams. But to require other material, brittle material, cast into artificial sticks, for you to build with! Bah! It is the art of a child building with lolly-pops! It is the last extreme of the marks of thought-economy peculiar to the outlay-paid. It shows a degree of effrontery even they durst not venture on till the present century—a degree probably inconceivable and incredible at any earlier time.

Talk of economy! when most of your material is, to save one brain, in such forms and so applied (I am speaking of engineers' or architects' work in general) that strains equal to a tenth or twentieth of each piece's absolute strength would break it! Economy! Yes, *designers'* economy: but are modern, poor dupes, never to see that, by their suicidal folly of leaving design to the outlay-paid, they have given "economy" in a designer's mouth and in any other mouth diametrically opposite meanings?—that one means "economy of my brains" and the other "economy of mankind's labour?" Ask, indeed, "what if I look to the primary requirement of few pillars"—what of horizontal supports? and what about foundations?" Why simply this about them, Mr. Architect, that they will begin (even for economy enough to satisfy these poor dupes) to need some atom of *design*,—of invention,—of art; that, in short, as you would phrase it, "there are practical difficulties," or, in other words, you must at length do something yourself!

Not, however, that any the least thing can ever be done, *right* by an outlay-paid designer (the first thing he will do right, is to cease outlay-paid design,—nothing before that). Design touched even by an outlay-paid hand is a ruin, whatever nobleness parts of the ruin may retain. If, as Mr. Ferguson has shown, the mere obtaining, by the German masons, of some influence in detail only, on the Medieval style of that country, destroyed it; and in Italy the allowing even great masters of Fine-art Proper (as Da Lapo, Giotto, Brunelleschi, and the Renaissance men) to influence the planning of buildings, made them failures in their kind, and that in each and every kind (before and besides launching on Europe the ineffable humbug of the "Renaissance") we may be sure this art cannot be touched by a finger of the *simply and purely* outlay-paid (which none of those spoilers were)—a finger in partnership with the contractor's, without utter debasement. Perhaps nothing has yet been reported in the *Builder* so instructive as will be that part of Mr. Petit's late admirable lecture on "Refinement," in which he gave the impressions of his first visit to a place without outlay-paid designers. In Tangier, said he, every piece of architecture struck him as not only picturesque, but right and consistent. Only fancy if you can the astounding novelty!—buildings—a whole town, everything right and consistent! Mr. Petit is one of the very few Englishmen who could see what charmed him in such a scene was not mere novelty, nor yet picturesque, but rightness, genuineness, reality—absence of crinolines, because there were no outlay-paid milliners; and of architectural crinolines, because no outlay-paid designers! Works of the last century he took for their purity and beauty (a strong word for him) to be of the golden thirteenth! and those made within living memory were hardly inferior. Do you ask, why inferior at all? This slight inferiority of present to past was simply what any stranger visiting our Europe at any period of the Pointed School would have seen; for, as Mr. Petit himself has remarked, the Pointed Gothic in all its loveliness was (as far as regards the nobler qualities, and, indeed, every quality but structural science) declining from beginning to end. Ruskin calls it the peculiar glory of the Romanesque or Round Gothic to have known no decline, but does not say, as he might of the

Pointed, that its whole career was decline. This was by no fault of its own, but through falling on evil days, for the three Pointed centuries (from 1200 to 1500) were exactly and exclusively the three of *Popeery complete and triumphant* (it was not complete before Innocent III. nor triumphant after Leo X.) Every art declined, because a religious canker was sapping morals and intellect; and nothing can be more absurd than to call arts Pophish, which, instead of springing from Popeery, were simply destroyed by it. Now the decline Mr. Petit found going on at Tangier was just like that,—a mere sign that their religion was either deficient of some vital truth, or tainted with some heresy. Such decline there must be everywhere but in the very city of God. Where art is real and genuine, it rises and falls with the great social heart, as a moral barometer; and, when lowest, is still beautiful and interesting. The works of *man* are, *naturally and as the rule*, beautiful and interesting to man; though now an Englishman must go to Africa to learn even this! It is only the works of the *genus outlay-paid designer* that are, *as the rule*, ugly and more disgusting the more looked at. And talk of such expressing social state or national character. God forbid! Forbid that it should ever be thought that *our* arts have anything to do with us as a nation. The barometer is simply broken. How can it indicate anything when thrown where it can fall no lower, in the bottomless abyss of outlay-paid design?

E. L. GABBETT.

OAK: THE TIME FOR FELLING IT.

THE accompanying extract appeared to be interesting, and perhaps unique, and as a context with that printed on page 133, *ante*, it may be considered as coming within the scope of your journal. The nature of the timber is not mentioned, but the date of the letter is sufficient to settle the point.

W. P.

"The whole of the timber already obtained (and which it was thought would suffice for a larger time), is already arranged in the hands of the carpenters, and about to be immediately reared, if it please God; and unless fresh timber be cut down during the winter season, which may be dried during the summer, our carpenters and other workmen, hired for the construction of the said work, will, for want of timber, remain wholly without employment during the whole of the next winter."

"May it, therefore, please you, most reverend father, graciously to enjoin and direct the seneschal and your other officers, that they do deliver the necessary timber to be cut down, if it please you (which timber consists rather of crooked trees than of tall and straight trees, of greater price and value), that we may be enabled to use all possible diligence." &c. &c.—"Written at York, the 19th day of January, A.D. 1355."—Letter from the Chapter to the Archbishop of York, for timber for the roof of the nave of York Cathedral.—*Brown's History*, p. 133.

WHITETWASH AND BEVERLEY MINSTER.

ALLUSION has been made in one of the recent lectures at the Royal Academy to the "Virgin privilege of perpetual exemption on the part of Westminster Abbey from the brush of the whitewasher." Would, indeed, that all our beautiful churches possessed this same privilege. The interior of Beverley Minster (one amongst many of our noble edifices) is daubed almost throughout with the brush and the whitewash, and I could wish that any observations in your valuable journal would lead the authorities not only to take the matter into serious consideration, but to set to work in good earnest, and let all the vile coating be removed, so that nothing but the stone itself, which is very fine, should be exposed to view. The interior of the building is entirely spoiled by this evil. Surely there is money in the Minster funds to do away with this, as a certain amount is spent annually in repairs and renovations, and this, indeed, would be a glorious renovation. One good thing in the interior they are doing, viz. polishing the pillars of Purbeck marble which run round the building in the arcade, and which until now were in a very dirty state. Let them, in order to beautify their Minster, and to set a good example to others, continue the good work they have begun, and cleanse all the stonework. Another eyesore in the building is the organ-screen, one of the vilest erections, I should think, extant, in a church of any pretensions,—badly proportioned, with rounded arch leading to choir, Corinthian columns, and painted niches, in a church built mainly in the Early English and the Perpendicular style. How much better would it have been, if, instead of raising money by subscription (which is now being done) for filling the west window with stained glass, and making that which is now fine still finer, they had removed what is actually bad, and raised an organ-screen worthy of the noble building and the instrument! Then, indeed, there would have been some com-

pleteness in the interior. I trust this may be the means of causing others to see that the buildings over which they have some control are no longer desecrated by the whitewasher.

A LOVER OF GOOD TASTE.

GRAVE DOINGS, HEREFORD CATHEDRAL.*

SIR,—Your leading article on Saturday last, respecting "Grave Doings in Hereford Cathedral," is so replete with unjust censure, that in justice to the present Dean and Chapter, and architect also, it must not be allowed to pass without a few remarks from those who are intimately acquainted with the peculiar circumstances in which Hereford is placed. Myself, and probably all the authorities of our cathedral, can entirely agree with the excellent remarks of the former part of your article. It is deeply to be regretted that so much mischief and ill-feeling should be caused simply from the effusions of a visitor, who does not appear to have consulted the local guide-books, or made any inquiries from those who would gladly have given every information on those matters which appear to have aroused such bitter indignation.

The contractor certainly did issue orders to his men not to enter into conversation with visitors; not that they had any information to withhold, but that they might pursue their work unhindered. I do complain that such censorious remarks should be published unless strictly true, and explanations offered on the spot proved unsatisfactory. I do not now attempt to answer in detail the remarks made in your journal; but it is absolutely necessary to make the fullest statements in our local papers at once, and to challenge any dissatisfied persons to come forward to examine the truth of the statements we are prepared to offer. Why did not the writer of the article inquire for the dean or canon in residence, for the clerk of the works, who is always on the spot, or for some one (and there are several) resident, who would have obliged him with all the information they possessed?

To his most serious charge of human bones lying scattered about and "cast to the dogs," the matter is simply as follows:—The surface of the chapter-house yard being 18 inches higher than the level of the church, the soil to that depth has been removed. No skeletons have ever been discovered, simply because there is no evidence of any burials having ever taken place there. The whole of this soil was the accumulation of many years, having been gradually brought there whenever an excess of soil in the adjoining churchyard occurred by the formation of vaults and graves. When brought into this yard many years ago, it abounded with fragments of human bones. These remains were ordered to be deposited under the old chapter-house whenever the workmen met with any, and these are the bones the writer in the *Builder* went out of his way to discover, and which never were inside the walls of the cathedral since the day that the burial service was read over them. The removal of about a dozen effigies and brasses of bishops and deans was effected some seventeen years ago, solely for the purpose of their better preservation. I am fully prepared to prove that, whatever antiquarian research may here have been made by deceased authorities, yet in no case were human remains ever wantonly exposed or disturbed. I am also prepared to bring forward the testimony of persons employed in removing these very stones, in corroboration of this statement. I can venture to say that facilities will be given to those who doubt it to examine the very spots where these memorials had so long rested, and where they will soon be once more carefully replaced. We believe that a sum of 500*l.* will be devoted to this object. The decoration of the nave and the wretched tiles on its floor are universally condemned by every one here, and we have to thank Mr. Cottingham alone for them both.

It is hard to ensure the present generation for the lamentable loss of an immense number of splendid brasses which once adorned our floors. No less than 180 had disappeared in 1717; and in 1790 it is said that two tons weight were sold to a brazier, most of them being fortunately recovered by the celebrated Mr. Gough. Those now left are highly prized, and although laid aside for safety, are by no means *cast aside*. Having received very unfair treatment in your columns, it is to be hoped that other antiquarian visitors may be induced to

* At the last moment before going to press, we received the following communication from Mr. Haverall, together with one of greater length from Mr. G. G. Scott, and a third signed "William Bradford, foreman," on the same subject. We insert Mr. Haverall's letter without comment, and will return to the matter next week.

examine the works now in progress, and render a different account of what they may hear as well as see. The clerk of the works will, I am sure, assist every inquirer for information, and will doubtless cause them to leave this interesting spot with anything but outraged or discontented feelings.

FRANCIS T. HAVERGAL,
Minor Canon of Hereford.

ASSOCIATION OF FOREMEN ENGINEERS.

On Saturday last, the monthly meeting of the members of the Association of Foremen of the Engineering Trade, took place in the City, Mr. J. Newton presided, and after the disposal of some routine business, and the election of two new members, Mr. Keyte proceeded to read a paper on "Heavy Iron Castings." The best modes of making patterns, preparing moulds, moulding, and casting, were explained, in addition to remarks upon the kinds of furnace best adapted, and iron most applicable, for large productions of the foundry. Diagrams illustrated the paper, which was listened to with interest by the numerous auditory, and a vote of thanks was given to Mr. Keyte at its conclusion.

On the next monthly meeting night, Mr. John Briggs, it was stated, would read a paper on the "Concussion of Water."

COMPETITION FOR CHURCH—SS. PETER AND PAUL, CORK.

STR.—Your correspondent, "One of the Humbugged," evidently is not aware of the very humbugging way in which the above competition was managed; and as I have just returned from Cork, and have seen all the designs, and also heard of some of the committee's doings, if you will allow me, I think I can give your correspondent, and your readers generally, a little information about the matter.

In the first place it has been in contemplation, some time back, to rebuild this church, and Messrs. Pugin and Murray furnished designs for it, which I have seen, and very good ones they were; but for some reason a competition was determined upon, though it was intended, from the first, that Mr. Pugin should have it. A committee was appointed, composed of retailers in soap, candles, tea, sugar, whiskey, shoes, carvers and gilders, &c. and who admit, themselves, that they know nothing of architecture. Seven architects, Pugin, Hadfield, Murray, Atkins, Nicholls, Wigley, Hurley, and J. P. Jones, two builders, and some students of the School of Design, Cork, competed.

My design was acknowledged on all hands to be the best, but the committee made an excuse, because I coloured, that I broke the rules; this my instruction did not prohibit; and I even asked the question, and was allowed to do so, and I also engaged to get my design erected for the sum at their disposal; but their objection I care not now to notice, for the Rev. Canon Murphy, for whom the church is to be erected, and, indeed, who is going to do it almost at his own expense, wrote to me, stating "that there could be no doubt, or question, as to the superior merit of my design."

The committee, as I was a Protestant, prejudiced against me, would not consider my design; but the Rev. Canon Murphy said the drawings ought not to leave Cork, and he bought them himself at my own price. So far for my part in the matter; but, sir, other competitors have been most shamefully used. For instance, Mr. Murray's design was rejected, because, it is said, he had some difference with Mr. Pugin; and the design to which the first prize was given would be a disgrace to an ironfounder. The parapet of the tower, for instance, was similar to the cresting of the fender in my office. The whole thing was such as children make with cardboard, or what you see on china plates, or the bottom of wash-basins. Putting my own design out of the question, I will give you my impartial opinion of the rest. Murray's was the best exterior; Atkins's the best interior; Nicholls's second best; Hadfield and Goldie's third. Pugin's was a very poor design, and carelessly got up, as I suppose he was sure of it, under any circumstances. Murray's, Atkins's, and Nicholls's, were really beautiful drawings, as were also Hadfield and Goldie's. Hurley's was what you may call the engraving style, cast-iron design. The canvassing of the committee was beyond comprehension; as one of them said, he was "badgered" from morning till night by one of the competitors and his friends.

I think the following would be a fair decision:—Atkins, Murray, Nicholls, Hadfield and Goldie, Pugin.

I take no notice of myself, as my design has been purchased, and I have letters by me to corroborate the above.

J. P. JONES.

Allow me to state that I have been met in the most straightforward and honourable manner throughout by the Rev. Canon Murphy, who is not answerable for the "fancies" of an unintelligent committee.

CLERKS OF WORKS.

STR.—Following up what has been said about builders' foremen, there is another important class of men who require the aid of your powerful and impartial pen: I mean the clerks of works.

I need not here describe the importance of the office of clerk of works, especially when in contact with the class of foremen which has been referred to, nor how much the reputation of an architect depends upon the honesty of the clerk of works; but I do think that in too many instances the latter do not receive that protection from the profession which the faithful of them merit. We will suppose the clerk of works in the early part of his career apprenticed to either joiner or mason. After serving his time, he must for a considerable time work as journeyman, to acquire that self-confidence and practical knowledge to qualify him as a clerk of works. In addition to his daily employment, his evenings are spent in studying architectural books, plans, &c. in preference to spending such time, as is too often the case, with his fellow-workmen in the alehouse. By such perseverance he becomes conspicuous to his employer by his superior manners, his attention to, and sound execution of the work intrusted to his charge; and thus, eventually, his employer, anxious to reward his merit, recommends him to an architect as clerk of works. Immediately he receives this appointment he must assume that superiority over workmen which the office necessarily demands. He performs the duties of the office to the satisfaction of the architect so long as he may require his services: he discharges him with a testimonial of good character and competency, and thus leaves him to seek another engagement without rendering him any further assistance. Should he not succeed, he must return to his former trade, subject to the ridicule of those who are ever ready to take advantage of his fallen position.

Could you suggest something to the profession to remedy this evil, you would be conferring upon the clerk of works a great boon. I have thought that, in the event of an architect discharging a clerk of works with a good testimonial, as a reward and encouragement, as well as to assist him to another situation, a register-office should be established by the authority of the Institute for the purpose of entering the names of all clerks of works; such names to be entered by the late employer, as a guarantee of their being efficient men; so that when an architect requires the assistance of a clerk of works, he would apply to the register-office, and the appointment would be given to him who is the senior on the list.

A WELL-WISHER OF THIS IMPORTANT CLASS.

PATENTS CONNECTED WITH BUILDING.*

MANUFACTURE OF BRICKS AND OTHER ARTICLES MOLDDED OR FORMED FROM CLAYS. *E. Tiggers, Paddington, London.*—Dated 7th June, 1858.—This invention consists in applying a material obtained from a refuse article resulting from the employment of the Torbane mineral, and such like material, in the manufacture of carburetted hydrogen gas. The refuse, which is of a black colour, burns in heaps in the open air without fuel, after having been ignited; and, when subjected to perfect calcination, the result is white masses or nodules of a light friable material, which has been chemically determined as "anhydrous silicate of alumina," and the patentee has found that by reducing this material to a suitably fine powdered condition, and then intimately mixing it with various kinds or descriptions of clays, he thereby improves the quality of the clay with which it is mixed, and also enables clays which could not heretofore be employed for producing numerous articles economically or perfectly to be easily wrought, perfectly moulded, and capable of being successfully burnt or kilned.

AIR BRICKS.—*G. Jennings, Holland-street, Blackfriars, Surrey.*—Dated 3rd July, 1858.—In manufacturing air bricks, in place of using cast-iron as heretofore, clay or brick earth is here employed, and the bricks are formed by expressing the clay when in a plastic state through moulding orifices or dies. Bricks to bond walls which are built hollow are thus made. Each brick is made

with vertical passages through it, and each brick is formed of a length corresponding with the thickness of the intended hollow wall in which it is to be used, except where the wall is to consist of three parts; then each brick is made of a length equal to the thickness of two parts of the wall, and the space between them. The sides of each brick are made with projections and grooves, and the bedding faces of the brick have hollows sunk, so as to prevent any moisture from flowing from the external to the internal wall: the edges of each end of the brick are jagged so as to hold when laid, the external and internal walls more firmly together.

MACHINERY FOR MANUFACTURING BRICKS, TILES, &c.—*H. Clayton, Upper Park-place, Dorset-square.* Dated 9th August, 1858.—In order to give the alternating motions and periods of rest to the rollers applied to or in dies, or to expressing orifices, when expressing clay or brick-earth, a cam is applied to the main or driving shaft. This cam is arranged to move the pulleys which drive the bands, so that they may alternately gear with, or be carried round by, the upright shaft on which they are placed, the one pulley allowing the shaft to turn within it when the other pulley is held by, and carried round with, the shaft. The two pulleys by two bands give motion to two screw wheels, each of which give motion to two screw wheels, which are fixed on the axis of the rollers applied to or in the dies or moulding orifices of the machine. In order to sustain and guide the end of the bar to which the enter wires are strained, a bridge is fixed across the cutting frame, the upper surface of which is formed to a curve corresponding with that described by the bar. On the end of the bar a roller or truck is applied, which runs on the surface of the bridge. The wires are tightened by means of screw nuts, which receive within them the stems or short rods to which the ends of the wires are attached. These short rods slide through the bar in square or angular holes, which prevent their turning in the holes, and the screw threads are cut at the four angles of the short arms or stems.

FIRE-PLACES OR STOVES.—*J. Billing, Abingdon-street, Westminster, London.* Dated 3rd July, 1858.—This invention consists in conducting a supply of air from the exterior of the room to the fire by means of a passage in the wall or floor, or other convenient place. The patentee causes this passage to communicate with an aperture or aperture in one side of the fire-place or stove, and conducts a pipe or passage over or round the fire-place to another aperture on the other side of the fire-place. These apertures supply the air to the fire and to the room. They are provided with valves or regulators, and may be adjusted to direct the air in such a manner as to counteract accidental draughts in the room. By regulating the valves suitably the temperature of the room may be raised or lowered at pleasure.

STOVES.—*J. Clinton Henderson, Albany, New York, U.S.* Dated 1st June, 1858.—The nature of this invention consists of a combustion chamber above the fire, and within a radiating chamber, whereby the products of combustion (such as smoke and gases from bituminous and other coals or fuel) are confined within the first combustion chamber where they are submitted to sufficient heat to produce a perfect combustion; and then they pass into the outer casing forming the radiating chamber, from which the heat is communicated to the surrounding atmosphere, or to the substance to be heated.

APPARATUS FOR REGULATING THE FLOW OF PASSAGE OF FLUIDS.—*J. Robertson, Glasgow.*—A communication. Dated 22nd June, 1858.—Applied to the purpose of regulating the supply of cleansing-water to water-closets, this invention consists under one modification of a short cylindrical chamber of pretty large diameter, having top and bottom cover screwed on. The bottom cover or end forms the actual shallow shell of chamber through which the supply of water from the main is brought to the apparatus.

LATHS.—*H. Becu, Merville, France.* Dated 19th June, 1858.—This invention relates to manufacturing laths used for plastering purposes, and in making them in combinations of two, three, four, or other combinations of greater number, instead of singly, as at present used. The patentee makes the laths in the form of perforated boards or sheets, of a width and length according to the wood to be used, or other circumstances. He perforates, or forms the separate openings of the laths to receive and hold the plaster by piercing battens or planks with parallel slits, of a length corresponding with the distance between the joints or timbers on which they are to be nailed, leaving a solid piece at the parts

* Chiefly from the lists published in the *Engineer*.

contact with the joists, &c. After piercing the patterns, which may be done by punching, or by circular saws, or by other means, he cuts them into thin boards or sheets. In this state combined laths are ready for use. Laths of this manufacture are quickly and firmly secured in position by driving the nails through the solid part of the board or sheets, besides requiring a much smaller number of nails than is used for ordinary laths to cover the same surface.

PROVINCIAL NEWS.

Reading.—The corner-stone of the new Masonic Hall has been laid here, with the usual ceremonial of the craft.

Winchester.—The Corn-Exchange Committee have resolved to inclose with a partially-glazed roof the area in the centre of the building, at a cost not exceeding 500*l*. in conformity with the plans submitted by Mr. J. Colson, architect.

Gloucester.—The street architecture of this city assuming new forms, the local *Chronicle* speaks of the design to erect two new houses on the site of two old ones in Westgate-street. Mr. Knight, of Cheltenham, is the architect, and Messrs. Wintate, of this city, are the builders. The fronts are to be of freestone, in the Venetian Gothic style, arched and ornamented, and with plate-glass windows. The old houses now in course of demolition date from the early part of the fifteenth century. The timber frame-work was of substantial oak, and is even now in good condition. On one of the fascia boards were carved the arms of the twelve guilds or trades union of which Gloucester formerly boasted. The carving over the old shop is to be incorporated into the design of the new. The business premises of Mr. Wheeler, seedsman, Northgate-street, have just been completed by Messrs. Medland and Maberly. The design is a kind of Italian or Lombardic style. This building has also been erected by Messrs. Wintate.

Plymouth.—Alterations and extensions are now being made to the offices of the South Devon Railway Company at Plymouth, under the direction of Mr. Alfred Norman, of Devonport, architect. The additional accommodation thus required is in consequence of the almost immediate opening of the Cornwall and Tavistock lines, which terminate at this station.

Sandbach.—The public building recently completed at Sandbach has been inaugurated, by the opening of the last completed portion of the building, viz. the Corn Exchange. The reading-room, library, and lecture-hall, have been opened for some time. One portion will be appropriated to the Sandbach Library and Scientific Institute, another to the purpose of a reading-room and library in connection with that institution. The building is of brick, with ornamented stone work. It has been erected from a design by Mr. Scott, towards defraying the cost of its erection, the sum of 2,100*l*. has been raised by voluntary subscriptions, and there still remains a debt unpaid of 600*l*. exclusive of the sum required for increasing the collection of books, maps, &c. for the library.

Wolverhampton.—Plans have been prepared by Mr. Bidlake, of Wolverhampton, architect, for the erection of a new school-building, comprising boys', girls', and infants' schools. Advertisements for tenders were ordered by the Committee to be inserted in the *Wolverhampton Chronicle* and the *Builder*. A total of 1,200*l*. has already been secured towards the building fund, but this sum will not be sufficient to meet the entire expenses.

Chester.—Mr. Hitchen, says the *Chester Chronicle*, has commenced his contract for the new bank, and is busy laying the foundations for the building. The architect, Mr. Williams, of Liverpool, has appointed Mr. W. Hankey, builder, of this city, as clerk of the works. The contractor is making the bricks for the proposed additions to the County Lunatic Asylum has commenced operations; and the works are intrusted to Mr. Benson.

Liverpool.—The foundation stone of the Infant Orphan Asylum has been laid. The new edifice for 300 infant orphans is to be built in Melville-avenue, contiguous to the Orphan Asylum for boys, and in the same style. Mr. John Cunningham is the architect. The design has been so arranged with these buildings and with the Church of the Holy Innocents, as to render the whole a symmetrical group.—A new exchange-room, which it is proposed to erect in Liverpool, will, it is said, be one of the largest in the United Kingdom, easily exceeding in size the large hall in St. George's Hall. The length will be 135 feet, the breadth 95 feet, and the height 60 feet.

Bedlington.—A new school at Bedlington has

been formally opened. There is room for nearly 200 children, and the cost, exclusive of site, is about 800*l*. The contractors for the building were Messrs. Trotter and White, Morpeth.

Sunderland.—The bridge at Sunderland has been re-opened, though not quite finished. The width, both in its carriage and passenger roads, is considerably greater, while the gradients are much more easy: the crown of the arch is considerably reduced, and the bridge may almost be said to be level.

ARCHITECTS' ACTIONS.

Ward v. Loewen.—The plaintiff in this action (tried at Gloucester on the 2nd inst.) was an architect at Hanley, in Staffordshire, and he sued the defendant, who was clerk to the Local Board of Health to the Tunstall district, to recover a sum of money which he alleged was due to him in respect of certain designs which he had sent in to the former Tunstall Improvement Commissioners, and which had been approved of by them, for the construction of a new market. The present board had appointed another architect, and the plaintiff now claimed his 2½ per-centage upon the plan which he had sent in, and which had been approved, and he also claimed a sum of 31*l*. 10*s*. in respect of services rendered to the present board. There were sixteen pleas on the record, raising various questions, and in the result, Mr. Baron Channell directed the jury to find for the plaintiff, giving the defendant leave to move on five points reserved in his favour.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

Messrs. D. Norris and Son, builders, of High street, Tooting, appeared before Mr. Paynter, at the Police-court at Wandsworth, on Thursday, March 31st, to answer the complaint of Mr. A. J. Hiscocks, the surveyor of buildings for Wandsworth and Tooting, for neglecting to give him, as such district surveyor, due notice previously to the cutting down parts of an external wall to a house in the occupation of Mr. Goodheart. They pleaded not guilty.

The district surveyor described the work, and said that such cutting away could not be done without great care, & without, in most instances, doing lasting damage to the structure. This proceeding was taken as a matter of principle, to try the question, and not for penalty.

Messrs. Norris admitted having done as the complainant alleged, but said they did not consider it came within the meaning of an alteration, as it was merely to put in windows down to the floor.

Mr. Paynter considered that such work too frequently involved serious damage to buildings: he was well acquainted with the nature of such work, and instanced buildings in the Temple, which had been brought to premature destruction, by cutting down the brickwork between the piers. Notice should have been given: however, as this was merely to try the question, he would inflict a nominal penalty only, with costs.

THE FALL OF STAIRS AT POLYTECHNIC INSTITUTION.

Branzier v. The Directors of the Institution.

This was an action to recover damages for an injury alleged to have been sustained by the negligence of the defendants.

Mr. Lush, Q.C. Mr. T. J. Clark, and Mr. Garth, were for the plaintiff. Mr. Edwin James, Q.C. and Mr. Joseph Brown appeared on the other side.

The defendants in this are the directors of the Polytechnic Institution, in Regent street, and the action was brought by the plaintiff, who is a young woman in humble circumstances, to recover damages for injuries she sustained by the falling of the staircase at the institution on the 3rd of January last. The plaintiff was one of the unfortunate persons present on the occasion; but although she fell a considerable distance, she escaped without receiving any material injury. It was alleged that this accident arose from the defendants having, a short time before the accident, caused the stone steps of the staircase to be repaired, and that this was done improperly by cutting a groove to let in some iron plating, about 6 inches from the place where they were inserted in the wall, which had the effect of weakening them, and the consequence was that the whole of them broke at the spot where the groove had been made, and that this was the cause of the mischief.

Evidence to this effect was given by Mr. Jarvis, of Southwark, Mr. Laxton, and Mr. Christopher Eales. On the part of the defendants Mr. Marsh Nelson, Mr. Renton, Mr. James Thomson, Mr. Ashtapel, and Mr. C. H. Smith were examined.

Mr. Justice Wightman summed up the whole of the evidence very carefully, and in the result left four questions for the consideration of the jury.—First, whether the defendants had themselves been guilty of negligence; secondly, whether they had employed competent persons to perform the duty of making the alterations that were required; thirdly, whether, supposing they had done so, these persons had performed their duty with care, in a proper and workmanlike manner; and, fourthly, whether the accident was attributable to their neglect in this particular, or to the defective manner in which the building had been originally constructed.

The jury retired at half-past five o'clock, and at half-past six they returned into court, and said that, with regard to the first question, they were of opinion that there had been no negligence on the part of the defendants personally; as to the second question, they were of opinion that they had employed competent persons to make the alterations; as to the third, they could not undertake to say that the persons so employed had taken the proper method to repair the staircase in question.

Mr. Justice Wightman interposed, and said the ques-

tion was one of negligence, and he should request the jury to say yes or no to the question whether the persons employed by the defendants to make the alterations had exercised the necessary skill and caution to effect that object.

The jury then again retired, and were absent more than an hour, and upon their return into court said they were of opinion that proper skill and caution had not been exercised by the persons employed by the defendants to make the repairs and alterations, and they therefore returned a verdict for the plaintiff, with 10*l*. damages.

Books Received.

The Engineer's Journal, Railway, Public Works, and Mining Gazette, of India and the Colonies. THE *Calcutta Engineer's Journal* has got into a second volume, and, what is of more consequence, is improving as it goes. We had occasion to differ from it in respect of Indian hospitals, and to controvert its statements, but that does not prevent us from bearing evidence to its usefulness. India offers a good field for engineering skill, and such a journal, as this may be of the greatest service to the country. The editor has adopted as a motto the sentence, "True engineering consists in overcoming difficulties, not in avoiding them." Shareholders will be of a different opinion, and we advise him to expunge it as soon as possible. It has been acted on too long already.

VARIORUM.

"Next Week: a Journal of Amusements for Visitors to and Residents in the Metropolis," contains something more even than the title promises. The idea is a good one, and is evidently being worked out by intelligent hands.—"Harmonious Colouring; especially as applied to Photography; by an Artist-Photographer" (Cassell, Petter and Galpin), is a useful manual, by Mr. James Newman. It is full of practical suggestions as to colouring photographs, and just touches on the philosophy of colour.—"The annual Report of the Manchester School of Art (sectional department of the Royal Manchester Institution), read at the annual meeting, February 22, 1859," has just been printed. Mr. Hammersley, the head master, states, in his Report, that "During the year 1858, 549 pupils have attended the classes of the School of Art; 800 pupils of parochial schools have been taught by art-pupil teachers; 2,451 by the masters or certificated teachers of the School of Art; giving a total of 3,800. This, however, does not entirely convey the whole of the direct teaching influences of the school. In most well-managed parochial and private schools very much instruction is conveyed by the principal of the school, in classes conducted independently of the visiting art-teachers; and it may be assumed, without fear of over-estimate, that the number given as under our immediate instruction is only about half the number influenced by the action of the school."—The Messrs. Chambers are engaged on what they call their "crowning contribution" to cheap literature, in the form of an "Encyclopedia or Dictionary of Universal Knowledge for the People; on the basis of the latest edition of the German Conversations Lexicon; illustrated by wood engravings and maps." Only a single number is yet before us; but we doubt not it affords a fair specimen of the style in which the editors are resolved to go through with the work, in which case there can be no question of its utility and excellence. It is being issued in weekly sheets at 1*d*. each, and monthly parts at 7*d*. and will form six or seven volumes, containing about eighty monthly parts, the volumes being similar in size and appearance to those of "Chambers's Information for the People."—Amongst our books received we observe the second number of a new monthly half-crown Review, titled "The Universal Review of Politics, Literature, and Social Science" (Allen and Co. Leadenhall-street). It contains a series of well-written articles, and promises fairly for public favour.—Mr. Murray is publishing "Byron's Poetical Works" in one-shilling parts, a wonderfully cheap issue of the only complete edition. In a similar shape the same publisher (Albemarle-street), is producing Boswell's "Life of Johnson," the most charming biography ever written. Parts I. and II. contain, each, 96 pages, with engravings, for one shilling.

LONDON AND MIDDLESEX ARCHEOLOGICAL SOCIETY.—At the next meeting of this society, to be held at Christ's Hospital, the Duke of Cambridge will preside. Going thence, the meeting will examine St. Bartholomew's the Great, and Less; St. Giles's, Cripplegate; Barber's Hall; London-wall, and other antiquities.

Miscellaneous.

NEW WESTMINSTER BRIDGE.—Is it safe to rely on vulcanized India-rubber for padding the bridge? Will it not soon lose its elasticity, and then crumble under pressure? Have the Woods and Forests been well advised about this?—N. R.

GLASGOW ARCHITECTURAL SOCIETY.—A meeting of this society was held on Monday evening, 28th March, in the Upper Hall of the Scottish Exhibition-rooms, Bath-street, Mr. Wilson in the chair. Mr. T. C. Gregory read a communication "On Foundations, Natural and Artificial," illustrated by a number of drawings. The paper contained a large amount of information upon the subject of foundations, derived in a great measure from experience on the Great Western Railway of Canada. Afterwards Mr. John Mo-sman, sculptor, read a communication "On Sculpture, in connection with Architecture."

BRICKS AND TILES.—In the case, *Bulmer and Sharpe, Middlesex*, v. *Moore, Belfast, Ireland*, before Chief Baron Prickard, and a special jury, tried at Armagh, twenty-four witnesses having been examined, in a protracted trial of four days' duration, the jury, having been about half-an-hour in consultation, returned to court with a verdict for plaintiffs on all the issues, finding that the invention of the plaintiffs was new at the time of the granting of the letters patent—that they were the first and true inventors—that the invention was an improvement in the manufacture of bricks, tiles, and other articles, from plastic substances—that the defendant infringed the letters patent, and did not use said invention, or enjoy the privilege of using the same, by permission of the plaintiffs: and the jury further found that the plaintiffs had sustained 25*l.* damages and costs, by reason of the grievances; and, finally, that the defendant did not use the invention merely as an experiment, in order to decide whether he would take out a license, but used same for the purposes of trade.

ROMAN REMAINS NEAR BALE.—A countryman who was tilling his land near the amphitheatre of Augusta Raucacorum, of the ancient Romans, near Bale-Augst, discovered the remains of a dwelling-house. Continuing his excavations, in the chambers of this habitation, he brought to light the walls, covered with paintings on plaster, and the floor in a perfect state of preservation. In one of the rooms were found handsome brooches of large dimensions in iron, brass kitchen utensils, also well preserved, and a glass goblet containing carbonized wheat. An inhabitant of Bale-Augst, having given an entertainment to his friends a few days ago, bought the glass to show it on the table as a curiosity to his guests.

DISCOVERY OF AN ANCIENT PIECE OF SCULPTURE IN EDINBURGH.—Although the old buildings now nearly swept away to make room for Lord Cockburn-street did not possess much attraction for the archaeologist, either in respect of age or character, says the *Scotsman*, the excavations have brought to light a few interesting relics. Chief among them is a sculptured stone, which was found the other day, face downwards, in the foundation of a house wall in Mary King's-close. The house was one of the oldest in the locality. The relic is of freestone. The subject is the administration of the last sacrament of the Romish Church, and represents an apartment with the dying person on a couch surrounded by figures of sorrowing relatives and officiating monks. The majority of the figures remain only in rounded outline, but in the others the features are easily traced, and in one or two instances tolerably distinct. It is considered probable that it belongs to the early days of the fourteenth century.

TAR AND LIME.—In answer to your correspondent of the 19th ult. who asks how to mix gas tar and lime, in order to make either wood or masonry waterproof, I have used the following method with great success:—To prepare gas or coal tar for coating woodwork with, get some of the best stone lime, and slake it to a fine powder (avoid chalk lime): it is the magnesian limestone that is used here (Sunderland); boil the tar about half an hour, and then add about one pint of the hot lime powder to a gallon of tar, and boil it about half an hour longer (keep stirring it all the while), then it will be ready for use. Lay it on with a brush while it is hot, and you will find it to set hard, and have the brilliant appearance that your correspondent requires. It is the best coating for woodwork that I know of, except lead. Give your masonry one or two coats of the same, preparatory, and it will be much cheaper than the method recommended by "Sphinx," p. 225.

A PRACTICAL WORKMAN.

A CHURCH FOR SALE.—Messrs. Rushworth and Jarvis have sent us a view of the National Scottish Church, London, which is for sale by auction, on the 4th May next, and say, "we believe there is no instance on record of a church of this magnitude having been sold by public auction to the highest bidder. The church is open, and under the ministry of the Rev. Dr. Hamilton, of the Free Church of Scotland, but possession will be given to the highest bidder at Midsummer next." It is a peculiar incident certainly, but we believe there was a similar occurrence at Bristol a few years ago. The Scottish Church was designed by Mr. Tite.

MAIN DRAINAGE.—At a public meeting held at the Oxford Gallery, on Friday, the 1st inst., Mr. J. A. Nicholay in the chair, the following resolutions were carried unanimously, Mr. D'Alffinger, jun. declining to vote, on account of his position as member of the Metropolitan Board. Resolved,—"That it is expedient to obtain an Act of Parliament to compel the Metropolitan Board of Works (in exercise of their powers under the 21st and 22nd Vict. c. 104), first to construct the projected intercepting tunnel sewers next the River Thames." Resolved,—"That a committee be appointed to wait on the Members for the metropolitan boroughs to ensure their services in procuring the required Act of Parliament, and that the committee, with powers to add to its number, consist of Mr. W. Loader, Mr. C. Freeth, and Mr. Smart."

MONUMENT TO THE LATE BISHOP OF LONDON.—A monument is to be erected in St. Paul's to this excellent prelate, a sum of 1,200*l.* being at the disposal of a committee for the purpose. They have issued invitations to compete to no fewer than eighteen artists: the cost of the competition, divided between the eighteen, will, therefore, amount to the sum that one of the eighteen will receive, and the committee, we humbly think, might have limited their application to half a dozen, with quite as much probability of a satisfactory result. The list contains two painters, Mr. Dyce and Mr. Richmond, both admirable artists, and men of unquestionable ability, but they are no more sculptors than Messrs. Foley and McDowell are painters: if these two were asked to compete with Messrs. Dyce and Richmond in decorating the walls of the House of Lords, we imagine that they would receive the application as either a "hoax" or an insult. We cannot doubt, that in such a spirit Messrs. Dyce and Richmond protested against a requisition to compete with Messrs. Foley and McDowell, in designing and executing a recumbent figure to constitute a monument to the memory of Dr. Blomfield. We can only suppose that, in the confusion incident to examining a Royal Academy catalogue, the committee supposed Messrs. Dyce and Richmond to be sculptors, and not painters, and that they did not discover their mistake until the two painters informed them of it. If it be not "a mistake," it is about as gross an error as the history of art records; but we are now so accustomed to "blunders" concerning competitions that we can scarcely marvel at any absurdity or injustice connected with them.

ART-JOURNAL.
ELECTRO-TELEGRAPHIC PROGRESS.—A contract has been concluded with Messrs. Glass, Elliott, and Co. for the construction of a submarine cable in connection with the intended telegraph communication between Liverpool and Holyhead station. The same company are about to construct a line of telegraph wires along the entire length of the Liverpool Docks. The wires will pass through the principal warehouses of the dock trusts.—A foreign scientific journal gives the following summary of the different lines where submarine telegraphs have been laid, up to the end of 1858:—

Dates.	Length in miles.
1850. England and France	221
1852. England and Belgium	708
" England and Ireland	64
1853. England and Holland	107½
" Ireland and Scotland	242
1854. Italy and Corsica	61
" Corsica and Sardinia	91
" Denmark Great Belt	112
" Denmark Little Belt	42
1855. England Channel of the Sound	708
" Scotland (Firth of Forth)	32
" Black Sea	371½
" Solent (isle of Wight)	3
1856. Straits of Messina	43
" Gulf of St. Lawrence	71
" Strait of Northumberland	91
" The Bosphorus	15
" Nova Scotia (Isthmus of Canso)	12
" St. Petersburg and Cronstadt	8
1857. Sicily and Algeria	149½
1858. Bay of Valencia (Ireland) and that of Trinity (America)	1,927½

Total in 1858.....2,771½

BUILDING THE PYRAMIDS.—Many plans have been propounded as likely to have been followed to raise the enormous stones with which the pyramids are built, but I am not certain that the following has ever been given to the world. I have some curious evidences for believing that the method consisted simply in the use of spindles or ribbed rollers, instead of plain round ones (as used at Nineveh), and that the stones were worked up the mounds raised for the purpose to the height required, by an immense number of slaves and camels. H. WHITAKER.

THE FRENCH GALLERY.—The gallery in Pall-mall known by this title, contains, on the present occasion, a collection of foreign works of art not wholly French, but very interesting. It includes, for example, a remarkable imitative work, full of character, by Leys, a companion to one belonging to Mr. Uzielli, still in the Museum at Brampton. Although the collection does not represent all classes of French artists,—is confined, indeed, to small pictures,—it will well repay a visit. Rosa Bonheur, Meissonier, Gerome Frere, Louis Gallait, Couture, and others, have contributed.

GAS.—At a meeting of the Parliamentary Committee on Metropolitan Gas Supply, it appears, the metropolis delegates refused to assent to the principle of exclusive districts to the companies, as perpetuating monopoly; and, after a long and, it is said, stormy discussion, the committee broke up without agreement, leaving the parishes to introduce a bill on the subject.—At the annual meeting of the shareholders of the Wantage Gas and Coke Company, it was ordered, amongst other things, that the price of gas be reduced from 8*s.* 4*d.* to 7*s.* 6*d.* per 1,000 feet, on the 4th of July next, and that a dividend of 5*l.* per cent. be paid to the shareholders.—At the Boston Gas Company's offices tenders for a new gasometer and tank have been opened, and the following accepted:—Brick tank, 86 feet diameter and 24 feet deep, Mr. W. Stainton, 1,950*l.*; wrought-iron gasometer, 85 feet diameter and 24 feet deep, Mr. B. Whitehouse, West Bromwich, 1,500*l.*

POWDER MAGAZINES; THEIR EXPLOSION, AND MEANS OF DIMINISHING THE EVILS RESULTANT.—The serious explosion at Hounslow, the other day, had scarcely taken place, and the coroner's inquest on seven dead bodies, or fragments of bodies, rather, had just been opened, when another explosion occurred at the Faversham Gunpowder-mills, blowing up the building and scattering fragments to a distance of several miles. In the Hounslow case, not only were two buildings destroyed, but damage was done to houses all round, to a distance of no less than six miles, and the shock was felt even at nine miles' distance. Surely something could be done, in improved construction of such premises, in order at least to confine or limit the effects of explosions, if nothing more can be done to prevent them entirely. Could they only be so formed as to send the force of explosion more directly downwards and upwards, perhaps the area of damage might be limited, and even the lives of those close beside the explosion saved. It would be well for architects and engineers to consider and suggest some means of improvement in these or other respects.

PUBLIC COMPETITION OF ENGINEERS FOR THE INDIAN GOVERNMENT.—The Secretary of State for India has caused to be advertised a competition, which is to be opened on the 10th of May, for twenty-four junior appointments in the engineering establishment, and twenty-four junior appointments in the upper subordinate establishment, of the Department of Public Works in India. Candidates for appointment to the engineer establishment must be under twenty-two years of age, and must have passed not less than three years as articulated pupils to a civil engineer. The subjects for examination include English and Anglo-Indian history and geography; algebra; Euclid, eleventh book; mechanics; hydrostatics, and hydraulics; making working drawings of machinery, and plans, elevations, and sections of buildings; framing of estimates and specifications from given plans and data; projects for bridges, locks, dams, roads, and other engineering works; trigonometrical surveying; land surveying and plotting from field-book; levelling, and use of the instruments employed. Candidates for the upper subordinate establishment must have been three years under a civil or mechanical engineer, or in some trade connected with engineering, and be under twenty-two years of age. The subjects of examination will comprise the English language; arithmetic; mensuration of planes and solids; framing of estimates of buildings of simple form; drawing plans and elevations of buildings of simple construction, and diagrams of ordinary mechanical appliances; levelling with the Y level; and land surveying and plotting.

The Builder.

VOL. XVII.—No. 845.

Christ's Hospital.—The Middlesex Archaeological Society.—St. Bartholomew's and its Neighbourhood.



LD LONDON is an inexhaustible subject for modern antiquaries and sight-seers. On Wednesday last the Middlesex Archaeological Society held a meeting in the Court-Room of Christ's Hospital, and we may make it the occasion for a few words about the neighbourhood, as well as the proceedings of the Society. Some improvement is being made in the approaches. At an enormous cost, the thoroughfares in the heart of London are in course of enlargement, in order to prevent the congestion of the enormous traffic of the City: bit by bit the houses in Newgate-street and elsewhere are being pushed back a few feet; and in the course of time these ducts will have an increased width throughout. It is a matter of regret that the extra space gained is so small that it is evidently

insufficient for the probable increase of the population and trade. A few years hence, when, if other means are not adopted for the passage of wayfarers, carriages, and merchandise, another congestion will have become imminent, it will be necessary, at a vastly increased cost, to march the houses and shops in the leading thoroughfares still farther to the rear.

In Newgate-street, the narrow way which formerly led to Christ's Hospital has been widened considerably; and now the entrance to the cloister, which is surmounted by the effigy of Edward VI., and the church, are visible from the street.

It was below the recently-built houses on the left of this passage that some ancient arches (engraved in the *Builder*) were discovered. Here is the churchyard, on one side of which is a building of the old, hard, dark-coloured red brick. The workmanship of this, as also of some gate-posts, is well worthy of attention; for, although this structure has stood about 200 years, the surface of the bricks shows not the least sign of decay; and the joints are close, and little touched by the weather.

The church demands a passing glance; so also does a little cloister which is reached after passing the porter's lodge. Here are several unassuming monuments, chiefly remarkable for the kindly feeling which they seem to show towards some of the more humble officers of the institution. There is a stone here, for example, with the following inscription:—

"Near this place lies
Mr. Robert Court,
Late the wardrobe keeper;
An upright and able officer.
His extensive services for thirty-one years will endure
His memory to all who are well-wishers
To this House.
He died 12 December, 1787,
Aged forty-eight years."

Another stone marks the resting-place of a master of the mathematical school, who had done duty twenty-three years; and a third, of John Wilkinson Long, who had been thirty-eight years carpenter to the hospital. On another stone is a very brief inscription:—

"Here lies a Benefactor.
Let no one move his bones."

The first feeling experienced by a visitor is that of wonder at the size and extent of the various buildings which cover this

ground, yet are so placed that ample space is left between each block for the purposes of ventilation and exercise. Under able guidance, we glanced at the steward's department; and, beginning at the basement, found that on this particular day the spacious kitchen was very actively in use, as it was not cold-meat day: all were busily at work cooking the dinner of 709 boys.

From the kitchen to the hall is but a short journey. The windows there are filled with stained glass: at the farther end, behind a dais, is a large gallery. On the wall in this part is a picture of considerable size, representing Edward VI. granting the charter to the hospital. Mr. J. Gough Nichols, in a very valuable "Catalogue of the Portraits of King Edward the Sixth," recently printed for private distribution, points out that this painting is an amplification of the picture representing the foundation of the City hospitals at Bridewell Hospital. It has been erroneously attributed to Holbein. Another large picture in the hall, 85 feet long! painted by Verrio, represents the Foundation of the Mathematical School by James II. There are also portraits of the Queen, Prince Albert, and others. It is an imposing sight to see all the boys assembled here to sup. From the hall we went over several of the dormitories and sleeping wards. The iron beds are arranged to the number of about fifty in each ward, which is superintended by a matron. It is almost needless to say that the greatest attention is paid to cleanliness. There is a curious feature in most of the sleeping wards: in one corner, near the roof, and reached by a staircase, is a wooden box of moderate proportions, which serves as a resting-place and study for the "Grecian" of the ward. From this eminence he is enabled to notice any delinquency below. We have already shown, that in a sanitary point of view, the position is not very enviable; for the atmosphere of those studies must, under the best circumstances, be polluted to some extent by the sleepers below. In the dormitory for the houseless in New Farringdon-street, the beds are ranged in considerable numbers on the floor, while surrounding this place is a gallery of from 6 to 7 feet wide, and at a time of great pressure beds were made up in the gallery. Down below, during a considerable time, no case of fever or any disease of this class occurred; but in the gallery several were from time to time stricken with fever, and so dangerous did it prove to be to allow persons to sleep there, that orders were given for its disuse by the officers of health.

The various schools,—the Latin school, mathematical school, writing school, drawing school,—are established in different apartments, and are presided over by numerous masters. The school-rooms are plain and without any striking architectural feature. The sick wards are separated from the other buildings and arrangements are made for the treatment of any infectious disease: the medical attendants' residence is close at hand.

It has now struck twelve, a bell has rung, and presently from all parts, deafening voices are heard, and large bodies of the scholars rush *ad libitum* to the play-ground. There are some who, notwithstanding this temptation, open a door which is marked "Library," and on entering with a few of the "small boys," we found a spacious room, divided into boxes and provided with tables; on the walls hang useful maps, and engravings of the steam engine: at one end is stored a small but well-chosen collection of books, and on the table are several illustrated periodicals. This library is of recent foundation, and will, no doubt, be attended with much good. Before its establishment the boys had no option but to waste a very large amount of the spare time between school-hours; now they can amuse themselves with useful reading. The books already in use have been purchased by a grant of 200*l.*—a sum sufficient to make a beginning; the shelves, however, are very bare, and we think that if some of the well-wishers of the school would look in, in passing through the City, and learn how this addition is appreciated by the "Blue-coat Boys," a capital library would soon be the result.

A word or two now about the meeting. The

Duke of Cambridge, who was to have presided, was prevented from doing so; and the Bishop of Carlisle took the chair in his stead. The Rev. Thos. Hugo read a brief sketch of the foundation of the hospital; and Mr. Fairholt described clearly the pictures and the plate, which was laid out in the court-room: none of the latter is very ancient. In this room is a very interesting picture of Edward VI. at the age of nine years, by Holbein. It is inscribed "Edwardus Wallie, princeps, anno etatis sue 9. Formerly the property of Sir Anthony Mildmay, Chamberlain to Queen Elizabeth." A larger picture of the King, also in the court-room, and carefully glazed, may be a copy.

From Christ's Hospital the party proceeded to St. Bartholomew's Hospital, where, in the great hall, a fine room of eighteenth century work, Mr. White told the story of Rahere, who, first a sinner then a saint, founded the church of St. Bartholomew the Great and the "hospital house, a little longer off from the church," at the beginning of the twelfth century. It was pointed out, as a fact only recently arrived at, that the bells in the seventeenth century tower of the church of St. Bartholomew the Great are the ancient bells, and are inscribed to saints. The church itself, chiefly Norman, is, as most of our readers know, one of the most interesting in London, with its semicircular arches, "purgatory," the tomb of the founder, and additions by "Prior Bolton, with his bolt and ton." The interior of the church is in a miserable condition, further disfigured by two huge pulpits and a mountainous stove in the centre! In the church of St. Bartholomew the Less, Inigo Jones was baptized, as the register records; and in Bartholomew-close Hubert Le Scur modelled his statue of Charles I. now at Charing-cross.

St. Giles's, Cripplegate, was the next place visited, where rest three notable Johns,—Speed, Fox, and Milton; and here Mr. E. Woodthorpe read a paper descriptive of the church and of that portion of old London-wall which remains in the burial-ground, illustrating his observations with some sketches, which included a view of the crypt of St. James's on the Wall. Barber-Surgeons' Hall, in Monkwell-street, where there is another bastion, was also visited, and the fine Holbein there preserved, which represents Henry VIII. delivering the charter to the Court of Assistants, duly examined.*

The curious wanderer in this part of London should examine the whole plot which is bounded on the west by St. Martin's-le-Grand, the east by Bishopsgate-street, the north by London-wall, and on the south by Gresham-street and Lothbury. Here Wood-street, Aldermanbury, and Basinghall-street, which are themselves of no great width, are intersected like a maze by narrow lanes and alleys east of Moor-gate-street; and, lying between that street and Lothbury, London-wall, and Old Broad-street, is a mass of buildings still more confused and confined, a number of which seem to have escaped the ravages of the Great Fire, and still serve to give an excellent idea of a large portion of London before that event. From London-wall along the space mentioned run numerous courts, the entrances and other parts so narrow and the houses so high, that fresh air must be scarce. Most of the dwellers here seem to be respectable and hard-working people,—some the widows of tradesmen who have been in better circumstances. The pleasant manner of the poorer occupants in the quiet parts of the City is striking: we do not mean those in such streets as have become "Rookeries" and dens for crowds of doubtful characters; but in such places as this, where, as in the smaller towns and villages, families have been known to each other, in a neighbourly, honest way, for two or three generations.

Extensive warehouses have been reared along part of the north side of London-wall, and we are told that considerable quantities of this

* A view of the entrance to Barber-Surgeons' Hall will be found in our vol. iii. p. 19, and some particulars. Illustrations of St. Bartholomew's Hospital are given in the same volume, pp. 42 and 79. In our vol. xiii. p. 171, will be found engravings of the Early English gateway to the church of St. Bartholomew the Great, and part of the cloisters; and in the same volume, pp. 98, 321, and 371, are particulars of London-wall, with illustrations of its course, and of all the portions of it which remain.

ancient fortification have been removed, and spread upon the new roads in Islington; and so the warlike fragments of the London of the past are used for the more peaceful purpose of extending the metropolis into parts where a few years ago houses and streets were little thought of.

On proceeding more into the centre of the thick plot of houses referred to, the artistic visitor will be pleased by the picturesque appearance of the streets, or rather alleys, some of which, although they have no carriage thoroughfare, are places of great traffic. Little Bell-alley and Bell-alley, although only a few feet in width, may be considered the Regent-street and Oxford-street of this locality. To the first of these Bloomfield, the poet, was brought from the pleasant country when a little boy, by his mother, and placed in the care of his uncle, a shoemaker, who occupied the upper part of the house No. 14, Little Bell-alley. We took some trouble to obtain evidence on the spot of the occupation of this house by the poet. In the upper front-room of it, the youthful genius, under the most ungenial circumstances, saw in his mind's eye those simple pictures of the country of which he has, with so much freshness, given word-paintings to the world.

Leading from London wall, which is the City boundary in this part, is Wilson-street, composed of rather old-fashioned houses and shops. At a short distance from the London wall, on the east side of this street, is Horse-alley, which, with the parts adjoining, presents a curious specimen of old London. The roads are narrow, and many of the houses were built before the time of the fire. In this lane there is a stately mansion, with a portico, reached by a flight of steps from what has once been the court-yard. The house is lofty and of substantial brickwork. The staircase is wide, with ornamental balustrades. The doors are of polished mahogany; the mantelpieces are enriched with carved ornaments; and the ceilings decorated with heraldic and other devices, in plaster.

In the courtyard in front some small houses of two rooms each have been lately built, which, together with the large building, are let to a decent class of working people. In the basement of the large house, wash-houses, fitted properly with coppers and tubs, have been provided, and care has evidently been taken to promote the comfort of the tenants.

This quarter, like most of the debatable parts of the metropolis, seems to have been much neglected. We are told that until lately, in spite of repeated complaints, the water-supply was altogether insufficient.

While in this neighbourhood it is worth while to look at the old inns, which not many years ago were so famous, so lively with numerous guests on trade or pleasure intent. The "Swan with two Necks," as the modern letterer has written it, once so prim and smartly painted, when cooks, waiters, boots, and chambermaids knew little rest, is now a dismantled and dilapidated wreck, that seems to be used only as a temporary booking-office for the railway carriers. Some of the other inns have dwindled down to mean "taps," or been appropriated to other purposes. The Bull and Mouth, the Holly-bush, and some of the inns in Bishopsgate-street and elsewhere, keep up their dignity; but it seems likely that the demand for space for offices and warehouses in the district round the Bank and Exchange, will cause the removal to a distance of the hostleries of former years, and the establishment of restaurants, where the citizens may obtain that last refreshment for which only time can be spared during business hours in these days of the railway and electric telegraph.

We give a view of Redcross-street, with the tower of Cripple-gate Church.* The gabled houses are of wood; and in connection with these remaining examples of our ancient street architecture, we add a view of the timber houses that formed a conspicuous feature of Old London Bridge, consisting of jointed framework, made and fitted together, in the first instance, in Holland. We add a view of Great

Winchester-street, in the same district. With this we must end our present chat about this ancient portion of what Carlyle calls, "That monstrous tuberosity of civilized life, the capital of England."

ON SARACENIC ARCHITECTURE.*

I AM, to a certain extent, unfortunate in the subject of my lecture this evening, as it does not possess the interest attached to the discussion of other themes,—that of the Pointed style, for instance.

It is, as its most ardent admirers must admit, alien to us and to our traditions, and at the time at which our Pointed architecture arose the fiercest and most dangerous enemies to our holy faith were the Saracens, whose customs, climate, ancestry, and religion (those great elements in the forming of every school in art) were utterly foreign to our own. Yet I hope to be able to show to you that their works are deserving, not only of praise, but of attentive study, and that the attempts of those who (like our chairman) have done what pen and pencil can do to save from oblivion the perishing memorials of these Arabs, have had full cause for their exertions, and that, even in the great question of the revival of Pointed architecture, there are some features in this style worthy of grave consideration.

I propose to give a slight sketch of its history, and then examine the general features and the details.

I must here mention that most of these beautiful photographs of the buildings from Cairo and Spain have been kindly lent to me by the Architectural Photographic Association.

In tracing the origin and history of any style in art, we seem to be almost tracing those of a nation. Their well-marked features show strongly and boldly in their present state, and they recede into the same obscurity as we trace them up to their beginning.

How clear and sharply stand out our Early English of Lincoln and Salisbury against the Norman of Ely and Peterborough. It seems the work of a distinct time, of a separate people. Yet the student, as he marks each trifling change of moulding or of leaflet, must trace the gradual growth of the thirteenth century's elegant work from the stern, bold forms of the eleventh, and thence still backwards through the Romanesque to Rome and to Greece. And the antiquary must go backward still, for the massive Doric will lead him for its origin to the temple cave of Egypt,—the light Ionic to the buried palace of Assyria. If any modern style would seem to claim exemption from the law, it would, perhaps, be the subject of my lecture. Its parents were the Arabs, the first Mahomedans, one of the finest races of mankind, whose country has never been thoroughly subdued, and even yet, is scarcely known. A few adventurous men have, at various times, attempted to explore it, but it has only been by the most cunning stratagems that they have been able to take a hasty glance at it, and escape the almost certain death attendant on discovery. I verily believe that at this moment Pagan China is better known to us in every way than the land of Ishmael, some 4,000 miles nearer to us, and on our direct road to India. From this almost unknown land its wild dwellers burst forth on the Christian world in the time of the Greek Emperor Heraclius.

In 633 they entered Syria; in less than twenty years afterwards had overrun Egypt and Persia; before 715, Africa and Spain were in their power; and in 827 Sicily was invaded by them. Within a few years of their first entry into Egypt, they had built the mosque of Amrou at Cairo, of which parts still remain. Seventy years after the conquest of Spain, the mosque of Cordova was finished; ninety years after that was added that of Teyloun, at Cairo, still almost perfect as its builders left it; one hundred years later came the great University of El Azhar; and very soon afterwards the bold gateways to the north of Cairo. So that we have here an almost unmixt race, suddenly appearing and becoming temple builders, the exact dates of their appearance and of the building known, and the buildings themselves left to us; and if the history of any style in art could be defined for its beginning, we might hope to find such clearness here. I shall not weary you with an abstract inquiry into the origin of the Saracenic style; but in these times, when we are awakening to the thought that a style, to be national, must have grown up with the nation's growth, and become identified with it by

association and tradition, it may not be uninteresting to examine a little whether these Arabs, who, till their decay, carried with them their architecture, through all the countries which they conquered, brought it with them from their deserts at the period of their conquests, or acquired and rapidly appropriated it from others. First, as to the name. It may be as well to remind you that the Saracens had as little to do with the style called after them as the Goths had with our Gothic. The Saracens were of an obscure tribe, known only by name in history, until the Arabs took that name, and made it famous; and the Turks were even a more distant importation from near the Caspian Sea.

The Saracenic style is essentially Arabic, practised only by the Arabs, and those under them for centuries; and if it have a definite national birth-place at all, we must look for it in their home—Arabia.

Our first inquiry must then be, What was the state of art there? Can we find in it the origin of the leading features of the style, the porticoed mosque, the minaret, the dome, the pointed arch, and the ornaments now so peculiar to it? For our knowledge as to the primitive state of art in this country of Mahomed, we naturally turn, as our first authority, to the Koran, and very significant is its silence upon the whole question. There are not, I think, in the whole 114 chapters, more than half a dozen passages referring in any way whatever to the buildings of the time, and even these in the vaguest way.

If there be anything more tangible, it has escaped not only my own notice in a tolerably careful search, but that of the scrutinizing eye of Mr. Ferguson, who, in his "Handbook," alludes to the fact.

We then turn to the sacred buildings of Arabia, whose dates are tolerably well known, but the result is there equally disappointing.

The mosques of Mecca and Medina are clearly shown to have been originally very small, repeatedly destroyed by fire and tempest, and rebuilt in later times, and on a grander scale in each restoration; the mosques at Mecca having been reconstructed almost entirely in 705 by El Walid, and again in the beginning of the fifteenth century by Sultan Boorhan, of Egypt, and that of Medina, by Kaid Bey of Egypt, in the sixteenth.

But so many restorations and alterations have since been made, that these mosques may be to a great extent considered as modern structures.

Of one thing, however, we may be tolerably certain, viz. that within a few years after Mahomed's time, the Arabs used the present plan of the cloistered mosque, and somewhat of the present form of the minaret; but it would seem that this latter picturesque feature was not used in his time, as the call to prayers was then made from the roof of the mosque, and not, as afterwards, from a tower. Failing in our application to the Koran, and to the mosques, we turn to the earlier writers of the time, whose works as to these points have been carefully investigated, and the existing remains studied and drawn by M. Girault de Prangey, M. Cate, Mr. Owen Jones, Mr. Ferguson, and others.

All these early writers preserve a most significant silence as to the state of art before the Mahomedan era, but record the events within the century after it, which give us a clue at once towards the truth. For in the history of almost every building of importance, between the end of the first century after Mahomed and the middle of the tenth, we find that workmen, artists, materials, and architects, were brought from abroad to execute them. Sometimes Greeks, sometimes Copts,—once, I think, an Abyssinian, are mentioned; in some cases from Constantinople, in others from Bagdad. But the fact of the foreigner is always the same, whether in Arabia, in Egypt, or in Spain. Thus, in the rebuilding of the Medina Mosque, by El Walid, in the early part of the eighth century, it is recorded that the Greek emperor sent him forty Greek and forty Coptic artists to do the mosaics and carve the marble columns; also two Greek architects to embellish the mosques of Damascus and Jerusalem; and for the palace of Zabra in Spain, built in the middle of the tenth century, the sovereign sent for the most skilful architects from Constantinople and Bagdad.

When the Mosque Teyloun at Cairo was built, in 876, the Sultan possessed himself of a Christian architect, whom he clapped in prison, to give him, I presume, the advantage of retirement in preparing his design.

Sometimes assistance was procured in a similar way, but by still more unscrupulous means; for we

* Read at the Architectural Exhibition, by Mr. T. Hayter Lewis, on Tuesday, April 12th. Mr. Owen Jones presided.

find that in one case the ambitious sovereign, thinking, perhaps, that the end would justify the means, seized a vessel which had been wrecked in the Red Sea, conveying workmen, materials, and two architects, for the erection of a Christian church, and very coolly appropriated the whole (the architects included) in order to assist in constructing his own mosque.

All this seems to show very clearly that the Arabs had, nearly to the end of the first century at least of their era, no definite architecture of their own, and that we must look abroad for the germs of their style. In the Teyloun, at Cairo, 876, we have it perfected: so it is between these two dates that we must watch for its development.

First, then, with respect to the general plan of their earliest buildings, the mosques: that of Mens, measured by Ali Bey, the accuracy of whose plan is admitted by Burckhardt and Lieut. Burton, though it differs considerably from that given in Sale's Koran, is identical with that of Amrou and Teyloun in Cairo; the Meccan mosque dating from the seventh century, those at Cairo from the seventh and the ninth centuries, the general outline in each being that of a large open space surrounded by porticoes and containing in the centre a fountain, reservoir in other buildings. The idea seems so completely to give what was wanted, so arising from the necessity of the case, that we need scarcely search for its style in any part of the Basilian arrangement.

A large space of ground was inclosed for sacred purposes, and the most obvious arrangement was to surround the walls with a colonnade, forming, in fact, a cloister; and, when this was done, and a fountain added in the centre, and a minaret or so at the angles, or wherever else it could best be placed, the primeval mosque was finished.

But the domes, the minarets, and the other details are so artistic in their treatment for the same reasoning to hold good with them; and for their origin we must turn to the countries from which the Greek, the Copt, and the man of Bagdad came.

Of these the first in rank and the best known are the Greeks of the lower empire and Constantinople, and of these we possess extensive works erected in different countries and of known dates, with which to compare those of Egypt and Spain. At about the same distance only from Constantinople that Cairo is lies Ravenna, the seat of the Greek Emperors, and well known in the history of art by its church of St. Vitale, erected by Justinian, and filled with mosaics and other works of his time.

Take now the mosque Teyloun, at Cairo, as a standard, and compare it with that of St. Vitale, so well known to you, and you will see how totally different is its character. In St. Vitale, some centuries earlier than the Teyloun, you have the well-defined Greek capital, and that style of carving almost detached for the bell so peculiar to the lower Greek empire.

Again, in Constantinople, whose remains have been so well preserved to us by the exertions of Subzenburgh's volume, the same character prevails. And neither in Ravenna nor Constantinople do we find the bold crest ornament, which shows so prominently at Cairo and Seville, and which forms so bold and picturesque a finish to the mosque of Teyloun and Kaid Bey, at Cairo; but we do find it in some of the palaces of Venice, whose buildings bear in part strong traces of Eastern art. I know also in the West no prototype of the minaret, unless it be, perhaps, the round old towers of uncertain date, that we find at Ravenna. But the era of a Mahomed was a tower-building one, and the minaret seems to have been a natural result of the Arab form of worship.

According to Lieut. Burton, it dates from the end of the seventh century, and was originally of about the same form as those which are now used by the Turks, viz. circular or polygonal, with a single gallery near the top, and a pointed termination. If, however, the ruined mosque of Bozra, mentioned by Burckhardt, and again by Porter, be really as is imagined the work of Othman, we have a date earlier by some twenty years than the above, and very close to Mahomed's time.

Of the pointed and the horse-shoe arch, the domes are, no doubt, in the East, and the Arabs at once appropriate them, as may be seen in their earliest buildings, and used them almost to the exclusion of other forms.

There is one more subject, that of the decoration, and I think that the most ordinary observer must be struck with the great resemblance that the Arabic has to the common forms of ornament, to which we are accustomed in Eastern fabrics. But one peculiarity is very striking. I mean the great

crest ornament to which I have before referred, and which fulfils the same condition in the Arab buildings as the great cornice does in the Italian, of giving a grand crowning mass to the whole front.

It is represented, to some extent, by the autefixa of the Greek temples, but nothing of the sort nearer than this was, so far as I am aware, used in the West. But in the East, it seems to have been used as a common form of decoration, and even in the Assyrian sculptures from Nineveh we find it represented almost as the outline used in the mosques of Cairo.

Taking these various facts together, it seems that we must look upon the Arabs' style as having been founded chiefly upon an Eastern type, but with mosaics and other details from Byzantium, and that, modified according to their habits and their forms of worship, it was rapidly developed by them, until, within a century, they had formed it into a distinct style of their own.

I do not think that this Eastern origin is contradicted by the fact that the Greek emperors were constantly applied to for, and furnished in the earlier times, artists for the Arab works.

Coptic artists (who must have been Egyptian) were sent as well as Greeks.

Bagdad supplied architects as well as Byzantium; and when the Greeks from the latter city are especially mentioned, the accounts of their missions are always accompanied with notices of the carvings and mosaics that went with them—just what we should expect from the known fact that Constantinople was, for such objects, the workshop of the world, and quite reconcilable with the idea that these Greeks were sent to decorate the buildings, put up, perhaps, by quite a different class of men. But whatever the fact may be in that respect, I hold it to be clear that, with the exception of the isolated cases at Venice, whose traffic was so great with the East, no buildings of the same style, or with any of the marked characteristics of theirs, exist to the west of the countries conquered by the Moslem.

Considering, now, in detail, their buildings, we find them just such as we should expect from the history of their founders.

They burst forth suddenly into a rich country, inhabited by a race whose effeminate manners they despised, to whose lineage, manners, language, and very form of writing they were strangers, and whose religion was to them idolatry. To destroy the temples of the Christian, and on their site to erect the mosques of Mahomed, was a holy duty, and, with a few exceptions, the destruction of the churches was complete. Their numerous columns furnished abundant spoils for the long-cloistered mosques, and nearly all the earlier ones are thus found to have been constructed from the wrecks of the older works. The mosques of Omar at Jerusalem, founded in 637; of Amrou at Cairo, in 642; of Damascus, in 705; and of Cordova, in Spain, 786, were thus formed of columns of unequal size, and dissimilar capitals and bases.

Just in this same manner did the Christians before them build their churches, baptisteries, and basilicas, out of the ruins of the Pagan temples. Such easy quarries have been too tempting in every age. The Arabs, however, soon began to work for themselves, and in the Mosque Teyloun we find some good bold capitals, but looking very like an Arab rendering of an antique.

I am not, however, aware of any early example in Syria or Egypt of the well-known Saracenic form, so characteristic of Spain, and the best known examples of which in the Alhambra date from the fourteenth century, nor do I know the original type of them. Their skeleton form is that of the cushion capital, but rendered so elegantly, and adorned so gracefully, as to clear itself altogether from its type, and to have made itself quite an integral part of the style.

In Sicily we get a very elegant semi-Gothic form, and in Greece (conquered by the Othmans in the fifteenth century) the few remains are chiefly formed by an arrangement of the honeycomb ornament, found also in nearly all the Arab works elsewhere.

The history of the pointed arch has been so well investigated, that its Eastern origin may be considered as settled. In relation to our present subject, we find it used in the mosque of Amrou, near Cairo, in the middle of the seventh century, and it occurs in almost every Arab building in conjunction with the round arch. But this latter is, curiously enough, commonly used, as in the transition Gothic, in the smaller apertures, the large, bold arches being pointed. Thus in the mosque of Kaid Bey, the great arches under the lantern light are pointed, whilst the small lights in the gable of the dome are round; and in the Moristan two-light windows the enclosing arch

is pointed, whilst the small arches within are round.

But we now come to other forms almost peculiar to this style, viz.—the horse-shoe and the large cusped arch, scarcely found in any other. We have, indeed, a few examples of the horse-shoe in our Gothic, as in the apse of Canterbury; they seem, however, to have been there almost accidental forms, and in no way characteristic of the style, and few of us would, I think, be bold enough to use such an outline with any prominence in the revival.

The cusping too, with us, is a mere ornamental appendage; but in the Saracenic, both the horse-shoe and the cusped arch are essential features of the design, and sometimes used, as at Cordova, with a recklessness that becomes almost unpleasing.

The earliest example with which I am acquainted is at Cordova. I am uncertain of the origin of the horse-shoe arch, but I can scarcely think it to be a form to be followed or admired. It seems to have been used from the earliest times by the Arabs, and is found in the mosques Amrou and Teyloun and others.*

THE ARCHITECTURAL EXHIBITION.

ADHERING as nearly as we can to the order of the catalogue, we come, in continuation of our review, to the designs for the Ellesmere Memorial, about a dozen in number. Amongst them is (229) the successful design, which we lately engraved, by Messrs. Driver and Webber. It is now in course of erection, at Worsley, Lancashire. On the whole, we deem it the most suitable design of those shown; and the reasons why it appears the best, it may be interesting to state, since they may be of importance at this time, when architectural art is in demand, as it should be in all monuments. Not long ago we discussed the question of monumental sculpture, and showed that whilst our art and that of the sculptor were in many respects the same, there was a general architectonic character, by grouping and framework,—as well as that there was detail and ornament of architecture,—to be observed in monuments of the highest class—those in which, admittedly, the human figure would be prominent, and the art-work, therefore, would come from the mind and hand of a sculptor. In monuments to be erected out of doors, and those not usually in streets or squares, but on commanding sites, it is obvious that the architectonic character should prevail, whilst that the largest amount of sculptural embellishment compatible with architectural work would be required by the conditions. What are these conditions? They are emphatically all related to the object of commemoration, distinguished from the mainly utilitarian object of a lighthouse, a prospect-tower, or analogous structure, and from the tomb, though the latter will be usually also a monument. Now, the authors of designs for such works as the Ellesmere Memorial, do not seem to have yet grasped the special character of the work given to them to accomplish. They habitually sacrifice the commemorative expression, and produce a mere prospect-tower. The likeness which their designs assume to Italian campaniles, or to Mediaeval defensive structures, is erroneous. It is a question, also, whether the Mediaeval styles at all, are suited to monuments erected in our own day, unless we can admit that such styles altered, or adapted, have become as much part of the work of our day, as the prevalent architecture of our streets, or the common furniture of our houses. This, however, opens up the whole question of revival in general, and the question whether we have yet succeeded in creating from the basis of Gothic, a style which we can call one of the nineteenth century, and our own. This we may safely say, that a mere revival of Mediaeval art, is not what we must rest contented with for our monuments, and for reasons of similar kind cannot be suited to buildings generally. With these views, the best men of the modern Gothic school would now fully agree. The chosen design for the Ellesmere Memorial, Gothic in character, and slightly wanting in figure-sculpture, certainly goes far to attain the distinctive commemorative purpose. It will be a marked object, whilst it will be serviceable as a prospect-tower: its expression will be that of a memorial, and its other use secondary in the appearance—and so, quite consistently in this case, with our principle that uses of things are to be recognized in the forms adopted in design.

Mr. P. Brannon's design (215) is good in some respects. It is an octagonal shaft rising from a terrace-stage, and has a gallery bracketed out at the top (in a manner to invoke some difficulties of

* To be continued.

+ Page 747, in last volume.

construction); but it has decorative character, rather than mere blank wall-surface to carry the gallery. Some of the details, however, only caricature the Gothic style,—the imitated flames as finials may be instanced. Mr. J. L. Andre's design (216), even with better details, could only be suited to a cemetery or other enclosed site. The Gothic design (231), by Messrs. Dean and Bellhouse, in a minor degree, is open to the same complaint; and the upper portion and the supporting arch, do not accord completely; but the arrangement of the site and ground base has been taken into consideration. Of their two Italian designs in No. 219, the more distant one in the view would be good for a prospect-tower, or a campanile; but the principal design, though injured by the manner of chamfering the upper part of the obelisk-formed termination (which is in banded brickwork), and by the tall finial, like a flag-staff, has the needed monumental character, and has well-studied details. Mr. W. G. Smith's "Design for a Memorial Tower" (220) is commendable in some respects; but the architect, in providing the platform at the base, which is necessary to effect, has arranged it so that it gives to us the idea of consecrated ground. The upper part of the structure, also, is corbelled out so as to be top-heavy. This design is for yellow and red brickwork, and is Gothic in character, with large shafts and pinnacles, circular on plan. Mr. T. Porter's design for the Ellesmere Memorial (221) conveys no idea of a monument. It is a square tower of red brick and stone, with chamfered angles, and corbelled upper stage, corbie-stepped gables, circular angle turrets on corbels, and a slated spirelet in the centre. "A Monumental Design," (222) by Mr. P. P. Marshall, is certainly more monumental; but sufficient care has not been taken about the details. Mr. L. Stride's design (224), somewhat like an early type of the turrets of Tattershall Castle, though carefully drawn, again, has nothing about it indicative of commemoration. It is an octagonal tower of red brick with black bands, and has numerous openings, an upper stage with a parapet corbelled out to a square plan, and a pyramidal tile-covered capping. Mr. G. Goldie's work (225), on the other hand, happy as it is, so far as the design of the ogee-formed domical capping and superstructure borne on four columns is concerned, is suitable to a tomb, and a cemetery site, rather than to any other; and Mr. J. Nicholls, also, in a work of very different character (230), by the broad base which he shows, with wide arches, conveys the idea of something within, or the idea of a tomb. Brickwork, in this design, as in many of the others, cannot but be considered as where it is least of all appropriate—for a monument, and not of very great dimensions. The design (230) has boldly-weathered stages, angle buttresses terminated by square pinnacles, and a crowning spirelet. In the principal stage, within arches, are figures in Medieval costume. Still observing merit, but still also failure, we get to Mr. G. Vulliamy's design (226), a diminishing square tower of striated brickwork with a moulded base, and a bold, corbelled stage, square pinnacles, and a peculiar capping, formed apparently of perforated metal-work.

In some of these designs, as we have shown, there are particular beauties, yet in nearly all of them there is what we believe to be misconception of the end to be attained. Unless the artist, whatever his subject, clearly realises to his mind, what is the object he has to accomplish, failure must follow. There is no matter more important to the architect, than formation of clear habits of thought. The design for the Ellesmere memorial (227), by Mr. J. T. Welchman, has been reserved to the last of our notice. How it can have been one of the "eight selected" works submitted to Mr. E. M. Barry, and "which obtained honourable mention," passes understanding; or rather, the fact must be accounted for only by what may be the operation of a natural law,—namely, the tendency of much choice to end in selection of the thing that is worst. The castellated character, the general ugliness and disproportion of all the details, the balls on the terrace base; and the turrets at the angles of the tower, which it would be hardly possible to support, surely supply no reason for the preference given.

Before leaving the monuments, we should mention (232) the "Crimean Memorial to the fallen of the 23rd Royal Fusiliers, erected at Carmarthen," by Mr. E. Richardson, an obelisk in form, with ornamental details of Gothic character, somewhat plain, but good, and not unsuggestive; but the iron railing, in which the author has introduced imitations of crossed muskets, seemingly to sup-

ply the "phonetic" want, or that of figure-sculpture, is only illustrative of that misconception of architecture, as of universal art-principle, which many sculptors, otherwise of the first talent, have lately manifested. The obelisk of best Egyptian form, with its sunk reliefs and hieroglyphics, as a simple monumental work, has probably never since been equalled: it would not suffice now to copy the Egyptian design; but the utilization of the general form, so as to secure the monumental, and yet offer no imitation of the obelisk, is one of the special merits in the design adopted for the Ellesmere Memorial.

Another group of drawings, serving to elucidate a question of the day, is that of the designs for the Trinity College Church, Edinburgh. Wanting the "conditions" (to which we cannot instantly refer), we assume that the problem was not dissimilar to that which we alluded to in our last, and spoke of in our notices of the Spurgeon Chapel Competition Exhibition. At least, we observe in most of the designs at Conduit-street, the avoidance of elongated nave and broad aisles, of long transepts, and of chancel "well broadened,"—as the phrase was. To designs of this character, including generally those for Nonconformist churches, we have been looking hopefully for some reconciliation of the opposite demands of convenience or ritual, of new art, and of desired old association. We cannot, however, say that we advance very fast. If there be better recognition of utility, there is very slow abandonment of that caricatureship of a style, by details, which has so strangely clung to the chapel-architecture of our country in all its efforts at improvement. Messrs. Oliver and Lamb's design, indeed (233 and 234), "one of the six which received special commendation," is free from many of these defects, and has not that crudeness of appearance which we notice in their design for the Derby Congregational Church (241), and that for the Eccles Congregational Church (245 and 246). Regarding the design for the Derby church, "to accommodate 1,200 persons, at a cost of about 4,000/," they speak of their "mode of introducing iron columns in tiers to keep down the cost of roof timbers in buildings of large span," which does not in the drawing appear different to the simple mode now adopted by others in chapels with galleries, double tiers of columns and arches, and roof-covering without clerestory or tie-beam. In the design for the Eccles church, to cost more per sitting, they offer "an attempt to improve the ecclesiastical architecture of Congregational Nonconformist churches without prejudice to special requirements and outlay." Here the interior columns are proposed to be of iron, 10 inches in diameter, and the roofs to be double, "to meet the objection of extremes of heat and cold urged against Gothic open roofs." Messrs. Oliver and Lamb have succeeded best in the exterior of their Trinity College Church design, though even there they exaggerate features. We instance the angle pinnacle in the principal elevation, carried up without decoration, to an extreme height. The tower and spire, and many details, however, deserve praise; and the attached buildings, with Chapter-House roofs, would combine well with the main structure. The details in Mr. P. Brannon's design (237, 238), go farther in the way of exaggeration of Gothic details. Indeed, its author has more need to cultivate his eye for proportion, than to follow his leaning to originality. His plan is a sort of combination of the Greek with the St. Andrew's Cross: the roof combines the hammer-beamed and the groined arrangements; the ceiling, however, seems intended to be in plaster; yet, externally, on the apex of the roof, is shown, not a timber-work louvre, or *fliche*, but a pinnacle of very ponderous and masonic appearance. Mr. E. Appleton's Design for Edinburgh Free Church" (239), with nave and aisles, and short transepts, but general square plan, and no great length of chancel, may be more common-place, yet, withal, is better in the details than the work last named. The design by Mr. J. Nicholls (240, 241), "one of the six selected," is an aisleless church, with timber roof—not very inviting in the drawing of the exterior. Internally, it is characterized, besides its polychromy, by an arcade gallery under the main arch at the end where the pulpit is placed. Mr. A. M. Dunn's design (242) has more of Continental character, and has a polygonal apse with tall windows, a *fliche*, and entrances and steps at the transepts. Mr. G. Goldie's design (213) has nave and aisles, on a nearly square plan, and a recess for the pulpit, a wide outer porch, and a square tower, at the angle, with lofty windows and square pinnacles, and a lantern stage crowned by a low spire. The design is, doubtless, according to

models; yet, assuredly, it fails not less than other works we have noticed. Its character is chiefly that of *association*, which is not sufficient for architecture: and some of its details, as those of the pepper-box pinnacles wedged into the parapet, or borne only on short shafts, differ from English forms, without being equal to them, or justifiable in adoption.

These are not the only drawings made in connection with recent competitions, that the Exhibition in Conduit-street contains. Throughout the number, however, we are impressed with the evidence of immature study. Merits, in the treatment of one requirement of a building, are associated with defects in another requirement; and where are the merits in one design, there are the defects in another, and *vice versa*. Who should throw the first stone in this day of unorganized education, and unregulated architectural training?—Surely, neither Classicist, nor Gothickist; architect of churches, or of chapels; antiquary-artist, or utilitarian; man of the "old school," or he that hopeth of the future.

NEW POLICE STATIONS.

DURING the last few years, numerous substantial buildings have been erected in various parts of the metropolis, for the uses of the police, contrasting favourably with those which had been primarily used for similar purposes. In some of the old police-stations, which are still in use, the arrangements are most inconvenient; the ventilation is imperfect; and the cells for the confinement of persons who have not been proved guilty are in some instances below the drains, and polluted with the overflow. One of these new stations has been finished near the east side of the Islington Cattle-market. In this house there is accommodation not only for public purposes, but also for the lodging of a number of the unmarried members of the police force.

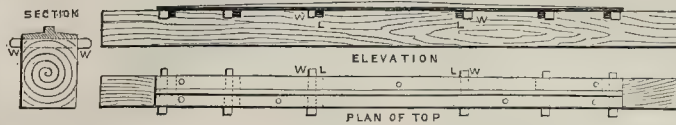
The office for the examination of cases, and where other police arrangements are carried forward, is of some size, and well lighted. Close by are cells for male and female prisoners: these are lofty, and in other ways of sufficient size. Each cell is fitted with water-closet and benches. Instead of the grated windows usually met with in these places, the light is here admitted through numerous small circular holes. Water and gas are plentifully supplied, and hot air is distributed in the cells and passages. An apartment of considerable size is used for a reading and sitting room, and the men, in addition to the use of a number of popular periodicals, have access to a library of about 200 well-chosen volumes; and it should be noticed that the metropolitan police have an extensive library, which is distributed to the different stations. At set times the volumes are changed, so that the men have an opportunity of employing any spare time in useful and amusing reading. On the basement is a kitchen fitted with every accommodation for roasting and boiling the various kinds of food for the men, who, by joining together in messes, are able to get wholesome and well-cooked dinners, at a moderate cost.

A female cook is paid by a small sum collected from each inmate. In a well-aired passage are lockers for each man. Water and light, both for night and day, are conveniently placed. Upstairs are sleeping-rooms: in one about 21 feet long, 15 feet wide, and 12 feet high, were seven beds. Instead, as is the case in most of the metropolitan barracks, of allowing the damp clothes and shoes to be dried in the guard-rooms and sleeping apartments, a separate place, fitted with a stove, is provided: here coats, boots, &c. are kept dried and aired. A provision similar to this might be applied with much benefit to the homes of our soldiers.

The bedrooms are not lumbered and confused by the storing of various matters; but a room is set apart for the reception of the boxes and other private property of the men. In some cases classes have been formed for the improvement of those whose education has been neglected. The resident sergeant has two convenient apartments allotted to him.

The arrangement for retiring pensions after long service, provisions for attendance, &c. during sickness, &c. are wisely planned. It would be well to contrast, notwithstanding the long hours of night duty, the mortality of the single men of the police, who live in thoroughly drained and well-contrived houses, with that of the soldiers, who are not so well cared for in a sanitary point of view. The married policemen who have families are not quite so well situated in respect of lodgings.

NEW METHOD OF TRUSSING WOOD GIRDERS.



COOMBS'S NEW METHOD OF TRUSSING WOOD GIRDERS.

THE disproportion which exists between the powers of various materials to resist the different strains to which they may be subject, whether of tension or compression, is well known. While cast-iron, for the sake of example, can resist compression with six times the power which it exerts against tension, fir is six times more efficient against the latter than against compression. With the view of compensating for these unequal qualities possessed by timber, Mr. Coombs, of 17, Union-street, Borough, has invented a simple arrangement, by which advantage is taken of the peculiar strengths possessed by iron and wood. It consists, as shown in the diagram, of a plate of cast-iron having small projecting cross pieces, or lugs (marked L), cast on to it, and also a rib running longitudinally along the back, for the purpose of facilitating the carriage of long lengths. This plate is fixed on the top of a wood beam, notches having been previously cut across the beam to allow the lugs to drop in, and the plate to lie close to the surface: the notches must be cut sufficiently wide to allow wedges of hard wood (marked W), to be driven in on the outside of the lugs, and these must be struck until the girder assumes an arched form, or slight camber on the underside. The two materials are now brought into intimate connection, and will simultaneously resist the forces applied to them. It must be understood, however, that no strength is gained by cambering the beam, but simply that the cast-iron performs more effectually the work that would otherwise be done by the wood, and a greater portion of the lower fibres is called upon to resist a strain which their nature eminently fits them for, namely—tension.

This invention has the advantage of great simplicity of application; and in many instances, such as stiffening a weak floor girder, the ease with which it can be applied is a great recommendation. The inventor also advocates its facility of production, a few hours only being sufficient for its execution; and this advantage will be appreciated by those who have had to wait days, or even weeks, for the rolling of a plate, through the snapping of shafts, breaking of rolls, or other causes.

THE FUTURE ARCHITECTURE OF LONDON.

SIR,—An attempt is being made to invest London with a Mediæval character. Several distinguished architects have endeavoured to inform the world, both by their works and by their teaching, that the only true architecture worthy of entire acceptance is that which prevailed during the Middle Ages. The wonderful beauty of Gothic architecture, its combined elegance and grandeur, the mysterious interest with which it affects the imagination, are admitted by all, as well by the few who are scientifically conversant with the art, as by that more numerous class who acknowledge the effect without understanding the principles. The study of Gothic architecture is so fascinating, allowing so much scope to the fancy, admitting such a variety both of form and ornament, that a mind imbued with its principles, and directing an artistic pencil, seems to revel in a perpetually new creation. The study of Classic architecture is, perhaps, not so absorbing to an artist; there is less of the picturesque in it, less variety, less scope for invention and fancy; its patterns are more rigid, its forms more regular. After a course of study of Classic architecture, the student seems to turn with a sense of almost freedom from its severe regularity, to the more varied elegance of her younger sister.

It is not surprising, therefore, that those who have pursued the study of Mediæval architecture for a long period; who have seen many of their ideas realized in durable monuments, and who have derived both reputation and profit from their favourite pursuit, should see no excellence but what conforms to those patterns of art with which

their minds are so conversant, and should unhesitatingly pronounce in favour of the adoption of that style whenever a new building is under contemplation. But it is obvious to remark that their very familiarity with, and love of the art, and the excellence they have achieved in its practice, are the strongest reasons why their opinions, although entitled to great attention and respect, should be received with the utmost caution.

At the present time Mediæval architecture stands very high in public estimation; besides its intrinsic beauty, it has had the advantage of very able expositors, it is almost identified with the movement of a very influential and talented section of the church, and it has been illustrated by many very elegant modern buildings. But there is a varying taste, a fashion in architecture, as in almost all other things, that exercise the inventive and imaginative faculties of men; and we must be careful not to mistake the influence of fashion and accidental circumstances for inherent beauty: we should rather endeavour to discriminate the principles of art during the prevalence of popular favour.

The public eye becomes dissatisfied and wearied with the constant reproduction of the same forms and ornaments: objects which were once admired, after a long familiarity are observed with pleasure no longer; in some instances they may produce almost a sense of pain from the different associations with which they are connected.

The omnipotence of fashion with regard to dress is admitted by all. Literature, language, manners, are not free from its influence. Even religion, at least in its less spiritual part, falls under its powerful dominion; and a mere glance at the history of architecture will show that, whatever may be its intrinsic merits, and the superiority to temporary opinion which it might be supposed to possess, the practical adoption of any particular style is in some measure dependent on fashion, and on particular circumstances of the times; nor is that, perhaps, altogether a matter of wonder, if it be true that buildings are a species of clothing, invested with fixedness and solidity.

After the revival of learning, the monuments of Italy were visited and delineated, and public taste became influenced by Italian art. Roman forms and ornamentation were introduced into Mediæval buildings, and from this union sprang a style more picturesque than pure. It pleased for a time, and upon its occasional revival may afford relief from the satiety of more regular forms; but it has no claim to the first rank in art, or to general application. Like the illegitimate offspring of kings, it has a royal origin, but is excluded from the throne.

But in the course of time purer buildings were erected, wholly after Roman models; and the numerous works of Inigo Jones, Sir Christopher Wren, Vanbrugh, Kent, Sir William Chambers, and others, attest the uninterrupted prevalence of that style for a long period, and the excellence it had attained; while Gothic architecture was neglected, and almost forgotten; its very name connected with barbarism, and a term of reproach.

But fashion was inconstant, or architects unskilful; the public taste required variety; and Horace Walpole and Batty Langley revived a kind of bastard Gothic, of the worst possible type, and took credit to themselves for having brought back public attention from the buildings of Italy to the monuments existing in our own land.

The utter neglect into which Gothic architecture had fallen, and the notions entertained about it in an educated age, by men of the highest accomplishments, may be seen in the correspondence of Walpole with Sir H. Mann. Walpole says,—"I thank you a thousand times for thinking of procuring me some Gothic remains from Rome, but I believe there is no such thing there; indeed, my dear sir, you have no idea what Gothic is; you have lived too long amid true taste to understand venerable barbarism. You suppose my garden is to be Gothic too. That can't be! Gothic is merely architecture; and as one has a satisfaction in imparting the gloom of abbeys and cathedrals into one's house, so one's garden, on the

contrary, is to be nothing but riant, and the gaiety of nature." And then he describes his "little hall decked with long saints in lean-arched windows, and hung with paper to imitate Dutch tiles;" and again his—"lean windows fattened with rich saints in painted glass: and niches full of trophies of old coats of mail, and Indian shields made of rhinoceros-hides," &c. And the whole forms "a castle" with two-and-thirty windows enriched with painted glass.

It is almost needless to say, that this was a period when Roman architects and architecture had declined; and when Gothic architecture, either as proposed to be imported from Rome by Sir H. Mann, or developed by the skill and taste of Horace Walpole, was still very imperfect, and taste generally at its lowest ebb.

But what Hume has said with regard to the general course of human affairs is true also with regard to matters of taste. "There is an ultimate point, both of depression and exaltation, which, when once reached, things return in a contrary direction."

Taste at first revived among the few; travellers with enthusiasm for, and knowledge of art, made elaborate drawings of the remains of ancient buildings. Rome, Greece, Babel, Palmyra, Spalatro, were transferred to paper; and then the public interest in architecture was again awakened. To Spalatro and Adams we owe Portland-place and the Adelphi, of an impure style, but occupying a nearer relation to genuine Roman, than Horace Walpole's Gothic to the real Mediæval.

Then the exquisite temples of Greece became the objects of imitation. Ionic and Doric porticos arose in our streets, and Athenian villas in our suburbs. But it was discovered that buildings which are beautiful when constructed of marble, and adorned with painting, gilding, and sculpture, and seen under a sky that reveals every light and shadow, are by no means so effective when built of brick, stone, or cement; and in a climate shrouded for half the year in a mixture of fog and smoke. Upon this Grecian architecture declined; and the modern Italian, being more forcible and varied, was introduced, as seen in our club-houses, banks, and other public buildings; and about the same time, through the labour and skill of Britton and Pugin, the beauties of Mediæval architecture became known. And now the modern Italian and Mediæval hold a divided empire over public opinion.

Thus in the course of three centuries, five or six varieties of styles in architecture have been in fashion; but we are not to conclude that they were all equally, or for equal periods, objects of admiration, or worthy of it; nor because fashion is inconstant that the prevailing style is the best. Fashion is undoubtedly powerful, and the love of novelty (wisely ordained to stimulate invention and fancy) must be gratified; but true art has principles which will re-assert and vindicate themselves, when the circumstances of the day have passed away and are forgotten.

The various styles which have prevailed in this country, have afforded some practical experience; for the constituents of beauty in architecture are so composite, and so much dependent on circumstances—so relative—that without taking into account climate, application, position, association, and other incidents, a building which may be justly the object of admiration under one class of conditions, may fail to be so, or to the same extent, under another class.

In order to simplify this inquiry, architecture may be ranged under the two great divisions of Classic and Mediæval.

The admirers of Classic architecture think that it is founded upon larger and loftier associations than that of the Middle Ages, as being identified both with the outer and inner life of the two greatest nations of antiquity; with the empire of the world under the Roman dominion; with the Christian religion before the irruption of the barbarians, and with the power and opulence of the great modern republics of Italy,—a combination of circumstances that impart to it a Catholic character,—variety and susceptibility of adaptation, with essential unity; while Mediæval architecture, being the growth of particular institutions, and limited to a particular era, is therefore not so calculated for general adoption; that, in fact, the opinion of Sir Christopher Wren, that it is the congestion of a monkish spirit, has a certain admixture of historic, if not of æsthetic truth.

On the other hand, the enthusiasts of Mediæval art would revive it so as to form a national style, and would banish her Classic rival as an alien forever from our shores. They hope to form this

national style by adopting the best period of Pointed architecture, selecting some peculiarities from the more varied buildings of the Continent, and imparting a cheerfulness to it by introducing large windows without mullions, and with plate-glass in large panes. Now, if it be true, as is generally supposed, that Mediæval architecture owes much of its impressiveness to its dim antiquities,—its subdued but rich religious light,—the mysterious awe, with which it affects the imagination,—this would be an attempt to unite in the same building things incompatible, the "riant and the gait," with "the gloom," which Horace Walpole kept apart in his house and garden; which could scarcely fail to be "barbarism," without being "venerable."

However, this proposal shows that even the total admirers of Gothic architecture would not adopt it without considerable qualification for mere secular buildings, which is a very important feature in the present inquiry.

It must be admitted that those who would by degrees Mediævalise London, have in the present posture of things a great apparent advantage in the argument as to experience.

A magnificent edifice, a palace of official buildings, "a dream in stone," has been built in Gothic architecture, at a cost of more than a million sterling, on one of the worst sites in Europe, on which it has conferred an importance otherwise unattainable. That building, with Westminster Hall and Abbey, have impressed a distinct architectural character, as well as historic interest on the locality. To such an extent is this presiding influence felt that,—

"As by the stroke of the enchanter's wand,"

Westminster-bridge disappears as a Roman, and is to rise as a Gothic structure.

Although the hand of genius has in a great measure triumphed over the difficulties of the situation, it is still to be regretted that some other site was not chosen than the penultimate corner of Westminster,—a mere slice reclaimed from the mud and exhalations of the Thames, below the common level, and hemmed in by Westminster Hall and Abbey. But it is done: it is a great fact, from which much wisdom may be derived, and we now know what it is to act upon an epigrammatic rather than a prudential opinion; one that fills the ear and satisfies the sentiment without convincing the judgment. "It is good to build upon the old foundation."

The Mediævalists are further strengthened by what has been done close at hand on "the finest site in Europe,"—Trafalgar-square. There we see the converse of the preceding experiment. Through want of means or of genius a building has been erected to which the excellence of the site only gives a stronger condemnation; and, such is the contagion of bad example, that every thing that has since been added has either been in worse taste, or, if good in itself, utterly incongruous with the main feature, and, indeed, with all around it.

Let any one walk up Whitehall northward, and see (if he can see) the National Gallery behind the base of the Nelson monument, and he will at once perceive the column commemorative of our greatest naval hero expand into colossal proportions, while those in the portico of the National Gallery dwindle into posts, and the entire building look like a gigantic baby-house. Perhaps the architect was more unfortunate than censurable. The ministry of the day gave him a problem beyond the power of plastic art to solve,—given 50,000*l.* and a few old columns from Carlton-house, and "the finest site in Europe," to build a national gallery. A gallery was erected, but the measure and the means precluded its being national.

Thus, on the one hand, the Mediævalists may point to the triumph of Gothic architecture over all the difficulties of site and position at Westminster, and with the other to the lamentable failure of Classic art in Trafalgar-square, notwithstanding every local advantage; and they may further show the gigantic fragment, the banqueting-house at Whitehall, in unison with nothing around it, looking down obliquely on the little "round-house" opposite; the pitted elevation of the unimposing Horse Guards; the new-fronted Treasury, which, though an elegant building, betrays some paternal defects; and may say with apparent reason,—Can you forbear to continue what Sir C. Barry has so magnificently begun? You see at Westminster a specimen of what London may one day be under our guidance,—a city which shall be the realization of "a dream in stone."

Notwithstanding that the Mediævalists have every advantage in point of argument, so far as the triumph of Gothic and the failure of Roman

art, almost in juxta-position, are concerned, yet it seems very questionable whether it will be judicious to adopt, systematically, the Gothic style of architecture, however modified, in the purely secular buildings of London. Here and there it may be proper to employ it under particular circumstances; but to invest London gradually and systematically with a Mediæval character is what every person of sense and reflection, in his sober mood, not led away by enthusiasm for a favourite and delightful pursuit, would regret and condemn.

The Mediævalists at present do not go so far; they only urge that a particular building under contemplation, to be seen in connection with the marvels of Westminster, shall be of the same style; which seems a very reasonable request; but when another such "dream in stone" has been realized (and without doubt it would be a very fair vision, though, like dreams, not remarkable for consistency), the argument for further progress would be greatly strengthened.

The architects who raised the beautiful religious buildings of the Middle Ages endeavoured to realize in stone one master idea; and they were wonderfully successful;—as Christian temples of worship, for the use of the Romish ceremonial, they cannot be surpassed in their adaptation, their effect, or their elegance.

It is reasonable, therefore, that they should be models, especially for ecclesiastical structures; and accordingly many beautiful churches have been built in imitation of them, and the association seems complete; but even there, in her own particular domain, Mediæval architecture is defective,—not in the art, but in the form and adaptation. The cathedrals and churches of the Middle Ages were built in the form of a long parallelogram, with chancel, nave, and aisles, divided by pillars, for processions and pageants. Modern Protestant churches are required for a stationary congregation, to see and hear a minister in one or two fixed positions, for which the Mediæval form is most inconvenient; if, therefore, we wish to retain the ancient form of association, we must submit to inconvenience in hearing and seeing; but if hearing and seeing are the most important, we must dispense with the long-drawn aisles, upon which so much beauty depends. It is not so with Classic architecture; almost any form, from a square to a double square, may be employed, without violation of the "sacred unities."

What is the fundamental position of the Mediævalists with respect to their proposal to invest London with a Mediæval character? They set out with saying that they have observed that scarcely any modern building in the Classic style has given great satisfaction, or obtained permanent admiration; and therefore they think that a different style, one in which buildings have given great satisfaction, should be substituted.

Now, buildings depend upon many circumstances besides style; as the height and extent, the application, the site, the means at the disposal of the architect; and last, not least, the talent of the designer.

It sometimes happens, in the contrariety of human affairs, that an extensive building may be required, and unstinted funds provided, when the talent of the architect employed does not rise above mediocrity; at other times an architect of transcendent ability may languish for want of a suitable field for the display of his abilities. But it has happened in our day that the three constituents mentioned have met together, and, as circumstances determined, produced a Mediæval building of unparalleled extent and splendour, of which, as we do not build in marble, we may say, without flattery, "*Materiam superabat opus.*"

But is that any condemnation of Roman architecture? Who can pretend to say that if it had been determined by the Legislature that the Houses of Parliament should be built after a Roman or Grecian model, instead of a Mediæval, that they would have been less admirable than the present?

Therefore, from the success of any particular building in one style, no inference can fairly be drawn as to its superiority to other styles, without a full consideration of all the circumstances essential and accidental.

Some of our Italian club-houses are very handsome; but importance and extent are wanting to fill the mind and impress the imagination, as the Palace of Westminster does; and the absence of those elements of success and grandeur are a condemnation neither of the style nor the architects.

But it is not necessary to confine our comparison

to Roman buildings in London of modern erection; if any ancient Classic buildings, or buildings on that model erected since the revival of learning, can be adduced (and unless the almost universal assent of the educated and enlightened is worthless, they can be adduced), which shall satisfy the understanding and taste as fully as any Mediæval building, the vaunted superiority of the latter must be set aside.

There is another consideration which ought to have great weight in respect of the choice of style, and that is the power of association. We associate the Gothic style principally with religious buildings, cathedrals, churches, monasteries, and to some extent with municipal and castellated buildings, all built within a certain peculiar, exceptional period of the world's history; and the growth of a remarkable state of society, manners, and institutions. It has long departed, and unless Europe has to pass through another night of barbarism and darkness, it can never return. When, therefore, the Mediæval style is applied to some building erected for a purpose which awakens no recollections of that period of society, injustice is done to the style, because one powerful element in its beauty is not there. If such is the case with regard to one building, how injurious must be the effect in a whole city; and particularly in such a city as London, the *moderna Babylon*, the commercial metropolis of the world.

London, with its fungous growth, its enormous, various, and yet unpicturesque population,—its incessant activity,—its manufactures and shipping,—its parks and squares,—its districts of fashion and of business,—its air of security and freedom,—what has it in common with our ideas of a Mediæval city?

It is so little like one, that with the exception of some half-dozen buildings, it might have been built and inhabited within a century.

If it is judicious to invest a great city with a Mediæval character, how is it, it may be asked, that Paris presents so different an appearance? France has passed through the same feudal condition as England; indeed, those institutions were exhibited on the Continent more vividly than in this country; she has Mediæval buildings of the same periods, and as beautiful as those of England; and the Romish religion still prevails there, while we have long disclaimed its authority; in addition to which there exists to the present day a more Mediæval character, about the ancient quarters of Paris, in their lofty high-roofed houses and narrow streets, than in the old parts of London (if, indeed, London can now be said to retain any antiquity); and yet all the main improvements in Paris, which form a new wonder of the world, are Classic, or based on Classic forms. Do we pretend to more taste than the people of France?

There are many cities on the Continent whose names alone awaken a sort of Mediæval echo. Oxford and Cambridge, too, are Mediæval, not merely from their buildings, but from their historic associations, the nature of the studies, the academic dress, the air of seclusion, "the cloisters pale,"—the absence of busy and progressive life.

But London requires a style of architecture, if any one is to prevail, of a character as cosmopolitan as possible,—one that shall speak to the judgment and imagination, rather than to the imagination alone in its most sombre moods.

The Classic style has that character. It originated with, or at least was adopted by, a people, who had no narrow or sectarian views; or conventional types and symbols essential to its development. As they annexed province after province, so they imposed Roman laws and civilization, and erected Roman buildings. The world is full of their remains—they are confined to no country or period—they are almost as much connected with Christian as with Pagan life; and modern times have seen a new creation of them whose association is the triumph of letters over barbarism.

Supposing, therefore, for the sake of argument, that the two styles were of equal beauty; confessedly our association with the one would be that of enlightenment and progress, as exhibited at two different periods of the world, and on a scale of unparalleled grandeur; with the other of superstition and barbarism, confined to a particular epoch, and to poor and scanty populations.

The associations are as distinct as day and night; and in the nineteenth century, when superstition and fallacies of every kind are disappearing before the illumination of the progressive mind—when education seems the great panacea,—our teaching even by material things, our "sermons in stones," should be associated with light rather than darkness.

CONSTRUCTED STREETS OF THE CITY.

AMENDMENT of the causeways of London, enlargement of the straits and narrows, or the establishment of routes entirely new, would appear to be now almost a hopeless matter. All the proprietors of houses and all the authorities seem to regard the growing constipation of traffic as a thing of indifference: no board, no corporation is disposed to concede anything to facilitate the free intercourse of commerce, although deadlocks and stoppages are frequent in our streets; and the retardation of business may be fairly computed at two full hours out of the twelve allotted to labour.

It would be a curious calculation, and not at all beyond the skill of a statistician, to determine the money-value lost by these frequently-recurring stagnations and delays, which are occasioned by the ever-increasing crowds and by the still accumulating amount of merchandise *in transitu* to and from all quarters of the metropolis: 1,000,000 per hour, or 2,000,000 per day, would be but a small estimate; yet this would amount to an annual loss of 600,000. If viewed in this light, some set-off might be scored against the expense to be incurred for the purchase of premises which obtrude upon the highways: the question becomes then a metropolitan if not a national one; and, like the toll-bridges, which impede progress still more, ought to devolve upon the Parliament and the resources of the kingdom at large.

The worst aspect of all these evils is, that there exists no body nor party that has the inclination or the power to apply a remedy to evils which are every year becoming more serious and alarming. The municipal body lately evinced a disposition to open some of the most constricted of the busy streets. Newgate-street is, by slow degrees, being widened six feet! The angular strip at the turn of Cannon-street was held in suspense for some years, inducing a hope that another block would not be erected close under the lee of the Cathedral; but that expectation has been disappointed, or at all events is threatened.

St. Paul's churchyard may be said to be the nucleus or aorta, where the great arterial ducts concentrate, receiving and pouring back an ever-pulsating torrent of living beings. The ample reserve of space around the cathedral is fenced in with an iron fortification; stopping all intercourse on one side in totality, and leaving, at several points of the carriage-way on the other side, only room for two teams to pass! The profitless inclosure is hideous from the deformity of bristling tombs; many whereof are unapproachable, but if seen, are undistinguishable as to the legends, many of which were once palpable, but now obliterated. There is an end to mortuary fees there; for sepulture has been long interdicted. Could not the mortal remains be collected together and enshrined in one or more mausolea, erected close to the cathedral? Might not the space be appropriated to the uses of the living, without involving, as in many cases of urban cemeteries, the desecration of the dead? The only argument that could be adduced for the perpetuation of the inclosure with its rude iron fence, might be that it added a grace to the architectural effect of our great *chef d'œuvre*; but this is not so: a uniformly designed terrace and balustrade, surrounding the pile, or even a graduated plateau, would look much better; whilst it added dignity to the structure, and dedicated to industry and trade that acclama which now yields neither credit nor profit to our ecclesiastics.

There was one other site, open for several years, which it was hoped the City authorities would turn to account in the relief of stagnated commerce—the plot at the angle of Paternoster-row—but that hope is, alas! frustrated. 6000, a year was too great a temptation; and St. Martin's-le-Grand, the Post-office, and the Cathedral, must all be screened.

Within the City the only street improvement lately made was the widening of Chancery-lane by about 6 feet only; and the present occasion of the demolition of two very ancient houses in Fleet-street, next to St. Dunstan's Church, would lead us to expect that the corporation would withdraw the frontage of the new houses, at least in the line of the church. We have more confidence in the modernization of the old quarters without the walls, and therefore beyond civic jurisdiction; and therefore we regard the project of erecting the Law Courts in one great series of buildings, to extend from Carey-street to the Strand, and from the Temple Bar (the city wall line) north, to traverse to Clare-market—as one of the wisest and most utilitarian that could be devised for the

health, convenience, and architectural character of the metropolis. Viewing, however, the difficulty of enlarging any of the great leading thoroughfares, or, indeed, any of the busy commercial streets, it is obvious that no very great improvement can be effected in any other way than by striking out direct thoroughfares in other quarters, in order to avoid the ancient narrow winding ways which are now for the most part renewed, with palaces of trade so costly that the national exchequer could not purchase them. The line recommended long since by the *Builder*, commencing at Leicester-square, cutting through Clare-market, continuing by Carey-street, across Chancery-lane, by the Record Office, across Farringdon-street (by a viaduct), and out at the statue of Sir R. Peel, would be a most direct, level, and obvious route; but there are no wide-street commissioners to purchase the plot at the corner of Chancery-lane, nor to seize upon any opportune occasion to forward such plans, or to prevent the erection of public buildings or of great private structures on the very line of any contemplated route.

There is, however, one great easement which might be secured for the increasing multitudes, and for commerce annually accumulating, and that is an esplanade and viaduct along the north bank of the Thames. The Improvement Commissioners have determined that this should be done: it is indispensable, not only for the relief, but for the health of an overcrowded city. Whether this esplanade be continued from Westminster to London-bridge, or only from Whitehall to Blackfriars, it must be carried out.

I have seen a plan, by Mr. H. H. Bird, for an open causeway, with a railway, in communication with the Pimlico terminus, which proposes to carry an esplanade, 100 feet wide, from Whitehall to Blackfriars-bridge: by this the embankment of the river, the formation of twelve acres of tidal docks, and the reserve of eighteen acres gained from low-water mark, are contemplated; and of this the cost is estimated at only 700,000. A more direct access from west to east would be acquired hereby: the impurities of the Thames would be rendered less noxious; and a new view of London, from an elevated and agreeable promenade (open to private vehicles and traffic, but not to omnibuses) might induce many thousands to frequent this line daily, thereby relieving the Strand and Fleet-street. One great recommendation of this plan is, that it proposes to open access to the rival esplanade from all the streets along the Strand and Fleet street which now terminate at the river bank.

It is hard to conjecture what plan may be adopted hereafter for the enlargement of commerce; whether the subterranean or the viaduct (elevated) railroads may be carried out, or whether the next generation may be compelled to shoulder each other in turbulent floods, now stagnating and anon bursting forth in rapids; but it is clear that some change must take place in the bridge-communication between the Middlesex and Surrey populations: it is ridiculous to contemplate that the comparatively paltry sums of 200,000, for Southwark-bridge or 300,000, for Waterloo should act as a clog and fetters upon great interests which represent millions every year. The question is more than metropolitan—it is national, and, when our colonies are taken into account, becomes semi-universal.

In Paris we have an example of what great things can be done in a short time, simply because there is a power and a will to accomplish. Neither the genius to execute nor the means to carry out great designs are confined within the atmosphere of imperial governments. Let us hope that a free and constitutional kingdom is not debarred by its inherent liberties from attaining the perfection and grandeur of an improved and embellished metropolis.

QUONDAM.

CHURCH-BUILDING NEWS.

Worcester.—A sum of 6000, or thereabouts having been subscribed towards filling the east window of Worcester Cathedral with stained glass, it has been resolved to advertise in the *Times*, *Builder*, &c. for the best designs. A lithographed tracing of the window is to be prepared for the use of competing artists. The whole cost has been estimated at 1,0500. It is proposed, according to the local *Herald*, first of all to fill in the upper part of the window; and this, it is thought, will induce the public to subscribe all the more readily.

Maindee.—Tenders, says the Newport correspondent of the *Hereford Times*, for the erection of the new church at Maindee, were opened by the building committee, when the chairman suggested

that as the average made about 5,000, necessary for the building of the church on the plans of the diocesan architects, Messrs. Pritchard and Seddon should be requested so to modify their plans as to reduce the cost to about 2,000, and the architects were instructed accordingly; the parties tendering to be supplied with the modified specifications, &c. with a view to sending in new tenders.

Bettws.—The little church of Bettws, near Newport, in Wales, is about to be restored by Mr. P. Bolt, builder, from the architectural decorations of Messrs. Pritchard and Seddon, of Llandaff.

Saltair.—The new church erected at Saltair has been opened. This is the last of the many costly works carried into execution by Mr. Salt for the benefit of his workpeople. The church is situated between the railway and the canal, and in front of the offices at Saltair, and forms a very conspicuous object in the picturesque valley of the Aire. Like all the buildings at Saltair, it is in the Italian style. The entrance consists of a peripteral temple of Corinthian columns, raised above the ground by a continued circle of six steps. The cellar forms the vestibule to the church. Above this is a pedestal broken by eight boldly-carved trusses, which is crowned by a circular monopteral story, decorated with eight columns, and terminating in a cupola. The spaces between the latter columns are filled with castings, to be bronzed and parcel gilt. The church is surrounded by pilasters, and crowned with an entablature in the same enriched character as the entrance portico. The whole exterior of the edifice is executed in masonry by Messrs. Moulson. The interior is a parallelogram, 95 feet by 45 feet in width, covered by a ceiling comprising as much of a semicircle as the laws of acoustics will permit. A continuous base runs round the building, supporting at intervals Corinthian columns executed in verde antique scagliola, polished, with white Parian capitals and bases. The scagliola has been executed by Mr. Dolan, of Manchester. The spaces between the columns are occupied by windows filled with tinted glass. The seats, arranged in two masses, preserving a central avenue, are of polished wainscot, carved. The joiners' work and oak carving were entrusted to Mr. John Ives, of Shipley. The whole has been designed and executed under the superintendence of Messrs. Lockwood and Mawson, of Bradford, architects.

Widnes (Lancashire).—A new Parsonage House for St. Mary's Church, Widnes, is now in course of erection, from the designs of Mr. Barry, of Liverpool. The tender of Mr. Rigby, Buncorn, for 9000, has been accepted.

Blackburn.—The foundation-stone of a new chapel has been laid at Mill-hill, a part of the township of Livesey, which adjoins the densely-populated borough of Blackburn. The designs and working plans were entrusted to Messrs. Hibbert and Rainford, of Preston, architects. The interior dimensions of the chapel are 72 feet by 50 feet. In all, accommodation is provided for 920 persons. The form of the chapel ceiling will be elliptical, a form which, it was considered, has not only acoustic recommendations, but increases the loftiness of the interior. The entrance front comprises a portico and vestibules, above which rise a clock-tower and spire, to the height of 135 feet. The architectural style of the edifice is Classical, freely treated in accordance with the necessities of the material, which consists almost altogether of bricks, moulded into bases, string-courses, capitals, cornices, and panels, as required. The mouldings are to be chiefly in white bricks; the panel-work and plain faces in red brick. The whole of the bricks will be provided from the works of Mr. Joseph Eccles. Effect will be given to the exterior by the use of figured encaustic tiles in panels. The whole of the interior woodwork for the pews, pulpit, gallery front, &c. will be in pitch-pine, stained and varnished. The windows will be glazed in figured enamelled sheet glass. The contractors are, for the excavators' and bricklayers' work, Messrs. Marsden and Charney; masons' work, Mr. John Isherwood (Wheelton); slaters' work, Mr. Henry Fletcher; joiners' work, Mr. Aspin; plasterers' work, Mr. William Cook; plumbers', glaziers', and stainers' work, Messrs. Park and Co. of Preston. The edifice is estimated to cost 3,2000.

Londonderry.—The fund for the restoration of Londonderry Cathedral appears to be accumulating to a satisfactory amount. The designs for the restoration have been furnished by Mr. Joseph Welland, the architect of the Ecclesiastical Commissioners, and they include the entire restoration of the interior of the edifice to its primitive architectural character.

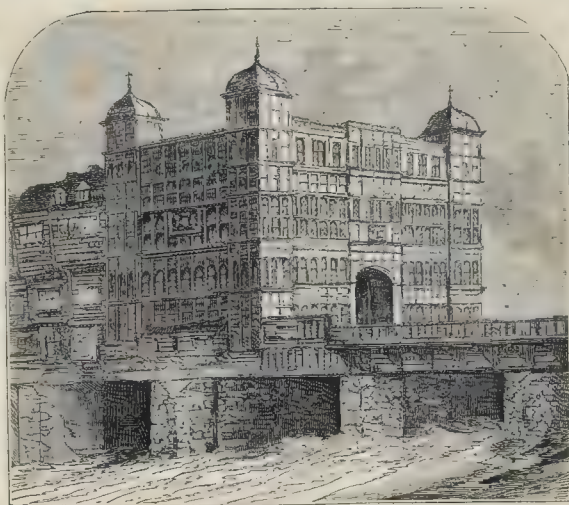
BITS OF OLD LONDON *



Redcross-street, Cripplegate.



Warwick-street, Ludgate.



Timber Houses on Old London bridge.

[See p. 261, ante.]

FOREIGN RAILWAYS.

The proposition made by the town of Carlsruhe (Grand Duchy of Baden) to construct a railway towards the Rhine (at Kinslingen) has been adopted by the Government.

The works of the construction of the branch line (of the Western Railway of France) from Lison to St. Lo advance with rapidity. It is expected that locomotives will be able to run over the line, for the purpose of ballasting, in six weeks' time from this. In the Calvados, the bridge over the river Elle, at Lison, is just completed.

The contractor for the construction of the line from Rome to Civita Vecchia has engaged himself to finish it by the 1st of April. Shortly locomotives will be able to run over the line from one end to the other without interruption. The other portion, from Rome to the Adriatic, and to the river Po, is in a very forward state. Mr. Brian, who constructs the line from Ancona to the Po, is the contractor on the Ancona and Bologna line for the permanent way and ballasting.

The works on the Madrid and Jaraque Railway, on the line to Saragossa, advance satisfactorily. Their ironwork for bridges, &c. has just been let in contract.

The inauguration of the section of the Seville and Cordova Railway, as far as Lora del Rio, took place, to the delight of the whole population, on the 5th of March. The first train held 759 passengers. On the following days the crowds were still overwhelming.

The Northern Spanish Railway continues to advance rapidly. In the beginning of April the earthworks are to be terminated between Valladolid and Arévalo. The structures, also, are very forward; the Medina and Duero bridges are finished. Those of Arévalo, Gomezano, Valdestillas, and Viana, are nearly keyed in. The company is already making preparations for the working of the line—forming staff, &c.

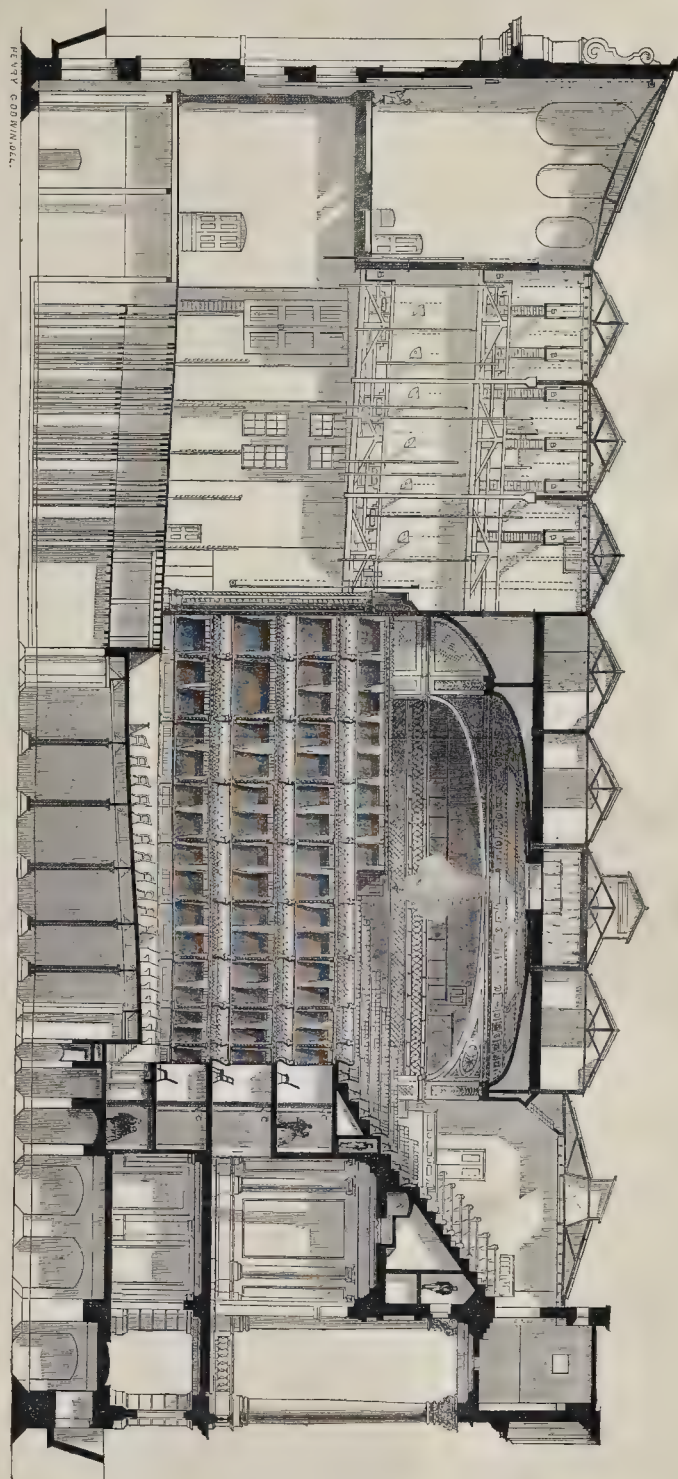
ROYAL ITALIAN OPERA-HOUSE, COVENT GARDEN.

In connection with the plan and views, of Mr Gye's elegant new theatre, which we have already published, and the detailed particulars given at various times, the accompanying longitudinal section of the building will serve to make its whole arrangement clear.

The ceiling is extremely light, and is constructed of wood of small scantlings, hung down from the main iron girders by light wrought-iron tie-rods. There are twenty-four apertures in the ceiling, forming part of the decoration, through which, by means of ropes, a scaffold can be pulled up from the pit, whenever it is required for purposes of restoration or cleaning. The chandelier is hung to two cast-iron beams, well secured to the main girders. The chains pass over a double-purchase crab, by means of which the chandelier is raised or lowered at pleasure.

The pit is supported upon strong cast-iron pillars, and is so constructed that it can at any time be raised level with the stage, or lowered some feet below it. To allow of this, the upper part of the cast-iron columns is made of the form of a tuning-fork, a shape which permits of the main trussed wooden girders of the pit being lowered into the heads of the columns. The boxes are supported by wrought-iron cantilevers, resting on the cast-iron columns shown in the section, and well secured to the wall. This arrangement renders the boxes quite independent of front support, and permits of the entire removal of all back and side partitions whenever required. The two centre boxes, marked A on the plan we published (p. 236), are so contrived as to form part of a state box, of twice the usual height, when required. The angular spaces on the plan near the saloon or crush room are ventilating flues from the several corridors, and (as well as the flue over the saloon ceiling) communicate with a high shaft over the triangular box staircase. The painting-room over the back of the stage is 90 feet by 30 feet, and has wall space for the longest cloths, which are hung on pulleys, and can be lowered into the basement, thereby giving the painter access to every part of the scene without leaving the floor of his room. The space under the pit, entrance-hall, and portico, is used for store-rooms, chorus and supernumeraries' dressing-rooms, and other apartments for the many purposes connected with the working of the establishment.

Madlle. Lotti de la Santa, who is singing as *prima donna*, is a charming artist; and, as it seems to us, was scarcely so well treated by the critics at starting as she deserves.



ROYAL ITALIAN OPERA-HOUSE, COVENT GARDEN: LONGITUDINAL SECTION.—MR. F. M. BARRY, ARCHITECT.

SCALE OF FEET

10 5 0 10 20 30 40 50 60 70 80 90 100

REFERENCES.

A. Ventilating shaft.

B. Bridges over stage from side to side.

C. Ventilation for boxes.

D. Doors for the entry of scenery.

ANOTHER EXPERIMENT ON STONE STAIRS.

THE directors of the Polytechnic Institution have allowed me to try what weight the steps will bear, which still remain on the other side of the well-hole, and which correspond precisely with those that fell on the 3rd of January last, if loaded uniformly over their entire surface, so as to imitate the effect of a dense crowd passing up and down, or confined for a time on the staircase. To insure safety to the workmen and others engaged in the process, the underside of the steps was shored up with timber to within about half an inch of touching the steps, just sufficient to let them break with the load, and not fall far enough to be dangerous. The weights were then put on, half a hundred-weight at a time, until twenty-eight half-hundred-weights were on one stone. Having no more weights at hand, the whole was left, thus loaded until the following day, when, before removing the weights, two men were placed upon the step, thereby showing that each step would bear loading with nearly 17 cwt. during a whole day without breaking or showing the slightest tendency to deflection. Similar experiments were repeated three times on different steps, without any variation in the result. There were present several of the directors, lecturers, architects, engineers, and other persons interested in the subject.

Many architects and others have remarked, that weighting the stairs steadily will bear no comparison with the effect of a vast crowd of people, running or jumping boisterously up and down the staircase. No one will deny that there is a difference, yet the variation is of much less importance than at first appears to the imagination. The same weight of different substances may vary materially in bulk, density, and specific gravity, and may produce very different results when put in motion, and then suddenly interrupted or stopped. A bag of feathers, weighing 50 lbs. might be laid steadily on a staircase, or thrown from a given height upon it, without doing any damage; whereas if a globular iron shot, of the same weight, were dropped from the same height as the feathers, it might very probably break at least one step, or perhaps damage several. These are extreme cases; but however violent or tumultuous the action of human beings may be, there is always a vast amount of elasticity in their movements. When we alight after jumping, the first part of our entire frame that is arrested by the ground is our feet: the legs will next be at rest, then the body, and the head and arms will be the last in motion. A certain time elapses after the first interruption before the whole is at rest, owing to the beautifully elastic nature of the complete animal fabric. This spring, or vibratory power, is in a great measure dependant on the will of the individual; for if we descend or step down but a few inches unexpectedly, as sometimes happens in a dark or gloomy place, a violent concussion is felt throughout the entire system, even to the crown of the head. Taking these circumstances into consideration, I am disposed to think that there is not so wide a difference in effect between a dead weight steadily placed on the steps, and a living crowd moving up and down in a disorderly manner. If a regiment of soldiers were to come down the stairs, marching with military precision, the case would be very different, and danger might be apprehended.

Having listened attentively to the observations of men possessing the highest attainments in scientific construction, and witnessed experiments undertaken for the express purpose of trying the strength of stone steps, similar to those of the staircase at the Polytechnic, I have good reason to consider that, notwithstanding the steps were weakened considerably by letting in the iron, the experiments have proved that, after the trellises had been inserted, the steps were much stronger than requisite to bear any load that was ever likely to be put upon them. Consequently, for all ordinary stone staircases, not exceeding 5 or 6 feet wide, there appears no reasonable cause whatever to deviate from the method heretofore successfully practised during probably 200 years. To prop up the ends of the steps of common staircases betrays weakness somewhere, which is not borne out by argument or experiment.

C. H. SMITH.

WELBURN.—The foundation-stone of a new church, to be built by the Earl of Carlisle, at Welburn, near Castle Howard, has been laid by that nobleman. The architects are Messrs. Malinsson and Healey, of Bradford.

REPORT ON THE EXAMINATION OF THE RETURNS OF DISTRICT SURVEYORS.

THE Superintending Architect of the Metropolitan Board of Works, Mr. Marrable, has issued his third annual report on the returns made by district surveyors. We print the following:—

List of Gross Totals of Fees received by the Surveyors of the several Districts, arranged according to value.

DISTRICTS.	GROSS FEES RECEIVED.	OFFICE EXPENSES.	NET REVENUE.
	£. s. d.	£. s. d.	£. s. d.
Tower Liberty	39 3 0	22 0 0	17 3 0
Stoke Newington	51 3 3	17 10 0	33 13 3
Pitney and Rosham	88 5 0	12 0 0	76 5 0
Lincoln, &c.	161 1 0	21 0 0	80 1 0
Fulham	149 6 9	17 10 0	131 16 9
Greenwich	153 4 0	94 0 0	59 4 0
Covent Garden, &c.	150 6 9	40 0 0	150 16 9
St. George, Hanover-square, North	44 10 6		
North St. Marylebone	40 13 0		49 15 0
Do. part	157 19 6	35 0 0	122 19 6
Streatham and Brixton	173 15 0	17 10 0	156 5 0
Penge and Lower Norwood	179 18 6	28 19 1	150 19 5
Do. part	31 0 3	4 0 0	27 0 3
St. George in the East, &c.	181 13 0	50 10 6	131 2 6
Clapham and part of Battersea	189 10 0	45 0 0	144 10 0
Rotherhithe and Hatham	198 3 3	46 0 0	152 3 3
Woodwich	208 5 3	103 0 0	105 5 3
Hammersmith	219 6 3	142 10 0	75 16 3
Hampstead	224 10 6	85 0 0	139 10 6
Whitechapel	237 18 11	45 15 0	192 3 9
Pimstead and Eltham	237 6 9	84 0 0	153 6 9
Bromley	257 10 0	94 0 0	163 10 0
St. Giles and St. George, Bloomsbury	265 10 6	35 0 0	230 10 6
Southern Division, City	275 15 3	No return.	275 15 3
Holborn and East Strand	277 2 10	99 10 0	177 12 10
Chelsea	278 17 7	90 0 0	188 17 7
St. James, Westminster	282 12 7	64 0 0	218 12 7
Whitehall and Finsbury	290 12 10	64 0 0	226 12 10
St. George, Hanover-square, part	297 5 6	40 0 0	257 5 6
St. Margaret and St. John, Westminster	302 9 3	37 0 0	265 9 3
Charlton, Lee, and Kidbrook	311 18 0	37 0 0	274 18 0
Holborn, part	318 19 11	85 0 0	233 19 11
Belgrave and Finsbury, part	322 5 3	100 0 0	222 5 3
Deptford	323 16 0	160 0 0	163 16 0
Camberwell	342 9 6	None.	342 9 6
St. Martin and St. Anne, Soho	343 12 3	60 0 0	283 12 3
St. Luke, Old-street, &c.	351 13 6	48 0 0	303 13 6
Clerkenwell	372 0 3	30 0 0	342 0 3
Spatialfields, &c.	401 7 9	96 0 0	305 7 9
Bermondsey, &c.	429 6 6	90 0 0	339 6 6
Mid-end Old Town	438 10 7½	115 0 0	323 10 7½
Eastern Division of City	479 13 3	277 0 0	202 13 3
Hackney			
South Lambeth, &c. part	497 3 6	148 10 11	348 13 6
Do. part	504 2 0	115 0 0	389 2 0
South Kensington	500 14 1	120 0 0	380 14 1
Western Division of City	534 17 8	90 0 0	444 17 8
Part of Clerkenwell	538 2 0	142 0 0	396 2 0
Bethnal-green	547 11 9	140 0 0	407 11 9
East Islington	567 10 9	165 0 0	402 10 9
South St. Marylebone	570 1 0	115 0 0	455 1 0
Lewisham	579 2 3	55 0 0	524 2 3
Northern Division of City	648 5 3	70 0 0	578 5 3
Southwark, &c.	769 13 9	231 3 0	538 10 9
West Islington	780 1 11	99 19 0	680 2 9
North Kensington	805 1 3	160 0 0	645 1 3
Bow and Poplar	873 0 6	225 0 0	648 0 6
Fulldington	896 3 9	172 11 0	724 2 9
Shoreditch and Norton Folgate	922 17 0	78 0 0	844 17 0
Newington, &c.	1,158 16 9	No return.	1,158 16 9
St. Pancras			
	£21,732 11 2½	£4,632 6 7	£17,100 4 7½

Summary of Abstract.

WORKS.	BUILDING OPERATIONS.	FEES.
		£. s. d.
New buildings in 1858, in respect of which fees have been received	3,913	6,963 14 10
Additions, alterations, and other works, in respect of which fees have been received	5,949	6,262 7 2
Arrears of former years received:—		
New buildings	2,923	5,553 7 0
Additions and alterations	2,715	2,953 2 2½
Total of works and fees thereon received during the year ending 31st December, 1858	15,500	31,732 11 2½

UTILIZATION OF WASTE SUBSTANCES.

THE paper read at the meeting of the Society of Arts a few weeks ago, "On the Utilization of Waste Substances," by Mr. P. L. Simmonds, was a very interesting and exhaustive one, and must not be passed over.

After stating that, in his opinion, the subject, in its collective form, had not received that attention which its importance deserved, the author said that he would group the various waste substances of which he was about to speak under the three general divisions of animal, vegetable, and mineral. After noticing a large number of animal substances which were utilized in some way or other, he passed to the consideration of the important subject of finding a substitute for guano, remarking that fish, the source of guano, naturally suggested itself. The waste material trade of London in London and other large towns, in worn-out garments and rags, was brought under consideration, which led to the discussion of the infinite variety of matter used in the manufacture of paper,—a subject which he treated at some length. Passing to vegetable substances, the employment of the refuse of cotton formed a prominent feature.

Waste bread and such similar substances, it appeared, were used very largely in Paris for making tooth-powder, &c. The care taken in collecting valuable waste metal was then described, as well as a mode for recovering metallic tin from waste tin-plate, by which a considerable saving was effected.

As the subject is a curious as well as a generally interesting one, we shall quote a few of the examples of utilization here and there adduced amongst a host of other instances.

Glue-makers' refuse has long been employed as a fertilizer in the vicinity of tan and glue works, and with good success when applied to any kind of crop, as from its putridity it acts rapidly. It is worth about 36s. per ton.

Cow-hair, from the tanneries, is used for mortar and for making felt; but, in some parts of the continent, they make ropes and carpets of it, and stuff sofas and chair cushions with it instead of with horse-hair.

The waste shavings in whalebone cutting are employed as a stuffing material by upholsterers, and for filling fire-grates in summer; and all the refuse goes to the farmer for manure, or to the

prussiate maker, to be used with other animal substances, woolen waste, rags, hoofs, and horns, button-makers' refuse, bone drillings and filings, to form these beautiful salts.

Under the various names of glue pieces, sizing, spatches, and screws, the offal or parings of skins and hides, and the pelt from furriers, the hoofs and ears of horses, cattle, and sheep, are used by the glue-makers. Old leather scraps are even converted into glue. Gelatine is a purer kind of glue, also obtained from waste materials, such as the raspings and trimmings of ivory, the bones, cartilage, and tendons of animals. The clippings of parchment, vellum, gloves, leather, and other kinds of skin and membranes yield size. The French buy up largely our written parchments, and after removing the writing, return them to us in the shape of kid gloves. The shavings of seal and other skins are used for filling tennis and cricket balls.

We have long paid a tax on dogs in this country, but in Paris the imposition is new, and it led to an immense destruction of these quadrupeds in the Seine. A number of persons forthwith engaged in the occupation of getting out the dead bodies, and boiling them down to extract the fat, which is employed in the preparation of kid gloves, and especially straw-coloured ones, being sold at the rate of 2½ francs per kilogramme.

The very pretty and durable ornaments now made from fish-scales, by Mr. S. Mahood, are a new and attractive application of a waste substance: fish-scale tiaras, brooches, bracelets, &c. are well known, and to be met with in the galleries of the Crystal Palace, the bazaars, and other places. Fishes' eyes are also utilized by the manufacturer of shell flowers for making the undeveloped buds.

In a recent number of an Australian paper we find the following paragraph. Whether it be in joke or earnest we cannot say, but if the discovery be a fact, we should, by all means, recommend the collection of the raw material in this great metropolis:—

"A late arrival in Melbourne is engaged in rather a novel occupation, being no other than extracting a dye from those nocturnal depredators unfortunately remarkably prevalent in this colony—bugs! We have seen the dye, which very much resembles that which is extracted from the cochineal insect."

Mr. F. B. Houghton has recently patented a process for making paper from any description of woody fibre, which is especially applicable to the manufacture of paper from flax-straw, or flax refuse.

Waste paper clippings and cuttings are bought up at from 1s. 6d. to 7s. 6d. per cwt. for common, up to 21s. per cwt. for the best clean white, such as the trimmings of bookbinders, envelope-makers' cuttings, the shredding from the plough-knife in cutting post and foolscap, &c. The best is worked up again for white paper, and the more common and coloured kinds for packing-paper and paper-hangings.

The waste made by the sawyer or turner, wood-dust of various kinds, has several uses. Mahogany dust is employed for smoking fish; box-dust for cleaning jewellery, being sold at 6d. per quart.

The shavings or refuse in making cedar pencils from the wood of the Virginia or American cedar, are used up to make the otto of cedar wood, a hundred weight of shavings producing about twenty-eight ounces of the otto of cedar. Sandalwood-dust is used to fill scented sachets.

Saw-dust is extensively used for sprinkling the floors of public-rooms, butchers' shops, in vinecellars for packing bottles, for stuffing dolls, and by many manufacturers; as by the needle-maker, and the nail and screw-maker. It is also in large demand in America for packing ice for shipment.

A large quantity of tobacco is destroyed from time to time in the customs kiln, termed the Queen's tobacco-pipe, in the London Docks, and the ashes are considered a good manure. A few tons of these ashes, purchased of the Customs, are occasionally advertised for sale.

The numerous uses of seaweed, present and prospective, I can scarcely touch upon. This waste substance, to be obtained on our own and most shores in such boundless profusion, is too much neglected. An inventor proposes to make paper from it, and a French engineer speaks in raptures of it as a building material, describing it as an excellent lining for roofs and walls; among other advantages it is almost incombustible, and will not harbour vermin.

Ordinary coal-gas liquid is often employed to obtain by distillation common ammonia, much used in dye-works, and to produce with lichens

the beautiful colouring matters called orchil and cudbear. Many hundreds of thousands of gallons of ammoniacal liquor are used in the preparation of ammoniacal alum. To obtain this and other refuse products of coal, aluminous shale comes largely into use, and shale oil is applied as manure.

Coal-tar (of which about 300,000 tons are made yearly) furnishes a chief ingredient of printers' ink, in the shape of lamp black: it is also made into asphalt for pavements, and, mixed with red-hot clay, forms a charcoal that acts as a powerful disinfectant: with coal-dust it forms, by pressure, an excellent and compact artificial fuel.

Carbolic acid possesses extraordinary antiseptic properties, and carbo-azotic acid gives magnificent straw-coloured yellow dyes on silk and woollen fabrics.

Crude naphtha, used for burning, benzine or benzole for removing grease spots, paraffine oil, extensively employed as a lubricator in the cotton mills, &c. are other commercial products, formerly waste or unapplied.

Breeze, the small dust coal of the mines, and screening from house coals, is pressed into cakes of artificial fuel. The ashes and small cinders sifted from the ash-pits and dust-holes are used for making bricks.

Horse-shoe nails, kicked about the world by horses innumerable, are not the useless fragments we might naturally deem them. Gun-makers tell us that no iron is so well fitted for their purpose as that which is derived from horse-shoe nails and similar worn fragments. The nails are in the first instance made of good sound iron, and the violent concussions they receive when a horse is walking over a stony road, give a peculiar annealing and toughening to the metal, highly beneficial to its subsequent use for gun barrels.

The scrap iron from needle-making and other manufactures is also sold by cart-loads, for making gun-barrels, as it is the finest-tempered steel.

The waste metal in cutting up steel pens, at Birmingham, is returned to the Sheffield steel converter, to be worked up again, an allowance being made for it of 10l. per ton, the original cost being 50l. or 60l. per ton.

Steel filings are sought for by the chemist to make steel wine. Barrels of brass filings are also saved at Birmingham, fetching about half the cost of the metal.

Scrap iron, the cuttings and parings of iron-work, are collected and melted again in the puddling furnaces.

Any one visiting the docks will occasionally see barge-loads of old iron being shipped as dunnage or ballast in vessels bound for the United States or for the Continent. It comprises a heterogeneous collection of all descriptions of articles, frying-pans and gridirons, saucepans and candlesticks, tea-trays and boilers, shovels, and old corrugated roofing, and many are the jokes of the men who bundle in this old iron. It is the accumulated produce of the old-iron shops, the collection of the mud-larks of the rivers and other itinerants. In 1857 we exported 36,500 tons of old and broken iron, chiefly to the Continent.

These, then, are a few instances of the utilization of waste substances. They form, of course, but a tithe of those being amusing, many instructive, exemplifications of the profit to be derived from the collection and utilization or re-application of waste products.

The paper was followed by a lively discussion on various points of interest in the extensive subject under consideration, a very appropriate motto for which might have consisted of the scriptural text,—"Gather up the fragments that remain, that nothing be lost."

IRISH NOTES.

THE foundation-stone of a new Independent Church, with school and lecture-rooms, on the same site as the old structure, has been laid at Donegal-street, Belfast. It is, as at present designed, only intended to accommodate about 550 persons, but further sittings may be obtained by the addition of galleries, for which provision will be made. The ground-floor is to be occupied by the school and lecture-rooms, and the church, which is to consist of nave 68 feet by 34 feet, and transepts, 55 feet wide, will be on the first floor. An organ-gallery placed in a lofty arch, with carved screen, will be constructed at one end of the building. Internally the fittings will be stained and varnished, and carved, and the roof, panelled with moulded ribs and semicircular trusses, traceried spandrels, &c. will be open to the hammer-beam at the height of 36 feet from

the floor, and ceiled at that level. Light is obtained through two light traceried-headed windows, placed between each bay of the nave and in the transepts; also an eight-light window in the gable end. Externally, the elevation of chief architectural character will be the front towards Donegal-street, and which will, in addition to the gable end of the church, embrace two houses, hereafter to be added at either side. The style is Early Decorated Gothic, and the principal entrance will be through a highly-enriched double doorway, with moulded shafts, &c. approached by a spacious flight of steps, with ornamental railings, &c. situated some 13 feet above street line, and placed under a continuous gallerie porch 20 feet in height. The roof is of equilateral pitch, and the ridge attains a height of 64 feet from the street. In the gable is introduced a canopied spirelet—projecting from its face, and supported on corbels—surmounted by a vane at a height of 90 feet. The material of front is Scarab stone, but the sides are of red brick, with buttresses introduced between the windows. The church is now being roofed, the work having been proceeded with previous to the laying of the corner-stone, for which provision was made. Mr. Raffles Brown is the architect, and Mr. John Ross, the contractor. The heating and lighting arrangements are by Messrs. Hart, of London.

The same architect has recently had completed, under his directions, the new Mechanics' Institute at Lurgan, situated at the junction of High-street and Union-street, and which was recently opened; the inaugural address being delivered by the Right Hon. the Lord Justice of Appeal, who has also filled the high offices of Master of the Rolls, Chief Justice and Lord Chancellor, and who, like an eminent legal functionary and statesman in this country, is known to have anxious desires for the amelioration of the working-classes. In a memorable competition for this building, Mr. Brown's designs were selected; and, as executed, they embrace, on the ground-floor, two separate entrances, a news-room, and library—at present stocked with only 1,200 volumes, but 400l. are available for the purchase of more,—a spacious semicircular lecture-room lighted by stained glass in the roof, committee and retiring rooms, &c. On the second floor are placed male and female school-rooms, an apartment intended as a museum for the display of local emblems and damasks in the manufacture of which Lurgan excels. The building is Grecian, externally, and has a clock-tower in which meteorological registers will be kept. Mr. Wm. Watson subscribed 1,000l. towards this Institute, and members of his family, 600l. It is intended to add a school of design, and a savings-bank, hereafter, to this building.

Shop architecture, as it is familiarly termed, is much improving in Dublin, and some important works are being, or about to be, executed. Messrs. Pim, Brothers, are newly fronting their "monster house," in South Great George's-street, and in an elaborate style. Other improvements are being made close by. In Grafton-street, the old dilapidated dwellings, of some centuries old, are gradually giving way to modern structures, and we doubt not but the gap caused by the recent fall of the house as noticed in the *Builder* will soon be filled by a more worthy occupant. A rumour was circulated some time since, of the probable pulling down of the block of houses uniting College-green with Grafton-street, with a view of widening the thoroughfare; but, as the work of "building up" is progressing there, we presume the project is abandoned. The new establishment for the Commercial-hall Company will be an important structure, having two fronts of Italian character, one (the principal), in Grafton-street, and another in Wicklow-street. Mr. Rawson Carroll is the successful architect, in a limited competition. At the four courts a further extension is being made, and the project of the new street, from Inn's-quay to Church-street, and thence to the Broadstone Terminus, is about being matured. We wish that from Dame-street to the King's-bridge Terminus were equally far advanced. The new Club-house to be erected at the junction of Leinster and Kildare streets will cost 22,000l. Messrs. Deane and Woodward are the architects; Messrs. Cockburn and Son, contractors.

The Augustinian community at John-street, Dublin, have recently purchased, in the Landed Estates Court, a piece of ground, with frontage to the street, whereon to erect a new church.

A Minor Model National School is to be built at Parsonstown, by the Board of Public Works. The ancient church of the Priory of the Holy Trinity, commonly called "The Black Abbey of Kilkenny," is to be restored, under the directions

of Mr. McCarthy. The south transept and its aisle are at present used as a Conventual Church, but the rest of the building, although even still presenting some beautiful features, is in a very dilapidated state. The church is believed to have been founded in the thirteenth century, and its plan comprehends nave, choir, south aisle, and transept, with small square bell tower at the junction, and a large massive tower at the west end. The cloisters and other portions are matters of history, but slight vestiges remaining.

A new Roman Catholic Church has been built at Kilrush, county Clare, and one is to be erected at Castle Connell.

Improvements are to be made to the harbours of Waterford and Carlingford.

The foundation-stone of a new school for the Christian Brothers, at Drogheda, has been laid.

GRAVE-DOINGS AT HEREFORD CATHEDRAL.

THERE are few persons who, when buffeted for their faults, can afford to take it patiently, still fewer who can submit to be evilly entreated for their good deeds, and, consequently, St. Peter's exhortation on this point is generally unheeded. The Rev. Francis T. Havergal, one of the minor canons of Hereford Cathedral, in his reply to the remarks in our pages on this subject, does not inform us whether he writes upon his own judgment, or at the dictation of his ecclesiastical superiors. This matters not in one respect, so far as the general issue goes, but it really affects his own veracity in the examination of details in his statement with reference to the exposure of human remains. The same gentleman has addressed a letter on the subject to the *Hereford Times*, commencing with, "Two persons, perhaps, in this county are readers of a weekly paper called the *Builder*," which he immediately afterwards terms "a very widely circulated paper." Why he should underrate the intelligence of the men of his county is not obvious. In that letter, however, as in the communication we printed last week, he condemns, in even stronger terms than our own, all the matters architectural to which we objected. As to the decoration, he says—"So universally is the colour on that groined roof condemned, that it will probably not be allowed to disfigure the building much longer," and of the tile flooring, that it "is of the most inferior quality."

Mr. Scott, in like manner, says that the matters on which we "so justly comment," "are as abhorrent to the feelings of those now engaged on the work" as to our own, and has simply to complain that we did not make it clear that these abominations were perpetrated before his connection with the fabric. We are quite contented to believe that in his able hands we shall have little reason hereafter to complain of matters architectural at Hereford. Of the principal object of our observations—the disinterment of the dead—Mr. Scott was not in a position to write. To show that we did not do so without good grounds, we will let the gentleman from whom we derived the information speak for himself. He says:—

"The fact of the cruel exposure of human bones dug up and cast out on a mound of earth, which I was informed would be drawn away to the fields, does not rest upon my testimony alone, and no guide-book was needed to point out any particular locality which your correspondent thinks 'the visitor' should have consulted. I assured the verger when I returned from the sickening scene, that the columns of the press should publish such a scandal to the world, and one of the dignitaries passing me to vespers, could not have been deaf to the severity of my remarks. I visited Hereford Cathedral about six weeks since, in company with a clergyman, who is the incumbent of a parish, about twelve miles distant, and knowing something of ecclesiastical architecture, as well as entertaining a sincere reverence for every relic of the past, and every memento of the dead, I could not refrain from expressing my regret at seeing the old brasses and stones being removed from the flooring, the long array of episcopal effigies, the upturned foundations of tombs, and the confusion which prevailed in every shape around us. But having surveyed the interior of the Cathedral, we passed out through a narrow doorway to what appears to be termed the Chapter House-yard, a great portion of which was doubtless covered by consecrated buildings. I will now state to you, and without any exaggeration, the sight which presented itself.

'Quemque ipse miserrima vidi.' The foundation of the old Chapter House was being filled up with rubbish, shot carelessly down as it had been brought out from the cathedral—thrown down with it were two human skulls, a thigh-bone, several arms, and smaller bones. I took up these skulls, and tried to bury them with my foot, as I found a little dog smelling at one of them; but if I had possessed a spade, it would have occupied a considerable time for me to have decently re-covered them with their native earth. Moreover, on a heap of mould beside the wreck of the Chapter House, there were large and small bones in abundance; and on a gentleman, who was there, telling me that that earth would be carted away, I picked off some of these human bones, and deposited them carefully in the Chapter House pit. I then observed that earth, to about the depth of 18 inches, was being cleared away from the walls of the cathedral, and into the trench which was made 1

descended, and there saw human bones in every direction, and where whole frames of mortality had been cut through with the pick-axe and the spade. A gentleman of the town (a stranger to me) was present, as well as my clerical friend, and he loudly re-echoed my expressions of indignation, adding, 'If you are horrified now, sir, I know not what you would have said if you had been here a few weeks since, and seen the number of skulls and bones in that pit, and on which the rubbish has been cast.' That gentleman lives, I believe, in Hereford; and he will remember, should he see this letter, the circumstance of our interview, and be thus assured that I have redeemed my promise to expose this disgraceful procedure.

M. A. CANTAR.

We have no desire whatever unkindly to pursue the matter further, or we could speak of our personal knowledge, in reply to one of Mr. Havergal's assertions, of doings in this cathedral some years ago, which would somewhat astonish him: if he doubt us, let him ask "Old Smith" to enlighten him. Our sole object, however, was to induce greater care in so serious a matter, and this, we have no doubt, will now be given.

DURABILITY OF ELECTROTYPE-WORK.

IN reply to an inquiry made at the Institute of Architects, as to the probable durability of electrotype metal, and its thickness, and for the information of your general readers, I may state that in 1844, being called upon to furnish metal medallions, &c. for the granite testimonial to Major-general Sir Alexander Dickson, K.C.B. &c. near the Rotunda, on Woolwich-common, a very exposed situation, I suggested electrotype castings. A consultation of officers on the question followed, the results being, full permission to reproduce my models in electrotype copper, which was ably carried out in the depth of a severe winter for me, by Mr. Henry Cox, at Battersea, now local manager of the Lizard Serpentine Company. These castings were at that time of unusual size and thickness—viz.: 2 feet 6 inches diameter, and fully an eighth of an inch thick of solid metal. This was effected also without shrinking, and every tool touch from the clay-model was reproduced. These works have been now exposed for fifteen years; and I believe that 500 will give no perceptible change in them. They weighed, as far as I can remember, thirty pounds each. No chasing was required. Mr. Cox, who, if he sees this, may speak for himself, afterwards executed much more extensive works for the Prince Consort, at Windsor, and other patrons.

On the other hand, I may have had, for years, a small brass, about fifteen inches high, of my Templar, William Earl of Pembroke, produced by the old fire-process, which cost me pounds to chase, obliterating every line of my original model, and weighs nearly $\frac{1}{4}$ of a cwt. When are we to rival our foreign neighbours in this important branch? The zinc Berlin process seems forgotten.

EDWARD RICHARDSON.

THE KALEIDOSCOPIC COLOUR-TOP.

THE kaleidoscopic colour-top, invented by Mr. John Gorham, to which we referred not long ago, is one of those ingenious instruments which combine with entertainment the means of sound instruction. It is calculated to produce good results as regards the combination and contrast of colours, and will, we have no doubt, be largely purchased; for, while it will amuse and please the children, it will also gratify and enlighten their elders, properly looked at. It is curious to notice that, though the several colours are by rapid rotation blended into a compound colour, yet each is restored in its individuality when seen through a perforated black plane, placed at will about an inch above the combined colours, which plane is made, by a simple and very ingenious contrivance, to revolve at a lower rate of speed. It is important to note that, while the results of the mixture of colours by the ordinary process and by rotation bear a striking resemblance, there is a curious exception with respect to the formation of green. Yellow and blue, mixed in any proportions, will produce it, but no yellow and blue related will form a green of any sort.

We can see in the kaleidoscopic colour-top a means of teaching many of the most interesting phenomena of colour, and we would suggest that one of the card desks should have the three primary colours only painted on it in the proper proportions, so as to show the formation of white, which occurs on rapid rotation. The top will serve to elucidate the principles of contrast and the action of the complementary colours. A little girl standing by asks us, "What is meant by complementary colours?" The three primary colours are yellow, red, and blue: what is wanting in a given colour to complete this triad is called its complementary. For example, the complementary of red is yellow

and blue (or green); the complementary of blue is red and yellow (or orange); the complementary of yellow is red and blue (or violet). If you look on a colour for a minute or so, and then direct the eye to a contiguous greyness, the complementary becomes visible. Of course the combinations permitted by the top are infinite; but, as a few examples of elegant effects, we may notice the following:—Blue disc and yellow heart; black disc, yellow heart and multangular blue piece; red disc, green heart and opening of black; red disc, white multangle and black ring; green disc and red heart; yellow disc and blue heart; the party-coloured discs alone; each combination having a perforated plane dropped down over it, while rotating. Some combinations are, however, very fine without the plane. Mr. Gorham's top and Routledge's edition of "Chevreul" may be usefully studied together.

INSTITUTE OF CIVIL ENGINEERS.

ON April 5th, Mr. Joseph Locke, M.P., President, in the chair, the first paper read was "On a new System of Axle-Boxes, not requiring lubricating, and without liability to heating," by M. Alphonse de Brussaut. The new apparatus was described to consist of a series of four, six, eight, or any other convenient number of cylindrical rollers, of the length of the journal, retained at certain distances apart from each other, yet still united by elastic bands of vulcanized india-rubber. These rollers, thus united and placed around the journal, would be set in motion by the pressure of the axle, without the possibility of collision with or friction against each other, or of rubbing upon the surface of the journal, or of the bearing; and thus avoiding, as much as possible, any friction or opposition to the motion of the journal. The action of rolling being thus substituted for sliding, there could not be any abrasion of the substances, and lubricating became unnecessary.

The second paper read was "On the Permanent Way of the Madras Railway," by Mr. Bryce McMaster.

BEVERLEY MINSTER.

IN your number for the 9th inst. "A Lover of Good Taste" has called attention to the condition of Beverley Minster. I spent a fortnight at Beverley some years ago, for the purpose of studying its beautiful minster, and was much disgusted to find that the Parbeck shafts to the arcade round the aisles, referred to by your correspondent, were all covered with a thick coat of limewhiting. I am glad to hear that these are at last being repolished, as they appeared to be in excellent preservation.

I was informed by a gentleman well acquainted with everything connected with the town, and an old inhabitant thereof, that the custodians of the minster have 1,200*l.* per annum at their disposal, to be applied to no other purpose but the repairs and maintenance of the building. Such a sum ought surely to be sufficient to both repair and beautify the edifice.

As a study for the young architect, there is hardly an ancient building in England which affords so good a specimen of every style of English Gothic from the earliest to the latest.

E. W. T.

INSTITUTE OF BRITISH ARCHITECTS AND THE ROYAL ACADEMY.

AT a special meeting of the Institute of Architects, held on Monday evening last, it was determined to address the following memorial to the Council of the Royal Academy:—

"Royal Institute of British Architects.—Incorporated 7th William IV.

16, Grosvenor-street, W., April 14, 1859.
GENTLEMEN,—The Institute of British Architects conceive it to be their duty at the present juncture to offer their congratulations to the Royal Academy of Arts, upon the probability of its speedily obtaining a site eligible for the erection of buildings more suitable for the requirements of the annual exhibition, library, art collections, schools, lectures, &c. than the premises it has hitherto occupied. By the steady maintenance of these and other educational institutions, it is undeniable that the Royal Academy has conferred inestimable benefits upon the Fine Arts of this country, and none can be more ready to subscribe to this fact than the Institute of British Architects. So highly, indeed, do they esteem the advantages which have been hitherto derived by the profession which they, to a certain extent, represent, that they cannot refrain from urging upon the Royal Academy, in any readjustment of its present arrangements, the expediency, and indeed duty, of yet further extending and developing these advantages.

The Royal Institute of British Architects conceive it both more respectful to the Royal Academy and less likely to prove prejudicial to its interests, at once to state openly, their impression of the mode in which this can best be carried out, than to remain silent; and yet not

together satisfied with the prospect of the bare maintenance for the future of that which may have been sufficient in the past.

The following are the general arrangements, which, if it were possible, the Royal Institute of British Architects would desire to see carried into effect by the Royal Academy.

1st. A larger proportion of architectural Royal Academicians and associates to be appointed.

2nd. Powers of independent action to be given to the architectural members, upon matters connected with architecture.

3rd. The provision of means of instruction in their art, to be provided for architectural students, equivalent to those afforded by the Royal Academy to students in any other branch of the fine arts.

4th. A more systematic scheme of general instruction in all branches of the fine arts, to be brought into operation, and more efficient tests by examination, or otherwise, of knowledge and proficiency in practice.

The first point,—the increase of architectural academicians and associates,—the Royal Institute of British Architects conceive essentially due to the great extension which has of late years taken place in the study and practice of architecture, and its subservient arts of design in this country.

The second,—independent action,—is indispensable to prevent the architectural element being rendered powerless through its remaining on all occasions a small minority.

The third,—architectural education,—it is conceived it would be incompatible with the comprehensive objects for which the Royal Academy was originally instituted to refuse.

And the fourth,—a general elevation of academic art teaching,—is unquestionably demanded by the public for students in architecture, if not in all other departments of the fine arts.

As considerable excitement is felt throughout the profession upon the subject of the present communication, it is proposed to give publicity both to it and to whatever reply the Royal Academy may make to it.

We have the honour to subscribe our names to this document on behalf of the R.I.B.A. and to remain, Gentlemen,

Your very obedient servants,
C. C. NELSON, Honorary Secretaries,
M. D. WYATT, R.I.B.A.

To the Council of the Royal Academy of Arts, London."

CAUTION TO CHURCH RESTORERS.

ST. PETER'S CHURCH, COLCHESTER.
IN this church, lately restored under the direction of Mr. Charles Foster Hayward, the heating has been effected by means of pipes leading from a furnace placed in a vault formerly used for *curials*. The soil under the church had also been excavated for the insertion of the heating flues. In consequence, perhaps, of these arrangements, or from some other cause, the church has become infested with a species of microscopic vermin of most disgusting aspect, such, it is said, as are found in certain cutaneous diseases to which the human body is subject; rendering it necessary to close the church till some arrangement can be made for their destruction.

ARCHITECTURAL ASSOCIATION.

THE paper for the next meeting (the 15th), at the rooms in Conduit-street, is entitled "An Attempt to explain the Harmonic Law of Nature, and how it may be applied in the Production of Architectural Beauty," by Mr. D. R. Hay, F.R.S.E. Mr. T. M. Rickman has been entrusted to read it for Mr. Hay.

The first meeting of the Class of Design at the new rooms was held on Friday evening, April 8th, the president, Mr. R. Druce, in the chair.

Sketches were contributed for a Frieze, the subject for the evening.

An address was delivered by the president, and a paper was read by a member of the class on "The Future Development of Architecture in England," which was followed by an animated discussion.

The half-hour's sketch was "A Drinking Fountain." The next meeting of the class will take place on May 6th. The subject for the sketches to be brought on that evening is "An Entrance to a Railway Tunnel."

A WARNING VOICE ON DIPHTHERIA.

A "WARNING VOICE" in *Lloyd's* newspaper, after mentioning the rapid progress of this fatal complaint, says that it is a fact beyond dispute that open sewers and other accumulations of decomposed matters are literal hotbeds for the propagation of fevers and other infectious diseases, and that the pure air of heaven becoming impregnated with the foul miasma is converted into the vehicle by which the germs of disease are conveyed to, and strike upon the human frame. Thus equipped, Death stalks forth,

"To cull his victims from the fairest fold,
And sheath his shafts in all the pride of life."

After regretting, in so many instances, the proper application of this knowledge, the writer says he was led into these reflections by circumstances which have recently come under his observation, and from reading the statement that

diphtheria had attacked the inmates of a house, No. 8, Commercial-road, Peckham, which stands near an open sewer, and is exposed to its effluvia.

"It is a singular coincidence," he says, "that my residence (which I have not long occupied) is similarly situated, with respect to its close proximity to an open sewer, but of which I was not until very recently aware, it being hid from view by a wall about 7 feet high. The sewer, however, is doomed, the lady to whom the property belongs having, on representing the case to her, very promptly resolved to remove it; but mark the sequel. Two of my children, who were daily, for hours together, in the habit of using the garden attached to my residence, and which immediately adjoins the property on which this open sewer is situated, have been attacked with diphtheria. They had no previous illness, or any indication whatever of the approaching affliction, but to all appearance were well and in good health at night; yet the following morning were prostrated by the effects of this virulent disease. I have been informed that typhoid fever has raged in dwelling-houses in this locality, and the origin of the disease was attributed by the medical attendant to a foul drain on the premises."

This "Warning Voice" comes from Haddleigh, in Suffolk, and it would be well if it prove the means of directing attention to the numerous dangerous ditches that poison many places which would be otherwise healthy and pleasant. Diphtheria, it may be noted, is believed by some to be a form of scarlatina.

THE NILOMETER.

I AM obliged to Mr. Essery for drawing my attention to the work of M. Luigi Mayer, respecting the Nilometer (p. 255, ante). The apparent difference between his drawing and that to which I referred is, I presume, owing simply to the fact that they were taken at different times. I have not been able since I saw Mr. Essery's letter, to consult the work of M. Mayer, so as to ascertain its date, but it is clear that it must have been written a considerable time since, as he speaks of the dome over the well. This, even in Ali Bey's time (1807), was in a ruinous state, and shortly afterwards was destroyed. That there has not been any for many years, and that Mr. Robert's sketch is so far at least correct, is clearly shown by the drawings of M. Coste, who in 1817 carefully measured the whole structure. I should be glad to see the drawing if Mr. Essery would oblige me with it, but the description of "a plain surface" to the column differs from any other that I have ever seen.

T. H. LEWIS.

THE TABERNACLE COMPETITION.

SIR,—I was induced to enter the lists with Mr. Garbett, partly because you termed him by implication "a man of genius," and partly because I considered the style he adopted, and which is very fashionable with writers on architecture at the present day (especially if young men), is far from calculated to benefit our art. Let us see the architectural art in vogue amongst us, and denouncing the designs sent in on this occasion, without exception, as absolutely "bad art,"—that is, worse than none. Now, directly he is brought to book as a designer, he is, I suppose, assumed to be as good as the average, he is at once obliged to confess that he took so little notice of it as not to be able to recall a single feature of it,—that he had never even been drawn to a "second view" of it. He next has to acknowledge that in three important points, namely, the construction of the staircases, the arrangements of the seats, and the insulation of the dome, his design was distinguished by proposing the only reasonable mode of meeting the requirements on these points. Next he has to retract his most thundering denunciation of the acoustic qualities of the plan; and in order to cover his retreat he seeks to raise a cloud of dust by loading the poor author with ridicule, and his patron with abuse, whilst, at the same time, he surrenders post after post upon which he had mounted his most formidable artillery. Now, he is welcome to ridicule and abuse your humble servant to the utmost of his bent, for such things I estimate only at their true value, which we all know is on the negative side of zero. But what think you of the taste or good feeling of that man who will gratuitously abuse the absent or unoffending friend, or patron, or client, or employer of the individual he is addressing? He cannot understand the first principles upon which a civil society is constructed. The man who can go out of his way to brand another as "an heretical preacher,"—a term as contemptible as it is offensive,—would use fire and faggot were he not restrained by a stronger hand. He, at least, forfeits all title to notice.

But to proceed. If such be the off-hand, inconsiderate way in which he dismisses any one design, what guarantees have we that he has more fully qualified himself for judgment upon any of the others? None whatever. On the contrary, he tells us that, with two exceptions, he "eliminated at the first view" all those his brother competitors thought most worthy of their attention! And, yet, this is the gentleman that undertakes to say there are not in England three professional architects who could solve a certain artistic problem "decently,"—and, certainly, not one could solve it well,—I mean as well as an average bricklayer in healthy times! One hardly knows which to admire most, the wit or the modesty! Surely these are the men, and wisdom will die with them!

I will take up no more of your space. This discussion can no longer answer any good purpose, or interest you or your readers, nor do I care to reply to a gentleman who mistakes ridicule for argument, and assertion for proof; one who does not know that Sabbath schools require no playgrounds; that every foot remove from the

noisy street is a boon in London; that more persons can be seated on a given length of seat or row, newly disposed in a circle or polygon, than on a given length of straight row; or who have not had experience enough to understand what are the "practical difficulties" in the way of having other than parallel-sided aisles; or, indeed, that that expression is equivalent to diphtheria in the garden sticks. The fact is, Sir, these two words contain the whole difference between us,—where *us* stands, somewhat like a certain "our," for your correspondents; as also, I suppose this latter pronoun does, when Mr. Garbett uses it in the sentence,—"But this is beside our question." G. (to use his own terms) is for good in theory. P. for practical results.

He laid down the law on acoustics with so much authority, wit, and simplicity, I hoped to have obtained some information from him on this undeveloped science. But our critic either has it not to impart, or is too chary to communicate it. In nearly all our cases, he has the only little piece of light that creeps out from something about a limit of 100 feet. Very important, no doubt, if true; but it will not bear the test of investigation; for if it were true, either there could be no echo in the theatre, or in a building much less than 100 feet in any given direction, which we know is not the case; or if there be one, the reflex wave must have traversed the whole length of the building twice, or in some cases thrice, to produce the effect, upon this theory of Mr. Garbett's.

Your readers—if they have thought our letters worth reading—have doubtless observed his inconsistency in the depressed and rolling burning sticks, with all the indignation of a Utopian philanthropist, and then coolly advocating "sticks" for horizontal beams,—his describing my building as having two ends alike, because each had two windows and a portico, and a portico on the other nose, and yet maintaining the two ends of a Greek temple were dissimilar, because of some variation in the sculpture of the tympana, or in the acroteria. Let the right for victory who has no higher aim! Truth be our motto.

One word on outlay-pay. Had Mr. Garbett searched through the profession he could not have alighted on a more unfortunate illustration of his theory than my humble servant, as could be easily shown, were I inclined to parade my humble doings. But let that pass. He asserts, but without offering any proof, that outlay-pay is the ruin of all design in architecture, and that it stands still, in the fifteenth century, the arts of design were in a more healthy state, because there were no outlay-paid artists. Now, suppose him to have proved these were none, and to have assumed that outlay-pay was then superior to what we have now—his conclusion is but "jumped at." It does not follow from his premises. Nor is it any solution of the problem. A far more feasible one is that, *don't* the architect work for an employer, or committee, as well as architect; apportioned the funds, laid down the conditions, deduced the uses, assigned the site, chose the style, selected the materials, fixed the dimensions; in one word, originated the work, and consequently felt the true inspiration of the work, and was unimpeded in his movements.

But Mr. Garbett, if I remember rightly, says somewhere, an artist should put his own proportion to where, an artist should put his own proportion to his work. But he does not tell us how this is to be measured, nor by whom. Possibly it would be somewhat like the barristers are now paid. Does Mr. G. think that a satisfactory solution? Does he really believe there is the difference in value between the advocacy of the leader of the circuit and that of the modest stuff-gownsmen, that the disproportion of their retainers, either in amount or number, would indicate? Or does he believe there is the same disparity in talent as there is in the prices of the works of our Royal Academicians and those who have not the honour of the R.A.? If he does, I do not. There are no more names connected with this as with every other question,—yes, and "practical difficulties" too. Life is a choice of difficulties: labour or starve, is our dilemma; neither is a bed of roses; and every designer, whether outlay-paid or not, will feel that, when he would reduce his theories to practice: his every step,—yes, and his greatest "practical difficulty,"—will be but the choice of difficulties.

WILLIAM WILLMER POORE.*

COMPETITIONS.

National Schools, Blyth.—In reply to the advertisement to architects for designs for the National Schools to be erected at Blyth, eight sets of plans were sent in to the committee, who decided upon adopting those prepared by Mr. Dunn, of Newcastle, under whose superintendence the new buildings will be commenced immediately. They consist of schools to accommodate 150 boys and girls, with two class-rooms, and a residence for a master and mistress attached, arranged according to the Government regulations. The buildings stand upon a quarter of an acre of ground, in the parish of Horton, a portion of the same site being reserved for a new church for the parish, and is the liberal donation of the Croft family. They will be all of stone, surrounded by a low wall and railing. The master's house in the centre divides the boys' and girls' play-ground, and a bell-turret forms a pleasing feature in the design. The cost will be about 1,000*l.* to be defrayed by the Government grant and local contributions.

New Church, Hingham, Norwich.—Sir: Can any of your correspondents inform me whether any decision has yet taken place in this competition? Nearly seventy architects have submitted designs, and, as the matter was advertised in your pages, it would be satisfactory to those who competed to see some statement there as to the chosen design, and those deserving special commendation.

A SUBSCRIBER.

Bristol.—The plans of Messrs. Medland and

* With this the personal controversy must cease in our pages.

Maberly, for proposed workhouse at Stapleton, have been selected. The sum of 30l. has been awarded to Messrs. Pope and Bindon for their design. The competition, we understand, has been nearly two years about; and the committee have held thirty-nine sittings.

Manchester Assize Courts.—A correspondent writes,—"The committee appointed to inspect the designs for the proposed Manchester Assize Courts, have already come to a decision respecting them. The mottoes of the three successful competitors are given in a local paper; they are, 1st.—"*Pro rege, lege, grege.*" 2nd.—"*Labore et honore.*" 3rd.—"*Let right be done.*" How on earth things could have been managed so adroitly is beyond my comprehension; considering that there were no less than 107 designs to inspect. Just fancy half the number of drawings for the Government offices being walked over (not even sat upon), in three visits!—A COMPETITOR.

Orphan School, Haverstock-hill.—The following is the result of the competition for the extension of the present Orphan Working School at Haverstock-hill:—First prize, Joseph James, Furnivall's-lane. Second prize, Joseph Gates, Bernondsey.

THE METROPOLITAN BOARD OF WORKS.

THE BILLS OF QUANTITIES FOR DRAINAGE.

At the meeting of the Board, on the 8th inst. after various matters of routine character had been disposed of, Mr. Leslie asked the clerk whether, in the contract by the Board with Mr. Moxon for the construction of the northern high level sewer at 152,430l. the Board and the Government were bound by the specification of the engineer and the drawings, levels, and sections in connection therewith, or were controlled by the estimates for those works signed by Richard Roberts and Edward Gotto, and dated December, 1858.

Mr. Woolrych (the clerk), considered that the Board was in no way bound by the quantities contained in the estimate dated December, 1858. Mr. Leslie then proceeded to point out what he considered gross errors in that estimate, and said that the quantities were, in many instances, greatly exaggerated, and far exceeded the estimates made by Mr. Bazalgette, the engineer of the Board. In the course of his observations, he stated that sixteen contractors made tenders for the work, and that fifteen of them fixed their figures grossly beyond the 152,430l. at which the contract was finally concluded with Mr. Moxon; and he then intimated the possibility that the exaggerated estimate had been furnished to fifteen of the parties, and that what he called the "true estimate" had been in some way made known to the sixteenth contractor. Upon this assumption he declared that the document to which he was referring was a fraud and a swindle upon the ratepayers.

Mr. H. L. Taylor, Mr. Carmichael, and several other members of the Board, expressed their strong condemnation of the insinuation on this mode.

The Engineer said, no doubt there were errors in the estimate referred to by Mr. Leslie, but it was not upon these quantities contained in that paper that the estimate of the Board was made as to the amount on which the contract should be taken, nor did he think that if those quantities should actually be executed, it would in any degree peculiarly affect the ratepayers. Ultimately, Mr. Carmichael moved a vote of censure upon that gentleman, which was seconded, and, on a division, carried by a majority of 10, there being 13 for it and 5 against it; and Mr. Leslie was censured accordingly.

The matter can scarcely stop here: Mr. Leslie is thought to be too head-on to have made such charges unwisely.

PROVINCIAL NEWS.

Asfordly.—The Parochial Schools here have always been incomplete from the want of a school-master's residence. A site has, however, been given by the Rev. F. Burnaby, of Barkstone, immediately adjoining the school; a portion of which will be thrown into the play-ground, and on the remainder a residence and offices will be commenced immediately. Mr. R. W. Johnson, of Melton, is the architect.

Keele (Staffordshire).—New Schools at Keele, erected entirely by Mr. B. Sneyd, at an expense of 800l., have been opened. They are situated in the centre of the village, according to the *Staffordshire Advertiser*, on an elevated site at the junction of the Newcastle and Silverdale roads, and consist of two principal rooms, one for boys and one for girls, and to each school-room there is attached an ante-room. There is also a residence for the teacher under the same roof. The schools and house are built externally of red bricks, with blue bricks in chequered patterns, and white freestone dressings, to the angles, windows, doors, &c. and a bell-cot on one angle of the boys' school. The roofs are high-pitched, and covered with ornamental tiles. Internally the walls are lined to the height of 4 feet with glazed tiles, having an ornamented border, above which the walls are finished in rough stucco. The roofs are open-timbered and stained. At a short distance from these schools was erected last year a building of a similar character, containing a reading-room and lavatory, village post-office, and residence for the postmaster and keeper of the room. The external walls are of red bricks, with blue bricks in chequered

patterns, ornamental chimneys, projecting eaves, ornamental tiled roofs, &c. It was opened in October last by Mr. Sneyd, at whose expense the whole was erected, furnished, and partly supplied with books, and papers: it is open daily to members at a very trifling periodical payment. Several cottages in the village have recently been built or remodelled. The works at the whole of the above have been chiefly executed by the men employed on the Keele estate, from the designs and under the superintendence of Mr. Thomas Lewis, of Keele, architect.

Wolstanton.—As the workmen were clearing away one of the pillars supporting the arches in the interior of Wolstanton Church, now in course of restoration, they dug up two ancient silver coins, one of the reign of Charles I. and the other evidently of an earlier date. The coins were, no doubt, placed in the position found, when the church was restored nearly two centuries ago and a half ago.

Duddeston.—The *Birmingham Herald* states that the foundation-stone of an infant school-room in connection with St. Matthew's, Duddeston, has just been laid. The school is intended to accommodate 190 infants. The architect is Mr. J. A. Chatwin, and the builders are Messrs. Branson and Gwyther.

Caeleon.—The large industrial schools at Caeleon, for the children of the Newport Union, have just been completed by Mr. H. P. Bolt, builder, from the designs of Mr. A. O. Watkins, architect, the cost being about 2,000l.

Walsall.—The Free Library of Walsall was inaugurated, on Wednesday last, by Mr. Charles Forster, M.P. for the borough. The building is from the designs of Messrs. Nichols and Morgan, of West Bromwich: it is situate near the Assembly-room in Goodhall-street. The style is Italian. The building comprises an entrance-hall, with glass screen to form vestibule, library with gallery, a large reading-room, committee-room, retiring-rooms, water-closets, &c. and, in addition, a residence for the librarian. The fittings and furniture were also designed by the architect. The material is red brickwork, with Portland cement dressings. The contractor for the works was Mr. James Rowley, of Walsall; the cost, including fittings and furniture, 1,160l.

Leeds.—A numerous and influential meeting has been held at the Scarborough Hotel, Leeds, to take steps for the purpose of erecting the new theatre, of which we lately spoke. The mayor (Sir Peter Fairbairn) presided. The two theatres at present in existence were, he remarked, inconvenient of access and very immovable. It was highly desirable that a good building should be erected, which would afford accommodation for all classes of the inhabitants, and where the plays of Shakespeare and other dramatic authors might be well represented. He hoped that a theatre would be erected, and that in its arrangements and management it would be second to none in the kingdom. A resolution was unanimously adopted to the effect that it was desirable to erect a new theatre; that a capital of 15,000l., in 10l. shares, should be raised to carry out the scheme; and that the property should be vested in trustees. A provisional committee was appointed, and the meeting was adjourned to receive the report of the committee. Several gentlemen put down their names for shares, about 200 altogether being taken. The mayor signified his willingness to take twenty.

Newcastle-upon-Tyne.—The Literary and Philosophical Society of Newcastle being much in want of a new lecture-room, Sir William Armstrong offered 1,200l. for the purpose, and approved of Mr. Dobson as the architect to be consulted. A committee have been instructed to carry out the project according to a plan by Mr. Dobson. The new lecture-room will be within the walls of the library building of the society. Sir William Armstrong has increased his donation, so as to afford seating of mahogany instead of deal. The estimated cost of the alteration, exclusive of this, is 1,121l. odds.

WANDSWORTH.—The St. Ann's Schools have been completed, and will be opened on Saturday, the 9th. The buildings are of white brick, with Bath-stone windows and copings. They are arranged in a group, having the school, lobby, and classroom on each side, with the residences between. They provide for 150 boys and 150 girls. The contract was 2,200l.; the architect Mr. Joseph Peacock. They have been erected chiefly by private subscription, through the exertions of the Rev. C. Haggard.

ADVERTISEMENTS FOR TENDERS.

SIR,—I herewith send you an advertisement for competition tenders, which has appeared in a local paper; but I think the architect might have been more explicit, and beg to suggest the following as a "model advertisement":—

"TO BUILDERS AND OTHERS.—Persons about to become bankrupt, or wishing to acquire a little money before taking a final farewell of their creditors, are invited to tender for the erection of &c. &c. at ——. No tender will be accepted if beyond a certain sum (the said sum not less than 25 per cent. below existing cost prices). The best security required for the due performance of the contract."

Now, sir, as building committees are always trying to get 1s. for 9d. why not come out strongly at once? There are plenty of fraudulent tradesmen ready to respond and undertake works, knowing that the sum sent in is below cost, and the committee may as well have the benefit of it. The process of whitewashing in the Bankruptcy Court is so mild that few dread the treatment; and the worst is, it is only levying contributions on the contractor's creditors; and, when we bear in mind the old adage, "Many can help one when one cannot help many," it is quite right. And why should not a committee of benevolent and Christian gentlemen so far profit by the weaknesses of mankind in general and builders in particular. It must naturally be a source of gratification to the community at large to know that a very large majority of the churches and religious edifices in our land have been executed at ruinous prices to the contractors. A statistical account of the building trade during the past five or six years, with the numbers engaged in that occupation, and the proportion of bankrupts and insolvents, would be a very interesting document. Can it be obtained?

STRAIGHT TO THE MARK.

P.S. I had nearly forgotten to say that the committee ought to incur no expense on an architect: he should be paid by the contractor.

RECENT PATENTS CONNECTED WITH BUILDING.*

IMPROVED MACHINERY FOR CUTTING VENEERS.

—A. F. Newton. —A communication. —Dated June 12th, 1858.—This invention consists mainly in the use of two knives made to cut the veneer from opposite sides of the block of wood, each knife cutting one half of the veneer, and making its cut in the same plane with the other knife, and parallel with the run of the grain. The veneer is thus little liable to be roughed or broken. To cut veneers from such woods as are commonly used, it should first be steamed, or softened by steam and hot water combined; but this is not required if the wood be soft or green.

IMPROVEMENTS IN TREATING WOOD TO PRESERVE AND COLOUR IT, AND IN APPARATUSSES TO BE EMPLOYED THEREIN.—R. A. Brooman.—A communication.—Dated June 21st, 1858.—These improvements consist, first, in extracting the air from the cells of the wood to be treated in a close vessel; in then admitting of steam, which will enter, heat, and expand the cells of the wood; in then withdrawing the steam; and finally, in forcing preserving or colouring fluids into the vessel, and into the expanded cells of the wood. The preserving fluids employed are the metallic salts in solution, principally the sulphate of copper, with which is sometimes combined sea salt, or sulphate of soda, or both. The colouring fluids employed may be of any suitable kind.

IMPROVEMENTS IN STOVES.—J. C. Henderson.—Dated June 14th, 1858.—This invention consists of a combustion chamber above the fire, and within a radiating chamber, whereby the smoke and gases are confined and submitted to perfect combustion. They then pass into the radiating chamber, from which the heat is communicated to the surrounding atmosphere, or to the substance to be heated.

IMPROVEMENTS IN STOVES OR FIRE-GRATES.—A. Robertson.—Dated June 8th, 1858.—Here the inner or lower top plate is made in one piece. The lower edges are made to rest on horizontal or curved mouldings at the spring of the arch, or behind the inside cheek. This inner top plate is hinged at the upper part to the fixed arched top plate, so that it may be thrown up out of the way of the smoke.

AN IMPROVED CONSTRUCTION OF STOVE.—J. Roberts.—Dated June 9th, 1858.—The object here is to construct a stove in which the fuel may burn for a considerable time, giving off an equal heat without requiring attention. To this end is employed a combination of well-known parts,

* Selected from the condensed lists published in the *Mechanics' Magazine and Engineer*.

slightly modified in construction, whereby the fuel is burnt from the top downwards. This combination is not described by the inventor apart from his drawings.

"SECTING JOINTS IN SLATE RIDGE-ROLL."—*G. Jones*.—Dated August 30th, 1858.—This invention is intended to strengthen and improve the joints of slate ridge-roll. For the above purposes the patentee fastens under the flange at the joint of ridge a piece of metal or other suitable material in a separate piece under one flange, or in a piece of sufficient length to cross the breadth of the two flanges, and connects them together; but in either case the piece of metal or other material must be of sufficient breadth to lap under the joint, so as to support the end of the flange next contiguous. Upon the upper angle of ridge above mentioned is laid a roll, the ends of which he connects together by inserting in a slot a tongue of metal or other suitable material laid in oil cement. The ends of the said roll he prefers being so arranged as to break joint with or overlap the joint in the ridge.

IMPROVEMENTS IN THE CONSTRUCTION OF FLOORS, ROOFS, AND ARCHES.—*J. Bunnett*.—Dated June 8th, 1858.—Here earthenware or clay blocks are used with tie-rods and wall-plates, so that the thrust is brought in each case to act on the tie-rods and the wall-plates, the several blocks being so formed as to over and underlap each other. The wall-plates are made of angle iron, and are tied together by tie-rods at intervals. The tie-rods should pass through the blocks, such blocks being made hollow with that view, as well as to obtain lightness. The two sides of each block are each composed of two parallel inclines, each about half the depth of the block, connected by a horizontal, or nearly horizontal plane, and the two inclines on the one side are parallel with those on the opposite side.

AN IMPROVED PREPARATION OR COMBINATION OF MINERAL SUBSTANCES, APPLICABLE FOR USE AS A PIGMENT, CEMENT, OR MASTIC, AND FOR OTHER PURPOSES.—*S. Cheavin*.—Dated June 11th, 1858.—The substances here used are red ore, or hematite iron ore, in combination with the slag or scale left from the working of iron in iron works. These materials are pulverized and intimately mixed, and then are either combined with oil or turpentine, &c. to form a pigment, or are mixed with water to form a cement or mastic.

IMPROVEMENTS IN THE MANUFACTURE OF WHITE LEAD.—*P. Brown and B. Young*.—Dated June 22nd, 1858.—According to this invention, nitrate of lead, however obtained, is placed in solution in a vessel, and submitted, until saturated, to the action of streams of carbonic acid gas, obtained, by preference, from the calcination of chalk, or carbonate of lime, in a closed retort. To the saturated solution the patentees next add an excess of caustic alkali. The chemical action thus set up is continued until the nitrate has been converted into carbonate of lead. The supernatant liquor is then run off from the vessel, and the carbonate of lead is subjected to lixiviation in a strong solution of lime, assisted by the action of a stirrer, by means of which all the free acid remaining in the carbonate will be taken up or neutralized. After the carbonate of lead has been allowed to settle, the lime-water is drawn off. The precipitate is the pure white lead of commerce when dried.

Books Received.

Annual of Scientific Discovery; or, Year-book of Facts in Science and Art, for 1859. Edited by A. Wells, A.M. &c. Boston: Gould and Lincoln. London: Trubner and Co. THESE annuals are important and interesting publications. They condense in one easily available focus whatever of interest occurs throughout the year in natural philosophy, and the various sciences of mechanics, chemistry, astronomy, geology, mineralogy, &c.; and in the useful arts, antiquities, &c. &c. A prefatorial summary is given by the editor, and the value of the work is enhanced by the labour of condensation throughout.

VARIORUM.

Is a pamphlet on "The Insalubrity of the deep Cornish Mines, and, as a consequence, the physical Degeneracy and early Deaths of the Mining Population," by Mr. John Robertson (reprinted from the "Transactions of the Manchester Statistical Society"), the author points attention to the mortality and other evils arising from want of ventilation, and of some other mode of exit than the long and laborious ladders up which the miners have to go. And yet a Cornish mine, from the

numerous shafts and the proximity of the workings to them, is much more easily ventilated than a coal mine. The ladders are quite oppressive in their aggregate and average length. The Monument of London piled eight times upon itself would not nearly equal the 1,800-feet ladder-way of some of the Cornish mines. These, after a hard day's work, the poor miners must ascend, each with 15 to 20 lbs. weight of blunted tools on his back. Even the miners take a whole hour to ascend, and with undue rapidity; and it is estimated that one-fifth of all the muscular power of the Cornish miners is thus wasted. A fat gentleman, who would descend into one of these mines, and felt the *facilis descensus* to be rather a pleasant process too, unmitigated as it was by any forebodings as to the undoing of what he was doing, must have found the re-ascent to be rather uphill work, since it took precisely five hours "treading" to accomplish it! Mr. Robertson urges the enforcement of a code of well-devised sanitary laws, with inspectors to see to their observance, in the Cornish and similar mines.

Miscellaneous.

ISLINGTON-GREEN.—The Watchhouse on Islington-green is to be sold as old building materials, and upon its site the Vestry have now determined to place a drinking-fountain. It will be erected at the apex of the Green, which divides the Upper from the Lower street. An influential committee has been formed to obtain another improvement. They propose to erect, by subscription, a clock-tower in conjunction with the fountain; one which shall be an ornament to the parish and a credit to its founders. It has been proposed to combine with the fountain (if possible), a statue of Sir Hugh Middleton.

THE NEW HOSPITAL AT SHEFFIELD AND WORKING MEN.—The workmen at the Washington Works, according to the *Sheffield Independent*, have had a meeting for the purpose of aiding the subscription of 40,000 shillings for the new public hospital. The meeting appears to have been earnestly anxious to promote the object in view, and a committee was appointed to manage the collection of the shilling subscriptions. It appears also that by clubbing together to the extent of 10s. 6d. a year, workmen will have the benefit of securing three tickets of recommendation to the hospital authorities in case of necessity from illness.

DISCOVERY OF MURAL PAINTINGS IN FIELD DALLING CHURCH.—During repairs the workmen, on removing some plaster, found rich colouring underneath, which showed several figures in a kneeling posture before a larger figure, which was that of St. Christopher, bearing the infant Saviour. The inscription is both in Latin and English, the former being *Sancte Christophere, ora pro nobis*. Of the latter there seem to be at least three lines, only one of which has as yet been deciphered; it is simply, "Christopher, we cry to thee." To the right hand of St. Christopher is another drawing, which probably represents the "Day of Judgment." These paintings are on the wall of the north aisle. The east wall of the chancel has also evidently been painted. Small portions of an old screen have been discovered, richly carved and gilded.

STRIKE OF STONEMASONS AT ST. MARY'S TOWER, TAUNTON.—The masons employed in the restoration of the tower of St. Mary's Church, Taunton, struck work lately on a two-fold question of wages and apprentices. They allege that the current rate of wages had been reduced from 20s. to 17s. 6d. and that workmen heretofore employed in inferior capacities had been engaged as apprentices. A new foreman was appointed, and some Scottish masons were induced to take the place of those who had struck work, their wages to be 1l. per week. A meeting of all interested took place last week, at which the ex-foreman, on the part of those on strike, at first appeared to insist on all being either paid 20s. or discharged, but seemed at length to give in, admitting Mr. Davis's right to give less wages to those not worth more and keep them in employment. The question as to the apprentices seemed also to be dropped, as one of the church-wardens had announced that more time had been given to Mr. Davis, and that they were ready to stop the works altogether if required. Ultimately, we believe, says the *Taunton Courier*, an understanding was come to, to this effect:—The job to be thrown open to the whole of the men; the maximum wages to be a 1l. a-week; that the improvers now on the works be allowed to remain, but in future no person to be articulated above the age of sixteen.

THE SUEZ CANAL SCHEME.—The *Progress* announces that the written application of M. de Lesseps for permission to commence the work of the Suez Canal has been rejected by the Viceroy of Egypt, and that the Engineer-in-Chief has tendered his resignation. It is reported, also, that the workmen already set to work at the quarries whence material was to be got for the canal have been arrested.

TERMINATION OF THE STRIKE IN THE GLASS TRADE.—This strike has at length come to an end. On Monday a meeting of the masters and delegates of the men was held at the Hotel, Dudley, when it was resolved to alter the note to rules 4 and 5, so as to make it read as follows:—"That it is not intended by rules 4 and 5 to compel the masters to engage any man to whom they object, and who is incompetent to fill the situation required; and any master may have any member he prefers by telling the secretary or any of his men whom he desires to have." An assurance was given by the employers present that no objection would be made to receive again any man lately in their employ on any grounds, in reference to the part the members or other officers of the committee of the society may have taken in the dispute now declared to be terminated. This alteration having satisfied all parties, the strike is at an end. It commenced twenty-five weeks ago, and it will be three weeks more before all will be ready for commencing work.

INTIMIDATION: BOMB-SHELLING WORKMEN'S DWELLINGS.—At the Birmingham Public Office, a remarkable circumstance has been investigated, in which five brickmakers were charged with conspiracy to intimidate certain workmen in the employ of Mr. John Lewis; two of them being also charged with throwing explosive shells at the house of a labourer in Mr. Lewis's service. The prosecution was conducted on behalf of the Brickmakers' Association. The charge appears to have originated in the fact, that Mr. Lewis refused, in September, to compel his workmen to join the Operative Brickmakers' Society; and that lately men have been threatening the labourers who were not members of the society. The defence was *an alibi*; but the case was remanded, on the understanding that if no further evidence be adduced the prisoners shall be set at liberty.

ICONOCLASM IN MARYLEBONE CHURCH.—The outrage in All Souls' Church, Langham-place, of cutting and defacing several valuable paintings, and for which a reward of 50l. was offered, without, however, having the effect of procuring an apprehension, is still fresh in the public mind. Much excitement has just again been manifested at another outrage committed in St. Marylebone Church upon a valuable painting, presented to it by a member of the Royal Academy, in commemoration of his having been born and brought up in the parish. The painting was on wood, and the head of the Saviour was scratched and obliterated as if it had been done with a penknife. The wood of the picture was cut and hacked about in a shameful manner, and on the face was marked "worship God, and not idols." Eleven monumental tablets were also defaced and chipped. A reward of 150l. is offered for the apprehension of the offender. It has been ascertained that a candle had been taken from the altar, and the miscreant must have been engaged for about an hour and a quarter in the commission of the act.

MONUMENTAL METAL WORK IN YORK CATHEDRAL.—A mural monument, designed by Mr. John Powell, and executed by Messrs. Hardman and Co. of Birmingham, has just been erected in the choir of York Cathedral, to the memory of the officers and men of the 19th regiment, who fell in the Crimea. It is 8 feet 3 inches in length and 3 feet 9 inches in breadth, and is wrought in brass, the plate, which is nearly half an inch in thickness, being mounted upon a marble slab. Gothic tracery work constitutes the head of the memorial, immediately below which is a representation of the Resurrection of Our Lord; on either side an angel kneeling with expanded wings, and underneath two angels with trumpets. On the left hand, near the top, is a figure of St. Michael; beneath it, Gideon; and lower down Judas Maccabeus. To the right are figures of St. George overcoming the dragon; of Joshua; and of a Roman centurion. The brass work has received a thin coating of a transparent chemical preparation, to which we think reference has already been made in our columns, and which is intended to protect it from the influence of the atmosphere, and to preserve the colour of the metal, which it is stated will be maintained for a great number of years without the necessity of a second preparation.

The Builder.

VOL. XVII.—No. 846.

Art-Gossip — English Art in Paris — the New Royal Academy — New Water-Colour Society.



ATTENDERS of Art are just now the chief subject of gossip, and we string together a few items of that kind. The Exhibition of the Fine Arts in the Paris Palace of Industry is open, and the room appropriated to English artists is empty! They have not refused to send, but they have stated, through a representative in Paris, that it will not be possible to forward works from this country before the end of May or beginning of June. Coming, as the invitation from the French Government did, at the moment when our artists were occupied in preparing for the Exhibitions of the season in London, this is not to be wondered at. The delay will enable some artists to send works for which room could not be found at the Academy, but this will not tend to make the collection a proper representation of our school.

Some of the French journals speak crossly on the subject. The *Revue des Beaux Arts* says:—"Why this delay? It would be difficult to say, and it does not suit us to be the echo of all the rumours on the subject. The apartment reserved for Messieurs the English is quite ready: when it is furnished with their works it will be opened. We shall then learn if the delay has been a calculation or a ruse on their part." The Germans and Dutch are congratulated on not having followed this "disagreeable example." There are some capital works from these countries. Another part of the Exhibition, namely, the sculpture, is incomplete. It was determined at the last moment to transform the nave into a garden for the display of horticulture, and there, by the side of artificial water, under trees, and amidst beds of flowers, the statues and groups will be placed. Growing out of this allusion to horticulture, we may mention that in the Paris Boulevards the planting of new substantial trees has succeeded wonderfully: for those of the Madeleine and Capucines, the tree selected is not the same as that in the Rue Royale, viz. a maple, but a plane-tree, similar to those planted on the promenades of nearly every town on the Continent.

The last statue exhibited in Paris is one of the Marshal Lobau, intended for the city of Phalsbourg, and which has been provisionally set up in front of the Louvre, beside the Pont des Arts. The figure is standing on a pedestal. The likeness is perfect; but he is represented in his extreme age, cloaked and bare-headed, (his hat being on a mortar behind him) with his gloves in one hand and his baton of marshal in the other. It is not a first-rate production. The works of Ary Scheffer have been gathered together in a house belonging to the Marquis of Hertford, by a committee of artists and others, to be exhibited to the public. The proceeds will be given to an association of artists of which Scheffer was a member.

Our tasteful neighbours sometimes make mistakes: the upper story of the new tower of or near St. Germain de l'Auxerrois, of which we have spoken, is demolished to make room for one of better character. At its base, coped walls have been run out right and left, with Gothic openings. These constructions are to be the last attempts at uniting the Mairie on the north side with the church on the south.

At Passy, Rossini, the composer,—too long silent, by the way,—is about to build himself a house: the first stone was laid by the composer himself a few days ago, and was thus inscribed:—"Joachim Rossini a posé la première pierre de cette Villa le 10 Mars, 1859." A medal struck in his honour on the production of his "Stabat" was enclosed with the inscription. To crown this little fête, Madame Rossini planted a rose-tree, decked with favours; and now the promenaders of Ranelagh will watch the progress of this habitation, which will be rendered historic, as being the House of Rossini.

The works from Belgium in the Paris Exhibition are viewed with much favour. Belgium has some excellent artists,—a fact fully recognized by English picture-buyers. In the departments of art-manufacture, too, Belgium finds customers in this country. Messrs. Cornman, zinc and bronze founders, of Brussels, have recently executed for a nobleman residing in Wales a large fountain, which is much admired in Brussels as a specimen of Belgian art. It consists of four statues in bronze larger than life, surrounding a column surmounted by a reversed shield, on which is a basket of flowers and fruit. The statues represent Manufactures under the figure of an athletic blacksmith; Navigation as a sailor leaning on an oar; Science as a female, measuring with a compass on a celestial globe the march of the planets; and the Arts as a young girl, holding in one hand a pencil, and in the other a wreath. The fountain, with the base, will be 22 feet high, and the basin 34 feet to 36 feet in diameter. The work is at present being exhibited to the public, and the Duke de Brabant and the Count de Flanders a few days ago went to see it.

Coming back to England, we are not by any means sure that the public drinking-fountains about to be erected in the metropolis will be so satisfactory in point of art as they should be. We shall have something to say of them before long.

The exhibition at the Royal Academy about to open will be deficient, we fear, in pictures of great mark, but may, nevertheless, prove a collection of good average merit. At the dinner in aid of the Artists' General Benevolent Institution, on Saturday last, when Lord Hardinge presided, and the R.A.s mustered strongly, as they should do on such occasions, Sir Charles Eastlake, on returning thanks for the Academy, expressed the belief that in the new house which was to be provided for the Royal Academy there would be greatly increased accommodation for the exhibition of works of art.

The Academicians, as they are to pay for their own building, have chosen their architect from their own body, and the choice has fallen on Sir Charles Barry. The First Commissioner of Works has appointed Messrs. Banks and Barry architects to the Board, for arranging the buildings on the site of Burlington House, for the various Societies of Art, Science, and Learning, who at present occupy Burlington House, Somerset House, with some others added, if room suffices. The architects have been directed, as a preliminary step, to confer with the Royal Academy and the other societies, in order to parcel out the space as advantageously as possible. In the case of the Royal Academy, they have, as Government architects, only to settle the area to be devoted to the Academy. The societies at present in Burlington House are the Royal Society, the Senate of London University, the Linnean Society, the Chemical Society; and in Somerset House—the Antiquarian Society, the Geological, and the Astronomical. It is also proposed to find accommodation for a new Patent Office, with extensive museum, library of inventions, and other appliances. This appointment of Messrs. Banks and Barry will probably be viewed, with reference to the late Foreign Office competition, as homage to the principle that in competitions the authors of selected designs should be employed to carry them into execution.

Whether or not the Government will positively give to the Royal Academy the portion of the site of Burlington House required, without reference to Parliament, remains yet to be seen. The claims of other art-bodies will

require adjudication. The sum available for the new building for the Academy, is understood to be 50,000*l*.

The New Society of Painters in Water-Colour have memorialized the Lords of the Treasury, setting forth how they have aided in promoting and improving the public taste as regards this particular branch of art; which has, confessedly, attained a higher degree of eminence in our own country than throughout the whole of Europe: showing further that the number of water-colour artists is still greatly increasing, and that additional means for exhibiting their works, beyond the present very limited space for the purpose, are still urgently required; and praying that their lordships will "take the case of this long-established Society into favourable consideration, in the arrangements which their lordships may be pleased to make for the extension and exhibition of works of art, and that they may be admitted to the great privilege of sharing with the Royal Academy and the other Water-Colour Society in the space their lordships may determine shall be allotted for the purpose." The Society have offered to carry out whatever measures the Lords of the Treasury may deem most effectual in promoting water-colour art, as a means of advancing the public taste.

The present exhibition of the society, now open, is calculated to strengthen their application. It is a very good one; and, as a result, pictures were bought on the private view day (last Saturday) to the amount of more than 1,500*l*! The Queen bought four small ones—(12) "Caernarvon Castle," by Edward Richardson; (101) "A View at Hampstead," by J. H. Mole; (246) "Robin Hood in Sherwood Forest," by Edmund G. Warren; and "The Great Pyramid after Sunset," by Henry Warren (295). Mr. E. G. Warren has two remarkably clever works, "Lost in the Woods" (88), and "The Avenue, Evelyn Woods, Surrey" (228): the latter recalls many charming recollections of similar spots. Mr. Bennett has never exhibited anything so fine as "The Tees and Mortram Tower, Yorkshire," seizing the moment,

— "When the sun's last rays
Have pass'd from hill and spire,
To mark the course of sinuous stream
By track of golden fire."

The movement and thought in Mr. Haghe's picture of "Cromwell" (contemplating the portrait of Charles I.), 53, are admirable; and he has a larger work, full of incident, "An Emutee at Louvain, in Olden Time" (61). Mr. Edward Corbould's large picture from Tennyson's "Dream of Fair Women," which displays some elegant work, gives visitors something to find out, and they gradually identify the Grecian Helen and Iphigenia, Cleopatra, Fair Rosamond, Joan of Arc, Jephthah's Daughter, Queen Eleanor, and Margaret Roper. S. Cook has some graceful and poetic coast scenes; Mr. Wehnert has a picture with more colour than life in it: Mr. Whympy is advancing fast; and McKewan, W. Telbin, John Chase, Rowbotham, Mrs. Margetts, and some other members, exhibit good specimens of what they can do. The crowd that filled the gallery on Saturday showed that the society want more accommodation; and their active secretary, Mr. Fahey, had as much as he could do to affix the tickets which say, "Sold!"

MICHELANGELO AND HIS TIMES.

THE ARCHITECTURAL EXHIBITION.

ON Tuesday evening last Mr. Robert Kerr delivered a lecture on Michelangelo and his Times, at the Architectural Exhibition, Conduit-street.

The chair was taken by Mr. E. B. Lamb.

Mr. Kerr commenced by stating that he proposed, in the first instance, to take a historical review of the sixteenth century, and look at Michelangelo as the architectural type of that period. The sixteenth century might be said to be that which witnessed the revival of art, for it was that in which the mightiest intellect of the day in connection with the fine arts had flourished. There was no disguising the fact, that in the present day the sixteenth century was unpopular with some, who maintained that the thirteenth century was to be regarded as the proper starting point for the revival of art. He did not wish to find fault with those who held that opinion. He was willing to admit that the thirteenth century

was deserving of all the importance which the school to which he referred desired to claim for it; but he could not ignore the claims of the sixteenth century to be considered an important period in the improvement of the human mind. The thirteenth and the sixteenth centuries might be viewed as presenting a marked contrast to each other. The former was the culminating point of its own period, while the latter might be viewed as the starting point from which that revival took place which was still tending in an onward direction. It was a remarkable fact throughout the history of the human race, that periods of 500 years each might be fixed upon as constituting the stages of art development. There were, for instance, two periods of 500 years each before the Christian era, and we were now in the fourth period of 500 years since that time. A thousand years before the Christian era the power of the Egyptian intellect was dominant. The Assyrian and the Persian succeeded; and as they in their turn declined, Greek art became ascendant. In the next period—the 500 years preceding the birth of Christ—Greek power decayed, and that of Rome was on the increase. The latter power then declined, and was succeeded by the “dark ages,” which lasted until 1000 years after Christ. Then came the “middle period,” and after a lapse of another 500 years there was the “revival.” From this it would appear, that in about 2,000 years after Christianity, or at the conclusion of the fourth period of 500 years since the birth of Christ, there would in all probability be another stage of human development, of which we might now trace the motive power working in various directions. Commencing with the birth of Christ, Rome was at its highest point of greatness. A century and a half afterwards, the Barbarians pressed heavily upon the confines of her limited empire, and the Christian religion gradually undermined the old Pagan States. When Constantine, yielding to the pressure from without, removed the seat of Christianity from Rome to Byzantium, his own personal influence was of little consequence, for the people became Christians, and Rome became, in fact, too hot to hold him. He founded a great city on the shores of the Bosphorus, erected many fine buildings, and established schools of art, which were started in the fourth century. At that time the early Christians were sincere, no doubt, in their newborn zeal; but they were no promoters of art. They called the statues and pictures “idols,” they tied ropes round the Venus and Apollo, tried and condemned them as unholy, broke them in pieces, and, having pounded them to atoms, blew the dust to the winds of heaven. It was at this time that the system of allegorical painting originated; for although the early Christians could dispense with Venus and Apollo, they wanted pictures of Christ. These representations were then that of a youthful and beautiful man, with a smile of triumph on his features, and depicted treading a lion under foot, or acting as a shepherd tending his flock. The fathers, in the Dark Ages, represented the Saviour in an agony, nailed upon a cross, with bleeding limbs and anguished brow. Then it was that the Saviour and the saint were not represented so much as art works, but by allegorical casts of countenance and accessories. In the Eastern empire, before the sixth century, Justinian made a bold effort to revive the arts. He rebuilt Santa Sophia; he contracted numerous bridges and aqueducts, and founded many schools of art. But when he died, art languished until East and West were reduced to the lowest point to which the human intellect had descended short of barbarism. The Latin language, even, was forgotten; noblemen could not sign their names except with a cross; and our own King Alfred declared that he scarcely knew an ecclesiastic who could understand the prayers he was reading, or the homilies he was preaching. Mahomed next endeavoured to overthrow idol worship; and he believed he could not effect that object if Christianity were to be introduced in its stead. In the succeeding century came the iconoclastic disputes between those who held that images were to be worshipped and others who opposed the system. Leo took the lead against it, on the ground of heresy, and issued edicts to destroy the pictures; but Gregory II. bishop of Rome, opposed Leo's troops, which were utterly annihilated. Charlemagne, in the ninth century, founded schools, and did all he could to revive the arts and letters; but there was too much war and bloodshed in the time of that monarch for an enduring policy; and at his death arts and letters were again lost. After the death of Charlemagne, a relapse took place, which continued to the end of the tenth century. In the Middle Ages the dawn began to break;

feudalism was established; and the young Italian republics—Milan, Florence, Genoa, and others,—sprang into existence. Thus it would be seen that Commerce was the parent of Freedom. Trade had originated Freedom, and to this day it was to be observed that the towns were always in favour of reforms and the counties against them. The Church subsequently acquired great wealth, and many splendid ecclesiastical structures were raised at this time. About the year 1200 Pope Innocent III. succeeded to the pontifical chair. Upon the strength of what had been done by Hildebrand, he established the papal authority over all the powers of Europe, taking the crown off the head of even the English king, John—a proceeding which, by the way, led to the obtaining of Magna Charta. At the end of the thirteenth century, Boniface VIII. desired to make still greater efforts, and the consequence was, that Philip the Fair of France took means which certainly might be called treacherous, and having got hold of him, kept him in durance for a few days. This, however, the Pope took so much to heart, that he died shortly afterwards. From this period might be traced the decline of the papal power. It would be seen that while the Papacy held unbounded sway art was pursued in an ecclesiastical direction only. Early in the twelfth century learning received an impetus. The monastic institutions had kept alive what remained of literature, and universities began to be established in Italy, in England, and in France. Platonic societies sprang up in Italy; printing was invented, and the transcribing of manuscripts became an extensive trade. Then came the study of ancient art. Pisa sent an expedition to Greece for specimens; but when Rome was subsequently ransacked, many fine Grecian works were found among the ruins. It was at this time that Michelangelo appeared upon the stage. His father wished to make him a wholesale clothier; but he had a thirst for art, and his father, finding it impossible to make him a clothier, was obliged to comply with his son's request, and allow him to become an artist. The character of Michelangelo might be drawn from the manner in which he deported himself with reference to the powerful pontiff Julius II. The Pope hearing of his extraordinary abilities, and conceiving the project of erecting a magnificent mausoleum for his own remains, sent for the artist, to execute the works. Michelangelo was, however, kept waiting in the Vatican, as the Pope was “not at home;” and so offended was he at this discourtesy, that he sold his goods to the Jews, and returned incontinently to Florence. The Pope sent messenger after messenger to him, and finding he would not come, undertook the conquest of Bologna. It was then, and not till then, that Michelangelo consented to be reconciled to his patron, and subsequently executed the celebrated statue of Julius, in bronze, of which, however, there is now no trace left. His next great work was painting the ceiling of the Sistine Chapel, a surface of 132 feet by 44 feet. This was done by his single hand; and although it contained between 200 and 300 figures, any one of which might make the fortune of a modern painter, the whole was concluded within the space of about twenty months. Leo X. a man of elegant mind and refined taste, succeeded Julius II.; but he and the great artist could not get on together, and the latter was virtually banished for seven years, on an expedition to search for marble in some distant quarry. Having referred to the merits of Michelangelo as a painter, a sculptor, and a poet, Mr. Kerr proceeded to describe the patriotic manner in which he had exerted himself for the defence of Florence, and how adroitly he had succeeded in concealing himself, to evade the penalty of his heroism. From that concealment he was only drawn when he was told that the Pope wanted him to finish the sacristy of San Lorenzo. The world had never altered the opinion it had formed of his works. His last paintings were finished when he was seventy years of age. In 1546, after he had devoted some years to the study of the Scriptures, and to the works of his old friend, Savonarola, he was called upon to take charge of St. Peter's. This was a duty which he at first declined to accept, owing to his increasing years; but he was ultimately induced to undertake it, and during the time he held the office, he executed a number of important works in connection with the church. Duke Cosmo of Tuscany repeatedly asked him to come to Florence, but nothing would induce him to return to it, and to all solicitations he replied that he liked the air of Rome, as it agreed with him. Having referred in eloquent language to the tran-

quil deathbed of Michelangelo, and to his reliance at his latest moments upon the divine truths of Christianity, Mr. Kerr described how peacefully he closed his eyes upon the world he had done so much to adorn and instruct. Thus, putting his foot upon the Rock of Ages, this mighty man of intellect went out into the night. Thus he died, and amid the fair circle of the just there was surely no man in all history in whose character and individuality the finger of God had more combined the mightiest majesty of intellect with the simplicity of the child, than in this rugged old high-priest of the beautiful.

Mr. Kerr having concluded, amid loud applause, The Chairman proposed that a vote of thanks be accorded to him for his interesting lecture, which was carried by acclamation, and the proceedings terminated.

THE WARMING AND VENTILATION OF DWELLINGS.

THE “Report to the General Board of Health, by the Commissioners appointed to inquire into the Warming and Ventilation of Dwellings,” has been published by order of the House of Commons.

The report contains, or consists of, six separate reports, of—1. Experiments in the board-room of the General Board of Health, on the temperature of the air, walls, and floor, and the hygrometrical states of the air. 2. Experiments at the Wellington Barracks in different soldiers' rooms, on the temperature of the air, walls, and floor, and the hygrometrical states of the air, as heated by different open fire-grates. 3. Experiments to determine the effects of duplicate panes of glass. 4. Experiments at the Wellington Barracks, to determine the physical relations of ventilation. 5. Experiments at the Wellington Barracks, to determine the chemical relations of ventilation, by H. E. Roscoe, esq. And, 6. Experiments in the board-room of the General Board of Health, to determine the direction and force of currents in the air, instituted by J. F. Campbell, esq.

The reports are of a technical, detailed, and diffuse description, with diagrams and sketches to illustrate them.

In the appendix is an abstract of numerous specifications of patents, bearing upon warming and ventilation, applicable to dwelling-houses.

On the question of warming apartments, one result deduced from all the experiments made is, that it is evident that smoke from almost all fires for warming rooms may be prevented. The most effectual remedy for smoky atmosphere in towns, say the authors of the report, would be the use of fireplaces constructed to prevent the formation of the smoke, or, in other words, to effect a perfect combustion of the coal. Various plans for achieving this object, including Arnott's improvement of Cutler's grate, are noticed.

The commission recommended that the area of the supply-pipe or channel (of air) be larger than the area of the smallest part of the chimney flue, in order that fresh air in excess of that required for combustion may be supplied into the room, to the amount of 15 to 20 feet per minute for each occupant; by which arrangement, the fresh air introduced for the purpose of ventilation may be warmed or tempered before entering the apartment; that the supply air-channel be provided with a closing apparatus, and that, for the ventilation of rooms, exits should be provided for the spent air near the ceiling, either by perforations in the cornice at different parts of the room, by apertures made near the ceiling, or by one sufficient aperture leading into the chimney, with a rarer, in case of need, to such an extent as to remove from 15 to 20 cubic feet per minute for each occupant. The supply of fresh air should be provided by a channel or tube under the floor, and not derived from accidental sources, so as to prevent all whistling of windows, pressure upon doors, and cold draughts.

In regard to fire-grates in general, the commission recommended—1. The use of reflecting surfaces to direct an increased amount of radiated heat into rooms; 2. That the chimney-flue be of small dimensions (not above 9 inches diameter at the widest part); 3. That chimney-flues should not be situated in the outer walls of houses so as to become chilled by contact with the air outside; 4. That each flue be provided with a closing apparatus; 5. That the aperture for the escape of the smoke be placed at the back of the fire so as to increase the intensity of combustion and promote the radiation of heat; 6. That fire-brick linings to grates should be in general use; 7. That sunken ash-pits and hidden ash-pans be employed to prevent the diffusion of dust; 8. That the fire be not on a level with the floor (made evident by

experiments with Leslie's grate); 9. That, as a rule, the fire-grate is best placed which is seen from the greatest number of points in the room; 10. That a good frontage of fire surface be exposed; 11. That those stoves be used which prevent the formation of smoke, which represent imperfect combustion and wasted fuel; and, 12. That the fire-grate should be studied in its construction with the view to its effecting a better and more economical consumption of fuel and a more equal distribution of heat, not as a contrivance for the ventilation of rooms. It will not answer the twofold purpose of warming and ventilating. The altering of a common grate into an Arnott stove has entirely failed on trial.

A proposed plan for the improvement of the construction of dwelling-houses is recommended, and illustrated by diagrams; and among other things, the use of double panes of glass in small, and of double sashes in large, rooms, is suggested. The use of gas or coke would preclude smoke, but the former is too expensive for heating purposes in places remote from coal districts.

The Wellington Barracks reports state that "a more defective system of warming and ventilation could not be devised than that which is there exhibited." Condemning the want of space allotted to the soldiers, and the disgusting practice of using open tubs as urinals in barrack-rooms, the commission urgently direct the attention of the Minister of War and the Horse Guards to "the absolute necessity" of providing more room and accommodation for soldiers in barracks, and that, instead of 500 cubic feet of space, 700 to 800 cubic feet be allowed per man, or, as in the case of the Wellington Barracks, only ten persons occupy the space allotted to sixteen; and that these regulations be enforced throughout the United Kingdom. A more economical system of heating and ventilation is also recommended.

The report is signed by Mr. W. Fairbairn, F.R.S., Mr. James Glaisher, F.R.S., and Mr. C. Wheatstone, F.R.S. Mr. Lyon Playfair objected to append his name to the report *pro forma*, on the ground that his avocations afforded him no time for attending to the work of the commission.

THE PROGRESS OF TELEGRAPHY.

In a former paper we drew attention to some of the early methods used in this country to convey a signal rapidly over large districts.* The flaming beacon, the clouds of smoke created on lofty places, and which could be covered up and allowed to rush forth at intervals, afforded means of spreading information of the occurrence of looked-for and expected events:—the rising of the different clouds of smoke might convey notions of the number of days which were to intervene between certain events:—but none of the ancient signals used in England could fulfil the herald's functions, and convey messages in what may be called a readable form. It is said that both the Greeks and Romans had a useful system of telegraphs. A writer on this subject mentions that in a Greek play, which commemorates some of the particulars of the Siege of Troy, a warden descends from a tower on which he had watched ten years for that purpose, and announces that Troy has fallen. This might have been communicated to him by a simple signal; but it is understood that the Greeks made use of pots filled with lighted twigs and straw, over which they poured oil, and these, being placed in certain positions, expressed various letters.

In the obscurity of the past, it is not, however, very easy to discover to what extent of perfection the system of telegraphing was carried by the civilised nations of antiquity. It is certain that the knowledge, if ever extensive, was for long lost, and the first hint at any improvement upon the beacon-fires seems to have been conveyed by that remarkable man, the Marquis of Worcester. In his "Century of Inventions," published in 1663, he says:—

"No. 6. How at a window, as far as eye can discover black from white, a man may hold discourse with his correspondent without noise made or notice taken, being according to occasion given and means afforded, *ex re nata*, and no need of promises beforehand, though much better if foreseen and means prepared for it, and a premeditated course taken by consent of parties."

"No. 7. A way to do it by night as well as by day, though as dark as pitch is black."

In examining the accounts of the rise and progress of the telegraph, it is evident that one of the chief difficulties was to make a signal of sufficient size to be visible at a considerable dis-

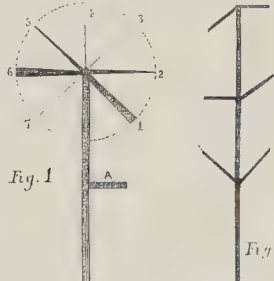
tance, and which could be worked by comparatively easy means, and with sufficient quickness.

In 1684, Dr. Hooke, who had some experience at the siege of Vienna by the Turks (it seems strange at the present day to read of such a siege), devised a means of telegraphing by characters cut out of the bottom of a cask, in which lights could be placed. He hinted at movable letters, and directed attention to the *telescope*, which had been brought into use, as a great means of assisting in this method of conveying news.

Although, in the times of bad roads, and necessarily slow means of conveyance, the need for improved means of communication must have been evident, it appears that but little advance was made with the telegraph. Rockets had been used in a peculiar way as signals, so had cannon, but little satisfaction was given, and carrier-pigeons were used for quick messengers than horses.

In 1767 Mr. R. L. Edgworth tried experiments, and endeavoured to show the possibility of communicating intelligence by a swift and unexpected mode. Amongst other things, this gentleman arranged the wands of a common windmill, and by alteration of the sails contrived a system of signals.

During the troubled times in France (1796) two systems of telegraphing were introduced. That invented by M. Chappe was considered the most perfect. The central post of M. Chappe's telegraph was the Tuileries, and from that point messages were conveyed from and sent to different districts of France. This seems to have been a very complicated affair, and consisted of seven indicators, each of which could be changed into seven positions; and the number of different signs which could be made by this apparatus would be 7 by 7 by 7 by 7 by 7 by 7 by 7, which would amount to 823,543. The principle seems to have been an extension of fig. 5. The fame of M. Chappe's



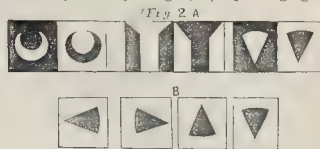
telegraph soon reached England, and the Government employed some competent persons in France to prepare a model, with which various experiments were made; and eventually a system was organized by which messages were passed from the Admiralty to Deal, Portsmouth, and other parts of the sea-coast.

In 1806 Napoleon Bonaparte directed his attention to the improvement and simplification of the French telegraph; and in that year a system was devised, from which but little change was made until the electric telegraph rendered the old system a matter of the past.

During the time that so much consideration was given to the signals on land, attempts were made to improve those in use at sea. Admiral Kampeufelt simplified this system, which was still further improved by Sir Home Popham. In addition to flags of different colours, forms, and devices, a movable instrument, similar to that shown in fig. 1, was fixed in suitable positions of the ships; and as in the movement of the vessels the signal when pointing at 3 or 5 might be mistaken for 4, when the view came sideways, an arm A was added to show when the signal was in right position. In 1814 Thomas Lyon published a plan of ship signals at the expense of the East-India Company; and although this was used with marked success by the company's ships, it appears to have been passed over without notice by the Home Government. It would, however, require more space than we can at present spare to give full particulars of the ship-signals as they are still in use; it is nevertheless evident, that great pains have been taken to arrange a dictionary of phrases which can be expressed by the arrangement of colours, &c.

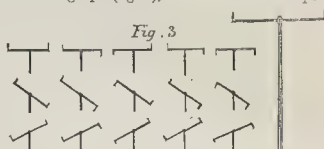
The engraving, fig. 1, will show how letters and numerals may be denoted by the position of the arms: for instance, 1 may represent A; 2, D; 3, C; 4, D; and so on; and by means of other arrangements of the index, the letters of the alphabet could by this means be made out.

In 1817 a series of three boards, on which were represented bold and distinct forms, shown on one side of each board in black, and on the other white relieved by black (see fig. 2, A), by changing the



position of the boards: it will be seen, by referring to fig. 2, B, that four distinct black and four distinct white signals can be made by each board—in all twenty-four, a number sufficient to express the useful letters of the alphabet. While these matters were in progress, plans of conveying commands amongst large bodies of military met with much consideration, and it was found that expression could be given by men at certain stations using flags, handkerchiefs, and wicker-work dials, in particular positions.

The telegraph (fig. 3), which is of the shape of



a T, is capable of giving a considerable number of signals. It is very simple, and easily worked, which seems to have been always an important consideration; and much ingenuity has been employed in contriving machinery for moving the arms of the telegraph with ease and certainty.

At length, in 1816, Sir Home Popham improved upon the system then in use in France, and introduced the telegraph which was once so familiar to those who passed by the Admiralty (see fig. 4).



This consisted of an upright pole, on which were two movable arms, which were able, in a very distinct and easy manner, to express forty-eight different characters, sufficient to express the letters of the alphabet and numerals, and to leave thirteen signals of abbreviations. Only a few years ago this telegraph was looked upon with wonder. Compared, however, with that which the application of electricity has given us, by means of which messages are wafted from country to country with lightning speed, it is so coarse, clumsy, and circumscribed, that wonder is felt at the satisfaction with which it was regarded.*

* The foreshadowing of the electric-telegraph was shown by a correspondent of *Notes and Queries* some time ago, who sent a translation from a work in German by Schwenter, entitled, "Delecie Physico-Mathematicæ," dated 1636. Schwenter himself quotes the invention from a previous author:—"How two people might communicate with each other at a distance by means of the magnetic needle: If Claudius were at Paris and Johannes at Rome, and one wished to convey some information to the other, each must be provided with a magnetic needle so strongly touched with the magnet that it may be able to move the other from Rome to Paris. Now, suppose that Johannes and Claudius had each a compass divided into an alphabet according to the number of the letters, and always communicated with each other at six o'clock in the evening. Then (after the needle had turned round 3) lines from the sign which Claudius had given to Johannes, if Claudius wished to say to Johannes 'Come to me,' he might make his needle stand still or move till it came to c, then to o, then to m, and so forth. If now the needle of Johannes's compass moved at the same time to the same letters, he could easily write down the words of Claudius, and understand his meaning. This is a pretty invention, but I do not believe a magnet of such power could be found in the world."

* See Vol. XVI.

ST. MARTIN'S SCHOOL OF ART.

The annual *conversation* of the students of this School of Art was held on Friday evening, the 15th, at Castle-street, Long-acre. There was a large collection of objects of interest, and the attendance of members and their friends was exceedingly numerous. The chair was occupied by the Right Hon. W. Cowper, M.P.

The Rev. Mr. Maule, as hon. secretary to the School of Art, gave a sketch of the progress of the institution since the former gathering, a twelvemonth previously, and showed how they had gradually relieved themselves from debt and improved the school. These results had been accomplished solely through the fees paid by the students; but it was only right to state that they were under great obligations to the Department of Science and Art for the kindness with which they had acted. They were informed by Mr. Casey, in his last return in February, that there had been a steady increase in the number of scholars, which from that School of Art were now returned as 210, being considerably in excess of the statement of last year. They were also enabled to point to a gratifying increase in the prizes, no less than twenty-five medals having been obtained by students in that School of Art, of whose works twelve had been selected for competition for the national medals. He remembered some years ago that the school was not very orderly, but that, on the contrary, it was often noisy, and there were sometimes reports of the gas going out, and of the room being left in darkness; of late, however, there had been a remarkable change in this respect, and the school was now conducted in a remarkably good spirit, and with strict attention to the object of their studies. These results he attributed to two causes: one was the kind and gentlemanlike demeanour of the master, Mr. Casey, and his assistant, Mr. Burchett, to all the students; and the other, to which especially he attributed the marked improvement in the tone of the school, was that in it, unlike, he believed, the majority of the other schools, they had persons of both sexes studying drawing together.

The Chairman then proceeded to deliver to the students the prizes which had been awarded to them as successful candidates at the late competition. These consisted, in each instance, of a case of mathematical instruments, and it was stated, incidentally, that four similar prizes would entitle the recipient to one year's gratuitous education in the School of Art.

The Chairman then, addressing the assembly, said he had often heard of the St. Martin's School of Art, and of the success which had attended its studies, but he was not prepared for a display of such a satisfactory character as that which he had witnessed. The spaciousness of that apartment, the numbers who were assembled in it, the success which had been attained as exhibited by the prizes which had been delivered, could not fail to be gratifying to any one who took, as he did, a warm interest in the progress of Schools of Art. He had been particularly glad to hear the statement that the school had so far succeeded as to be enabled speedily to become self-supporting. This was as it should be; for the Science and Art Department, the working of which was, in many respects, so important, looked not so much to the perpetual support of schools or of institutions as to the development of the energies of different local schools, making them to depend on their own resources, and to carry on their objects without any external aid. The existence of that department, and the rapid spread of schools like theirs throughout the country, he regarded as sources for great congratulation to all lovers of art; and, looking back to its past history in this country, it was interesting to see how one thought had sprung from another, and how one good work had incidentally, and unexpectedly produced other good results. The Department of Science and Art, as a branch of the Government, sprang, as was well known, from the Exhibition of 1851. Those who were active in establishing that wonderful creation were not, of course, thinking of Schools of Art, and yet their acts had resulted in much of the good that they now saw around them. At that Exhibition the art manufactures of this country were shown to be so deficient in comparison with the art manufactures of other nations, that some effort became necessary in order to place our intelligent, industrious, and hard-working artisans on a level with those of other countries. This primary thought soon expanded, and from a commencement which merely contemplated the assistance of art-manufactures, it had ended in the establishment of an

art-education, in a popular form, suited to all classes in the country and to the circumstances of the different provincial towns. Formerly the opinion was very prevalent that any great knowledge of art, any great appreciation of painting, or taste for sculpture, belonged rather to a small and narrow body of men and women, whose high cultivation, whose refinement, and whose leisure enabled them to devote special attention to such subjects, and to travel in those parts of the Continent where such information was most usually acquired. But the fact was now established, and it had been brought before our eyes in such a manner that no person could doubt it, that the love of art, or the appreciation of painting, of drawing, or of sculpture, was not confined to any class of the community, to any body of persons, or to those who were employed in any particular occupation. As widely as the sense of beauty was found in the human breast, so far was it possible to impart cultivation to those natural powers of imagination which were born with all equally, with rich and poor, with those who were busy and with those having leisure. But what had not been acquired until very recently in this country was some public means of developing those faculties which had lain dormant: they required schools where popular instruction could be given in drawing and in modelling, and a museum where persons could easily behold the best examples of ancient and modern art, and so have their perceptive faculties exercised and developed. At the present moment measures of the kind were so fully extended, that they had become settled institutions in the country; the immediate wants of the lovers of art were pretty well satisfied, and provision had moreover been made for the increasing demands and for the rapidly growing desire which was manifesting itself for the extension of this class of education. Parliament had already voted a sum of something like 80,000*l.* a-year, which was to be disposed of by those having charge of this particular branch of the national expenditure. It was now an admitted fact, that popular education was insufficient, if confined simply to teaching out of books: the eye and the hand must also come in for their share of instruction and cultivation. Every one would be ready to coincide in the opinion that there was scarcely any business or occupation in which a person, whether man or woman, could be engaged, where some knowledge and experience of art-drawing would not serve them and be useful to them. The object, however, was not so much to effect the practical results which might arise from Schools of Art, as to ensure the complete education of all the faculties of those who attended them; and it was desirable that these schools should flourish, if they only took into account the mere recreation and amusement which might arise from a knowledge of drawing. The great desideratum in the present day was some innocent recreative occupation, which would afford rest after the labours of the day, at the same time that to those who desired to acquire instruction it would enable them to do something which would increase, not only their own powers of enjoyment, but place them in a position of greater usefulness to themselves and to others. Such a desirable object they certainly found in the study of art, because it was not only a knowledge of the art itself, but the power of observation, and of appreciating nature itself, which was gained in this manner. How very few persons there were, for instance, who looked much at those gorgeous sights which were constantly to be seen in the skies: even when the most glorious sunset was taking place, persons for the most part passed heedlessly along the crowded thoroughfare; and the number of those who were but few who raised their eyes from the level of the pavement to notice what was going on above their heads. The late Mr. Rogers, who was remarkable for always indulging his sentiments of the beautiful in this respect, was in the habit of walking up and down in the Green Park at evening when the sunset was taking place; and he enjoyed the sight so much himself, that he used to stop persons and invite them to look up into the sky, and share with him the magnificence of the sight. But he used to say that he could not find one person in twenty who took the slightest interest in what he was pointing out, and that they only looked on him as a troublesome, strange old gentleman, who was trying to point out something which was not in the least worth seeing. It was astonishing the number of beauties which persons lost by never having trained their powers of observation; for persons who were accustomed to pictures would at once see in landscapes new features of interest and new beauties which those who were strangers to the art of painting would

entirely fail in discovering. Even in London, for instance, persons who were accustomed to take an interest in such drawings as Prout had given of Venice, and the different towns of Germany and of Italy, would find in some old houses near Aldgate pump, or in many of the back lanes of the City, new objects of interest, which the crowd that passed them by were totally unable to appreciate.

Mr. Redgrave, R. A. regretted the absence of Mr. Ruskin, as they were all aware of the interest which he took in the school; but after the discourse which they had just heard from the excellent chairman, after his description of the beauties of art and its benefits to mankind, it could hardly be said that the meeting had sustained any loss. He himself had had the pleasure of serving under the chairman in the Department of Science and Art, and was well aware how conversant Mr. Cooper was with the whole action of the Department, and how strong was the interest which he felt in all that belonged to art, and its propagation in the country. The excellence of the School of Art in which they were then assembled, was shown by the merit of the drawings, and by the number of rewards taken by the students. There were naturally one or two short-comings here and there, and he trusted that the students would be constant in their studies, and not give way to the desire to make pretty drawings merely. He was quite sure that not only was there a great advantage, individually, to the students in pursuing their course of instruction in the St. Martin's School, but that they also acquired a substantial benefit in improving their perceptive powers, and arming themselves with what would be most valuable in after life. Mr. Redgrave concluded by wishing success to the school, and expressing a hope that it might soon become self-supporting.

The proceedings terminated with a vote of thanks to the master of the school, Mr. Casey, and to his assistant; also, to the Rev. Mr. Maule, the honorary secretary; and the Right Hon. Mr. Cowper, for presiding.

THE ARCHITECTURAL EXHIBITION.
CONCLUDING NOTICE.

THOSE competition designs at the Exhibition in Conduit-street, which are for buildings for religious uses of the Established Church, in character of detail whilst in somewhat inadequate consideration of use and ritual, and of art, have the same distinctiveness from designs for other places of worship, as we have already referred to. Of the designs for the Highgate New Church, one of the two exhibited, that by Mr. J. Brown (248), indeed, adopts with the plan of the cross, an octagon at the intersection, developing itself externally—an arrangement reducing some of the disadvantages of transepts when connected with a long chancel. Yet, in general decorative character, the design is inferior to that by Mr. J. H. Browne (249, 250, 272, and 273), altogether a successful application of red brick walling, and stone ornamental details. This design has a well-proportioned tower and spire, and a common arrangement of the plan. The interior view is drawn with capitals of the columns on each side, in oblique perspective, or as though with distinct observations from a near place of view, in lieu of the ordinary method of using one vanishing point, or at most two points, for the picture.

The drawing of "St. Paul's Church, Tottenham, now in course of erection" (275), does not give the idea of commanding excellence in the design, which is that of a very plain Early English structure with tower and spire. Some of the other designs might have been preferred with advantage; though omission of tower and spire in favour of a turret, has not been attended with success in cases where by plan or dimensions great importance is given to the body of the church. Mr. T. E. Knightley's design "one of the six selected" (274), and one of the best, has somewhat this character—resulting partly from the predominance of the east end, by a polygonal apse. Mr. James's design (276) affords satisfactory treatment for a church of moderate dimensions—as in the management of the bell-gable over the roof of the transept. A design for the same building (271 and 277), by Mr. F. G. Lee, makes much use of colour in the interior.

Amongst other drawings associated with competitions, are views of some of the designs for the Scarborough Infirmary. Messrs. Oliver and Lamb exhibit two designs (265 and 266), one on a more extended site than the other. The arrangement shown in their plan, they say, is "based on the suggestions contained in the *Builder* and elsewhere," and is made to get the principal wards fronting the sea,—the wards being "open on all sides," and having beds "only between the windows." 1,500 cubic feet are allowed to each patient. Both designs are of plain character, for brick and stone: one is Italian, and the other has pointed arches to the windows. Portions of the upper stories are set back, to admit of verandahs to one story and a terrace to the story at the top. The oblique arrangement on the ground, of Messrs. W. J. Green and L. De Ville's design (268), which has a plan in the form of the letter T, may afford some

advantage to compensate inferiority of position of some of the windows,—which are turned from, rather than towards the sea,—though the first impression given by the design is, that the arrangement was chosen with regard to novelty of external effect.

Designs for the schools at Forest-hill, are exhibited by Mr. H. M. Eytton (280); Mr. J. G. Stapleton (283); Mr. J. Nicholls (284); and Mr. J. Messenger (285). The last named, the accepted design, is shown in a sketch too roughly executed for any safe opinion as to the propriety of the selection. Amongst the schools erected, shown in drawings, are those at Upton-on-Severn (262), by Mr. G. R. Clarke, good plain red brick and stone, Gothic; and amongst those about to be erected is the "School and Mistress's House," Seer Green, Beaconsfield, Bucks (261), by Mr. L. G. Butcher, an effective composition of Gothic character. The coloured materials, as string-course at the springing of the arches, are managed with good taste; and the same author has a capital "Parsonage-house" (152), to be erected at Ilfracombe. Mr. R. Hesketh exhibits two views (335, 336) of a design for the "School and Soldiers' Institute at Chatham." In the third room are two designs for "the Cambridge Asylum" by Mr. J. Ellis (235, 236); and one (257) for the "Royal Albert Benevolent Society's Almshouses, Cambridge," we suppose, the same subject, by Mr. C. Moore, better in grouping than in structural points of the window arches and mullions; also, a design, by Mr. C. Fowler, jun. for the new Town Hall, at Wokingham (259), with pointed arches, and a low pediment, the horizontal cornice of which is broken by a pointed arch enclosing a shield. Mr. Fowler also exhibits (278), "Parts of a Design for a Public Building, submitted in competition," treated after the model of the Italian palaces, as regards the internal quadrangle and loggias. A design by Mr. H. M. Mileham (264), of Gothic character, materials red and black brick and stone, has not the symmetry which is essential to the effect of a public building, the hall even of the smallest town.

The "Plan and Elevation of a Suspension Railway Girder Bridge, to carry the Railway and Main Road across the River Foyle, at Londonderry" (264 a), as designed by Mr. P. W. Barlow, and revised and recommended by Sir W. Cubitt, the "architectural features" by Mr. E. C. Robins, appears to be the design of which mention was made some time back, when the matter of the structural sufficiency was under discussion. The drawing, however, being to a small scale and unaccompanied by details, we are not able to judge whether there is any considerable difference from the system of construction in the Chelsea bridge, where the girder also is employed, though only for an ordinary roadway, and probably with no view to primary support. The question, whether the resistance to strain of the suspension part of the construction and the girder part would be simultaneous, is a very interesting one, and still not conclusively settled. The design in the present case shows two spans of 451 feet each (Hungford bridge has, we believe, a centre span of 632 feet 4 inches), and a pier in the centre, carried up as a tower, 140 feet in height, the girder being on the lattice-work principle. The decorative part of the design, imitative of Gothic archway and turrets, with details of panning, is not very successful. This is scarcely the fitting opportunity to inquire into all reasons of the moderate success in architectural effect, of some of the most considerable works of recent engineering construction. But, noticing that effect is the best where least was attempted, as in some viaducts over valleys, and the earlier suspension bridges (the works of Telford may be mentioned), we are justified in saying that the object in such cases, just the same as in all architectural design, is one that demands an appearance of consistency in every part, with the structural office. The errors by engineers have been made needlessly, or through affectation of architectural detail, which, being caricatural, would have been better absent, and those where architects were employed, though those where to mere mouldings and ornaments, and want of preliminary inquiry into what form was dictated by requirements. The Italian bell-tower character of the piers of some bridges is a mistake in architecture of the worst kind; mere plain piers, with battering or curved sides, would be, strictly speaking, more architectural. It by no means follows that, as some would seem to believe, expression of the use and structure of a thing is expression also of beauty; nevertheless, it should be the first axiom for the student that there can be no architectural beauty—that is to say, no complacency, or the impression aimed at—unless there be consistency

tenacy of the kind spoken of. Yet, set an architect to design a piece of furniture, or give to a decorative artist a new material, and, instead of first studying, the former what are the requirements of special use and construction, and the latter what are the distinctive properties and advantages, the chances, judging from experience, are, that both individuals will straightway invest the object or the material with forms which are the attributes of something else. As it is not unlikely that the suspension principle will be adopted in a greater proportion of the bridges to be built in proximate years, it is in their case, as generally, important that such errors as we have alluded to, should be pointed out, and the reasons of them understood.

We have omitted to name, amongst the drawings of works in progress, the "Town Hall, Folkestone" (150), by Mr. Messenger, a simple but good version of an ordinary Italian type of Corinthian three-quarter columns over a rusticated basement, with a recessed porch and Venetian window with balcony. The columns, however, are out of drawing, and the crowning central feature is bad. The interior view (6) is certainly unsightly; the bands on the ceiling, longitudinal and transversely, do not harmonize. Also we should name the curious drawings (166) of "Alnmouth by the Sea; transformation of Old Cottages and Granary into Four Dwellings;" clever in many respects, though imitative; but no architect could work upon a drawing such as one of those in the frame, with the accessories of illuminated border, and flags in the view as though cut out of board, without being mentally injured the while. "The Strangways Arms Railway Inn, Evershot, Dorset" (304), by Mr. R. H. Shout, has the merit of suitableness of character; and so may have the work next to it (305), by Mr. J. J. Laforest, the polychromed and galvanized iron structure erected for dancing at Highbury Barn Tavern.

Amongst the studies in design we should give a first place to the "Suggestions for Public Drinking Fountains" (56), by Mr. A. W. Blomfield. They deserve attention at this time, as well from their merit and variety, as from the subject. There are six designs, all Gothic in style, and some of them for metal-work enriched with colour. Two of the designs are plain in character, with basins of metal; one has a canopy, and another has lanterns introduced. They are for different positions, isolated or attached to the railing of a square; and some of them have stone basins on dwarf shafts, and of circular or other forms of plan. In one case, rests for burdens are introduced. Several of the designs might lack the solidity and durability required; but there can be no doubt of the merit of these "suggestions;" and we hope some of them may be turned to account. The "Memorial Fountain" (57), by Messrs. Driver and Webber, is not quite so happy; and no dependence should be placed upon external colour for effect in this climate, if to be executed by painters' work.

Mr. W. Papworth exhibits three drawings, too prominent to be omitted from this notice, though we are not sure that their value as studies accords with what our good opinion of his abilities would lead us to anticipate from him. The "Drawing, partly in perspective, of a Design for rebuilding the Front Wall to a Draper's Shop in a country Town" (176), is not successful as satire; and by many will be misunderstood. The argument against the idea of utility as the sole need for production of beauty in architecture, required to be stated; but the drawing, No. 176, does not effect the object.

The "Study for a Palace Façade" (20) is an elevation designed in the French Italian manner, and well treated. Mr. G. H. Tait's "Design for a New Façade and Enlargement of the National Gallery" (157), would do away with the portico, and not effect an adequate improvement. The "Design for a Circus," by Mr. T. Vaughan (140), well deserved the Soane Medallion from the Institute of British Architects.

Some interesting sketches and drawings of old buildings are contributed by Messrs. Nesfield, Lightly, Newton, Panson, Christopher, F. P. Cockerell, Lockyer, Penrose (including a capital sketch of the Interior of Como Cathedral—134), W. P. Griffith, and others whose works have been before named. Amongst these, Mr. Goodchild's drawings of Sir Christopher Wren's design for St. Paul's Cathedral (328, 329) are prominent; and we are glad to have renewed acquaintance with Mr. Falkener's Interior of the Parthenon (310), which, for the controversial question involved, will be better understood by reference to a statement of the question which we gave at length, last year, when we mentioned the

drawing in the review of the Exhibition at the Royal Academy.

We have now brought our series of notices to an end. We have at various times offered suggestions for the improvement of the catalogue of the collection, or classification in the hanging. Many of these have been adopted; and the result this year, is certainly more favourable to uses of the gallery as a place of study. Further attention will doubtless be given to collecting together drawings of the works in progress during each year, to the subjects of the lectures, and other matters. The Exhibition can be made to serve powerfully the advancement of architecture with the public; and we all are greatly indebted to those whose personal exertions have brought about the present state of affairs.

THE HARMONIC LAW OF NATURE. ARCHITECTURAL ASSOCIATION.

At a meeting of the Association held on Friday, the 15th, Mr. Rickman read an elaborate paper by Mr. D. R. Hay, of Edinburgh, entitled "An Attempt to Explain the Harmonic Law of Nature, and how it may be applied in the production of Architectural Beauty."

The writer said,—It was justly remarked, in the "Record of the New York Exhibition of 1853," that "it is a question worthy of consideration how far the mediocrity of the present day is attributable to an overweening reliance on natural powers and a neglect of the lights of science;" and there is expressed a thorough conviction of the fact that, besides the evils of the copying system, much genius is now wasted in the acquirement of rudimentary knowledge in the slow school of practical experiment, and that the excellence of the ancient Greek school of design arose from a thoroughly-digested canon of form, and the use of geometrical formulas, which make the works, even of the second and third-rate genius of that period, the wonder and admiration of the present day.

That such a canon of form, and that the use of such geometrical formula, entered into the education, and thereby facilitated the practice, of ancient Greek art, I have, on a former occasion, expressed my firm belief; and that belief is founded on the remarkable fact, that for a period of nearly three centuries, and throughout a whole country politically divided into states often at war with each other, works of sculpture, architecture, and ornamental design, were executed which surpass in symmetrical beauty any works of the kind produced during the 2,000 years that have since elapsed. So decided is this superiority, that the artistic remains of the extraordinary period to which I allude are, in all civilized nations, still held to be the most perfect specimens of formative art in the world, and even when so fragmentary as to be denuded of everything that can convey an idea of expression, they still excite admiration and wonder by the purity of their geometric beauty.

So universal was this excellence, that it seems to have characterized every production of formative art, however humble the use to which it was applied.

The common supposition, that this excellence was the result of an extraordinary amount of genius existing among the Greek people during that particular period, is not consistent with what we know of the development of human genius in any other direction, and is, in the present state of art, calculated to retard its progress, inasmuch as such an idea would suggest that, instead of making any exertion to arrive at a like general excellence, the world must wait for it until a similar supposed psychological phenomenon shall occur.

Indeed, history tends to prove that this long period of universal artistic excellence throughout Greece could only be the result of an early inculcation of some well-digested system of correct elementary principles by which the ordinary amount of genius allotted to mankind in every age was properly nurtured and cultivated, and by which, also, a correct knowledge and appreciation of art were disseminated amongst the people generally. Muller, in his "Ancient Art and its Remains," also shows clearly that some certain fixed principles, constituting a science of proportions, were known in Greece, and that they formed the basis of all artistic education and practice during the period referred to. But the principles seem soon thereafter to have fallen into disuse, and the knowledge of their nature and use lost.

Such are the principles I have long laboured to discover, and at last have been led to believe from high authorities that I have fully succeeded; and I shall now proceed, as on former occasions, to explain their nature and origin. * * *



PARIS ARCHITECTURE: A SHOP-FRONT ON THE BOULEVARD DE STRASBOURG.

The physical part of my theory is very simple, and consists in the hypothesis that the eye estimates not by distance but by direction, not by complex proportion, but by simple division. It assumes that all the angles of a composition are aliquot parts of some given angle, and consequently related to each other by the same direct relations which govern the notes in music. Thus the æsthetic pleasure derived from listening to the beautiful in musical composition, and from contemplating the beautiful in works of formative art, is in both cases simply a response in the human mind, to artistic developments of the great harmonic law of nature upon which the science is based.

Although the eye and the ear are two different senses, and, consequently, various in their modes of receiving impressions; yet the sensorium is but one, and the mind by which these impressions are perceived and appreciated, is also characterized by unity. There appears, likewise, a striking analogy between the natural constitution of the two kinds of beauty, which is this, that the more physically æsthetic elements of the highest works of musical composition are melody, harmony, and tone, whilst those of the highest works of formative art are contour, proportion, and colour. The melody or theme of a musical composition and its harmony are respectively analogous:—First, to the outline of an artistic work of formative art; and, secondly, to the proportions which exist amongst its parts. To the careful investigator these analogies become identities in their effect upon the mind, like those of the more metaphysically æsthetic emotions produced by expression in either of these arts. * * *

We assume that the standard of symmetry, so estimated, is deduced from the simplest law that could have been conceived—the law that the angles of direction must all bear to some fixed angle the same simple relations which the different notes in a cord of music bear to the fundamental note; that is, relations expressed arithmetically by the smallest natural numbers. Thus the eye is guided in its estimate by direction rather than by distance, just as the ear is guided by number of vibrations rather than by magnitude; both it and the ear convey simplicity to the mind without effort, and the mind with equal facility receives and appreciates them.

As we in all cases refer direction to the horizontal and vertical lines, and as the meeting of these lines makes the right angle, it naturally constitutes the fundamental angle, by the harmonic division of which a system of proportion may be established, and the theory of symmetrical beauty, like that of music, rendered susceptible of exact reasoning.

Let, therefore, the right angle be the fundamental angle, and let it be divided upon the quadrant of a circle into the harmonic parts already explained, and the following terminology may then be applied in the harmony of form.

When a right-angled triangle is constructed, so that its two smallest angles are equal, it may simply be termed the triangle of ($\frac{1}{2}$), because the smaller angles are each one-half of the right angle. But when two angles are unequal, the triangle may be named after the smallest. For instance, when the smaller angle, which

we shall here suppose to be one-third of the right angle, is made with the vertical line, the triangle may be called the vertical scalene triangle of ($\frac{1}{3}$), and when made with the horizontal line, the horizontal scalene triangle of ($\frac{1}{3}$). As every rectangle is made up of two of these right-angled triangles, the same terminology may also be applied to these figures. Thus the equilateral rectangle, or perfect square, is simply the rectangular of ($\frac{1}{2}$), being composed of two similar right-angled triangles of ($\frac{1}{2}$); and when two vertical scalene triangles of ($\frac{1}{3}$), and of similar dimensions, are united by their hypotenuses, they form the vertical rectangle of ($\frac{1}{3}$); and in like manner the horizontal triangles of ($\frac{1}{3}$), similarly united, would form the horizontal rectangle of ($\frac{1}{3}$). As the isosceles triangle is, in like manner, composed of two right-angled scalene triangles joined by one of their sides, the same terminology may be applied to every variety of that figure. Thus, the four elementary figures which belong to all the forms employed in architecture are, in all their varieties, ruled by a horizontal or vertical right-angled triangle, and are as follows:—

1. The equilateral rectangle.
2. The oblong rectangle.
3. The equilateral triangle.
4. The isosceles triangle.

The law by which these four elementary figures may be harmoniously combined in an architectural structure is a simple law of nature, and the mode of its application is easily understood. Two positions, however, require to be adopted; the first of which is, that the eye is influenced in its estimation of spaces by a simplicity of proportion similar to that which guides the ear in its appreciation of sounds; for it is reasonable to conclude, that an element which is so necessary to the satisfaction of the one sense, should be also requisite to the complete gratification of the other. The second is, that the eye is guided in its estimate by direction rather than by distance, just as the ear is guided by number of vibrations rather than by magnitude; and it may be reckoned equally reasonable to conclude, that the failure of all attempts to discover the operation of harmonic ratio among the various parts of the architectural structures of antiquity has occurred from length, and not direction, being made the standard of comparison.

Mr. Hay then went on to refer to the observations of Mr. Penrose, published in a former volume of the *Builder* [No. 539], and a communication on the subject from another writer, which also appeared there. He then further developed his system, and thus concluded:—The basis of my theory is simply my conviction of the fact that a figure is pleasing to the eye in the same degree as its fundamental angles bear to each other the same proportions that the vibrations bear to one another in a chord of music, and as the whole science of musical harmony depends upon the simple division into which a monochord when in a state of vibratory motion resolves itself by notes into $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{1}{5}$, with their multiples, $\frac{2}{1}$, $\frac{3}{1}$, &c.; so in like manner the whole science of proportion or harmony of form arises from a similar division of the quadrant of a circle. The highest standard of symmetry, so estimated, is

thus deduced from the law that the angles of direction must all bear, to some fixed angle, relations expressed arithmetically by the smallest natural numbers. I am strengthened by high authority in the conviction that no other law can be devised half so simple as this; that it accords with the other laws of nature; being but another form of that great law of least effort which pervades and regulates the system of the universe; that the labour it imposes on the eye is simply to measure round a point, and that the measures it demands are the easiest and readiest which could possibly be required, viz. to estimate the halves and thirds and the other simple proportions of the assigned unit. Also that no other law could give such repose to the eye, or present its results to the mind in a form so plain and unmistakable, for it is exhibited under a form which we know the mind to be capable of judging from, being the identical form under which the ear presents to it an harmonious combination of sounds; and it certainly is in perfect consonance with the wisdom of the Creator to find sensations so widely different as these brought back to the same ultimate type.

PARIS ARCHITECTURE: [A SHOP-FRONT.]

The shop-front of which we annex an engraving partakes of the character of the architecture which has been made fashionable in Paris by M. Duban and M. Labrousse. It is situated on the new *Boulevard de Strasbourg*, and is occupied by a leading bookbinder. Above the entrance-door is a tablet of marble bearing the name of the occupier, and surmounted by a pediment, supported on each side by a chimera. In the tympanum are representations of the medals of the Great Exhibitions, of London, '51, and Paris, '55.

THE HANDS IN PICTURES.

In looking, the other day, at a choice collection of engravings of the works of Michelangelo, Raffæle, and other masters of a great period of art, we were struck by the numerous instances in which marvellous expression of the passions was given by the disposition and character of the hands of the figures—a matter which has been too little attended to by English painters. The practice of using the ordinary artists' models for the hands by some portrait-painters has led to several inconsistencies between the hands and countenance, which cannot fail to strike even those who do not observe very closely. An observance of nature, as it may be noted in the figures which are presented in every-day scenes, shows, in general circumstances, the somewhat firmly-clasped hand of the man of intelligence, its slow but impulsive working, which, if even the face were not visible, would express so much: contrast this with the listless and distended fingers of those who are without intellectual ideas or education, or the claw-like expression of the miserly man. When walking in the street the palms of some hands are presented on the line with the face, in others the reverse, and in these varieties it will be found that the same peculiarities of the hands are connected with certain physical and phrenological developments. This matter might be much extended, and made more clear by illustrations: our object, however, is just to hint the importance, in both painting and sculpture, of attending to the peculiarities and characteristics of the hands, and not to allow one pair of them to be combined with perhaps twenty or thirty heads.

Although not so strongly marked, that expression to which we have referred is still evident in the female figure; and wonderful are the signs which are exhibited by griefs and joys of life, by surprise, fear, wonder. Great actors and actresses have made more use of the power of expression in hand than our painters have generally done.

OHIO LIFE ASSURANCE AND TRUST COMPANY'S BUILDING.

The extensive building represented by our engraving is erected at Cincinnati, in the State of Ohio, U.S. for the Ohio Assurance and Trust Company. Mr. J. K. Wilson was the architect. It is wholly of stone, and will serve to give an idea of the extent to which our transatlantic brethren indulge in their commercial buildings. Part of the cornice, at the time of its erection, fell, and caused the deaths of five men. In 1800 the population of Cincinnati was 750. In 1850 it was 115,436!



OHIO LIFE ASSURANCE COMPANY'S BUILDING, CINCINNATI, OHIO.—MR. J. K. WILSON, ARCHITECT.

TO ASPIRING VOLUNTEERS.*

PERHAPS one of the greatest advantages an architect derives from foreign travel is the bolder and more elevated tone of mind produced by the constant study, or even long-continued contemplation, of monumental edifices and grandiose scenery, or the glorious combination of both, which the ingenuity of man has effected to delight the sons of men. Who that has visited the cities of the South will not, on perusing these words, call to mind the feelings of delight and gratitude, on some occasions even of awe, which have filled his mind on suddenly encountering some of these almost magic combinations! How often on entering a city before unknown to him has he not felt almost bewildered by the succession of noble buildings that met his view? How has he not been charmed by the picturesqueness of the groups? How has he not been awed by the infinitely more noble back-ground which nature has provided to these groups? His mind will revert to Athens and Girgenti, and Segesta, to the solemn Campagna of Rome; to smiling Florence, to busy Genoa, and I know not how many others; and then turning to his own land, he will, probably, think of picturesque Edinburgh, and try to console himself with the reflection that in this metropolis, even, there are one or two points of view which may not unfairly be compared with the above: for instance,—from the bottom of Waterloo-place, or the steps of the National Gallery. But alas! our sins are manifold.

The power of conceiving grandiose combinations is essential to the production of magnificent designs: where largely enjoyed it is undoubtedly a divine gift, and some no doubt, like other poets, have it by inspiration. Many have it not at all, others in a latent form; but where even the germ exists, it may, I believe, by the frequent and continued contemplation of such scenes as I have referred to above, and by the diligent study of the works of great masters, be cultivated so as to produce good fruit: the study, however, must be diligent and not mere chamber study,—for that I believe to be of but secondary importance,—but the most careful consideration of noble edifices, the associating with them until their spirit enters into us, until we can think in the same numbers in which they were conceived; and, measuring our conceptions by this new standard, we discover their poverty and meanness and aspire to better and nobler things.

In grouping a design, it should always be a primary object to determine what portion is to form the principal feature in the whole — to secure, in short, a key-note to which all other parts should be, not only subservient, but should serve either as foils, or as degrees by which the attention is led to it. And the point to which the attention is thus directed should be invariably one of the most important parts of the whole — if possible that which marks its purpose. This principle, carried out in its fullest breadth, would place the chief building of a city in the chief place, as was really the case with the ancients. Witness the Acropolis at Athens, the Capitol at Rome — each surmounted by religious edifices, and each crowning a city of noble buildings of a uniform style. Mr. Ashpitel's very beautiful and clever restoration of the Forum of Rome will serve, to those who have examined it, for an excellent illustration of my meaning.

How admirably, how specially does our own St. Paul's seem adapted to fulfil a similar office. Imagine it the culminating point of a system of buildings, the groups artistically arranged, so as to form grand and impressive pictures, from whatever point of view. This, I fear, will now never be the case; but much may be done if architects, in designing buildings, will consider the effect they are likely to produce when grouped with existing neighbouring structures; if, in short, they would give a little time and thought to the site. I may here observe that great praise is due to the architects who have arranged modern Edinburgh — for the good use they have made of the accidental advantages of the site.

Again, in grouping buildings, or the parts of a single building, the architect should always bear in mind the aspect of the site; for shadows exercise great influence on the appearance of a building, either cutting up or consolidating it, as the case may be, and, in cunning hands, are weapons which may be turned to good account. Those accustomed to sketch from nature will at once recognize the truth of this.

Hitherto I have been applying the rule more particularly to groups of buildings, but it obtains equally in the arrangement of the parts of a single

edifice. Some one portion should be fixed upon as the principal one, around and subservient to which the others should be arranged, as it were, in an order of merit, those which are of least importance being the most modest, and the last to arrest attention. Descending the scale, the same system should be carried out in the arrangement of the smaller parts or features of a building. Take, for instance, the entrance as being generally one of the most important of these minor parts: the eye, instead of having to pass from opening to opening in search of a door that is unmarked by any special features, after it has conveyed to the mind a general impression of the whole, and you begin to examine the building in detail, should of itself, and without effort, turn at once to the entrance which, distinctly, marked, invites, nay, insists, on recognition. To take St. Paul's again as an illustration. In the first place the dome, the unmistakably principal feature, at once rivets our attention, which thence passes naturally to the belfries, or clock towers, subordinate to the last, yet sufficiently attractive, and answering the double purpose of aiding the general outline, and, by the contrast of their form, serving as foils to the great dome. Our eye is next caught by the pediment of the west front, and so carried down to the great portal. In many modern buildings, both in England and Scotland, I have been much struck by the total neglect of this important principle.

We are now arrived at the fourth and last subject of remark, "Detail," under which title I shall include both detail proper, or the enrichment of actual construction, — and what may be termed architectural accessories; that is to say, — those portions of ornamental detail, which, though strictly not forming a part of the actual construction, yet perform no mean office in harmonizing the whole; or, more concisely, that are esthetically a part of the building, constructively no part thereof. This detail, though it is here placed last, is by no means the least deserving of attention; for chaste and appropriate detail will often make amends for grievous short-comings in other respects, and will ameliorate, on a closer inspection, the effect produced in our minds by the contemplation of an edifice wanting in breadth and nobility, or bad in arrangement and artistic in grouping. On the other hand, however good may be the planning, however satisfactory the grouping, the impression left on our minds can scarcely fail to be one of disappointment and disgust, if on a nearer inspection we find the detail gross, vulgar, and ill-placed. This subject is one of the most serious of all the many perplexing ones which beset the young architect's path. None, perhaps, is a more frequent, or a more fruitful source of trouble and disappointment to him: the fact is, — having had but little actual experience, he does not yet know how to calculate the effect of mouldings, nor how different forms look on paper close to the eye, and when at a distance, raised in mid-air; or again, quite beneath the level of the eye. From want of this knowledge, he will be surprised and disappointed to find how far short his executed work comes of his expectation, and probably to see it issue from the workman's hands devoid of all the poetry and grace he fondly hoped he had given it; but let him not be cast down — though his disappointments be many — for this is a probation which all must pass through, and by persevering, and making good use of his failures, he will ultimately triumph.

No part of the detail of a building is beneath an architect's consideration, — rather, on the contrary, is it beneath him to repeat himself in every work he executes, as is not uncommonly the case; thus trumpeting to the world either his paucity of ideas or want of energy. How those old Greeks — true artists — put us to shame: witness only one of their art manufactures which has come down to us, — their painted vases, on which, though the same incident be repeated again and again, it is never represented in exactly the same manner. It has been truly remarked that "the repetition of mechanical copies was alien to the spirit of Greek art." They were far too earnest tamely to repeat, stroke for stroke, that which they had already done; but strove, in each new attempt, to improve upon the last, ever working with love, and ever dissatisfied with their work.

Let the young architect, then, throw his soul into his work, and most surely his work will bear its impress. Let us try if we cannot be more original even in common things: let us throw over our stereotyped patterns; let us design even our own door-knockers and scrapers. Ancient artists were not above these things. Here is a knocker in hammered iron, by John of Bologna. Compare his idea of a knocker with our wretched

affairs, which, as a witty author of the day has observed, seem to frown or glare forbiddingly on all who approach. Can we not make the entrances of our houses a little more inviting? Are we all so poor that we cannot afford anything better than a plain square-framed moulded door? If we cannot do without cowls to our chimneys, is it impossible to beautify them, or, at least, to render them less hideous than the accepted forms? All this, young architects — aspiring volunteers, is part of the work set out for you. The task is great; but take courage: be ever on the watch: let no opportunity slip. You will meet with opposition; but what of that? Persevere! No great reform was ever yet accomplished without opposition; more generally with many a hard knock.

Gothic architecture has of late certainly made more progress than any other style, and we find in the works of the best modern Gothic architects the most praiseworthy attention to detail. Is not their success in a great measure owing to the care thus bestowed? The painter and sculptor enjoy advantages which the architect does not, inasmuch as they execute their designs themselves, and can thus give them the impress of their minds. This disadvantage under which the architect labours may be somewhat neutralized by a practical knowledge of modelling, and I would earnestly recommend all who have it in their power to acquire this.

The architect also should, whenever it is practicable, have models made in the round of all cornices or other moulded work, and try them in different parts where they will be employed. All sculptured enrichment should be executed (as it is by the French) after the block has been fixed in its place, and in the design of such enrichment particular attention must be paid to its position. The bronze gates of Ghiberti, at Florence, are in themselves a lesson on this subject.

In conclusion, let me say a few words on the subject of architectural accessories, which term includes all objects of architectural decoration and many articles of furniture; in short, all those various items which present so large a field for the display of taste and thought, and which an architect must regard as of inestimable value for a means of obtaining those sweet harmonies, those subtle combinations and contrasts, of form, scale, and colour, which are, as it were, the poetry of design. Until quite recently, these accessories, which, in the interior of a building, are of as much importance as the material of the fabric is externally, were left uncared for by the architect, to be supplied according to caprice or the interest of the tradesmen. The French were far before us in this, as their many valuable books on the subject prove, more especially I may notice those of Percier and Fontaine. The architect's position gives him peculiar opportunities to improve and cultivate the public taste in these matters; for where the settlement of them is not actually left to him, his opinion is often asked, and he has frequent opportunities of protesting against those gross abuses of all principle which our tradesmen constantly perpetrate, those traditions, replete with ignorance and bad taste, to which our manufacturers so blindly — so fondly — cling; and, on the other hand, to increase the demand for the really beautiful objects and materials which others, with more spirit and good taste, are engaged in introducing. Let us not neglect this privilege of our position.

W. L.

YE ANATOMIE OF YE ENGINEERE.

THE Indian Punch has the following: — Although an arch man yet is he never forgetful of gravity; and though he denunciate and blameth more than any other man, he piqueth himself on being always correct in his terms: he is a dab at algebra, for which a Y Z is needful: he is a very Noah, after describing arcs. Though he seeketh not after taverns he is conversant with swags, and payeth due attention to his cosines and sick Aunts. Even though not wealthy he helpeth to establish many a bank. He, ever kind and hospitable, supplieth chairs for sleepers, and though addicted to rail is never forgetful of the tender: he is a dutiful subject and though often in hot water, ever payeth fit attention to the Governor. He is somewhat of an ornithologist, knoweth all about cranes and crows, kites, tumblers and cocks for hengeines, and moreover maketh wire ducks to aid his resonant steam eagles to fly. He is also somewhat of an Entomologist, understanding flies, crabs, worms and such likes, and not above taking notice even of a crows ticks. Though partial to hydraulics he is not otherwise a rollicking man, yet is at home in high dressed attics, where he often maketh use of new

mattocks in his area speculations. He is a peaceful man though well versed in triggonometry, and in the habit of making great use of switches in various ways. He is of levelling tendencies, yet sometimes wisheth he were monarch of all he surveyed. He is the most progressive of mortals, axing his way through forests and picking it through rocks, and, paradoxical as it may seem, he opens a country by putting locks on the rivers and keys on the banks. He is by no means a hater of docks man, but well versed in dry dock trials subjects, and would never desire to pull down the church unless it stood in the way of a railroad. He reverence the institutions of his country, because in them he recognizeth the mechanical powers. The Press he rightly regardeth as the lever; the ten-pound voters as the small end of the wedge; the House of Lords as the inclined plane, and the Commons as the screw: the Army he conceiveth to be both hammer and tongs combined, the Navy a series of pulleys, and country justices in general pumps. His affection for the constitution is unbounded, for he only regards it in the light of the common wheel.

RACE STANDS.

THE late unfortunate accident to the staircase at the Polytechnic Institution has naturally led to the consideration of the security of places of public resort generally. And as the season is at hand when the races throughout the country come off—periods of excitement when the erections set up for viewing the course are sorely tried—it behoves the parties owning them to see that they are carefully overhauled, with a view to their security being fully vouched for. As an example of this care and desire for the perfect security of the public, we are informed that the proprietors of the Grand Stand at Epsom has called in the professional aid of Mr. Eales, architect, to examine and certify thereon,—a course creditable to his foresight and care.

THE NINE-HOURS MOVEMENT.

IMPORTANT MEETING OF MASTER BUILDERS.*

AN important and influential meeting of master builders was held on Wednesday last, at the Freemasons' Tavern, for the purpose of considering the reply to be given to the Conference of the building trades amalgamated for the purpose of limiting the hours of labour to nine hours per day.

Mr. George Smith, of Pimlico, having been called to the chair, opened the business of the meeting by observing that a letter had been addressed to the Builders' Society, on the part of the workmen, requesting to have what was called "the nine hours" conceded to them; that was, that they were to work nine hours, and be paid the same as before. The Builders' Society considered they were far too small a body to deal with a question involving not only their own trade, but many others; for it was useless to dispute that the question at issue was one which would affect, not only the building trade, but the general labour of the country. Under these circumstances, they thought it better to convene the present meeting, in order to obtain the general opinion of their fellow-tradesmen. This was the occasion on which they were met; and the difficulties of dealing with the question before them would be much diminished if those assembled would express their opinions on the subject. The letter of which the following is a copy was that which was addressed to the Builders' Society on the 19th of March last:—

"To the Members of the Master Builders' Association.

Gentlemen,—We, the Conference of the Building Trades, amalgamated for the purpose of attaining the nine hours per day, deem it expedient once more to communicate with you on the question at issue. You doubtless are fully aware of the whole of our proceedings since we last addressed you, and these proceedings, we are convinced, cannot fail to have their due weight with yourselves.

Supported as our claim is by the public press, acknowledged favourably by the Association of Architects, advocated from the pulpit, and our own energetic and persevering efforts, cannot fail to call forth your entire approval.

Your 'resolutions' submitted to us do not express anything definite, but to enter into debate on this question, by letter, would be next to impossible, and it is not our intention.

This much, we may be allowed to say, that we con-

* The following builders were present:—Messrs. Dunnage (W. Cubitt and Co.), Kell, Lucas, Lee, H. Lee, Jun. Myers, T. Piper, Mansfield, Ald. Lawrence, W. Piper, C. Lucas, J. Rigby, Plucknett, Soward, G. Bird, Rider, Stephens, J. Bird, E. Bird, Watts, Todd, Browne, Horner, Ashby, Abbott, Arding, Turner, Oxford, Higgs, Read, Patrick, Patman, Outhwaite, Morris, Adams, Aris, Trollope, Hocken, Dove, Birkett, Bywater, Gray, Wood, Coles, Henshaw, Coleman, Turner, Heaps, Pickering, Waller, Harrison, Barton, and about twenty others.

sider this movement has been agitated long enough to entitle us to claim either your sanction or rejection.

And not doubting that it has been discussed in your Association, we respectfully request an answer from your meeting in April next, whether you will concede the 'nine hours' as a day's work.—Yes' or 'No'.

I have the honour to be, on behalf of the Congress, yours most respectfully,

(Signed) GEORGE POTTER, Secretary,
19th March, 1859. 95, Denbigh-street, S.W.

The resolutions referred to in the above letter were agreed to on the 26th of August last, and declared that the question, although originally raised by the carpenters and joiners, was really a question involving all trades; and that, as there was no law to compel workmen to labour for any given number of hours, the question amounted to an alteration in the rate of wages, which no circumstances of the present times appeared to warrant. There appeared to be some feeling on the part of the workmen, on account of their deputation not having been received, but the reason was this. The carpenters and joiners first requested a meeting, and they attended in considerable numbers, and stated, the masters believed, all the reasons which could be advocated in favour of such a movement. It seemed that subsequently a union, or amalgamation of all the various trades, was brought about; and they also requested a deputation, which was not acceded to, as it was felt that they could only go over the same ground again; but not intending any discourtesy, or want of feeling, towards the men. Having thus stated what had been done, he hoped the meeting would not separate without passing some opinion upon the important subject submitted for their consideration.

Mr. Charles Lucas proposed the first resolution, as follows:—

"That in the opinion of this meeting it is not expedient to accede to the request of the letter dated 19th March, because the present arrangement of hours is the most convenient to all parties and does not involve such an amount of time as to bring the building workmen at all within the limit of those on whose behalf the public interest has been excited and its benevolence aroused;—the hours now being from six o'clock in the morning to half-past five in the afternoon, with one hour and a half interval for meals. Much inconvenience would result from the discontinuance of work at so early an hour as half-past four, involving as it would the stoppage of all machinery, plant, cattle, &c."

In his opinion, the claims put forward by the Conference were unreasonable, and if acceded to would entail a prodigious loss upon the public.

Mr. George Myers seconded the resolution, which was put from the chair, and carried as the unanimous feeling of the meeting.

Mr. Dunnage (of the firm of W. Cubitt and Co.), proposed the second resolution, which was in the following words:—

"That if the builders were to admit the principle sought by the workmen, they would take upon themselves the responsibility of taxing the public more than ten per cent., and establish a regulation which must necessarily govern labour and its value with all other trades throughout the kingdom. That, acting upon this impression, this meeting records its opinion, that there is no sufficient reason at this present time to justify such an advance as is demanded by what is called the 'nine-hours movement.' During the past year the desire of the master-builders to meet every reasonable demand has been evinced by the fact that they have given up, without reduction of wages, one hour and a half on each Saturday afternoon; and, so lately as the year 1853, they agreed to an advance of ten per cent. on the wages then paid, by reason of which the skilled workmen, on an average, now receive 33s. for 54 hours' labour. That, for these reasons among others, it is the opinion of this meeting, that the request for nine hours to be paid for as ten hours, ought not to be acceded to."

Mr. Kell seconded the motion.

After a short conversation, in which it was stated that skilled workmen, in connection with the building trade were now able to earn 5s. 6d. per day, or 33s. per week, the Chairman put the resolution, which was carried unanimously.

The Chairman having expressed a hope that the meeting would not separate without eliciting some remarks from the gentlemen who had attended,—

Mr. Turner said he had been induced to attend this meeting of his fellow-tradesmen, because he considered the question at issue to be to them one of the most important and momentous which had ever been raised in his lifetime. The question of wages was one which affected the employer as well as the employed. They lived in an age of severe competition, and how, he asked, could they compete successfully if there was not something like uniformity of wages among the building interest. He happened to know, however, that uniformity was not the rule, as there were certain large firms which did not pay 5s. 6d. a day to their workmen. There were gentlemen present from some of the largest firms in the metropolis, who could refute what he said if it were not true, and who could assert that they paid 5s. 6d. a day to all hands. For his own part, he thought it most unjust to pay 5s. 6d. per day without refer-

ence to the ability of the men. He had men in his employment who were not worth 5s. 6d. a day, and why should he be compelled to pay that sum to men who could not earn it? He had no objection to pay it to honest industry and perseverance, as the extra 6d. per day should be an incentive to labour; but he objected to place the bad workman on the same level as the good. He was glad to see the trade united on this question, for he had long felt that they looked upon each other too much as competitors and antagonists; and that they ought to be bound together by a band of wire, and not by a rope of sand. The fact was, they competed too much with each other, and as a body they contained no common elements of cohesion. This should not be; and he assured such men as Mr. Lee, Mr. Lucas, and Mr. Myers, that if they and similar men would combine for an object like the present, hundreds of the small employers would gather round them. Whatever men like Mr. Myers or Mr. Lee did would rule the trade; and, if they would set the trade an example, they might depend upon the co-operation of the general body of employers. The interest of the working man and the master was one, and identical; and the sooner the vexed question was settled, the better would it be for the men, the masters, and the public.

A Gentleman suggested whether, as considerable misapprehension existed on this subject, it might not be desirable that means should be taken to exhibit to the public the true position of the question at issue. The workmen put forward a statement that "their claims had been advocated from the pulpit." Now he ventured to say that this was not the fact; as, whatever interest might naturally be felt by the clergy for the over-worked shirt-makers and poor sempstresses, their cases were by no means analogous to that of skilled workmen earning 33s. per week. He should be glad to see a resolution passed giving the committee power to advertise the resolutions agreed to that day as generally as possible.

Mr. Abbot said he would have great pleasure in seconding the proposition just made, as he considered it very desirable that the public should not be misinformed on this subject. With regard to the Church advocating a question of this nature, a friend of his had told him that the Rev. Mr. Cadman, of St. George's in the East, had been requested to advocate the cause of what was called "the nine-hours movement," and he had declined to do so because he considered the claims of the workmen unreasonable and impracticable.

Mr. Lucas said he doubted whether in any other business the hours of labour terminated at half-past five o'clock.

Mr. Abbot said he hoped the resolutions agreed to that day would be advertised in the *Builder*, where the trade could see them.

Mr. Piper.—Of course: that is our *Times*.

A resolution was then agreed to authorizing the advertising of the resolutions.

On the motion of Mr. Todd, a resolution was also passed directing that the resolutions agreed to at that meeting be communicated to the Conference of the building trades workmen.

A Gentleman inquired what course it might be desirable to take in case the men refused to accept the resolutions of the meeting, and "struck."

The Chairman said he thought it would be more advisable not to discuss such an alternative until it arose.

Mr. Morris expressed his opinion, that union among the masters was most desirable in case of any exigency, such as that referred to.

Mr. Lee deprecated any discussion upon the subject as premature. They had met that day to give an answer to the men, and he did not think it desirable that they should arrive at any hasty determination as to what should be done in the future. If any strike should take place it would then be time enough to hold another meeting, and consult as to what should be done. He hoped also that nothing might occur to interrupt the good feeling between masters and workmen.

Mr. Morris explained, that he did not wish to be understood as giving any other counsel. He would treat the men with every consideration and courtesy.

Mr. Arding said that he felt personally obliged to the Builders' Society, for having called the meeting, and he was assured that the good feeling and sound sense of the employers would induce them to call another meeting if necessary. He thought they had all reason to be grateful to the chairman, and he begged to move a vote of thanks to him.

The vote having been unanimously accorded, the chairman acknowledged the compliment, and the proceedings terminated.

COST OF CEILING-PAINTING.

SIR PETER PAUL RUBENS received for his painting of the grand *Plafond*, at the Banqueting House, Whitehall, the sum of 4,000*l*. The space covered by this painting is about 400 yards, so that he was paid nearly 10*l*. a yard. Sir James Thornhill, the first Englishman who received knighthood for his ability in art, was paid only 3*l*. a yard for the laborious work on the ceiling of Greenwich Hospital, and only 1*l*. a yard for painting the ornaments on the walls. This employment he was appointed to in the reign of Queen Anne; but the work was not completed until the reign of King George I. He commenced in 1708, and finished in 1727, and was paid altogether 6,685*l*.

The valuation of the work, after many attempts to screw down the painter, was made by the directors of the hospital, after consulting by the directors artists then residing in London.—Vandervelt, Cooper, Richardson, Sykes, and Degard,—who decided in favour of Sir James, and reported that the performance was equal to anything of the kind in England, and superior in the numbers of figures and ornaments.

"The Duke of Montague," says Sir James Thornhill, in his memorial to the commissioners for building the hospital, "paid Monsieur Rosso, for his saloon, 2,000*l*., and kept an extraordinary table for him, his friends, and servants, for two years, while the work was doing, at an expense estimated at 500*l*. per annum."

Signor Verrio was paid for the whole palaces of Windsor and Hampton Court ceilings, sides, and back stairs at 8*s*. a foot, which is 3*l*. 12*s*. a yard, exclusive of gilding, had wine daily allowed to him, lodgings in the palaces, and, when his eyesight failed him, a pension of 200*l*. per annum, and an allowance of wine for life.

Signor Rizi had of the Duke of Bedford 1,000*l*. for painting three rooms; for the little chapel at Bulstrode, 600*l*.; from Lord Burlington, for his staircase, 700*l*.; Signor Pellegrini, of the Duke of Portland, for work in his house, 800*l*.; and for a small picture over a chimney-piece, 50*l*.; of the Earl of Burlington, for the sides of his hall, 200*l*.

Other instances might be given to show the large amount of employment this now comparatively unused description of house-decoration afforded to artists of ability.

CHURCH-BUILDING NEWS.

Hereford.—The works at Maiden church, in the county of Hereford, delayed for a few months in consequence of the dangerous accident that occurred to the builder and his foreman, are now recommenced and will be proceeded with, with the despatch requisite to ensure completion towards the early part of next autumn. The body of the old church had become much dilapidated, the walls being, on an average, 12 inches out of the perpendicular, while the west walls toppled over as much as 2 feet 6 inches. The roof had also become dangerously rotten. There was therefore no alternative but to take down and entirely rebuild the nave, aisles, and porches. The tower, steeple, and chancel will remain, and the new nave and aisles will occupy the old site, and the pillars, arches, and every other object of interest will be carefully preserved, restored, and brought into the design of the new structure. The works are being carried out by Mr. Noden, of Leominster, from the designs and under the superintendence of Mr. Nicholson, of Hereford, the diocesan architect.

Bemerton.—The foundation of a memorial church to George Herbert, has been laid in the parish of Bemerton. The site is a little beyond the present church, on the road to Wilton. It is to be in the Decorated style of architecture, and will consist of a nave, north and south aisles, and a chancel, on the north side of which will be a tower, surmounted by a bell-turret. The length of the building will be 104 feet, and its width about 53 feet; and it will afford accommodation for 355 persons. Mr. Wyatt, of London, is the architect; Mr. Miles, of Shaftesbury, the builder; and Mr. Howitt, of Wilton, the clerk of the works.

Worcester.—At a meeting of the subscribers to the fund for erecting an ornamental stained-glass window in the eastern end of Worcester Cathedral, the honorary secretary intimated that the amount at present actually subscribed or promised was about 600*l*. and suggested the desirability of taking the necessary steps for securing designs from the best artists for the window; subsequently commencing the filling in of the first or higher portion of it, until such time as the state of the funds would allow of the completion. The entire

cost of the window will be something like 1,050*l*. A resolution was adopted to the effect that the work of filling in the window with stained glass should, with the concurrence of the dean and chapter, be at once commenced; and advertisements were ordered to be inserted in various newspapers, inviting artists to send in designs by the 1st July next.

Ely.—The dean and chapter of Ely have determined upon the restoration of the central octagon and lantern of the cathedral, as a memorial of the late Dean Peacock. According to the estimate of Mr. Scott, the expense will be 5,000*l*. for which a subscription has been opened.

Manchester.—The removal of the loftiest and most conspicuous church-spire in Manchester, that of St. Mary's, the Parade, says the local *Courier*, has naturally excited much notice. Representations of its unsafe state were made to the dean and chapter by the corporation of Manchester, and the ecclesiastical authorities at once took steps to render the sacred edifice secure. The work of demolition was entrusted to Mr. J. W. Graham, stonemason. It is intended to take down the spire to the base of the columns, and not rebuild it at present. The spire was originally 186 feet high. The plan of constructing the tower and spire was very unsound. The iron bands in the steeple had corroded with the wet, expanded, and split the stone. The balance-weight of the 20 feet vane corroded and fell many months ago. The removal of the heavy stonework has been effected safely.

Richmond (Yorkshire).—Part of a fund, collected towards the restoration of Trinity Church, Richmond, has been expended in replacing the ill-formed windows of the nave by others more in harmony with the new east window, the chief feature of the present improvements. This was furnished from Messrs. Hodgson, of York. Mr. Barnett was the artist employed by them. The window contains three figures—the central that of the Saviour. To the right is St. Paul, with sword and book; and to the left St. Peter, with keys. Above the chief lights, and filling the remainder of the window, are the figures of two angels, bearing scrolls. The unsightly chancel arch has also been removed, and has been replaced by a dressed stone arch, harmonizing with the character of the new windows and the rest of the church.

Durham.—The Dean and Chapter of Durham propose to restore the central tower of the cathedral. It is intended to recase the whole of the tower, down to what is termed the "bell-ringers' walk," and the buttresses are to be restored for 20 feet lower. The architecture will, in all essential particulars, be the same as at present, but the workmanship will be very different, as stone work is to be substituted for the cement in which the tower is now enclosed. The work will be commenced as soon as possible, and will occupy nearly two years.

Butterwick-in-Ryedale.—A new chapel-of-ease to the church of St. Michael, at Barton-le-Street, just completed at Butterwick, has been opened for Divine service. The edifice is situated on the south bank of the Rye, immediately adjoining the village and the bridge which carries the Kirby-moor-side-road across the river. The architects are Messrs. Tuke and Metcalf, of Bishop Auckland, and the erection of the edifice has been carried out by Mr. John C. Teale, of Malton. The building is in the Early English style. The exterior presents a porch, nave, and turret. The nave contains nine pointed lights, three on the north, three on the south, one east window, and two in the west end. The nave is slated, and the east gable is surmounted by a universal cross, of moor stone. The west gable has a bell-turret, flanked at all the angles, with buttresses rising from corbels. The whole of the windows are glazed in alternate squares of green and white. The bulk of the building is of Appleton stone, but the arches are of Kildenley. The sculptured bosses of the doors and windows have been executed by Mr. James Teale, of Malton. The chapel is stalled to seat about 100 persons, and the woodwork, of deal, is stained oak and varnished. The edifice is warmed by an ornamental stove, with a descending flue. The flue is of open woodwork, stained oak, having three centres springing from corbels, the apices of which are trefoiled. The chapel has been erected at a cost of from 300*l*. to 400*l*. including the purchase of the site and the expense of conveying it to the Ecclesiastical Commissioners.

Carlisle.—A temporary church, in West Tower-street, has been opened for divine service. The structure is of wood, and is situated on the south side of West Tower-street, the site being given

free, so long as it should be required, by Joseph Ferguson, esq. of Morton. The building is calculated to seat about 400 persons. Its length is 53 feet, and width 37 feet, and it is entered by a porch, having doors on the right and left. The seats are of plain deal, with inclined backs. It is lighted at each end by large windows, one above the altar and pulpit, and the other above the entrance. Gas has been introduced. The floor is of asphaltum, and the roof is slated and plastered. It was erected by Messrs. Cameron and Briggs, joiners, and Mr. John Hodgson was the architect. The total cost will not exceed 180*l*. towards which sum 143*l*. have already been subscribed. The scheme originated with the bishop.

Millom.—Some workmen at the Millom parish church, says the *Ulverston Advertiser*, removed the roughest and rubble within the pane-work of the remarkable vesica or fish-shaped window at the west end of the aisle, with the view of ascertaining whether any indications of the original tracery of the window could be found. The original tracery, almost perfect in form, was brought to light from the mass of rubbish under which it has probably lain hid for upwards of a century. It proves to be a specimen of the Decorated order of architecture. Drawings were taken, as the old tracery, though almost perfect in form, is in parts crumbling and liable to fall in pieces. The incumbent has decided to restore this window.

Ormskirk.—A number of the Ormskirk parish church windows are to be restored, at the expense of several persons, as memorials or contributions. The new east window is to be from a design by Mr. Paley, of Lancaster, architect, and executed by Messrs. Forrest and Co. of Liverpool. The subject is to be the Ascension of Christ. Mr. J. P. Heywood, of Liverpool, provides this window. Another contributed by Mrs. Webb, of Brooklands, has just been put up in the north side of the church. Faith, Hope, and Love are the subjects, and Messrs. Forrest and Co. of Liverpool are the artists.

Edinburgh.—The Reformed Presbyterian Church people at Lady Lawson's Wynd are about to erect a new edifice at George IV. Bridge, nearly opposite the Rev. Dr. Alexander's new church. The plans have been selected from a number of competitive designs, and are by Mr. Leadbetter, architect.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

At the meeting held on Tuesday, April 19th, the report of the council upon the drawings sent in competition for the prizes offered by the Institute was read, and the medals were delivered to the successful competitors, viz.:—

- I.—For a Perspective Line Drawing.
Medal.
Francis D. G. Stanley, apprentice to Messrs. Brown and Wardrop, architects, Edinburgh.
 - II.—For a series of Drawings of Architectural Details, measured and drawn from the originals.
Medal.
John Alexander Hamilton, apprentice to David Rhind, esq. architect, Edinburgh.
 - III.—For the best Original Design,—subject, a Screen.
Medal.
James Lessels, apprentice to John Lessels, esq. architect, Edinburgh.
- Meeting Honourable Mention.*
1st.—G. A. Aitken, apprentice to Messrs. Peddie and Kinneir, architects, Edinburgh.
2nd.—James Shepherd, apprentice to Wm. Smith, esq. architect, Aberdeen.

DESIGNS FOR THE MANCHESTER ASSIZE COURTS.

The designs for the Manchester Assize Courts, including the three selected for the premiums of 250*l*. 150*l*. and 100*l*. respectively, are displayed at the Royal Manchester Institution, where they have been inspected during the week by the county magistrates. The designs are very various in style of architecture. The first prize has been given to Mr. Waterhouse, of Manchester; the second to Mr. T. Allom; and the third to Mr. John Robinson. The designs were to be on view to the public on and after Wednesday, until Saturday, the 23rd instant.

The designs were first reduced to seven, and the Committee called to their assistance Mr. David Bellhouse, to "ascertain how far their contributors had complied with the instructions issued; and particularly with that portion of them which limits the total cost of all the erections required, including fixtures, fittings, the boundary fences, heating and lighting apparatus, draining, and all matters necessary for carrying out the proposed works, to the sum of 70,000*l*."

The selected design (by Mr. Waterhouse) is Gothic in style. The courts, &c. comprised in the

principal building form on plan a rectangle, 250 feet by 150 feet, except where Scott-street runs into it on the north-east (Cotham-street) side, and where the principal entrance projects beyond the facade. Taking the central line of Great Ducie-street, the facade will stand back more than 100 feet, a fine open space being thus left. The height from base to parapet will be nearly 60 feet, and through and above the open tracery of the parapet will be seen the steeply-pitched roofs, there being pavilions over the principal entrance and at the angles, rising to a considerable altitude. An illuminated clock turret will crown the chief entrance, and behind will rise a central tower 200 feet high, with gabled sides and slated spire, serving as a ventilating shaft. The windows of the basement story will be coupled; those of the principal story, of three lights with tracery heads; and those of the upper floor more deeply recessed, with detached marble shafts between each group. The central porch will have open arches, with canopied statues above, and there is an octagonal staircase turret on the Southall-street side. Though the building will be faced with stone, it is considered by the architect that grey and red granite in small quantities (as in columns and elsewhere) might be effectively introduced. At the Great Ducie-street and Cotham-street angle of the plot will be the Judges' lodgings, communicating with the Courts by means of a corridor at the back of a court-yard, forming the carriage entrance to the lodgings; and the entire frontage to Great Ducie-street will be 350 feet long.

The entrance for the public will be by three easy flights of steps, leading through an open vestibule, 40 feet by 25 feet, into a central-hall, 100 feet by 50 feet and 70 feet high, having an ornamental timber-framed roof. This hall will give ready access to all parts of the building by various corridors and staircases.

The two principal Courts will be at the north and east angles of the central hall. They will each be 66 feet by 40 feet and 40 feet high; the ceilings being flat in the centre, with inclined ends and sides. The Judges' retiring-rooms will be placed back to back, with a connecting corridor. The Sheriff's Court, 40 feet by 25 feet will be immediately contiguous to the Crown Court; and the Grand Jury Room and the Palatine Chancery Court will be in the upper story.

COMPETITIONS.

Blackburn Workhouse.—The ratapayers of Blackburn are about to erect a new union workhouse, at a cost of 14,000*l.* to accommodate 700 inmates. The Board of Guardians offered a premium of 50*l.* for the best-appeared plans, &c. and issued printed invitations to architects to compete for the same, and designs were sent in from ten parties. The guardians have placed the whole of them in the board-room for public inspection.

Royal Medical Benevolent College, Ensom.—The Council have elected Mr. George Elkington, of Cannon-street West, architect to the College, having received twenty-two applications for the appointment, in reply to the recent advertisement in the *Builder*.

THE RESTORATION OF HEREFORD CATHEDRAL.

Sir,—Excuse my saying that, after the accidentally erroneous statements made on the faith of, I have no doubt, a very well intending correspondent, as to the restorations of this cathedral, I think your corrections of them are scarcely sufficiently clear to prevent misapprehension. In your first article you say that "Hereford Cathedral is undergoing a process, not of restoration, but of renovation, with a vengeance." This seems founded on what follows, that "a portion is said to be restored, and a greater contrast between the past and the present cannot well be imagined." Now, it is pretty clear that this statement cannot refer to any part of the work recently undertaken, but to the restorations effected under the late Mr. Cottingham, and commenced in 1841, yet the correspondent would connect it distinctly with what is now doing. The same may be said of your remarks on the ceiling, and the floor of the nave, which were executed in the years 1849-50, under Mr. Cottingham, jun. The removal of the monumental slabs and effigies took place, so far as I have heard, at the very commencement of Mr. Cottingham's operations: all I have to do with them is to replace them; yet your correspondent says he saw them being removed from the floor, about six weeks ago! I can only say that, on my appointment in 1854, I found, to my great disgust, that they had for the most part been stacked up in the Chapter-house yard, or stowed away in the eastern chapels; and my clerk of the works says of them, "I have removed the brasses and slabs, expecting to put them to a place of security, for they were thrown about very recklessly when I came here. I took the same precaution with the effigies, at a very great expense to the contractor." You will see from the above, that all the statements made respecting the actual works, though so much

* The remarks in question referred to the general reversion of the cathedral, viewed as a continuous work, without any reference to time, and are confirmed in every respect.

as to seem as if aimed at the works commenced last year, relate, in fact, to those commenced in 1841, and discontinued about seven years since.

The remaining charge, however, does relate to what is now doing; and I can truly say, that it is in any degree correct, no one would be more annoyed at it than myself. In the form in which it first appeared, I can give it a very distinct denail. It is there distinctly stated, that the remains of the bishops, whose effigies were removed by Mr. Cottingham, and are now to be restored (not in the sense usually understood by "restoration," but) to their places, "have been cast to the dogs and the manure-heaps, drawn forth without the city, and reburied with the burial of an ass!" This is of course only a rhetorical flourish; but so far is it from being true, even in the most mitigated sense, that I believe no kind of disturbance to internal burials has taken place since the work has recommenced. There might have been such disturbance when the internal piers were restored some fifteen years back; but of this I know nothing. All I say is that nothing of the kind has taken place now; so that the flourish in question, after all due deduction to bring it down to sober matter of fact, contains a grossly unjust accusation. I have inquired very carefully into the remainder of the statement, and have received the written depositions of several of the workmen employed. I do not know the case of my own proper knowledge, but from all the information I can obtain it is as follows.

The foundations of all the eastern part of the cathedral had to be underpinned to a considerable depth: in one place to deep as 17 feet. In opening this up, it was, as has been the case in churchyards since the days of Shakespeare, found to contain bones, not skeletons, but bones which had been removed before, and in some places deposited in holes as if collected while digging new graves, and placed together. These, when it became necessary to the works to remove them, were deposited in an extensive excavation which had been made some years back by Mr. Cottingham, on the site of the ancient chapter-house, and its immediate excavation; and, as I am assured, carefully buried. Any one who has had to do with ancient churchyards knows well what numbers of bones have to be thus removed when any work has to be carried on. "Bonhommes" have from time immemorial been erected for such purposes; but in this case the two excavations in question seem to have been deemed proper places to deposit them. There has been some earth removed from the chapter-house yard; but I am told that the utmost pains have been taken to ensure the absence of every fragment of bone from it. The clerk of the works says, "no bones have ever laid exposed longer than necessary, and were they from my dearest relative I could not have respected them more." The depositions of the workmen all assert that all possible care was taken, and that the bones removed were all such as had been removed before.

I cannot say more of it than that I think the gentleman who attributed to the work commenced last year the faults of that commenced in 1841, and discontinued seven or eight years back,* may have fallen into other errors; and that I hope and believe he has done so.

April 18.

GEORGE GILBERT SCOTT.

* We have also received a letter from Mr. W. H. Lowder, Hon. Sec. of the Oxford Architectural Society, but are unable to find space for it. Mr. Lowder says,—
"The pit which evokes the Latin quotation from your correspondent is, I grant, a melancholy spectacle, and its history is still more so; but its history is a thing of the past, and nothing to do with the present question. It is quite true that there are bones in it, but these bones do not come from the interior of the cathedral, but from the necessary excavations for the underpinning of the walls, which were ruinous."

PROVINCIAL NEWS.

Colchester.—Two new hospital wards, with offices attached, are being added to the Borough Union Workhouse, by Messrs. Orrin and Elsdon, under the direction of Mr. H. W. Hayward, of this town.—Touching the appearance of insects in St. Peter's Church, Colchester, the architect denies that the furnace is placed in a vault formerly used for burials, and says the cause of the visitation is now being investigated.

Blyth.—In reply to the advertisement to architects for designs for the national schools at Blyth, says the *Gateshead Observer*, eight sets of plans were sent in to the committee, who decided upon adopting those prepared by Mr. Dunn, of Newcastle, under whose superintendence the new buildings will be commenced immediately. They are to consist of schools to accommodate 150 boys and girls, with two class-rooms, and a residence for a master and mistress attached, all of stone. The site is in the parish of Horton (a portion being reserved for a new church).

Newcastle-under-Lyme.—The committee to whom the preliminary arrangements were entrusted have received a large number of plans in answer to their advertisement offering a premium of 20*l.* for the design which the council might most approve. The following are the names of the architects who have supplied them, besides which there are seven designated by mottoes:—Messrs. Ward and Son, Hanley; Messrs. Ford and Meyer, Burslem; Mr. R. Chapman, Newcastle; Mr. Robert Edgar, Stoke-on-Trent; Mr. Ralph Dain, Burslem; Mr. Robert Scrivener, Hanley; Mr. James Stevens, Manchester and Macclesfield; Mr. James Murray, London; Messrs. Mason and Layland, Liverpool; Messrs. Holme and Stubbs, Liverpool; Mr. W. Hall, Birmingham; Mr. T. H. Hutchinson, Birkenhead; Mr. Robert Down, Bridgewater; and Mr. J. M. Johnson, Lichfield. The plans are open for inspection.

* He really did nothing of the kind.

Jersey.—The massive breakwater along the Esplanade, says the *Jersey Times*, is regularly advancing: upwards of 240 feet of solid work, 21 feet high from the sea-line, is completed, with solid granite blocks, on a prepared bed of rough stonework. The works are facilitated by a double railway and traversing platform, the contrivance of the contractor. The promenade and roadway will, by this improvement, be widened 24 feet, and the sea entirely prevented from breaking over the road.

SPURGEONIA.—COMPETITIONIA.

In a large room, with galleries deck'd,
The Spurgeon designs were ranged.
Two designs by designers were voted,
The first and the third being named.
But another design the church select,
For it the first was changed.
The true worth of the first, 50*l.* denoted;
The third with it was ranged;
And the other—the chosen of Spurgeon and deacons—
Declared "the best basis" for readings and teachings.

But to turn from this tale, which every one knows,
To another much like it, as far as *that* goes.

Musingly sitting, behold! the flower of artistical critics;
Smoking so gently his pure weed: gently recalling "the Spurgeons."

Take his mind through Rae's premise; premise well covered with drawings:
Suddenly fixes on Pocock's—plan, elevation, and section.
Peeps into every crevice—dreams of the deeds of the ancients.

Things never noticed by none, save those who have also created:
Fortified thus as to defects, rushes to pen to paper;
Finds the ink smoothly to flow; finds the pen move like a "chisel!"

Mason-like in his fine touches, cleaveth "poor Pocock" ascender:
Rendeth his building in toto; wanting much light where none's needed:
Upriseth Pocock in anger, sneering "not seeming to do so—"

Sneers by the "I-will-not" dodge; but cutteth his foe into pieces:
Points his facts fierce and concise, but errs when he falls into by-play—
Understands not the full depth; depth of the fulness of language:

Proves his design well arranged, but cannot prove good his four turrets—
Turrets that seem as if misplaced; placed at the top for the bottom:

Verily they must be piling; driven to hold the foundation—
Erected with sundry device upon the four tops where they're bases.
Fruitful "usque ad nauseam" Garbett finds out the dis-

commodities:
Pocock has smitten him home: he cannot re-enter the meekly.
Stay, O Muse, so presumptive; Garbett has re-blown his trumpet;
Skirmishing "outlay pay"—seeming t'encounter with Pocock:
Raskin's sentences rise, gleaming as brass in the sunlight:
Evident copies of "get up," known in our greatest "lamp-lighter!"

His rich golden metal; metal despised in his copy.
Having skirmish'd with "outlay pay," he quietly smokes a cigar out:
But Pocock as first is the victor—his payment ne'er soiling his light.

METROPOLITAN BOARD OF WORKS.

THE BILLS OF QUANTITIES.

At a meeting of the Board, held on the 15th inst. Mr. Leslie objected to the payment, either directly or indirectly, to Messrs. Roberts and Gotto, of any money out of the rates, for the taking out of the quantities for the contract for those works. In doing so he took occasion to animadvert on the manner in which these gentlemen had performed their duties. He then went into minute details to show that there were errors in the quantities taken out, which operated to the prejudice of the ratapayers to the extent of 7,240*l.*

The President said that the matter was full of importance, and he saw no reason why the errors which had been made in taking out the quantities should not be rectified. The public were not injured, as stated, as Mr. Moxon, the contractor, had taken out the quantities for himself.

The Board ultimately adopted the recommendation of the committee as to the payment of the instalment, with a request that the payment of Messrs. Roberts and Gotto should be postponed until the report of the committee of the whole Board upon an investigation of the matter should be brought up.

This matter must be cleared up: it cannot rest where it is.

COVENT-GARDEN APPROACH.

The superintending architect reported in detail all the purchases of property agreed for up to the 25th ult. for the Covent-garden approach, together with an account of the sums claimed, and the amounts agreed upon to be paid for the respective premises, and the manner in which the claims were settled; and that the claims on freehold and leasehold interests, for goodwill, loss on removal, &c. which amounted to 117,693*l.* 5*l.* 1*d.* had been settled at the sum of 80,178*l.* 14*l.* 6*d.*

ELY SURVEYORSHIP.—Mr. Baldwin Latham, C.E. of Nantwich, has been appointed surveyor to the city of Ely.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

The Builder.

Vol. XVII.—No. 847.

The Manchester
Assize Courts
Designs.

THE Exhibition of Designs for the Assize Courts, Manchester, whether from the labour and cost expended on the drawings, or the merit to be found in the works submitted in the competition, is assuredly, speaking professionally and in the interests of art, one of the remarkable occurrences of our time: indeed, in some respects it is not less important than the only exhibition with which it can be compared, that of the designs for the Government Offices. In our last number we announced to whom

the premiums had been awarded, and gave some account of the design which received the first premium, to which we now add a plan,*—and we are also able, from inspection of the designs in Manchester, to supply further particulars. It is, however, impossible for us with the limitation of time, and we might add, the impediments at such exhibitions which seem to be unavoidable, to supply notices of the whole of the drawings. Sooner or later, architects will discover the truth of our assertion, that to prepare for any committee, honourable though their intentions, at a cost of 50*l.* per set on the lowest average, sometimes with beneficial effects to themselves in study, but sometimes those which are deteriorating, designs which, not simply, cannot be duly examined in the few days, or usually hours, given to adjudication, but will not, considering what is the largest available space, and the usual duration of exhibitions, be fully exhibited to the public, is doubtful policy, to say the least, leaving out of view whatever other considerations there are, one way or the other, in the competition question. Were we to give some weeks of labour, and whole numbers of our journal, to such an exhibition as that at the Royal Institution, Manchester, we might be still unfitted to pronounce an opinion as to the justice of a selection like this in question; therefore, it is best we should be understood to disclaim the responsibility, or rather to doubt the possibility under existing circumstances. Committees have no such hesitation. For ourselves, we say that an amount of pains and exertion has been given to this matter which could not ordinarily be demanded of us, and trust we may offer as the result, particulars interesting, and perhaps useful, of some of the best designs, and opinions not carelessly formed, which may operate advantageously to the extent that they are expressed. The exhibition has been open to the public during the present week, as well as on the days which we named in our last; but whether it will close, as announced, this Saturday, is not certain.

There are 109 contributors to the competition, following the private catalogue of the curator, or half the number of the contributors

to the competition for the Government Offices, several of whom had only "block plans;" and there are, besides three models, about 940 drawings, covering an area of 8,410 square feet, according to the same authority. This statement, however, falls short of the fact; for, several of the competitors have sent what are really two designs, and one gentleman has six designs or modifications; whilst, in some cases, we counted more drawings than those set down,—as those under the motto "Laus," twenty-eight instead of two. The drawings were hung under the direction of Mr. Salomons, architect, honorary secretary to the Royal Institution, and he has obviously paid great attention to their display, under the difficulties of space. The three rooms used for the annual exhibition of pictures, with closely-placed and lofty screens,—the corridor and recess, and the gallery round the grand staircase of the building—and screens there also, are occupied. We find, however, some drawings not hung; and these included very nearly the whole of the block plans,—a most unfortunate omission, for ourselves as well as for the comprehension of the designs by the general public. Different scales, also, are used in the drawings,—16 feet to an inch having been allowed subsequent to the first instructions, which required a scale of 8 feet to an inch; and the majority of the competitors have felt themselves restricted to a single perspective view, whilst others sent two views, the instructions being not definite on the point. We are able to print the following complete list of the architects and others who have allowed their names to be known. There are, of London men, Messrs. Allom (second premium); J. Robinson (third premium); E. M. Barry, Kendall and Mew, T. Roger Smith, J. T. Knowles, C. G. Searle, J. M. H. Hahn, Green and De Ville, Dean and Bellhouse, H. A. Darbishire, A. Trimen, W. H. Thurgood, D. Campbell, J. Murray, Moffatt and Coe, E. Blatchley, G. Morgan, T. Knightley, W. Parnell, C. Kirkby, R. N. Shaw and Nesfield, C. W. Epp, W. E. Hope, W. H. Lamborn, H. F. Price, E. B. Lamb, W. Blackett, W. W. Pocock, W. Tolley, T. Morris, S. Hewitt, Dalton and Bowness, G. Aickin, H. B. Garling (two designs), and G. Truefitt. The local men are Messrs. Waterhouse (first premium), Walters, Leigh Hall, H. Bowman, Mills and Murgatroyd, T. Worthington, Starkey and Cuffley, Pennington and Bridgen, Clegg and Knowles, Speakman and Charlesworth, Holden and Son, S. H. Hope, Corbett and Raby, Hayley and Son, Travis and Mangnall, H. Fuller, Fisher and Son, T. Holmes, Cawley and Radford, M. Naylor, and T. Bird; and from different localities there are, Messrs. J. T. Rochead, J. Stevenson, J. Hamilton, Thompson, and Haig and Low, all of Glasgow; J. Johnstone, Newcastle; G. F. Jones, York; R. Baldie, Kenmore, Perthshire; Belamy and Hardy, Lincoln (associated with Mr. J. Giles, London); E. G. Bruton, Oxford; J. Nunn, Blackburn; Moore and Sons, Sunderland; C. L. Dresser, Dyson and Dixon, and C. Brodrick, Leeds; E. Ashworth, Exeter; C. Trubshaw, Stafford; S. Maxwell, Bury; J. J. Bateman, Birmingham; R. M. Phipson, Ipswich; T. Turner, and Lanyon and Lynn, Belfast; B. Wilson, Alfreton; S. Young, Derby; E. Hodgkinson, Chester; J. H. Christian, and S. Campbell, Liverpool; J. Brown, Hull; W. H. Crossland, Halifax; G. Haughton, Doncaster; T. Goodchild, Guildford; W. Scargill, Colchester; R. Lawson, Trowbridge; Frupp and Pontem, Bristol; S. Clarke, Bath; and Lloyd Williams, and Underwood, Denbigh. An unusually small proportion of the works of these, can be called undeserving of notice.

The accommodation required included besides the two chief courts, each of 2,650 feet superficial, and besides two rooms, each 936 feet, in the sheriff's department, suitable for courts, about sixteen rooms and offices attached to the criminal court, and eleven to the civil court, for the judges, magistrates, juries, male and female witnesses, attorneys, barristers, prisoners, and others, as well as refreshment-rooms, a library, and either a hall or ample corridors for the public in

waiting; and, lastly, judges' lodgings with covered communication. Further, the "instructions" said, that "in fixing the relative positions of the civil and criminal courts, it should be borne in mind that the judges frequently confer with each other" on points arising in the progress of trials, and that every facility should be afforded for this. An obvious consideration to be attended to, was the ready access to the courts, of the barristers, attorneys, the public and others, especially the "witnesses immediately wanted," without interference with one another. The expenditure was absolutely restricted to 70,000*l.*

The ground in Strangeways approximates to the form of the reversed letter **J**, though the line bounding South Hall-street, or to the right of the **J**, is not exactly at right angles to the lower horizontal line—which bounds Great Ducie-street—part of the Bury New-road. The streets are narrow, considering the buildings intended, being 47 feet 3 inches in the former case, and 58 feet in the latter—a fact not sufficiently kept in view by very many of the competitors, although by Mr. Waterhouse. There is an incline in South Hall-street of about 20 feet, and a steep bank at one part of the back-ground. A considerable proportion of the competitors, therefore, including those who have received premiums, placed their principal front towards Great Ducie-street, and left the upper half of the South Hall-street portion unappropriated—there being more ground than the building required,—and a "suggestion" that part of the Great Ducie-street ground should be left, having been waived in deference to opinions. The peculiarities just mentioned of the ground, also, have dictated to nearly all the architects, adoption of an elevated basement to the Great Ducie-street front. The last-named street, with lines of rooms parallel to it, may be conveniently spoken of in our notices, as though running north and south, and South Hall-street as east and west.

It is remarkable that some of the designs which have been the subject of the greatest labour are most defective in the matter of convenience of access for the witnesses and others. The "instructions," issued after "much anxious thought and deliberation," and after opinions from the best authorities, are hardly such as could be taken as the basis for planning buildings of the class. Very large accommodation for witnesses is scarcely wanted, the fact being that witnesses are always in the court, except in some few instances, when a particular case requires that those only who are to give evidence should be ordered out of court; and a central "hall," at least one of vast dimensions, is not needed for crowds, and can therefore only extend the area of the plan disadvantageously to the several parts of it. The halls at Liverpool, Leeds, and Westminster have reference to several objects,—and in the first-named cases, such as do not well assimilate with the idea of courts of justice. Goods to be produced on a trial, are generally in the hands of policemen. Ample and well-planned corridors, or wide promenades, are however necessary; with, perhaps, a central hall of moderate size. The lighting to the corridors, generally by skylights, is not always adequate, as shown in the drawings at Manchester. The chief requirements being for rooms on the ground-floor, the courts, however, being necessarily carried higher, there can be little difficulty in providing proper light. What the competitors, as well as the subject of design in this class of buildings, did want, was some matured principle expressed, which might be taken as a starting-point. The committee, without knowing it, set forth a certain principle, and thereby at once fixed the particular key-note and the value of many plans. It was desirable that the judges should be able to confer readily, but not so that every other consideration should be made subordinate to a necessity which cannot be said to arise frequently, as set forth, and does not require the room for conference provided by some of the competitors, or (except the distance were very great) not more than that a passage should be provided, which could be private. We have been assured that no inconvenience is found

* See p. 296.

from the mere distance of the courts at Liverpool. There is, however, in plans for courts of justice, importance in other objects not dwelt upon, such as distribution of entry-ways to the witness-box, the barristers' seats, and the space for the public, severally; and the separation of jurymen in waiting from the public. The slightest direction or "suggestion" will often impair the result of a competition.

Some of the plans might oblige the judge to traverse a greater distance than desirable; but most of the competitors have commenced with the idea of habitual conference with the judges, and the idea of a central hall for mere effect. Thus, one plan makes the distance 300 or 400 feet. Another arrangement is that of courts side by side at the end of a hall; another similar, but with the hall in the transverse direction, and with ready communication between the bench of one court and that of the other; other plans have the courts obliquely placed with reference to an octagonal or circular hall; whilst others have the main entrance to the building at the corner of the ground nearest to the town, and the courts at right-angles to one another. Some of the plans have the courts opening from a wide promenade, so as to get the advantage which there is at Westminster, — of immediately finding the court or passage wanted.

We are not about to complain of the award of premiums to the particular designs; but defects there are in the three chosen no less than great merits. But it is impossible to find reason for the preliminary selection, so far as regards two or three of the seven designs, which would not bear comparison with many others not placed in the list. We do not hesitate to say, after some experience in these matters, that no architect could master the facts of the thousand drawings and one hundred and nine reports and specifications, in a week, working resolutely seven or eight hours a day. The non-possibility of doing so, unhabituating to drawings, distracted by the differing scales, and the colour, could get through the whole business, including the judgment, in a fortnight; — or probably much less, though there will be no reason for hurry. We are told that they did read many of the reports; and the discomfort of the hall of the Royal Institution would almost inevitably prevent detailed examination of the works there hung. Great complaints are made of the course in originally directing one scale, and subsequently allowing another; also as to the permission of colour in sky and figures — in like manner subsequently to the first instructions. A large scale certainly is disadvantageous to the judgment of competition drawings; but in the changes of intention, in both cases, the committee should have been better advised ere they cast upon many competitors an extra amount of labour, and gave to those who began late an advantage, and raised disturbing influences to themselves. The perspective views should have been required to be either wholly, as first directed, in sepia; or colour should have been allowed throughout. The result now is an exhibition of figures — executed in several cases with quite unusual skill — but so as thoroughly to overpower architecture; whilst some of the drawings, besides the colour allowed in sky and figures, introduce colour, not sepia, in the building — as Mr. Waterhouse's view, which by the execution of the greys of its roof, and its accidental shadows, proves him to deserve the reputation he has with his Manchester brethren as a water-colourist — amongst his qualifications as an artist-architect. We receive, in the case of this competition also, proofs to multiply what we had before of the uselessness of the motto system, or rather of its positive disadvantage for every object of committee or competitor. The style of drawing of each architect in Manchester is well known to the rest; and the hand-writing in reports is perfectly familiar to most of the judges.

The committee, it appears, consulted Mr. David Bellhouse, as we mentioned last week, only as to the designs named by themselves; and out of the number seven, we have reason to know there were only two designs, one the design by Mr. Waterhouse and the other that of Mr. Walters, which Mr. Bellhouse could report upon as having abided by the conditions in regard to cost. The seven designs were, the three which received premiums, the design (Gothic, with alternative design Italian), under the motto "Prêt d'accomplir," by Messrs. Isaac Hoiton and Son, of Manchester, the design just instanced, marked S. W. (Italian), by Mr. Walters, of the same town; one or all of the half-dozen designs, or alternative designs (Grecian Doric, and Italian), marked S. P. O. R. by Mr. Leigh Hall, "late of the firm of Hayley, Son, and

Hall," of Manchester; and lastly the design with the motto "Experience," an ordinary Gothic work, of the square-headed, multilioned, transomed, and labelled window, turreted, and plain little window class, of which Mr. John Johnston, of Newcastle-on-Tyne, is the author. Besides the fact of cost, preference was due to both the designs first named, for the careful attention to the setting back the building for increase of roadway. Mr. Walters, and some few of the unnoticed competitors, would have effected this object in a properly artistic manner; that is, affording a new causeway up to the building, yet utilizing decoratively the foreground in the very manner which is so desirable for realization of architectural effect, and is usually so difficult of attainment in towns. Several of the designs, otherwise commendable, whilst setting the building back, even go so far as to erect a wall, and cut off the new practicable roadway; and partially, the same defect occurs in such designs as that which has received the third premium — one, however, of great merit — where, in consequence of the steps to the portico, so desirable in point of effect, and the posts to the same line, nothing, in point of fact, is gained of space for carriages except at the front in South Hall-street, where as in most cases the acute angle is given up.

In the selection of Mr. Waterhouse's design, we believe the committee were guided by his argument of the facility with which witnesses might be drafted off from general waiting-room to room for "witnesses wanted immediately," and thence directly to the court. It is open to discussion, whether the plan, as such, had advantage to the same extent as the plans of several other competitors; for, in one case, the witnesses would be somewhat distant from the court in which they would be wanted, and, in either case, would have to intersect the stream of the public. We have mooted the question whether the principle of a very wide corridor, with the courts opening as near as possible directly out of it, may not be better, as well as more economical of ground, than that of a great hall with narrower passages. The first and third selected plans, have the central hall, though not the entrances to the courts, on one and the same principle. The plan which has the second premium, adopts the arrangement of the bench gallery, or passageway, with the courts and transverse passages entered from it.

Considerable difference in the plans, as in the external character, results from treatment of the judges' lodgings as a separate building, only joined on by a covered way — a court-yard conveniently interposed, or as part of the general mass. Mr. Waterhouse's design is of the first class; the two other selected designs are of the second. Some of the designs greatly differ from those selected, by not the provision of three entrances in the main front, the end doorways in the basement leading to internal staircases, and the centre doorway having steps external to a portico, or within a porch. Thus distribution of the crowds would be effected; on the other hand, a grand central doorway would be better than three entrances, each narrow, in many of the plans, — considering the position of the building in reference to the town.

Mr. Waterhouse's design, "Pro Rege, Lege, et Grege," having been noticed as to the decorative character, in our last, and further described herein, and by the engraved plan, we need not add many more particulars. It will be understood that the Great Ducie-street portion of the ground is proposed to be built upon, as it is in the second and third designs. Some of the designs use the South Hall-street portion, as originally suggested in the instructions, reserving the portion of the ground to the extreme north in Great Ducie-street; and a small number of the competitors actually cover all the ground, or in both streets; and in many of the designs, quantity of ground has needlessly operated to a disadvantage. It will also be seen from the plan, that the courts, each, with the bench (the position of which we have indicated by an asterisk), in Mr. Waterhouse's design, are placed conveniently for the conference of the judges; as well as that a large central hall is provided, and a main entrance, though of ample width. Opposite the entrance, or across the central hall, is the corridor for the judges; and the ventilating towers rises above the vestibule, in the centre of that part of the plan. The courts are lighted by multilioned and transomed windows in the upper part of the walls at one side and end; and the large hall, which has a roof of the Westminster Hall type, is lighted partly at one side, but chiefly at the ends, by large windows. On one side of the hall is a triforium gallery.

We have not had time to look into the arrange-

ment with reference to the matter which is most important of all — good hearing. Most of the competitors state their theories, differing, however, considerably. Now here the point is one on which "instructions" devised with the aid of the great experience of the barristers of the Northern circuit, might have done much to assist all those who are interested in good planning of buildings unostentatiously. What are the features of form and construction of the courts at Liverpool, where hearing is so bad, and of the court at Lancaster, which is considered nearly perfect? Mr. Waterhouse has adopted the form of ceiling, sloping slightly in the sides, apparently from the example of the House of Commons as altered. He has evidently carefully considered ventilation; but the tower, intended as part of the arrangement, is the least satisfactory part of the decorative design. It does not group with the rest of the building, and is an adaptation from works interesting as all examples, but which do not serve well as models. It occupies a small area of plan, rises with plain sides to a considerable portion of the height, and is finished with pointed windows, a corbel-stage, pinnacles on corbels, gables enclosing circular windows, and a high slated roof square on plan. The main character of the whole building results from the grouping, with pavilion-masses at the angles of the plan, and centre of the main front, having high truncated roof and dormers, and the semi-octagonal entrance-projection, with lofty windows and symmetrical in the middle of the bank. The central porch, with arches on shaft, and steps partly external, the sculpture, with canopies, in the upper story; and a square clock-turret, with a balcony, and lead-covered spire-capping, rising from the roof, are effective; though the clock-turret is to be altered in deference to the opinions of some of the committee. The enclosing wall to area in South Hall-street, cuts in harshly. It is more easy to convey by description the idea of the general outline of buildings, than to describe their details — quite as much part of the effect. The character here is Gothic — yet neither English, nor, strictly speaking, Venetian Gothic. There is considerable variety in the windows; those of the lower stage somewhat resemble those of the basement of the Houses of Parliament; those of the principal story, three-light, have pointed arches, and lions or shafts, and geometrical tracery, and those above, plain ogival cusped openings. Scandall of the wall-surfaces are formed as pinnacles; and much peculiarity results from Italian character of the continuous impost and string courses, and great decorative effect from shafts on the piers, and corbels, carrying peacefully formed pinnacles. The whole front finishes with a corbelled stage and quatrefoiled parapet.

The second premium has been given to one of two designs by Mr. Allon ("Labore et Honore"), having the same plan, or with very slight modifications. The Gothic design has been preferred to the other, which is Italian. Both have done much of the detail in the views is indicated, rather than drawn, with skill; but would certainly require for execution, further study with regard as well to the part it would play in the general architectural effect, as to the effect on close inspection. The Gothic detail especially, though novel, is not satisfactory, contrasted with models. In both designs the author has adopted in the front of the building towards Great Ducie-street, an arrangement which he has before worked upon, though not with the same success; that is, a form of plan having three projections from the main line, — the two recesses, with the re-entrance angles, at the end corresponding, being filled in with a portion of the building which is one story in height, and is lighted by traceried windows in the Gothic design, and decorated with three-quarter columns, and niches, and statues, in the Italian, the light being in the latter case from the top. The central feature in the Italian design (not to speak of the dome) is a portico advancing considerably beyond the general line of the other design, and of greater height, or so that the order is one with that which is the major order of the building. Thus, though both plans have the same principle of symmetrical grouping, or classical origin; there is greater difference than that of the substitution of ordinary details of one style for those of the other, — as pediments and *vis versa*. In the Gothic design, the porch with gable and pinnacles, and the lofty windows of the hall seen over the terrace-story, are good in general character; otherwise the Italian exterior is better, from having been more matured, and worked upon *con amore*. In the interior, however, the merit is reversed; and in the Gothic design there

is a grand effect of perspective in the hall or gallery, with its lofty open arches in the centre to carry the dome, and their side arches filled with tracery, reminding us of that which was attempted and in part realized at Fonthill. The cove of the ceiling, with the arches over the windows groined in, the mouldings springing from shafts, returned across the ends and centre of the hall, where are the grouped, open, and traceried arches, also is well managed; but the flat portion of the ceiling is too Elizabethan in character to be harmonious. The dome is best worked out in the Italian design, where, though the balustraded termination might be improved, the tambour is very successful. In the Gothic design, the pointed termination is bad, and the tambour, with pinnacles and gabled and traceried windows, not equal to the other case; still the effort merits attention. The principle of the plan will be understood from what we have stated. It has the advantage of simplicity as well as effect. The entrance-porch, or portico, gives access to the hall or long gallery, at the centre, under the dome; rooms for witnesses being in the terrace story, right and left. Opposite the entrance, there is a corridor between the two courts, somewhat the same as in the plan we engrave; and there are similar transverse corridors, or towards the back corridor, from the extreme ends of the gallery. The entrances to the courts are intermediate, the witnesses wanted immediately being placed near them. The difference between the two plans as to ground covered, or area absorbed in halls and corridors, we can scarcely say; but Mr. Allom's design, we think, leaves less ground for courtyards, if also the portion of the building given to the lodgings does not afford less accommodation on each floor than the detached building in Mr. Waterhouse's plan.

We shall speak further of the design which has received the third premium, and some of the others, in our next.

THE ART-UNION OF LONDON.

On Tuesday morning, the 26th, the annual meeting of the members of the Art-Union of London, for the reception of the report and the distribution of prizes for the purchase of works of art at the forthcoming exhibitions, was held at the New Adelphi Theatre, kindly lent for the occasion by Mr. Benjamin Webster, the lessee. In the absence of Lord Montagu, who was to have presided,

Sir Charles Barry, R.A. took the chair. Mr. Godwin, F.R.S. read the following

REPORT.

The Council have the satisfaction of commencing their twenty-third annual report with the announcement, that the subscription amounts to the sum of 15,210l. 6s. The anticipations in which they indulged concerning the print of the year, "Life at the Seaside," now in the hands of the great part of the sub-scribers, have been justified with remarkable unanimity by the periodical press of the country.

Subscribers for 1859 will receive for each guinea paid a volume of wood-engravings, executed by Mr. W. J. Blake, of the best pictures of thirty deceased British artists, with probably the most valuable collection of art not yet decided on. The volume in question comprises: "Nature," by Lawrence; "A Corn-Field," by Constable; "The Burial of the Princess," by Northcote; "Peasant Children," by Gainsborough; "The Banished Lord," by Reynolds; "Marcus Curtius," by Haydon; "Sancho Panza," by Smirke; "The Rabbit on the Wall," by Walker; "Yorick and Grisette," by Newton; "Death's Door," by Blake; "A Coast Scene," by Bonington; "Marriage à la Mode," by Hogarth; "A Scene in Sussex," by Nasmyth; "Cobbler's Register," by Lawrence; "The Old Horse," by Morland; "The Witches in Macbeth," by Fane; "Joshua commanding the Sun," by Martin; "Europa," from Pilgrim's Progress," by Stothard; "Niobe," by "The Victors at Olympia," by Romney; "The Death of General Wolfe," by West; "Burrington Old Pier," by Cooper Fielding; "The Memoirs," by Müller; "Cromer," by Allais.

For a future year, we have commissioned Mr. Allom, A.R.A. to produce a plate in the best manner, Turner's picture of "Italy," which forms part of the painter's remarkable legacy to the nation and the world. "Child Harold's Pilgrimage," as it is named, is one of the greatest of landscape painters. It is full of poetry, knowledge, and beauty. The air and the foliage are vividly Italian. A broken bridge, mountains, best manner, a party feasting and dancing below, are the principal features of the composition, and serve to recall the antique, the mediæval, and the modern Italy,—the "fair Italy" that Byron apostrophizes.

"Thou art the garden of the world, the home

Of all art yields and nature can decree—

Even in thy desert what is like to thee—

Thy very weeds are beautiful, thy waste

More rich than other climes' fertility;

Thy wreck a glory, and thy ruins grand

With an immaculate charm which cannot be defaced."

It may be expected that Mr. Willmore, who thoroughly

understands the works of this master, will produce an engraving worthy of the subject and the Society.

Turner's pictures and the Vernon collection are about to be removed to galleries erected at Brompton for their reception temporarily, and, in conjunction with Mr. Sheepshanks's noble present, will form a good commencement of a National Gallery of British Art. The Turner and Vernon collections will still remain in charge of the trustees of the National Gallery; and a doubt has been expressed whether these will be open to the public in the evening. The Sheepshanks Gallery, visited of an evening by very large numbers of persons who would otherwise be barred from seeing it, and it is to be hoped that the trustees of the National Gallery may find themselves able, during the exhibition of the Turner and Vernon collections, at Brompton, to allow these also to be open to visitors during the evening, as well as the day. It has been said that the exposure of comparatively newly-painted pictures to gaslight is injurious. Should this be correct, means could, doubtless, be devised to obviate the evil. The advantage sought is so great, as to deserve the most earnest endeavours to obtain it. A modern satirist says,—

"What England, as a nation, wants, is taste:

The judgment that's in due proportion placed,

We overdo, or underdo, or waste."

If this be so, whose fault is it? If, as according to Burke, that the faculty of the mind which is affected with, or forms a judgment of, the works of imagination, and the elegant arts; or, as Alison puts it, that faculty of the human mind by which we perceive and enjoy whatever is beautiful and sublime in the works of nature and art; is it not evident that, like other faculties, it requires to be exercised, in order to be perfected, and depends to a great extent on the means of comparison afforded by acquaintance with the best productions of art, and the grandest works of nature. Much is being done towards removing the inferiority in this country, and every opportunity which is afforded to the people of contemplating fine works of art, is a step in that good direction.

The bust of Ajax, No. 36, in the Tower collection, has been reduced by Mr. Delpech, and produced in wax. Some examples will form part of the present distribution, with other bronzes previously made for the Society. The most important of artistic bronzes in England is now in a very different position from that which it held several years ago, when the Art-Union found, with some difficulty, an artist to execute their first work. The council, in their report for 1843, said, speaking of Flaxman's group of "Michael and Satan," "The model was completed several months ago, but the artist has experienced so much difficulty in finding parties competent to cast it in a perfect manner, that the bronzes are even now hardly finished. This circumstance, as may as it has proved, tends to show the good which may result from the Society's operations, even in this department. By forming a school of modellers, and inducing the practice of artistic casting, a branch of art may probably be established, which, at present, requires great improvement, even in a mechanical process."

At the present time no difficulty of the kind referred to exists. Amongst the large works, in bronze, recently produced in England, Mr. Foley's questing statue of Lord Hardinge, now in Calcutta, may be pointed to as one of which the country may justly be proud.

The dies for a medal commemorative of our admirable painter, Gainsborough, having been completed by Mr. Ormer, impression will be distributed to-day. The "Lawrence" medal was not proceeded with by the engraver to whom the commission was entrusted. It was, in consequence, withdrawn, and has been transferred to Mr. G. G. Adams, by whom it will be executed forthwith. A medal of Wilkie has been determined on, and this will be executed by Mr. Leonard Wyon. It is to be regretted that the same want of encouragement in respect of this important branch of art, has not been shown, to which the council have repeatedly called attention, should still be evident. The service rendered by medals to modern times, in affording information concerning the countries of antiquity, and the progress of the art, and the importance of a beautiful coinage, offer additional reasons for inducing the cultivation of the art amongst us, and for employing it on all fitting occasions to record events, or do honour to individuals.

The volume of photographs of works of art issued last year, gave satisfaction to those prizeholders who obtained the following twelve photographs, and a certain number of copies will be included amongst the prizes on the present occasion.—

PHOTOGRAPHS, 1859.

1. Church of the Holy Sepulchre..... Frith.
2. Tower of London..... Frith.
3. Neapolitan Fish-woman..... Penton.
4. Bust of Antonius Pius..... "
5. Holy Family..... "
6. Bust of Lucius Verus..... "
7. Altar of Salisbury Cathedral..... "
8. Exterior of Gloucester Cathedral..... "
9. Porch, Leichfield Cathedral..... "
10. Porch, Cobham Court..... Cundale.
11. Cairo from the Citadel..... Frith.
12. Mosque of Sultan Hassan..... "

For a future distribution, arrangements have been made with Mr. Lake Price, to furnish the Society with photographs of Raphael's "Transfiguration," Dominichino's "St. Jerome," in the Vatican, and other celebrated pictures. Mr. Price is an Italian, under circumstances which will give him facilities for obtaining what may doubtless prove to be very valuable representations of those famous works.

The regulations of the Art-Union require the change of four members of the council each year. Vacancies have been caused by the retirement of John Aubrey, esq., Mr. Justice Williams, and by the lamented death of J. J. Gaskoin, esq. Mr. Gaskoin was one of the most active and efficient members of the Society for many years, and the council desire to record the expression of their deeply-felt regret at being thus deprived of a much-valued colleague, and the loss which the Society has in consequence sustained.

The new members of the council have been elected in accordance with the requirement referred to, are, Philip Hardwick, esq. R.A., General Derville, Robert Bell, esq., and the Right Hon. the Lord Mayor. The council, during the next year, have been in the habit of holding five of committee meetings and those for the selection of prizes deputized to them; and have under consideration numerous propositions. If comparatively little change be made from year to year in the proceedings of the corporation or the manner of carrying out its objects, it is

not through apathy, but because experience inclines the council to a continuance in the old course.

The question of granting to members additional chances in the distribution of prizes, for a modified subscription, was brought under the notice of the council, and it has been resolved that a member having paid the regular subscription of one guinea for the year, shall be entitled, for each additional half guinea which he may pay to one additional chance in the distribution of prizes for that year, but not to an additional copy of the print or other work of the Society. It has been arranged that prizeholders entitled to the tazzas or photographs, may receive busts or statuettes instead, on paying the difference in value. Further, subscribers of two guineas annually who desire to receive a statuette or tazza produced by the Society in lieu of the two copies of the print to which they are entitled, may do so on payment of a certain fixed sum representing the mere cost of the material and moulding. The council are influenced in making these and similar arrangements by the fact that it is the purpose of the Society to spread abroad works of art to the greatest possible extent, and to interest in its objects as many persons as possible.

Following out this view, the council continue to appoint gentlemen, resident in all parts of the world, who undertake to act as local honorary secretaries or agents. The most recent appointments are in Louisville, U.S. Calcutta, Quebec, and Sydney. Within the last few years officers of co-operation have been received from St. Petersburg, and a clergyman in San Francisco proposes to act there as honorary secretary. From Boston, U.S. there have been received 275 subscriptions. Long lists have come in from Hobart Town, Adelaide, and other parts of Australia, amounting to between 600 and 700 from that country.

The local honorary secretaries and agents now number 756, and include many who have worked vigorously and efficiently for years. The council tender to them, on the part of the Society, their warmest thanks, and invite them to renewed co-operation. While referring to obligations, the council take the opportunity of acknowledging with thanks, the efficient services, at all times ungrudgingly rendered, of Mr. William L. Donaldson, the honorary solicitor of the Society.

Exhibitions of fine-art works have been held in Australia and elsewhere, of which prizes gained in the Exhibition of London formed the basis. The most particularly the case in the third Exhibition of Fine Arts, recently held in Cape Town, at the Cape of Good Hope, at the closing of which an admirable address was delivered by the Principal of the Johannesburg Collegiate School, the Rev. Gilbert White. From America we have accounts of more than one of our prizes that, sent to a distant part of the country, has become in each case the nucleus, round which an interesting collection has gathered. Some time ago, the Emperor of the Russian applied to the Council, through his ambassador in England, for details of the working of the Society. These were of course fully afforded, and have probably been considered in the establishment of the Art Union which has been organized in connection with the *Exposition des Beaux-Arts* now open in Paris.

The arrangement that every member, who shall have subscribed for ten consecutive years without gaining a prize of any sort in that time, shall be entitled to a porcelain bust, and which, practically, insures to every member a prize once in the period named, is found to work well. In pursuance of it 578 members have received the bust of Cybele, or a similar work of art.

The following is an extract in brief, of the receipts and expenditure; a detailed account will, as usual, accompany the report when printed.

Amount of subscriptions received.....	£15,210	6	0
Expenses of printing, exhibition of prizes,			
local agents, salaries, and other charges,			
including reserve 2½ per cent.....	3,593	7	3
Cost of plate "Life at the Seaside," paper,			
and printing.....	6,980	19	9
Amount to be allotted in prizes.....	4,706	0	0
Total.....	£15,210	6	0

The reserve fund now amounts to the sum of £3,812.

The accounts have been audited by two members of the general body of subscribers, Mr. Frudley and Mr. Heathcote, and three members of the finance committee.

The following is the allotment of the sum set apart for prizes to be selected by the prizeholders themselves; viz.:

25 works at.....	£10	each.
20 ".....	15	"
20 ".....	20	"
12 ".....	25	"
12 ".....	30	"
6 ".....	40	"
4 ".....	60	"
2 ".....	75	"
1 ".....	100	"
1 ".....	150	"
1 ".....	200	"

To these are added:

- 5 Bronzes of "Her Majesty on Horseback."
- 51 Bronze Busts of "Ajax."
- 30 Porcelain Groups of "Venus and Cupid."
- 60 Porcelain Statuettes, "The Dancing Girl &c. &c. &c."
- 10 Tazzas in Iron.
- 30 Silver Medals of Gainsborough.
- 700 Volumes of Photographs.

The bronzes, porcelain statuettes and tazzas, will be allotted to the first named subscribers, and distributed at the close of the general distribution. The tazzas, medals, and photographs will be allotted to the names standing one-hundredth and two-hundredth in the list, previous to and subsequent to each of the prizeholders, determined as above stated, with a proviso that a prize has not fallen to that number to-day; in that case the prize will pass to the next succeeding number. Notice will be sent to those entitled to the statuette, medals, and photographs in the course of two or three days. The above details will be informed of the result by to-night's post.

The prizes of last year, increased from the various exhibits ones of the season 110 works of art, to the following, viz.:

From the Royal Academy.....	£1,115	6	0
The National Institution of Fine Arts.....	627	5	0
Society of British Artists.....	907	0	0
British Institution.....	215	15	0
Royal Scottish Academy.....	20	0	0
Water-colours Society.....	169	15	0
New water-colour Society.....	167	10	0
Royal Hibernian Academy.....	35	0	0
Society of Female Artists.....	99	0	0

required to make a systematic record of these matters, it would be valuable.

For good or for evil, the metropolis has entered upon a work of no common magnitude.

NORTHERN ARCHITECTURAL ASSOCIATION.

At a meeting held at the Exchange Hotel, Newcastle-upon-Tyne, on Saturday, the 13th day of November, 1858, the principal Architects of Northumberland, Durham, and Newcastle-upon-Tyne, formed themselves into a society, to be called the Northern Architectural Association. The first quarterly meeting was held on Tuesday, the 19th inst., in the room of the Society of Antiquaries, in the Old Castle. The meeting was numerously attended, and after transacting the ordinary business, including the nomination of several new members, the following resolution of the Birmingham Architectural Society was read by Mr. Oliver, the secretary:—"That the cordial thanks of this society be tendered to the Architects of Newcastle, Durham, Northumberland, Sunderland, Darlington, and South Shields, for having protested against the inadequate and unjust terms offered for professional services in the competition for the South Shields Institute, and that this society views with much satisfaction the independent course adopted by the Architects of the North." An inaugural address was then delivered by the president of the association, Mr. John Dolson, F.R.S.A. the substance of which we print.

ARCHITECTURE IN THE NORTHERN COUNTIES OF ENGLAND.

MR. DOLSON'S ADDRESS.

THIS being the first general meeting since the formation of the Northern Architectural Association, and as you have done me the honour of electing me your president, I will take the liberty of addressing to you a few introductory observations. I can truly say that I view this meeting, and the establishment of this society, with much of that anxious feeling with which the agriculturist regards the sowing of his spring seed, hoping that, by the assistance of Divine Providence, and by a united friendly feeling towards each other, we may look back upon the auspicious occasion of our present meeting with pride and satisfaction. If the result of our general proceedings is attended with all the advantages which I anticipate, it will greatly tend to promote a desire to follow our pursuits with strict adherence to professional honour; avoiding in all our transactions those petty jealousies which are so unbecoming in men of a liberal profession; and we shall leave the public to estimate our value without having recourse to self-praise, which is not only calculated to bring ridicule on the individual, but is derogatory to the character of the profession, which it should be our chief aim to elevate.

I will now proceed, gentlemen, to take a glance at the progress of architecture during the present century, more particularly with reference to the northern counties of England. The architectural student of the present day, I may premise, has numerous advantages which did not exist in former years. About fifty years ago there were but few publications on architecture, and such as were published were, with very few exceptions, the work of very indifferent authors, and still more indifferent artists; and there were very few works of any particular use on either ecclesiastical or domestic architecture until the time of Pugin: now we are inundated by illustrated works of the highest value and importance, whilst periodical works devoted to our art, and conducted by men of ability, abound not only in our own country, but come to us also from the ablest writers and artists of France and Germany. In addition to these sources of information, we have numerous admirable papers, written by men of the highest talent, read at the meetings of the various societies established in London, Edinburgh, and elsewhere. These are advantages, gentlemen, and sources of information and improvement, which it is impossible too highly to appreciate. The facilities afforded now, to all, of visiting foreign countries, are also an advantage of inestimable value, which our predecessors were without. The student has an opportunity of sketching for himself the best examples of his art, which formerly he could know only through prints or drawings little to be relied on.

Since the commencement of the present century, architecture in the northern counties has, I think, been somewhat in advance of most other districts. Fifty years ago there was no employment for a

professional architect; the duties were performed by builders alone, who united to their special business the profession of architect. As a proof of the talent of some of these builders, I may refer you to All Saints' Church, designed by Mr. D. Stephenson, and the elegant proportions of the tower and spire are a proof of his taste and skill. At the same period Mr. Newton practised as a builder and architect: he both designed and executed the Assembly-rooms, of this town; Backworth House, Northumberland; and other country houses of minor importance. Then followed Mr. Stokes, who also practised in the various capacities of architect, surveyor, and builder: he designed Elswick Hall, Newcastle, and Harford House, Northumberland; and, in conjunction with his son William, was architect, contractor, and builder of the County Courts in this town. These were men of talent, whose works might have been an ornament to the country, had they fortunately been better educated in the profession.

It may not, perhaps, be uninteresting to you, gentlemen, if I pursue this inquiry, and cast a rapid glance over the course of our profession since the period to which I have been adverting. I cannot, however, in this address, venture to notice the great advance that has been made in our street architecture. This would occupy too much of our time: and the omission may, perhaps, be the more readily excused, as you yourselves have witnessed the erection of those magnificent buildings in Newcastle, which owe, in a great measure, their origin to the spirit and enterprise of Mr. Grainger.

At the early period to which I have adverted, fifty years ago, Mr. Stephenson, whom I have just named in connection with the elegant structure of All Saints' Church, was the sole practitioner in Newcastle as an architect, and it was in his office that I completed my clerkship in 1809. I will not say that he was an accomplished architect, but he was a man of excellent character and much kindness of disposition. It was by his counsel and advice that I resolved, when leaving him, to establish myself as a professional architect. I need hardly say that I found, what many other young men have found, that it was far easier to profess an art than to practise it. The services of an architect were then but little in request, and you will readily suppose that to one so young, so inexperienced, and so unknown, engagements came in like angels' visits. But how hidden to us are the ways of Providence! It was probably to this very circumstance that I owe my present position in our profession. Want of sufficient employment gave me leisure, and leisure gave me the opportunity of acquiring far more professional knowledge than I could acquire in Mr. Stephenson's office. I employed a great portion of my time in travelling, sketching, and studying the higher branches of the art. At this period, my old and worthy friend Bonomi practised as an architect in Durham: he was the surveyor for the county. It is true that, like myself, he had little or no practice; but he and I enjoyed the somewhat barren dignity of being at that time the only professional architects in the counties of Northumberland and Durham.

The time that I devoted to the study of castellated architecture was considered by many of my friends as a great loss, and it was not likely that I would be called upon to erect many buildings of that class, particularly as such a style was considered ill adapted in every respect for domestic comfort. But no sooner had I spent three months at Conway, Carnarvon, and Beaumaris, Wales (where, in my opinion, are some of the finest examples of castellated architecture in the kingdom), than designs were required for the erection of county prisons, court houses, &c. for Northumberland. A design, which I submitted in competition with others, was accepted—a distinction of which I was not a little proud, for I was then very young and little known to the public. I then found that the knowledge that I had gained of castellated architecture was invaluable to me, not only in the construction of Morpeth gaol, but in many other instances where I have been called upon to alter castellated buildings already erected, and where I had abundant opportunities to avail myself of my studies among the old castles. You see, then, what advantage a student derives from earnestly availing himself of every opportunity that offers of acquiring professional knowledge; and if any of you desire it, I will be happy at any time to show you my sketches of old castles.

But, to continue. The extension of the old castle, with its small loop-holes and its large surface of blank wall, is, it must be admitted, not an interesting object to the eye, but that expression of strength and heaviness arose out of necessity:

light and healthy chambers could only be obtained where the apartments overlooked the interior courts: hence arose the many beautiful examples we have of oriel and other projecting windows, commanding distant views over the embattled walls and barbicans. As a proof of a partiality to lightness of interior construction, I have only to refer you to those beautiful chapels at Conway and Beaumaris.

Whilst studying and sketching examples of Tudor architecture, I found that interior convenience was alone the object sought to be accomplished, and that what was called the picturesque arose from chance. Much might be said of the advantages of Tudor architecture in the construction of buildings for domestic purposes, in producing varied and picturesque outlines when the forms appear to arise out of necessity; and I do not see that there can be any objection to adopting the decorated style of detail to a Tudor outline, provided it harmonizes with the building. When this style is found to be too costly, then I have found what may be called the Manor-house style, of irregular outline, a good substitute; and in some cases it will be found more in harmony with the component parts of the landscape. Many excellent examples of buildings of this class have been erected of late years.

On the subject of ecclesiastical architecture, and its progress in this country, I would observe that the beginning of the present century might be called a dark age, for no architect had courage to attempt anything like purity of Gothic; and it was only after it became fashionable among a portion of the clergy that an architect was permitted to introduce a Gothic design: hence we are much indebted to the societies of Oxford and Cambridge, who introduced the custom of clerical gentlemen devoting a portion of their time to the study of ecclesiastical architecture. Time will not permit me to dilate upon this subject; but it is a fertile one, and I trust I may be permitted at some future time to address you upon it.

Now, with respect to the construction of buildings erected in the north of England about fifty years ago, I may remark that the whole of the execution was rude and unmechanical. The first step to improvement was introduced by Sir Charles Monck, when he commenced building Belsay Castle, a mansion designed and constructed after classic models. Sir Charles had resided and studied for some time in Greece; and, having a refined taste and mechanical talent, he made the masonry of his new house equal to any of the polished marble temples of that classic land. This at once introduced a style of masonry previously unknown, and those who could afford the expense soon followed his example; and I consider that the north of England is much indebted to the worthy baronet's enterprise and cultivated taste. The masons employed at Belsay Castle, on completing their work, branched off into different parts of England, and since that time a Northumbrian mason has been considered amongst the best that could be found in any part of the country.

Many of our best houses have suffered very much from the exterior part of the foundation and cellar walls being filled in with the soil taken from the excavations. The walls, consequently, are kept in moisture, thereby creating a constant damp or vapour beneath the floors. This defect was readily overcome by placing a slight wall a few inches from the foundations, covering the vent on a level with the surface of the ground, with dressed stone or flags, perforated so as to admit a thorough ventilation entirely round the exterior of the building. Since I adopted this plan I have never known an instance of dry rot to take place. With respect to battening walls for the purpose of obviating moisture, it was the practice in Mr. Payne's time not only to batten the external, but also the interior walls. In the event of fire, however, this plan was found to be extremely dangerous, and was the cause of the destruction of Hexham Abbey House. In opening out the Roman baths at Holton Castle, on the estate of Sir Edward Blackett, bart. Northumberland, I found that the Romans had lined their walls with tiles about 9 inches by 15, each side of the tile returning about an inch, thus producing a current of air, and preventing the moisture from penetrating into the interior. The tiles were fixed to the stone walls by T-headed nails, some of which I found quite perfect. From this time I adopted the example thus set us by the Romans, using bricks in the same manner as they used their tiles, and leaving a space of about 2 inches between the stone walls and bricks.

In the early years of my practice, good carpentry was also but little understood; so much so, that if a builder had to place a roof on a building,

say 50 or 60 feet square, the plan was to make one main principle of great strength, and to trim the hip and other principals into it, thereby laying the main weight of the roof on the centre portion of the structure. I had not been long in practice, however, before I discovered the absurdity of this plan, which I easily obviated by trussing the principals, which are now called diminished principals, each answering as a purling, and thus having a regular pressure on each side of the building. Hence arose my idea of trussing roofs, particularly in my design of the Newcastle markets, as may be seen in my construction of the capacious roof of the vegetable department. Many improvements in other branches of carpentry have taken place within late years, and the subject is one well deserving of further consideration.

The facility of obtaining malleable iron led me to originate a new style of roofing for the Central Railway Station, Newcastle, which I effected by introducing curved principals. This was not accomplished, however, without much anxiety and consideration, as the rolling mills at that time only supplied flat plates of iron, out of which the curved rafters had to be cut; this increased the expense so much, that at one time I did not find myself justified in introducing them; but by a simple contrivance of bevelled rollers regulated to suit the curve of the principals, the expense was reduced to the extent of 1,100*l.* in the roof alone of the station.

I may here perhaps, appropriately make allusion to the heavy weight of responsibility which rests upon an architect, particularly in the department of construction. The contractor, we find, is only responsible for the proper supply of such materials and labour as specified, or as may be reasonably inferred by the constructive drawings and specifications, and other directions of the architect. The contractor's responsibility, therefore, ceases after the approval of the architect or clerk of the works; but the architect is responsible on failure of construction, when he is remunerated by commission and not by time. Where difficult foundations have to be encountered, such as the foundation for the railway warehouses of the Manors across Pandon Dean, Newcastle, which was at the time only town deposit, and of a depth of 50 or 60 feet, and that for the most part in a state of fermentation, it may be conceived how heavy are the responsibilities of an architect, and what care and judgment are required in such a case as I have named to form a suitable foundation, and to provide for a reasonable settlement of the building. This, I may observe, was done in erecting these warehouses, by concrete footings, varying in width from 6 to 11 feet, in proportion to the weight of the superstructure, the settlement exceeding 7 inches over the whole. Who then can say that an architect who has to encounter so much anxiety, and subject to so many risks, or in designing ornamental buildings of a limited size, is overpaid by the ordinary commission of 5 per cent.?

ON SARACENIC ARCHITECTURE.*

IT APPEARED that it is likely enough to have arisen, either from a wish to get a sort of corbel at the springing, or from the desire to get rid of the abrupt projection of the top of the capital beyond the line of arch, and that the arch was thus prolonged with a sweep inwards, to bring the whole into one unbroken curve.

The Gothic architects managed this in a different way, by bringing forward all the arch mouldings boldly beyond the line of column,—a way much I think to be preferred to the Saracenic, whose method can scarcely be called elegant, whilst it is constructionally bad. I may add, from some slight personal experience, that it is a very matter to bring this form into harmonious keeping with others, and to get it to combine well with the other lines of the architecture. Of the bold cussing, as seen in Cordova, I am not aware of any example in Egypt or Sicily, but they are very common in the Spanish remains. The windows are of such varied forms, that it is almost impossible to give any definite general description of them. In the private houses, the windows towards the street are usually formed of wood, projecting boldly forwards over the street, the openings being filled in with wooden trellis or ornamental work. Towards the garden, they are used of all shapes and sizes; but the type may, perhaps, be considered to be that of the double light window, with a column in the centre, and pointed arches over, as nearly as possible like the simple arrangement in our English arcades. Something like the arrangement of the projecting

windows may be seen still used at Palermo, a town abounding in very interesting remains of the Saracens, and where on the upper stories in many of the main streets, are great projecting trellised windows, much resembling those at Cairo.

In the mosques the original window seems to have been a mere wide, pointed opening, filled in, as in that of Teyloun, with very beautifully carved pierced stonework.

In the Alhambra, and at Seville, they are generally single openings, not much ornamented, but made to form parts of a very picturesque facade internally, by the use of columns—tapered there; and, in Sicily, they are still more plain; but in Cairo, many of the later mosques have very elegantly formed windows of double or triple lights, divided by detached columns, and enclosed in a pointed arch.

You may see some good examples in the mosques of Barbaak, Kaid Bey, and the Moristan.

In nearly all of the Cairo, also, at the upper part of the walls, just under the drum of the dome, we find an arrangement of triple windows, with circular lights over, as you may see also in the above-named mosques, and which have so completely within them the germs of the Gothic tracery that we might, at first sight, almost take them for its prototype; but I feel no doubt that the arrangement is merely the result of a desire to adapt the general outline of the openings to the filling in of the gables.

In the minarets another form is constantly used, consisting of a pointed arch, with a sort of niche head, tilted up very high above the capital of a large edge column. You may see them in mosques El Magedi, Azhar, Kaid Bey, and others. The doors were subjects of much greater care and decoration than the windows, and offer subjects for the most careful study. Take, for instance, the great doorways of the Old Kaid Bey at Cairo, which is, however, merely one out of many. The door itself is small, for the Arab architects, like the Gothic, were careful to prevent the inevitable disappointment that would result at entering from the open air, through a large doorway into their halls. No space, however great, would not be dwarfed by it. But they wanted external grandeur too, and they got it in the most ingenious way.

The richly decorated doorway is enclosed within a great recess, itself having a bold moulding round it, and above the inner doorway a couple of cross niches bring the square plan gradually into a curve, and the whole is finished by another arch at top, formerly a sort of grand trefoil.

The small doorways, too, are perfect models for study. They usually had an edge shaft: from this an arch sprang, and an exceedingly wide and ornamented archway was enclosed by an equally enriched square head. Sometimes a series of mouldings enclosed the whole composition, down to the ground in a square form. The arcades in the great mosques, where, from the great space and size, we should expect to find a grand effect produced, are somewhat disappointing. We get long ranges of columns and arches, but no fine composition or massing of the whole together; not even a combination of twos or threes. In the mosque Teyloun, indeed, we have piers instead of columns; but the usual forms are merely so many arches and columns in a row, without even a bold cornice over them to give an air of richness to the lines. But in Spain the arcades are sometimes beautifully managed; and, by making the openings of unequal size and height, sometimes coupling the columns, sometimes raising the whole mass in the centre and crowning the whole with a bold cornice, a most picturesque effect is gained. Cover the plain surface of the mass above the columns with the most delicate and graceful ornament, profusely decorated by these masters in the art of colouring, and you have an effect never, I imagine, surpassed. In many places the composition is added to and, perhaps, improved by the addition of an upper story, likewise arcaded. The cloisters of the mediæval churches, such as the Lateran, Monreale, and others of that type, together with many of the Gothic cloisters, may equal these in design; but I know of no other composition that does.

The ceilings of the houses naturally followed the line of the flat roof of the Eastern houses, and were commonly formed of wood. Where no great amount of decoration was intended the rafters were often shown, a rich effect being produced by a bold bracket at each end, whilst the spaces between the joists were strongly coloured. The ceilings were, however, very often enriched in a very elaborate way by ornamental work raised on the flat surface by wooden ribs in the geometrical

patterns, as seen in their pierced stone and tile work, the whole being gorgeously coloured and gilt. The very Gothic spirit of this will be at once recognized. In the mosques there was no necessity for the flat roofs, and the ceilings there were usually formed of a series of small domes, one over each compartment between the columns; and it is rather singular that in this arrangement the dome was usually formed with the regular pendentives to which we are accustomed in modern work, and which are scarcely ever found used by the Arabs in their larger works. These small domes were usually formed of brick, and left undecorated.

In the larger domes and the niche heads we find the honeycomb ornament largely used, more, however, in Egypt and Spain than in Sicily. In the latter country (although it contains some good specimens of the honeycomb work) the more usual plan was to bring out the pendentives by a series of arches, gradually increasing very much, as shown in Angoulême. The dates of the buildings here, however, are very doubtful. Mr. Fergusson attributes the chief of them, viz. the Cuba and C. di Ziza, to the twelfth century. Signor Cavallari, who had, I believe, the lion's share in the great work of the D. di Serradifalco, told me that he considered them to be very much earlier, and of the ninth century. In many cases they are, no doubt, by Saracenic architects. Mr. Fergusson suggests that the origin of the singular and characteristic ornament,—the honeycomb, to which I have just alluded,—may have been such an arrangement as is shown in the sketch of Delhi. It would seem, from some of the first instances in which it is found (viz. at the Cuba in Sicily, and Teyloun in Cairo), to have been suggested by the idea of very small arches cutting off the angle of the square base, and sustaining corbels, which carried other and still more projecting arches above, in the same way as I have described to have been practised on a large scale in Sicily. Row upon row of arches was then added, each overhanging more, and thus the pendentive outline was filled up.

Then, in later copies, these corbels were made to carry two or three arches, combined together like a trefoiled niche-head, as is seen on a great scale in the doorways of El Moyed and others, as I have just explained; and this form again, in after times, expanded into the complicated one, so well known in the Alhambra, in which all ideas of construction are completely lost, and the whole resembles one immense but regular mass of stalactites. Gorgeously coloured as these masses were, and used in combination with stained glass in the windows, marble mosaicked floors, and walls covered with the beautiful tiles, whose use for such purposes we are only now beginning to appreciate, they realized in common life the splendour which the wild dreams of an Eastern poet could scarcely have surpassed in fancy. The forms of these works are complicated in the extreme. Even the most simple are very difficult to master; and I speak from some experience in sketching them, when I say that more puzzling subjects even than they can scarcely be found. But to master the intricacies of the later style, where no leading lines exist, or even to bring oneself to comprehend the general idea of the composition, requires more patience and greater skill than most possess. It is a marvel to me, although I had the pleasure of seeing him engaged in the task, that Mr. Owen Jones should have managed to get his workmen to give such a life-like copy of the Alhambra work as that at the Crystal Palace. By the aid, however, of this singular ornament, the Arabs were able to lead the round or the octagon form out of the square, and, in fact, to make any change of form they chose, without a harsh line at the junction. They used it with admirable skill, but never greater than in forming the substructure, internally, of their domes, whose beautiful forms, so common in mediæval times, so seldom used in our own, were decorated by the Arabs in a way, to my mind, unsurpassed. Their architects did not break up the grand, simple line of the vault by compositions whose lines were utterly foreign to it, as Thornhill (not an architect) was unfortunately allowed to do at St. Paul's; but they took the general outline of the dome, and at the more prominent parts carried round a series of beautiful ornamentation, almost flat, but relieved by colour, the greater part of the surface being left plain. Except at the base, they used scarcely any mouldings, and even these had very slight projections. The detail of the ornament was very beautiful, but so arranged as to combine in one general mass, and not to break up the surface into detached pieces; and whatever opinion there may be as to the other ways of treating it, there can be none, I

* See page 262, ante.

think, as the great beauty of the Arab, and that the ordinary coffered vault is a poor and tasteless substitute for their enrichment.

I must notice the stained-glass windows, as they are of very angular construction. The spaces for light are very small, and resemble pierced stonework; but the tracery is, in reality, composed of plaster, disposed generally, as in the Alhambra, in geometrical patterns. Often, however, as in Cairo, the pattern takes the form of a vase of flowers, or other similar subject, the flowers being, of course, represented by different coloured glass. The tracery bars are very thick, so that the actual glass is not seen at all, except in a front view; but the colour is thrown, by reflection, on the side of the bars, producing thereby a very striking effect, from every point of view.

I will now detain you a short time in alluding to a few features in the style, of external use only. They are mostly of no great interest; for, except in such works as Mosque Hassan, the pretty little mosques of the Mahmoudieh, and of Kaid Bey, at Cairo, there are few buildings that form one well-arranged mass. The main feature relied on for effect was the crest ornament, which certainly breaks very effectively the sky line, and gives a rich finish to the front. It gives no idea of a battlement, but is purely ornamental. It is curious that the beauty in the composition of these buildings almost begins at the upper part. Below the cornice, the front, except in some few cases, as El Moidy, in Cairo, consists of little more than walls striped in red and white, with some slightly ornamental work for the doors and windows; but above the general line of the walls, the skyline was varied in the boldest and most graceful manner. In the treatment of this part, the minarets took a leading place. They sprang usually from a square base, and had two or three galleries, in the projection of which the honey-comb ornament was used with singularly good effect to form the corbelling which carried the square base into the round or octagon.

I have already alluded to the origin of the graceful minaret which, in all forms of elegance, adorns the cities of the Mahomedans, and certainly in these there is no want of boldness either in outline or construction. The dates of some of the finest in Egypt are about the same as the leaning tower of Pisa, and of Canterbury Cathedral, in England (that part which was the work of William of Sens).

In Greece there remain a few only. In fact, this beautiful country has been so wasted by war, that it is a wonder only that anything has been preserved at all.

During several days' riding on the northern shores of the Gulf of Corinth (a part comparatively little known, and where several very interesting ruins remain, so far as I am aware, undescribed), I saw a very few traces of the Turks. The few minarets were mostly of the forms described as those of the earlier times, with a single gallery.

The last and most important feature is the dome, and allow me to recur for a few moments to the way in which it was treated by other nations.

Among the Byzantines, and as seen at Ravenna, it is brought from the octagon into the circle, by a series of small arches spanning the angles of the octagon, so as to bring it into a sixteen-sided figure, from which the circle is insensibly developed—very much, in fact, in the way in which at the Greek-looking church of St. Aposteln at Cologne, at Mayence, and other Rhenish churches, the octagon dome is brought out of the square, or the circle brought out of the square at St. Ciriaco, at Ancona, and in the churches of Aquitaine (Angoulême, for instance), so well described by Mr. Pettit.

In the Greek domes of Constantinople the circle is brought from the square by the gradual swelling out of the pendentive, as we are ourselves accustomed to do it. But in the works of the Arabs, the way in which the transition is arranged is in general totally different, as I shall hereafter describe.

Externally, the difference in outline is very much greater, and, except St. Ciriaco at Ancona, I do not remember a single building, allied to the Greek, which resembles the Arab dome. The western outline was, and still is, a great extent is, that shown in these drawings from Athens and Constantinople; shown remarkably in the Rhenish churches of the eleventh and twelfth centuries. The Greeks still cling to this old form. I saw a modern church at Patras, where the dome was made rudely enough indeed, but just like those I have mentioned. The few Mahomedan domes remaining in Greece follow, usually, the plan adopted in

Sicily, and the niche heads are, as there, filled with the honeycomb ornament.

In Syria and Egypt there are, I believe, no remains of earlier work, but in Persia there are some of great interest; the palaces, viz. of Seribstan and Ferouzbahad, of the fourth and fifth centuries. In each of these the chief feature is the dome, springing internally from a series of cross arches, in precisely the way used in the Arab domes of Sicily. A great peculiarity here also is seen, in the way in which the light is introduced, through openings made, not only in the top of the domes, but also in small star-like forms throughout their whole surface, a plan which is used (I think copied) to a very great extent in the Arab works.

The Arab dome sprang, I think invariably, from a square base, both inside and out,—at least I remember no instance to the contrary. We all know the difficulty of leading the one form from the other, and, whether from this cause or not, there is scarcely, so far as I am aware, a single case of any Roman or Italian dome having been formed on a different plan to that of its substantive, where the change of form externally was boldly shown. Whereas in the great cathedrals, it sprang from a square base, the change of form was masked by the great roofs of the nave and transepts, the circularly appearing above. In the steeples of Sir C. Wren, and his English followers (the only architects who have been successful in adapting the Gothic spire to Italian details), the change was hidden by an arm, or such like ornament at the angles. It scarcely seems quite a satisfactory way; and the Goths took a much more picturesque course. In their larger steeples and towers they carried up pinnacles, harmonizing in outline with those used in other parts of the building, uniting them by flying buttresses to the main work. Sometimes, though more rarely, a spirelet was carried up at each angle, as may be seen, for instance, at Sutton St. Mary's, in Lincolnshire. In the smaller spires, where the transition from the square to the octagon almost always occurs, some very picturesque effects are produced in a very simple manner by the use of the branch spire, or by a simple flanching off, so commonly seen in our village churches. In the Byzantine works, the square base scarcely appears at all. In Armenia we have some approach to the Gothic form, as in the case of the tambour to the dome of Ani Cathedral. The Saracens began apparently by placing a circular dome directly on the square, as seen in the Cuba, and in many of the churches erected by their architects after the Norman conquest; and as they still do in the erection of their tombs. This, however, was a very rude way, so far as the external effect went, and they soon began to improve, going to work in a very Gothic-like spirit. They first flanching off the angles of the square base, until they had resolved the latter into the octagon form, whence to the round of the drum of the cupola was an easy transition.

The same method was used in the bases of many of the minarets, as at those of mosques Hassan and Kaid Bey, at Cairo, and though very simple, was entirely successful, and produced the most graceful transitions of outline, and contrasts of light and shade: it is, in fact, precisely the same way as used in our little village spires, or in the towers where the change of form occurs, as in Uffington, for instance. At the base of the drum the above method produced a series of square-headed gables, and these the Arabs filled in with the Gothic-like semi-traceried windows I have already described.

There are examples of this in nearly every mosque and tomb of consequence in Cairo, and the simpler forms are more especially to be seen in those of the Emir Akhour, the Mahmoudieh, Barikauk, &c. Soon, however, it was found that this arrangement, however picturesque, gave somewhat too large a surface of plain masonry, and so the architects cut the flanching surface into a series of very bold mouldings, and enriched the plain gable with trefoil and other enrichments, an excellent example of which may be seen in the mosque Kaid Bey. This arrangement gave perhaps as much richness to the upper part as was required to lend the plainness of the lower part into the extreme richness with which the whole surface of the dome was in later times decorated. I may particularly allude to the beautiful domes at Cairo of the mosques Kaid Bey, Akhour, and Ibrahim Aga.

I have now alluded to the chief peculiarities of the style in the earlier works of Egypt and Spain. I have purposely omitted Constantinople, for it was not conquered by the Mahomedans until 1453 (about the time of the mosque Kaid Bey),

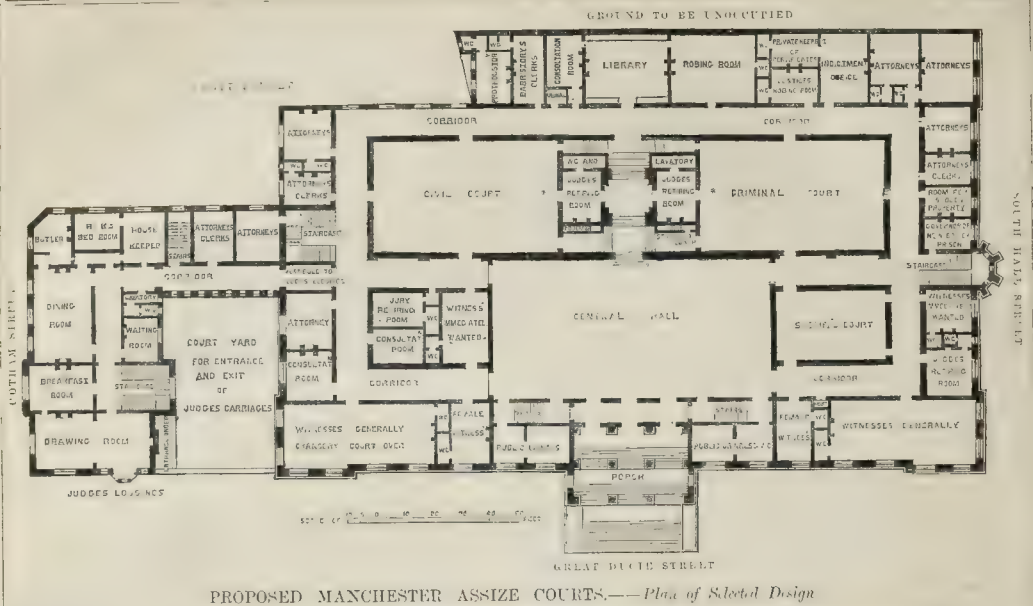
when the style had reached, perhaps, its culminating point. They did not then destroy the churches of the Christians; but they whitewashed the mosaics, altered the details, and arranged the buildings for their own forms of worship; so that the mosques and palaces of Constantinople show, not the pure Arab style, but a series of works of another nation, altered for their own requirements,—not for any love or reverence for those works, nor because they were exactly suitable to their own wants; but because it was easier to alter than to replace them. India likewise has quite a separate existence in art history. It was not conquered until the end of the tenth century, and then not by the Arabs, but by Turks and others, who borrowed largely from Hindoo sources. The whole subject has been so deeply investigated by Mr. Fergusson, that I should fear, in touching upon it, I was almost invading his province. The real Arab architecture is that which I have described in Syria, Egypt, and Spain, the latter being not perhaps so pure as the rest, and containing many traces of the previous Christian architecture of the Spaniards.

Sicily was conquered in the ninth century. In it several very good and pure examples exist; and at Palermo especially, there are very curious and well-known cases of Arab architects having, by a sort of retributive justice, been compelled to erect Christian palaces and temples. Taking now a general view of the Arab style, we find it characterized by great beauty of detail, and exquisite appreciation of colour, but wanting in the power and vigour which mark the architecture of other races. The detail is in the highest degree conventional.

Every ornament, every pattern (and none are there more intricate than those of their mosaics and stonework), seems the result of the deepest thought, yet the wildest fancy, restrained by the severest of rules. But, except in India, where such masses as those of the great mosque of Delhi attest the boldness of the designers there, we see little trace of the powerful minds which could raise high in the air the great dome of St. Peter's or St. Paul's; or send towering up towards heaven, the grand outlines of Canterbury or Lincoln. And even in their graceful ornamentation (and it is so graceful, so wildly luxuriant, yet so restrained, that we can hardly venture to carp at it), one great element of beauty is everywhere absent—nature. That law of their prophet, that the Creator's works were not for man to copy, shut out for ever from his followers this one chief source of beauty; and, save in a few instances, at Damascus and in Spain, there exists, in all the Arab works, no copy of created thing, living or inanimate. Deprived of such an aid as nature, their works speak to the eye only, not to the heart. The Arab architect dare decorate his work with no likeness of those whom his nation revered or loved. No cunning workman, as he carved the stone in Egypt or in Spain, dare grave upon it the flower of the leaf, or the animated form which might remind him of his native land; and thus to him, if I might dare to paraphrase the words of our great poet, was "Beauty by one entrance quite shut out." Yet, let us do him justice, and admit that, with what light he had, and in his own chosen style, he worked with a grace and beauty never, perhaps, surpassed.

Considering now in a general view the perishing works of this decaying race, there remain no unimportant questions.

Is their study to be a mere pastime, a pleasing subject for the mind or eye, or may we make it of some real value, some actual use? We may use the style itself, but altering its details to suit our habits. I plead guilty to the charge myself of having done so once, but it is a course which I neither advocate nor defend. Or, practising in one school of art, we may step beyond it, to introduce within its limits the beauties of another, and thus fill up some gap, or strengthen some weak part, which study or experience points to in our own—a most seductive practice, but a very dangerous one, and there are few who could carry it out successfully, as your chairman, for instance, has done; nor should I have ventured to make the few remarks that I am about to do (although the subject is one upon which I have given some thought, viz. the application of the forms of the dome to Pointed architecture), had I not been fortified by the authority of others whose right to give an opinion no one will dispute. Some two years since, after a lecture of mine, at the Royal Institute, Mr. G. Scott expressed his opinion distinctly, that there was no reason, beyond certain difficulties to which he alluded in the working out, why this form should not be used in the Pointed style; and I had the pleasure of hearing Mr. Street, only last week



from this place, repeat the same opinion more at length. Now, this would open to us an entirely new field of design; for, beyond those in France, and a few examples (Pisa, for instance) in Italy, there are, to my knowledge, none whatever existing. Where, then, are we to seek for objects to study—Not copy? The French remains, though picturesque enough within, give little aid to us in their external forms: we may go to the Rhenish churches, whose outlines are picturesque enough, and often have combined with them the tower or the spire. But I must leave the examination of their merits to others, and direct your attention to the examples now before us from Cairo. Though utterly different from the Gothic, they seem to me to be, with the exception of that of mosque Hassan, worked out altogether in the true Gothic feeling. In the first place, they are all, or nearly all, combined with the outline of the towering minaret, which itself springs almost invariably from the ground, as do the Gothic spires, and those of Sir C. Wren, instead of being stuck on side on the roof, as are those of later date.

There occur in the design scarcely more of the strongly marked horizontal lines which characterize Italian work than we find in the corbel tables of our spires or towers; and the whole effect of the minaret and dome, when closely placed together, is that of a composition of vertical lines increasing in richness to the summit. I am not now speaking of such long façades as those of mosques Hassan and El Moyed.

There you get the horizontal line strongly marked; but I refer to such beautiful works as those of Ibrahim Aga and Akhour, and to some of the tombs even when quite isolated and without the minaret. I know that I am treading upon dangerous ground, but I hold that the way of bringing out the circle of the dome from its square base is essentially Gothic in its bold, plain way of showing the transition, and converting into a beauty that which in other styles was put aside as a deformity. Not that the Goths would not have improved upon the form.

I doubt—I almost doubt, in spite of my reverence for the architects of Lincoln and Canterbury, whether they could have much improved some of those minarets.

But how they would have filled up those great gables of the domes! What magnificent rose windows we may picture to ourselves there, and how the spandrels would have been filled with the beautiful scroll-work that we know so well; and how from the nucleus should we have seen pinnacle and canopy arise, breaking, but adding beauty to the outline?

But though there might not be one feature which the Gothic architect would not improve—though there might not be a detail which, by the marvellous power of his fancy, he could not light up and vivify with beauty—I hold

that the form which the old Arab gave to his minaret and dome would harmonize well with the added work of his Christian enemy; that scarce one line which the follower of the Prophet had marked out need be changed by the Goth to work on; and that he, in stamping upon these old monuments the character of his own glorious art, might almost forget that the stranger reared them, and see in them almost the creation in another age, of his own race. This has been but an imperfect sketch. The rise and progress of art in a people who for centuries kept the world in fear, and whose religion, excepting only in Spain and Greece, still, even now, holds its sway upon the minds of all the nations whom they conquered, can scarcely be well told in the compass of an hour. The glory of their race is gone; its works are in decay; art and science still owe to it a debt of gratitude.

The Arab monuments press lightly, indeed, upon the soil which bears the ponderous masses of the Roman and Egyptian; but they possess in grace and beauty what they want in power. They are to the mere copyist (to him all things are so) useless. But to other minds they offer themes for study and wide scope for thought; and if from the perishing works of these old Arabs can be snatched some trait of beauty, or be transplanted into other lands some form of grace unknown to them before, those who have preserved these decaying works, by the imperishable power of the pen or pencil, will have earned no little claim to gratitude from all the devotees of art.

T. HAYTER LEWIS.

THE FRENCH EMPEROR'S NEW CANNON.

THE following description of the Emperor's new cannon appeared in the French journals. They are internally grooved as in the rifles or carbines "*de précision*." The calibres are reduced to two dimensions only; 12-pounds for siege guns, and 4-pounds for field batteries. For the navy the calibres remain unaltered. The solid ball is done away with, the projectile being one which strikes like a full shot, and then bursts like a shell; thus having a double effect. It is fitted with waddings of lead, which enter into the grooves of the gun, and give the requisite precision to the aim. This new piece is equivalent to one of 24, of the old system, which is the size ordinarily used for opening a breach. Against a massive butt of masonry, a battery of ancient 24-pounds was pointed, some weeks ago, at a distance of 35 metres, viz. that at which fire is generally opened against a rampart. A second mass of masonry similar to the first was breached by a battery of 12-pounder new guns, but at a distance of 70 metres. The experiments proved that fewer rounds from the rifled gun were required

to open the breach than from the old 24, and at double the distance. The 4-pounder field-piece is so small, that it may be well termed the artillery rifle; weighing less than 300 kilogrammes. Six gunners can carry it on their shoulders without difficulty. The charge of powder is only 500 grammes, and sends the ball 4 kilometres.

THE LAND OF THE 1851 COMMISSIONERS. THE 1861 EXHIBITION.

THE Horticultural Society are applying for twenty acres of the forty-six acres belonging to the Commissioners at South Kensington, as a dress-ground, in which to hold their *fêtes*, and will doubtless have it. The remainder will be arranged for the reception of a building for the Exhibition of 1861, and for sculpture and other accessories. We have reason to believe that Mr. Sydney Smirke, A.R.A. has been directed to make a general plan for laying out the ground with these views.

But for the threatened war (great will be the guilt of those personages who may lead to it), the Exhibition of 1861 would have been announced by this time. We see no reason, however, why it should be held in abeyance on that account. Let those nations come who will. The idea of it will tend to interpose some little hindrance to the spread of the war fever. What a mockery on our boasted advance it is, that nations should allow themselves to be sacrificed as to life, and plundered as to money, to gratify the evil views of two or three individuals!

HARBOUR OF REFUGE, DOVER.

PUBLIC attention having been directed to the important works going on at Dover, for the formation of a harbour of refuge there, we give a view showing what is proposed to be done. Next week we shall give full particulars of the undertaking, with an engraving to illustrate the construction. The works are let by contract to Messrs. Henry Lee and Son, of London, under Messrs. Walker and Burgess, as engineers in chief, Mr. Edward Druce being the resident engineer.

COMBINATION OF WORKMEN.—Before the dissolution, the House of Commons passed a short bill to amend and explain so much of the existing law as renders working men liable to indictment for conspiracy for entering into any argument or arrangement with others to fix the rates of wages, or to regulate the hours at which working men may daily begin or leave off work. The change in the law makes such discussions perfectly legal, so long as there is no intimidation.

PROPOSED HARBOUR OF REFUGE, DOVER; NOW IN THE COURSE OF CONSTRUCTION.—MESSRS. WALTON AND BEAUMONT, ENGINEERS.



W. & B.

ARTISTIC FURNITURE.

MR. JOHN THOMAS has recently executed some novel works in the shape of chimney-pieces, frames, sideboards, and other internal fittings for Mr. John Houldsworth's house near Glasgow, and for Mr. Betts, which comprise various woods and marbles, sculpture, and bronze. Mr. Houldsworth's house appears to be fitted up throughout with marqueterie: the drawing-room decorations are of satin wood, and the chimney-piece presents two figures in marble, life size, Brisis and Thetis. The sideboard for the dining-room includes a frame for a picture by Mr. Philip. Walnut-tree wood, marble pillars, and stones of various colours are cleverly brought in to aid. One carved piece of framework for another house, and intended to surround a picture by Landseer, displays birds and fish very boldly and effectively carved.

We do not know of any similar works executed lately in this country, and while we commend the taste and varied skill shown in them by Mr. Thomas, we congratulate him on having found such liberal and enlightened employers as those for whom they have been executed.

THE CRYSTAL PALACE.

THE huge Handel Orchestra has been extended far away on each side, to contain the array of performers to be employed at the commemoration in June. Painters have commenced to chalk out colonnades one above the other on the inclosure at the back; but the artistic arrangements contemplated, as we mentioned some time ago, appear to have been modified. On Good Friday, an enormous crowd flocked to the palace: more than 36,000 persons entered it. The greatest order prevailed; the conduct everywhere was unexceptionable. A striking effect was produced by the simultaneous removal of hats on the part of the vast multitude, the majority of whom were men, and the rising of all who were seated on the singing of the Old Hundredth—looking down from a gallery upon the sea of heads below, the effect was startling in the extreme. The galleries of the building, which contain much that is curious and valuable, had a larger number of visitors than usual. The Indian Museum, with the remarkable series of pictures from the caves of Ajunta, attributed to the tenth century; the Chinese room, and the engineering models, deserve a morning to themselves. The portrait-busts—at least the greater number of them—have been brought together in the lower gallery, and afford the most interesting subjects for contemplation. During the present week the Palace has been well attended, without the announcement of actual novelties. On Monday the new season will be commenced in earnest, with a military *fête*, involving the performances of seven bands. Those who, like ourselves, view the Crystal Palace as a most important educational institution and a delightful place of recreation, should take season tickets forthwith; and, instead of saying "it ought to be maintained," help to maintain it.

SEWERAGE AND SANITARY GUIDES AT READING.

ON a recent occasion, when a scheme of drainage had been prepared by the surveyor to the Local Board of Health at Reading, Mr. J. G. B. Marshall, C.E.; and a question as to it was under discussion by the Board; one of its members, Alderman Brown, who, it appears, is an architect, and who was deputed to present a memorial from certain ratapayers against the drainage scheme, or, rather, against drainage at all,—considered it "impious in men to stand up, as they did, in the New Hall in this town, during the memorable inquiry, and say that disease was preventible!" And Mr. Brown actually quoted the *Builder* in support of his fifteenth century superstitions. "Dr. Southwood Smith," he continued, "stated that fever was preventible, and that there would be no such thing as fever if the towns were thoroughly drained. He would say that such an assertion was impious. As well might King Canute order the waves to stand back, as for humanity to stay the hand of Providence, and that those who made such broad assertions do not fulfil their duties as they ought to do, or take a correct view of disease. On looking over the *Builder*, that morning, he was much struck with some remarks that were very pertinent to this point. The writer says:—'Those defectively-constructed sewers and drains prevent all fevers, will be disappointed; as diseases from this class result from many other evils—over-crowding, defective ventilation, unwholesome food,

starvation, mental anxiety, and more causes than we can enumerate.' Now, the impious man here is clearly he who blasphemously charges Providence with the production of diseases which are known to arise from the violation of the very laws of Providence, by obedience to which that Providence has placed health within the reach of all his responsible creatures. According to Mr. Brown himself,—if our remarks be really "very pertinent to this point," as he says,—it must be "impious" to ventilate dwellings as well as to drain towns, to diminish over-crowding, or to mitigate starvation; because, defective ventilation, bad drainage, over-crowding, and starvation do produce fevers, and, therefore, the removal of these causes must "impiously" prevent them! The only excuse we can find for nonsensical cant like this, is that the worthy alderman, being distinguished by "the dirty party" as their advocate, felt it incumbent on him to support the memorial consigned to him by a flourish of special pleading in its favour, and unfortunately made a mess of it. In this opinion we are supported by his subsequent futile attempt to flounder out of it by the remark that "if those gentlemen who had been such strong advocates of sanitary reform, would say that they considered a good system of drainage would mitigate disease, he would go with them; but to say that it would absolutely prevent it, was saying more than mortal man ought to do." We may add, that the discussion referred to ended by a majority of 12 to 11 voting that it was not expedient to proceed further with the drainage scheme; the proposer of the motion (or amendment rather) being of opinion that the public health had not been shown to have "been benefited to the slightest extent by adopting any drainage scheme."

ROYAL INSTITUTE OF BRITISH ARCHITECTS AND ROYAL ACADEMY.

AFTER the notice you gave, a few weeks since, of the animated discussion at the Institute, upon the position of architecture in the Academy, I was grieved to read in your paper the memorial which has been addressed to the Academy by the Institute. I should greatly like to be informed of the names and number of the Fellows who were present when that memorial was finally resolved upon. What has caused the change which has come over the spirit of their dream? What influence has been at work to occasion the drop in the independent tone the first part of the discussion assumed? Was it only a dream after all? I sincerely trust not. But is the tenor of the memorial up to the spirit of the times? Many architects, in and out of the Institute, have been devoting their energies for several years in establishing the Association, the Publication Society, the Exhibition, the Benevolent Society, the Museum, the Photographic Society, and finally, the Union Company, which has provided the "local habitation" for all these (except, at present, for the Museum), and even for the Royal Institute itself, leaving only "the name" to be desired. I had considered, if the Academy was about to make any readjustment of its concerns, for the purpose perhaps of placing itself in a better light with the public and with the Parliament, that surely such an opportunity was a highly advantageous moment in the tide of advancement, and deserved being made available for a far different result than that which we have read.

I had hoped the Institute would have considered the question as concerning the whole body of the profession, and not as merely connected with the portion of it contained in its list of Fellows; that it would have held a meeting accordingly, worthy of the occasion, when no doubt the result would have assisted in furthering the efforts above mentioned, which in my opinion require but little more to place architects and architecture in their proper position in the ranks of the other prominent scientific institutions of the day.

It has appeared to some of us "that 'the name' which is required to be placed on the doors of 'the local habitation,' No. 9, Conduit-street, should be nothing less than that of THE ROYAL ACADEMY OF ARCHITECTURE." This letter is, perhaps, hardly the proper opportunity to state the words by which such a result could be achieved; but I should be greatly mistaken indeed if, at a public meeting of the profession, the desirability of such an institution would not be unanimously adopted, and the proper steps taken for carrying it out.

In 1768, when the Academy was founded, it might have been very well to have said that four architects represented the then state of the pro-

fession, and that they were equal to the remaining thirty-six painters and sculptors; but if these thirty-six do not represent the several bodies of artists at the present day, do four members represent the architectural talent of the country? Would forty do so? Would the majority of the present two hundred Fellows do so? It is needless, therefore, to ask for the accession of some few more R.A. architects. It is not requisite for me to enlarge upon the manner in which, in the Academy, architecture has been treated. It is patent to all. It is also clear that the education of architectural students cannot be of that character, or so well carried out in the mixed body, as it would be under the management of the profession itself. By the Institute's charter it is its province "to promote and facilitate the acquirement of the knowledge of the arts and sciences connected" with its specialty. Should it be delegated, then, to another and less qualified institution?

A little energy amongst us worthy of the occasion, and then (to use the words of the memorial) the profession would have its own R.A.s and A.R.A.s; its own independent action; its own provision of means of instruction in its own art; its own systematic scheme of general instruction; and its own more efficient tests, by examination or otherwise, of knowledge and proficiency in practice. I humbly urge that in recommending to the Academy to open its doors wide to architecture,—the maiden it has not for so many years treated as she deserved,—the Institute has not availed itself of the present spirit of progression in the profession; and I fear "a readjustment," if any be made, in the Academy, would greatly tend to promote divided action, and frustrate the good work that has lately been developed by the profession itself.

In submitting these observations, I would beg to protest against the memorial being considered as the act of the body of London architects. Not being a member of the Institute, yet a warm supporter of it, and studious for the welfare of the profession, "I have conceived it to be my duty at the present juncture" to attract some attention to the subject, which is the only apology I can make, if one be necessary, for thus having commented publicly, for the first time, upon any proceeding of a body all are desirous of seeing in its proper place in public estimation.

WYATT PAWORTH.

P.S.—Of course, in any consideration of such a proceeding as I have hinted, the very many societies of architects now actively established in this country would have to be consulted, as they have done quite as much as the London institutions, in their several spheres of action, to assist in elevating the profession and the art in public esteem.

STREET FOUNTAINS.

A LETTER appeared in the *Times* of the 22d inst. signed by Mr. E. T. Wakefield, honorary secretary to the association for the above object. Feeling confident that a gentleman engaged in so charitable an undertaking as the erection of fountains for the poor would not intentionally injure the several water companies by misleading the public as to the quality and condition of the water now supplied, I venture the following explanation.

Mr. Wakefield remarks, "It is true that a partial process of filtration is attempted at the companies' reservoirs, but it is of a very imperfect nature, removing some of the organic impurities only, without eliminating any of those held in solution."

In justice to the several companies the public ought to be informed that within a recent period they have, at the expense of several hundreds of thousands of pounds, not only improved the sources of supply, but have adopted, fairly speaking, a complete—not partial—system of filtration.

The analysis of the water supplied by the several companies, made by the able and talented Dr. A. Taylor, is published monthly, the last of which I subjoin:—

	Carbonate of Lime.	Organic matter.
	Grains.*	Grains.
Chelsea	15.88	92
Southwark	16.00	1.96
Lambeth	17.40	1.08
Grand Junction	16.10	1.72
West Middlesex	15.96	1.28

* N.B.—Grains in an imperial gallon, weighing 70,000 grains.

It will be seen from the above that the impurities as distinguished from pure distilled water consist of carbonate of lime, 16 grains to the gallon, and organic matter 1.4 grains to the gallon. Now, carbonate of lime, although hypocritically

speaking, it is an impurity, is really an essential sanitary ingredient in all waters for drinking purposes; consequently we have happily only 1-4 grain of organic matter in the imperial gallon, weighing 70,000 grains, of a questionable impurity; for, looking to the report of Professors Hoffman and Blyth to the Board of Health, they state, referring to organic impurities—"The accurate determination of the quantity of organic matter in a water is one of the most delicate operations in analytical chemistry; still greater is the difficulty of examining into the nature of the organic matter. The total amount of organic matter is so small that immense quantities of water must be evaporated in order to obtain the material upon which a satisfactory examination of this kind can be founded at the present moment."

Seeing that the water now supplied contains carbonate of lime, which being in chemical solution no filtration will remove, we have only 1-4 grain of organic matter in 70,000 grains to deal with, and I think I am justified in saying that in truth the most fastidious water-drinker has no just cause to complain of the water supplied, or of those companies who supply; and further that there is indeed little occasion for the association of which Mr. Wakefield is the secretary to encumber their charitable operations with the costly expense of further filtration, which must certainly circumscribe the sphere of usefulness.

FRED. BRAITHWAITE.

BUILDERS' BENEVOLENT INSTITUTION.

At the monthly meeting of the committee of the Builders' Benevolent Institution on the 25th inst. after the usual routine business had been disposed of, Mr. Joseph Bird, the hon. secretary of the hall held in February last, on producing the accounts of the same, announced the gratifying intelligence that the profit arising from it would amount to 100%.

A vote of thanks was unanimously accorded to that gentleman for his unceasing efforts to advance the prosperity of the charity, by devoting so much time and energy, and by which so successful a result had been obtained.

A question put to the secretary by the treasurer, Mr. George Bird, elicited the fact, that no less a sum than between 1,100% and 1,200% had been realized from the same source since the commencement of the institution in 1817, the whole of which had been invested in the 3 per cent. Consols, and now assisted in maintaining the pensioners on the funds of the charity. This is truly a successful result, and a pleasing combination of business and pleasure.

The treasurer stated to the committee that he was happy to inform them that Mr. George Smith, of Pimlico, had kindly consented to become the president of the institution for the ensuing year.

NEW BUILDINGS, BREAD-STREET-HILL.

UNTIL within a very recent period, most of the lodging-offices in London were notorious for bad construction, coupled with a state of dilapidation hardly credible, also for serious defects in their mode of access, working space, internal communication, and means of supervision. Ventilation and all sanitary precautions were ignored; in short, no consideration was given for the health and comfort of the numbers of men and boys crowded therein. Great improvements have been made in many of our large establishments, and in such new buildings as are constructed for the purpose. On Bread-street-hill, in the city of London, a large block of buildings has been erected for Mr. Clay, which extends from Bread-street-hill to Fye-foot-lane.

The external walls, which are of brick, are faced with yellow malmes, varied with red brick in arches, courses, cornices, &c. with stone sills and weatherings. The three fronts of the rear portion of buildings above the basement story are constructed entirely of cast iron, so as to obtain the maximum of light. The basement story is made partly fireproof, for the reception of stereotypes, &c. The steam-engine and boilers are on this story. The floor of machine-room on the ground story is constructed with brick arches and iron girders. Pits are formed in this floor under each machine, by counter arches and wrought-iron plates.

The upper floors are constructed on cast-iron columns and wood girders. The roof is of iron and wood, and left open, with a large amount of skylight. The timbers of floors and roof are wrought, stained, and varnished. There is a steam-lift passing through the several stories, which was supplied by Messrs. Dickinson and Co. The

building is heated by hot-water apparatus supplied by Mr. J. R. Peill.

The architect was Mr. Henry Dawson: the contractors for the general works were Messrs. Browne and Robinson: the clerk of the works was Mr. John Nicholson.

TRUSSING GIRDERS.

THE method of applying cast-iron to strengthen a beam, as illustrated in your last number but one, is ingenious. Nevertheless, I should be sorry to trust such a beam, so assisted, with much more weight than the timber beam itself is calculated to carry. My reasons are these. The whole theory of Mr. Coombes's plan depends on the perfection and immobility of the junction of the iron and wood. The least shrinking or decay of the wooden wedges, or timber beam, at points adjacent to the wedges, brings a cross strain on the iron, and the consequence is clear. I have, however, written less with the object of discussing Mr. Coombes's plan than with the purpose of illustrating a simple plan, which I have used with economy and success, and which is easier obtained and much cheaper than a wrought-iron plate, rolled purposely. I make my iron beam, or plate, of riveted boiler plates, lapped. The heading rivets should only pierce the heading or meeting plates. These I insert at distances of about 4 inches. The rivets at top and bottom, are 7 or 8 inches apart. Though laps have a clumsy look in a sketch, in practice this is not so. The beam has a neat homogeneous appearance, and is bolted between timber timbers in the usual way. I used one last summer, 27 feet long, made of 3-16th-inch boiler plates, in 4 feet lengths. This I found to be the cheapest and simplest method available, and I believe it to be of immense strength, though at present I have not had an opportunity of experimentally testing its utmost capabilities. There is, perhaps, no novelty in the principle of this plan, possibly not in its application, though I have seen none but my own. I venture to submit it to you, as it may be useful to some of your readers. I forgot to say that any boilermaker can make such a beam as I have described in two days.

Dreadnought.

J. SMITH.

FOREIGN RAILWAYS.

THE important improvements that railway companies are making for the accommodation of families on long continental journeys are known to every one who has lately travelled in France. With a view of further completing the comfort of parties who wish private conveyance, several companies are constructing carriages, consisting of a saloon, a bed-room, and an antechamber, in which families can undertake without fatigue the longest journeys, and have one or two of their servants to wait on them on the road. It is said that the Eastern French Company is going to make some of these carriages in its workshops for persons who want private accommodation, and that these can pass over all the European railways. They are to be fitted up with every comfort the passengers can desire.

A bill has been presented to the Spanish Chambers authorizing the Government to give to railways connecting coal districts with navigable rivers, or with arterial railways, or with central industrial parts of the kingdom, a guarantee of a minimum of interest of 6 per cent. per annum, for twelve years after the commencement of the works. This money advanced is to be repaid by the duty per ton levied on the coal transported for the ten ensuing years. Moreover, the Government reserves the power of purchasing, for war vessels, coal at 10 per cent. below the market prices in the ports and markets of the Mediterranean.

The Government engineers sent down to examine the railway from Marseilles to Toulon passed over the line in a train, a few days ago, stopping at the different stations, and examining carefully the principal works. They expressed an opinion that the line could be officially received, as the works were well executed. At the station at Toulon, a triumphal arch was erected, and when the train entered, it was greeted with the acclamations of a vast crowd.

The first loan of 500,000*fr.* applied for, for the basin of the port of Boulogne, has just been granted by the Government; so that the works can commence.

The group of Sardinian railways in 1848 comprised only 17 kilometres of line: at present the length opened for traffic is 933 kilometres. In consequence of some difficulties of momentary consideration, the State had to take upon itself the construction of the first lines to be established; viz. those of Alexandria to Arona, and Turin to

Genoa. This last was one of the most difficult lines in Europe: the portion from Genoa to Novi perhaps may be considered as an extraordinary piece of work. The cost of construction and rolling stock amounts to 135,720,000 francs, or more than 501,000*fr.* per kilometre for a length of 263 kilometres. The opening of the Turin and Genoa line took place the 6th December, 1853; the section from Alexandria to Novara, (the 9th July, 1851; and that of Novara to Arona (Lago Maggiore) in 1855.

The station for the junction of the Lombardo-Venetian with the Sardinian railways is to be at Trecento. The works are so far advanced that a locomotive will be able to run over. The central office of the Piedmontese Senate have just unanimously adopted, "purely and simply," the project of a law abolishing the tolls on the bridge of the Biello near Boll'Arca, constructed at the joint expense of Austria and Sardinia, on the road from Milan to Novara. Half of the bridge was to serve for the railway junction between the two above groups; the other half was to be left open for carriages and foot-passengers; but if report be true, the bridge has been blown up, as the first result of the Austrian movement towards Sardinia.

ARCHITECTURAL COMPETITIONS.

A SAD misgiving and deep distrust seem to have overspread the profession as to the indiscriminate justice of awards lately made by committees appointed to adjudicate upon competitive architectural plans. The monstrous rivalry for the Public Offices excited suspicion that these trials are not conducted with the impartiality and knowledge which might be expected from an honourable tribunal. The commentaries upon that strife of genius are already before your readers, and need not be recalled, as both the profession and the public have already formed their own just conclusions upon the issue: there have been, however, recently, competitions on a smaller scale, which have given great general dissatisfaction, and created such diffidence in either the judgment or honesty of the arbitrators, as will go far to disincite competent or talented professors to enter the lists again in similar conflicts.

Notices are gazetted that designs and plans are to be sent in by a certain day: some two or three scores of ambitious aspirants bestir themselves to produce something worthy of the time and of the country; they hire able and practical hands to embody their designs, and send in within a brief period of three or four weeks drawings and sketches, which, if valued, would not be estimated under 20*fr.* for every single competitor: thus these productions in the aggregate, say sixty, are worth 1,200*fr.* Premiums of 50*fr.*, 30*fr.*, and 20*fr.* are proposed for the three sets of more distinguished merit! and thus sixty architects are lured on to commit their productions to the arbitrament of a tribunal which may or may not be competent to the task of selection; and many are the instances in which a petty jury of shopkeepers might give as wise an arbitrament!

In cases where the whole collection of plans is exhibited before the public, there is some check and safeguard that the judgment of selection be a righteous one, as in the instance of the Spurgeon Tabernacle. Such open exhibition might prove a modified check; but in other competitions, where the plans and designs have not been exhibited—where the notices only were advertised—where numerous competitors, anxious for fame, or for profit, or employment, exerted all their energies, and taxed all their resources—what security is there that the best design has been accepted, or that justice has been dealt out in the struggle?

A competition has just been decided in this occult manner, which called forth the exertions and excited the hopes of many architects—it was for the enlargement of a great public asylum. The judges, or rather the committee, have settled amongst themselves who is to have the job—they are all, no doubt, righteous men; for there is an infusion of the religious ingredient throughout the body, but how or when did they become entitled to discriminate as to the merit of works of art? One might say to his brother committeeman (and truly), "I have no idea of taste or aptitude in these matters, but you have: I will therefore vote as you do." Such would be the natural alternative in such circumstances; but there are predilections, and friendships, and the wisest are not exempt from them—the better judge might have them, and might thus sway the decision in favour of his friend! I do not say that this has been done, but it is within the scope of possibility; and therefore, in every instance of public competition, the interests of art require and demand that all

the plans and designs should be collectively laid before the public. It would be a satisfaction to all competitors to be acquainted with the character of those works which were sent for selection; but further, the open display of highly-finished drawings would be sure to attract large numbers of students and amateurs; and, as at the great Westminster display, the public, and the public press, would confer upon merit that degree of marked approval which might in some degree mitigate the feelings of despondency consequent upon failure.

Architects ought, in the most decided manner, to insist upon public exhibition in every instance of invited competition; and where, from concealment, influences not creditable to committees might be entertained, it is no less incumbent upon gentlemen assuming the office of judges to acquit themselves of even the shadow of an imputation. To hear a cause and to determine in a closed court, is little less than a *suppressio veri*—it is certainly un-English; and although religious men may be true in their honesty, that truth could be in no degree questioned by openness and exposure to light and public opinion.

For these reasons, all those who have toiled in preparing designs for the late Asylum competition, owe it to themselves, to the public, and even to the tribunal of the committee, to withdraw their plans, to place them before the public; and so to obtain that ratification of the verdict which might elevate yet the more the fortunate artist to whom premium was awarded.

The labour and expense incurred by architects of standing, the anxieties and hopes of younger aspirants, and the immense loss of time occasioned to the unsuccessful in such competitions, make it doubtful whether the system is beneficial to the body at large; the least, therefore, that can be done by committees is to show forth, that if many run for the prize, it is adjudged to the most deserving.

QUONDAM.

MOTTOES ON OLD DOORWAYS.

In some of the ancient towns of England, but more generally in those of Scotland, you fall upon quaint and friendly mottoes which have been cut in various styles of ornament over the doorways of dwellings and other buildings, and lead one to regret that in these matter-of-fact times such a practice should have been abandoned. It would be thought out of harmony with the style of our modern houses and ideas to introduce the old practice. It is not that the old feeling has departed; at the present day, although the only ornament to be seen on a door is a lion-headed or some other knocker, in most instances the hospitality is the same as if some antique couplet were cunningly devised, expressive of welcome. Notwithstanding, there are some practices which we cannot but regret the departure of, and this is one of them.

At the present day the old inscriptions below the armorial bearings of the London companies may be still met with; amongst them the "Honor Dio," of the Movers; "God grant us Grace," of the Grocers; "All Worship be to God alone," of the Fishmongers; "To God only be all Glory," of the Skinners; "By Hammer and Hand all Arts do stand," of the Blacksmiths; "God is my Strength," of the Ironmongers. Such mottoes breathe a good spirit, and suggest useful thoughts. In Elizabethan and Jacobean buildings, it will be remembered, inscriptions over doorways are not uncommon; many have been given in our pages.

FURNITURE OF A ROYAL CLOSET AT GREENWICH.

REIGN OF HENRY VIII.

The following fittings of a royal mansion show the changes which, in several respects, have been made since about three centuries have passed.

A cloche, a glass of steel, four battle-axes of wood, two quivers with arrows, a painted table, a payre of balances, with weights, a case of tynne, with a plat in the window; a rounde mappe, a standing glass of steel, a stand of flowers wrought upon wyre, two payre of playing tables of bone, a payre of chessmen in a case of black leather, two birds of Araby, a gonne upon a stocke, wheeled; five paynes of glasse and woode, a tablet of our Ladie and Sainte Anne, a standing glass, imagery made of bone, three payre of hawking gloves, with two lined with velvet; three combe-cases of bone, furnished; a night-cappe of black velvet, embroidered; Sampson, in alabaster; a piece of unicorn horne; little bones in a case of woode, four little coffers for Jewells, a bone of ivory, a standing diall, in a case of copper; an hour-glass,

eight cases of trenchers, forty-four dogs' collars, of soundry makynge; seven Lyons of silk, a purse of cryman silk, embroydered with gold, a round painted table, with the image of a king; a folding table of images, one payre of bedes, of jasper, garnished with leather; one hundred and thirty-eight hawkes' hoods, a globe of paper, a map made like a screene, two green boxes, with wrough coral in them; two boxes covered with black velvet, a rede tip'd at each end with golde, and battes for a turning bowe, a chair of joiner-work, an elle of synnamonde stickes, tip'd with silver.

COMPETITIONS.

Walcot.—The Walcot Burial Board have considered the drawings submitted by various architects in competition for the new cemetery, and selected the design by Messrs. Hickes and Isaac.

Burnley Clock Tower.—Some of the competitors for the Burnley clock tower want to know the number of designs sent in, and when the decision of the committee will be made known. An Architect complains bitterly of the condition in which his design was returned to him *by post*.

Orphan Working School.—We are asked to say that the name of the successful competitor for the second premium in the Orphan Working School competition, Haverstock-hill, was not Joseph Gates, as stated, but Mr. Joseph Gile.

Blackburn Workhouse.—The *Blackburn Standard* has some strong observations, urging that the author of the selected design should be appointed architect of the building:—

"The guardians, in their advertisement, reserve to themselves the right and the power to appoint anybody they like, and the effect of that reservation has been to make the 50*l*. premium almost stink in the nostrils of the profession. It is no use affecting ignorance of what everybody knows, or pretending to know, was the original design of the clause being inserted; and we shall not be squeamish about expressing a strong suspicion that the same influence was at work on Saturday, when the motion to reject all the plans which were opposed to the 'conditions' was rejected. Had the motion which was rejected by the committee on Saturday been carried, 'Porreo' would have shared the fate of 'Humanitas,' and 'Porreo's' friends might have found it difficult afterwards to convince the Board of the special fitness of 'Porreo,' the rejected, to carry out the design accepted. If the gentleman whose design is accepted is not appointed architect, what do the Board in effect say? They say this:—'We give you 50*l*. for your brains, but we will take a man who has less brains and give him 500*l*. to carry out what you have designed. Can anything be more unreasonable? Can anything be more unjust? Can anything be more discredit to the public? And we would con- sider it, or more mean and despicable on the part of the man who would be a party to so injuring a brother professional?"

Stockport Mechanics' Institution.—There has been a competition lately for a new Mechanics' Institution at Stockport, the result of which is as follows:—First premium, 20*l*. to Mr. James Stevens, architect, of Manchester; the second, of 10*l*. to Mr. William Walker, architect, also of Manchester. There were nine competitors.

CHURCH-BUILDING NEWS.

Gillingham.—The church here has been reopened after being renovated and enlarged. The addition consists of a new north aisle, forming a bay of three Norman arches between the tower and chancel arch, supported on shafts, having moulded bases and carved capitals, lighted by three windows on the north elevation and one at the east and west ends. The gables are filled in with circular lights, moulded, and cleveron enrichment running round. The covering of the roof is of plain tiles, laid in stripes, the old ones being used up. The roof itself is of oak, with circular moulded ribs, framed to the principals, exposing the underside of the rafters, and covered with oak boarding. The walls of the interior are stuccoed. The walls of the nave, chancel, and under the tower have been scraped, and the old plastering removed. A portion of an illuminated perpendicular screen was discovered behind the hall pew: it had been cut down with axes and hammers. The apse has been restored with three stone windows. The paving is laid in Staffordshire tiles. The nave and new aisle are benched. The transept pewing has been stained and oiled. This portion of the church is considered so insecure, that struts are fixed to support the breastsummer that carries the roof. The flooring of the chancel and nave is formed of monumental slabs of black polished marble, to the memory of the deceased members of the families of Bacon and Schutz. The slabs have been levelled, cleaned, and adjusted. The floor of the new aisle and under the tower is paved with chocolate and black Staffordshire tiles. The church has been provided with a heating apparatus. The architect who has carried out the restoration and renova-

tion is Mr. T. Penrice, of Doncaster, formerly a pupil of Mr. Scott. The stonework was done by Messrs. Watson, of Norwich; Mr. W. R. Lacey, of that city, completing the carpenters' and joiners' work. Messrs. Thompson and Brundell, of Beccles, were the plumbers, glaziers, and stainers; Messrs. Hart and Son, of London, supplied the Medieval ironwork; Mr. Warrington, the five stained glass windows; Mr. King, of Norwich, the two tower-lights.

Great Warley.—The parish church of Great Warley has been reopened. All the inside fittings have been removed, the chancel and belfry pulled down, and the nave has undergone repair and renovation. A new chancel has been erected on the old site, at the expense of Dr. Robinson: it has an open timber roof, boarded diagonally, and open pews and stalls stained and varnished. The east three-light window is filled with stained glass given by Mr. Peters, the owner of Warley Hall, and contains six subjects, viz., the centre light, the Lord's Supper; the side lights, the Four Evangelists. One of the small two-light south windows is also of stained glass, presented by the Rev. Dr. English; subject, Christ Blessing Little Children. Both windows were executed by Ward, of London. A new red brick tower has been erected on the west end, and pointed in blue mortar, the lower part being thrown open to the nave, and the upper part appropriated to a gallery, in which are eighty-five additional sittings. A new vestry has been erected at the north side of the chancel, and the whole of the interior of the edifice has been fitted with open pews, stained and varnished. In place of the old window-frames, which were of wood, stone frames have been provided, glazed to a pattern, with ventilators. The paving is of Staffordshire tiles, red and blue, and the church is heated by one of Porritt's under-ground stoves. The open frame work on the top of the tower and entrance porch is of oak, varnished. The spire, covered with small slates, to a pattern, is about 30 feet above the framework, making the tower and spire about 70 feet high. The total outlay has been about 1,000*l*. The architect employed was Mr. Teulon, of London, and the builder Mr. John Hammond, of Warley.

St. Albans.—Christ's Church, St. Albans, has been consecrated. The edifice, which will accommodate about 100 persons, is in the Lombardo-Italian style, and consists of a nave, with side aisles, a tower at the west end, and a chancel. The building is raised on a high plinth; and the tower, which is elevated on a double plinth, and serves as a porch, is of three stages, with pilasters at the angles. The church is built of Bath stone. The nave and side aisles, which are of nearly equal width, are divided by numerous slender columns. The chancel is approached from the nave through an arch of two orders, by four steps, which elevate it above the body of the church, and is separated from the sacristy and organ-chamber by moulded screen-work, within which seats are provided for the choir. The roof and internal fittings are of carved and polished oak. Mr. Scott was the architect latterly employed. It is stated that he had to take up an uncompleted building, and to adapt the designs of another to an altered purpose. Mr. W. Smith was the carpenter, Mr. A. Gregory the stonemason, and Mr. J. W. Kent the glazier employed. The font was executed by Mr. Phillips, of London.

Cambridge.—At a meeting of the parishes of All Saints and St. John, the committee for improving the church accommodation reported that they consulted Mr. Scott, who examined the structure. In his opinion, the roofs of the nave, aisles, and chancel are in a condition so unsafe as to need immediate and thorough repair; and the committee therefore directed plans to be prepared and estimates to be made, with a view to carrying out Mr. Scott's propositions, both with regard to the roofs and also respecting a chamber on the north side of the chancel to receive the organ. The estimated cost of these works would probably be for the nave roof 480*l*.; north aisle, 200*l*.; south aisle, 240*l*.; stone-work, parapets, and gutters, 120*l*.; organ-chamber, 44*l*.; total, 1,187*l*. The rector intended undertaking the complete restoration of the chancel, and had offered to contribute 200*l*. towards the construction of the organ-chamber. After the report had been read, it was agreed that the recommendations be carried out, under the direction of Mr. Scott, as soon as the necessary funds could be obtained. A subscription-list was opened, and several hundred pounds have been subscribed.

Oxford.—It is in contemplation, according to the local *Journal*, to erect a temporary church, constructed of iron, and capable of accommodating 250 persons, for the Cowley district, in Hockmore-street. The church, which is of Gothic design,

with bell-turret and high-pitched roof, will be commenced without delay. The sittings will be free, and the cost defrayed by voluntary contributions.

Welsh Bicknor.—The old church, all except the tower, has been removed, and a new edifice has been raised in its place, from the designs of Mr. Rushforth, of London, by Messrs. Pearson, of Ross, the contractors. The entire cost of the building, according to the *Hereford Times*, will be about 1,600*l*. In the architecture of the building, says this paper, a mingling of styles has been adopted; the Early English and semi-Norman periods being set off side by side with Perpendicular ornamentations and more profuse decorations of a later era. The windows are formed of plate glass. The nave is separated from the aisle by an arch, the pillar of which is of freestone at the base, with bands of dark-coloured Devon marble, and a cap of alabaster, having the appearance of unpolished marble. The points of this cap present the heads of the Four Evangelists, carved, as are numerous other ecclesiastical symbols which crowd the interior, some of them of mystic import to the uninitiated. The arch is Perpendicular, with curved foliage for moulding. The roof above is of stained oak. The font stands on 8 pillars of polished marble, of dark hue, and has a band of sculpture, giving the heads of the twelve apostles. The entire floor is laid with Godwin's mosaic tiles.

Preston.—The chief stone of the new Congregational chapel, now in course of erection in Grimshaw-street, in this town, has been laid. The front of the building is Early Decorated, and is executed in Longbridge-stone walling, with wrought stone dressings. In the centre of the façade, under a four-light window, three doorways lead to the entrance corridor, at each end of which are the staircases to the galleries, and entrances to the body of the chapel. Over these staircases it is intended to erect two stone spires. The chapel is lighted by a four-light arched window in front, filled in with tracery, and by ten two-light arched windows on each side of the building. The entire length of the building is 73 feet, and the width 47 feet 6 inches. The architects are Messrs. Bellamy and Hardy, of Lincoln. The works are being executed by the following contractors:—Messrs. Cooper and Tullis, masonry and brick-work; Mr. William Pye, carpentry; Mr. George Pye, slating and flagging; Messrs. Park, Low, and Co. plumbing, painting, and glazing; and Mr. E. Shaw, plasterer.

York.—The new chapel erected near Monk Bar, by the Methodist Free Church people, has been opened. The building has been constructed from designs prepared by Mr. Rawlins Gould, of this city, architect, under whose direction and superintendence the building has been finished by the under-mentioned tradesmen of this city, who contracted for the work; namely, Mr. William Reed, brick-layer; Messrs. Shaw and Young, joiners; Croft and Braithwaite, plasterers; W. and T. Hodgson, plumbers and glaziers; Bowman and Co. masons; Mrs. Mary Wood, slater; Mr. H. Wood, painter; R. Petty, ironmonger and whitesmith; R. Waddington, gas-fitter; and Messrs. Longbottom and Co. of Leeds, furnished the heating apparatus. The building is 66 feet in length by 40 feet in width, and the height of the ceiling from the floor is 28 feet. There is a gallery extending round the chapel, and there is accommodation for between 700 and 800 worshippers, including the sittings in the area and the gallery, 150 of which seats are free. In the centre of the flat ceiling is a large skylight filled in with figured glass. By means of this skylight and windows in some of the side walls the chapel is lighted. The front of the chapel is of the Italian style of architecture, and is built principally of red and white bricks. At the rear of the chapel is erected a school-room, 65 feet in length by 30 feet in breadth.

Edinburgh.—The new Congregational chapel on George IV.'s bridge, says the local *Post*, may now be held as about finished in the mason-work. The structure, built up from the ground beneath, near Merchant-street, contains a large amount of room for schools or otherwise, besides "the place of worship, entering from the bridge. The front is surmounted by a tower, and the material is stone. It was meant to continue the line of shops and houses to the railings above the Cragie arch, and the block completed is incomplete in its design, exhibiting the projecting stones which were to join with new masonry. Here the chapel has been set down, precluding the realization of the original plan for building in the locality, and destroying the uniformity of the line of masonry. The bridge is one of the most conspicuous parts of the south side of Edinburgh, and an important

approach to the city. Hard by, too, near Bristo, adds the *Post*, is the lumpish mass of stone, we believe, a Free Church, which again has irretrievably occupied a piece of ground that would, if included with the space occupied by certain miserable buildings southward, have left a magnificent approach from the south, securing, too, a site for some statuary worthy of the metropolis of Scotland. A few feet beyond the bridge chapel, a position wholly isolated, stands, in ugly inutility, where a fine structure would have been an ornament and advantage, allowing the street to be finished in its entirety, and agreeably to the style of building fixed upon at the outset.

PROVINCIAL NEWS.

Teyning.—The new lord of the manor, Captain Stocker, having decided on building a mansion to supersede the old manor-house, the foundation stone has just been laid, and fifty workmen are employed on the building. The mansion is to be in the Perpendicular style, from plans by Messrs. Medland and Maberley, of Gloucester, and will be of blue lias, with Bath stone dressings. Mr. T. Collins is the builder, and the total cost will be about 5,000*l*.

Preston.—The "Teetotal Monument," at the Cemetery, Preston, has been inaugurated. The column is erected in the Dissenters' portion of the ground. It bears the following inscription:—"Erected by public subscription, A.D. 1859, to commemorate the origin in Preston, of total abstinence from all intoxicating liquors."

Middlesborough.—The foundation stone of a new Mechanics' Institution has been laid at Middlesborough. The site is in Durham-street.

Lincoln.—The foundation stone of the new Wesleyan Day schools, in Rumbold's-lane, has been laid. The façade is modern Italian in style, and is to be executed in bricks and stone of varied colours. The front will occupy the whole extent of the ground, and in the centre is the master's house, over the entrance to which it is intended to erect a block tower. The plans are after the Government models, and in L form. The architects are Messrs. Bellamy and Hardy. Mr. Wm. Huddleston, builder, has engaged to complete the work for 2,320*l*.

Gloucester.—Some new buildings in Hamilton-drive, Great Western-road, have been rent in the walls, the windows smashed, and plaster disintegrated, in consequence of having been reared on the site of old coal-pits, of the existence of which, according to the local *Gazette*, the builders were ignorant.

YORK MINSTER SOLD FOR GROTTOS.

SIR.—The "last of the barbiens" has been, at least for the present saved, and I wish I could say the same of the last of the beautiful pinnacles at the east end of York Minster which has just been pulled down. The title of my heading was suggested by some questions put to the master mason, on seeing the disjointed fragments of a carefully proportioned pinnacle on the ground, most of which showed the carving as fresh as when old Thorsby, nearly 400 years ago, built it. "What do you do with these pieces of carving?" I asked. "Sells 'em for grotters and sich," was the answer. But, we remarked, the new work does not seem to be so bold, it has such an appearance of thinness. "We tried to compress the pinnacles," was the rejoinder.

I learnt, on further inquiry, that no architect or person of the slightest authority has superintended the works for many years, but that the restorations (?) have been in the hands of a common mason; and that the pinnacle about to supply the place of the one taken down is not a copy of it, but after a drawing made by a workman named Scott, who died about twelve or fourteen years ago; and that all the other pinnacles of the east end are from the same drawing, forgetting that no two were alike in the originals. It certainly does seem strange that so much is being done in this way to call attention to the beauties of Gothic architecture, a process of ignorant destruction is allowed to proceed unchallenged, and in face and with the approval of educated men—such as compose the Dean and Chapter.

There remains the more truly said to fear, as I understand that the Dean is about to restore the exterior of the chapter-house at his own expense, and, from what I can gather, under the same superintendence. If such be the case, he had better throw his money into the river Ouse at once, and thus prevent his doing more harm than good to that venerable structure, York Minster.

A LOOKER-ON.

"MEDICAL STUMBLING-BLOCKS."

The *Lancet* writes:—"Under the title the editor of the *Builder* classes 'arguments for the obtuse, obstinate, or altogether opposite to any sound theory' as 'silly, sick, or worse, save money, elevate the character, and lengthen life, provided by individual members of the medical profession.' Cordially concurring in the gist of the excellent and useful article from which we extract this passage, we must express our belief that such individual opponents to sanitary reform are few and unimportant. They are constituted by a small number of persons who are so unfortunately as to be possessed by eccentric and one-sided theories. 'The crochets of individuals must not, however, be supposed to represent the general opinions of the profession. The great bulk of sanitary work has been done by medical men.' The voluminous records of improvements effected by sanitary medical officers are but the latest fruits of their exertions. The whole sanitary activity of the time, great and useful as it is, is due to the inspiration of medical teachers and writers. Able, sensible, sometimes self-indulgent, by courtesy and men of science, they have not failed to perceive, and to impress upon the public mind, the high functions and the noble future of preventive medicine."

THE NINE-HOURS MOVEMENT.

MR. EDITOR.—In justice to the Conference of the nine-hours movement, we trust you will favour us with the insertion of this letter.

At a meeting of the master builders, held at the Freemasons' Tavern, on Wednesday, 19th April, to consider the request of the Conference, resolutions were passed refusing to concede the nine hours as a day's work.

Had the master builders present confined themselves to facts, we should have suffered them to pass without comment; but, as their statements are greatly exaggerated, and tend to prejudice public opinion against the movement, we therefore deemed it right to place the question in its true light before the public.

It seems, sir, that the master builders, in spite of all reasoning and entreaties to fair argument, will not treat the question of reducing the hours of labour as a question embracing the chief elements essential to the practical operations of labour and the well-being of society. They have fallen into those fatal errors to which Locke ascribes so much mischief: they will govern by their own passions instead of reason; they will take their own view of the question and entirely exclude us, as if we have no right to exercise our feelings or views in conjunction with their own. They simply and blindly confine themselves to a very narrow and selfish view, viz. that of reducing the hours of labour from ten to nine hours per day, and paying the same rate of wages for it.

This is the chief objection,—the only foundation on which they build their tottering fabric of resistance to our demand. They hold the question before the public as monstrous, or, to use the words of the first resolution, that the number of hours for work does not involve such an amount of time as to bring the building workmen within the limits of those on whose behalf the public interest has been excited, and its benevolence aroused; in fact, the latter part of the resolution places the artisan below the machinery, plant, and cattle labour of the employers. In the second resolution they assert that, in admitting the principle of the nine hours movement, they would tax the public more than 10 per cent. This we deny, being as 55*l*. is to 5*l*., which is only 4 per cent. and so far as 3*l*., per week being the average rate of wages, as set forth by the resolution, the employers themselves are at issue on this question.

The Artisans of the Building Trades are employed, on an average, only nine months in the year. This would bring the average earnings to 2*l*., per week. The employers acknowledge to receiving 1*l*., per cent. from 1853, but from their own words, the distribution is not general among their workmen, in as much as they do not pay a uniform rate of wages. This resolution contains another attempt to mislead the public by false construction. The question of the hour and a half on Saturday was agitated fully by the workmen and won (with a few honourable exceptions) by the unpleasant mode of striking, the advance of 2*l*., per week was of no credit to them, being substituted in lieu of the nine hours per day; this was gained by strike also; so that no voluntary act on the part of employers coerced them in the concession of the one, or the substitution of the other, but they were compelled by the artisans' last resource, when all are deaf to their appeals, and hearts are hard to their wants. The assertion of a master builder that we had solicited the services of the Rev. W. Cadman, and he had refused, is a most unwarranted invention, unworthy of the meeting, that rev. gentleman having denied (to the best of his memory) any knowledge of our transactions.

When the employers issued their advertise-

ment, they expressed a desire to have the question ventilated through the press: we applied on those grounds for admission to discuss the question, if they thought fit. This they refused; and by their subsequent conduct, instead of giving the movement ventilation, they, as intermediates, have, as far as lay in their power, tried to annihilate it by suffocation.

We advocate the nine-hours movement not on the ground of expediency, but on those of justice and humanity.—On behalf of the conference,

GEORGE POTTER, Secretary.

Committee-room, Parsons' Arms,
Johnson's-street, Westminster.

EXHIBITION OF INVENTIONS AT THE SOCIETY OF ARTS.

THE collection of articles recently invented or patented, now exhibiting in the rooms of the Society of Arts in the Adelphi, is one of considerable interest, and comprises 415 articles, contributed by 258 inventors. The majority of the specimens have a practical value, and should be examined with the view of being made use of. Valves, pistons, taps, and packings, occur early; including (21) Warner's improved taps and valves; (25) the patent water-waste preventer, applicable for domestic and sanitary purposes by George Jennings (noticed by us some time since in useful operation in Berners-street); and (33) Chndwick and Frost's patent high-pressure piston water-meters.

The Cotton Supply Association of Manchester exhibits the Indian churka, or cotton gin. The object aimed at in exhibiting this is to enable the mechanics of England to obtain a knowledge of the nature of the gins at present used by the natives in India, and which are sold for about 4s. each; and also to prevent engineers misapplying their ingenuity in the production of costly machines which the natives are too poor to purchase. Cotton gins, capable of clearing large quantities of cotton, have been greatly improved, and the patent toothed roller cotton gin, by Garnett, is exhibited: this is an interesting application of the recently invented band-saw, and in its results is stated to be more satisfactory than any saw-gin hitherto made. The great object, however, is to produce a cheap gin. The natives themselves can purchase and work. No. 86 is a patent brick, tile, and pipe moulding machine for stiff plastic clays; from Wm. A. Smith, Belper; which is stated to produce 25,000 bricks in ten hours. (87) is the patent kiln for burning stoneware, clayware, and porcelain, by John Cliff; exhibited by Messrs. Green. In the use of this kiln there is great economy in fuel: this is effected by means of the hollow columns, bottom and annular flue dividing the flame and heat equally over all portions of the kiln. There is also economy of time, since the kiln can be fired oftener, and drawn and set more speedily.

There are sample bars of cast steel, suitable for turning-tools, files, chisels, and other cutting instruments, by Henry Bessemer and Co. Sheffield, produced direct from molten pig-iron, by the "Bessemer process." We have still hope.

104 shows the machine-twisted iron of John Reynolds, 57, New Compton-street, W.C. The advantages over the ordinary twisted iron are that, being worked cold, greater accuracy in the twist and sharpness of outline are secured. The specimens exhibited are very clean and good, and demand the attention of architects.

The patent Roman-type Printing Telegraph of Professor Hughes (156) would seem to be a very important step in telegraphy. These instruments print any letter with one electric wave. They are governed and kept in unison by a vibrating spring, motion being produced by a weight acting upon a train of wheels. The printing apparatus is detached from the train of wheels, and only brought into action by the electric wave, which depolarizes the cores of a permanent magnet, allowing a spring attached to an armature, always resting on these cores, to rise, unlocking a detent by which the printing press is for one revolution attached to the train, and the desired letter printed.

The specimens of geographical modelling and maps in relief in papier mache plaster (188), John Brion, illustrate the application of hydraulic machinery to register-printing and embossing. The price is low, and their use considerable.

Willway's gas valve (288) and Hart's economising burner (212) are both here. 211, a patent chandelier, by John B. Smith, 2, Grosvenor-place, Lodge-road, Birmingham, has for its object to do away with the hitherto ordinary method of raising and lowering by means of the hydraulic

tube and balancing weights. A quick-travelling internal screw is used, by means of which the chandelier can be raised or lowered as required.

Mr. White, of Finchley, has several arrangements for warming and for the purification of air, mostly by means of water. Mr. Jennings exhibits, amongst other of his inventions better known, his stoneware air-bricks, a cheap substitute for iron; and Messrs. Doullton send, *inter alia*, their patent improved invert blocks (241).

The patent stoneware sockets (267), Benjamin Looker, Kingston-on-Thames, S.W. deserve attention. Each socket is made with a foot, or enlargement at the lower end, and the bottom is closed, so as to prevent any moisture from passing up from below into the interior of the socket. The use of sockets of this description protects the post from rotting oil, especially at the point where it enters the ground, which is the part where decay first takes place.

The catalogue is a very good one, and is illustrated.

THE HOSPITAL OF THE COLDSTREAM GUARDS.

SIR,—My attention has, only lately, been drawn to a letter which appeared in the *Builder* on the 26th of March, containing an account of the recent alterations at the hospital of the Coldstream Guards.

Had your correspondent paused to consider how vast an influence is exerted by the criticism of the press upon those who have not leisure or inclination to ascertain its justice for themselves, and had he remembered how frequent are the instances of things really valuable being brought into contempt by ridicule, he would not certainly have inquired into the meaning and objects of the "shafts" which he condemns; and having inquired, he would have learned:

1st. That they were recommended by the contractor of the new works, who had employed similar means for ventilation in a large manufactory of offensive material in the neighbourhood with the most complete success, and who believed that their introduction into the wards would be attended with a similar result.

2nd. He would have learned that this result had been attained without any complicated machinery and without any extravagant expenditure of money, that the shafts worked admirably, and that they were not productive of the slightest inconvenience to the patients or to the hospital attendants.

3rd. He would have learned that the limited funds at the disposal of the commanding officer rendered it impossible to build an entirely new hospital or to introduce any decoration into the new wing.

Finally, he would have learned that the hospital-surgeon, or any other officer connected with the building, was courteously ready to give any information that might be sought respecting the system of ventilation which had been adopted; and possibly he might have preferred appreciating the good which he had tried to cavil at, at the bad which he did not care to comprehend.

If the building be regarded from an architectural point of view, it may be thought to present another unfortunate instance of the incongruity which inevitably follows the addition of "new cloth to old garments;" but as the design and arrangement are the work of officers, and were decided some time before the commanding officer requested me to see them carried into execution, I need not trespass upon your valuable space by further allusion to them, but conclude by urging those who are interested in the subject of ventilation to pay a visit to the maligned "shafts," and to judge of their merits for themselves.

H. A. DARBISHIRE.

ARCHITECTS' ACTIONS.

IMPORTANT TO THE PROFESSION.

At the Gloucester Assizes, held in that city on the 2nd inst. an action was tried before Mr. Baron Channel, between Messrs. Ward and Son, architects, of Hanley-Stoke, Staffordshire, and the Local Board of Health for the township of Tunstall, in the same county, to recover the sum of 351*l.* for professional services rendered to the late Improvement Commissioners for that place.

From the evidence it appeared that in 1848 the commissioners advertised for designs for a town-hall, hotel, markets, &c. offering 20*l.* for the best design. The plaintiffs, with others, sent in plans. Theirs, with another architect's, were chosen, subject to certain alterations desired by the commissioners. This was done, and Messrs. Ward's design was ultimately chosen, and the premium awarded to them. Nothing further was done until 1853, when the plaintiffs were informed by the commissioners that they had no power by their local Act to build an hotel, and they requested a new design and plans to be prepared for a town-hall and markets only, to occupy the same site, which was, after various alterations and additions, approved by the commissioners and signed by the chairman in June 1853. The plaintiffs were then requested to take the necessary steps to obtain tenders from builders but in consequence of the quantities not having been taken out, they could get none. Messrs. Ward, as agents of the commissioners, then employed Mr. Pearson, of London, to prepare quantities, and tenders were obtained ranging from 15,800*l.* to 15,400*l.*, the lowest amount being 3,000*l.* in excess of the plaintiffs' estimate. This difference was accounted for by reason of the great increase in the value of labour and materials about that time, and, as we are told, was fully verified by the evidence. Messrs. Ward, anxious that the proposed buildings should not in any way be curtailed either in design or accommodation, recommended the commissioners to postpone further proceedings for a period of two years, as they believed they could then get the buildings completed for the stipulated sum. The proposition was agreed to by the improvement commissioners. In the early part of 1855, and previous to the expiration of the two years, the Local Board of Health superseded the commissioners, and appointed their own officers. The plaintiffs, still believing they would

be called upon to carry out their design by the new board, took no further steps until they saw, in 1856, a statement in a local newspaper that another architect had been appointed to carry out the proposed town-hall and markets. Messrs. Ward wrote to an explanation, and received a reply very much to the effect that the Local Board of Health knew nothing of Messrs. Ward. The present action was then brought to recover the 20*l.* premium awarded in 1848; for 24 per cent. upon 12,000*l.* the plaintiffs' estimated value of the buildings, and some other charges for perspectives, &c. amounting to a total sum of 351*l.* The defendants, in their official wisdom, and with little credit to themselves, pleaded the statute of Limitations as to the 20*l.* premium (and fifteen other pleas). Thus the plaintiffs are now, after the expiration of eleven years, and after all the toil and anxiety they must have experienced to earn this paltry 20*l.* premium for a design to have cost 12,000*l.* told they could not recover because the law decrees that the claim should have been made within the time limited by the statute. The result of the action is that the plaintiffs get a verdict for 351*l.* being 20*l.* less than their claim, occasioned by the plea before stated, with liberty for the defendants to move as to five points reserved for the opinion of the court above, these are questions of legal technicalities as to the law of contracts, &c.; and such as, it is asserted, never would have been made the excuse for the non-payment of a just debt by any member of the Tunstall Board of Health personally. The professional witnesses for the plaintiffs were Mr. Trubshaw, county surveyor of Stafford; Mr. Medland, county surveyor of Gloucester; Mr. T. Pearson, of London; and Mr. E. Banks, of Wolverhampton; and those for the defendants were Mr. Robinson, architect, of Leamington, Highbottom, auctioneer, of Longton; and Mr. Hales, surveyor to the Board of Health.

An action, it is understood, is to be tried in the ensuing term against the same defendants, brought by the surveyor, for 300*l.* for his claim for taking out the quantities, &c.

Since the above was written, the defendants' counsel moved, pursuant to a rule called on by the plaintiffs to show cause why the verdict found in their favour should not be set aside and entered for the defendant. After the learned counsel's argument, Lord Campbell said "he might take to show cause why the judgment should not be arrested, at the same time he must say the plaintiffs' was as fair a claim as had ever been brought into a court of justice, and he (Lord Campbell) should much regret the defendants' claim, if eleven pence, they should be barred of their claim; but whether a *mandamus* would lie for the payment of an unliquidated claim was an important question."

PATENTS CONNECTED WITH BUILDING.*

WROUGHT-IRON BEAMS AND GIRDERS.—*J. G. N. Allegue*, Alfreton, Derbyshire.—Dated 18th September, 1858.—Great difficulty is experienced in rolling wrought-iron beams or girders of great depth when furnished with flanges or enlargements at both edges. By the present invention the patentee makes wrought-iron beams and girders in two or more pieces, united by scarfed, or notched, or lapped, or diagonal joints. Thus he rolls two pieces of wrought iron, each of which has a flange or enlargement at one edge, and has its other edge bent or formed in such a manner as to fit to the corresponding edge of the other piece of iron. The aforesaid flanges or enlargements may be on one or both sides of the edge. He then places the two pieces together, and connects them by one or more rows of rivets or bolts and nuts, or by other suitable means.

CONNECTING TOGETHER PIPES, TUBES, OR WAYS, AND APPARATUS FOR REGULATING THE FLOW OR DISCHARGE AND SUPPLY OF FLUIDS.—*L. A. and T. E. Hermann*, Paris.—Dated 16th August, 1858.—One object of this invention is to facilitate the connecting together of lengths of pipe, without the necessity of employing hot metal, or of soldering; and also the use of piping without flanges or other such means of connection. For this purpose the patentees apply over the adjoining ends of the pipe a band or ring of lead, or other such soft metal, and force such into close contact by means of two compressing rings of iron or other hard metal, formed by preference conical on the inside, to press tightly upon the ring or band of soft metal. The invention is susceptible of various modifications.

MACHINERY FOR FORGING HORSE-SHOES.—*A. V. Newton*, Chancery-lane, London.—A communication.—Dated 16th August, 1858.—This invention consists in certain novel combinations, arrangements, and methods of operating mandrills, die rollers, and punches, for the purpose of forming horse-shoes from bar-iron, producing the creases in the same, and punching the holes therein. And also in an improved application of discharging apparatus for the purpose of delivering the shoes from the machine as fast as they are completed.

IMPROVEMENTS IN APPARATUS FOR BORING WELLS.—*C. Erhard*.—A communication.—Dated 26th June, 1858.—To keep up a constant flow of water past the boring-tool, to remove the earth, &c. cut away thereby, the tool is connected to the end of a tube of less diameter than the diameter of the boring-tool, which tool passes up to the top of the well, and to which a to-and-fro motion is given. Water is supplied to the space between

* Selected from the condensed lists published in the *Mechanics Magazine and Engineer*.

the exterior of the tubes and the sides of the well, and the water is caused to rise constantly up the tube by a piston in which there is a valve opening downwards, being attached to the exterior of the tube near its top, which piston works in a cylinder through which the tube passes.

ARRANGEMENT FOR SUSTAINING WINDOW SASHES AND SLIDING PANELS.—*T. Riddell, Old Ford.*—Dated 11th October, 1858.—This invention relates to a mode of supporting window sashes and sliding panels at any required elevation in their frames, the object being to avoid the use of cords, pulleys, and counter weights, or to provide an efficient substitute for the metallic supporting springs at present employed to keep windows wholly or partially closed. To this end the patentee avails himself of the elastic pressure of vulcanized india-rubber for maintaining sufficient friction of contact between the sash or panel and the frame, to ensure the retention of the latter at any desired position, and also to keep it from rattling in the grooves of the frame.

Books Received.

AMONGST the works before us to have attention hereafter, is a small volume called "The Oxford Museum," by H. W. Aldred, M.D., and John Ruskin, M.A., containing the substance of a lecture, and some letters by these gentlemen. It comprises some very interesting views on decoration, and is published by Smith and Elder. Mr. Denison's lecture at the Royal Institution, "On Some of the Grounds of Dissatisfaction with Modern Gothic Architecture," to which we referred on its delivery, has been printed (J. H. and James Parker).—No. 124 of Weale's admirable "Rudimentary Treatises," is "on the Carpentry and Joinery of Roofs," reduced from the works of Professor Robinson, Price, and Tredgold. It contains thirty-four wood-engravings.

Miscellaneous.

CITY CARPENTER.—The election of City carpenter will take place on the 5th of May, the next court day, the report upon the subject having been brought up and ordered to be carried into execution.

CLOTHWORKERS' COMPANY'S SURVEYOR.—The *City Press* announces the resignation, by Mr. Samuel Angell, of the appointment of surveyor and architect to the Company of Clothworkers, on account of declining health—a post which this gentleman has held for the last thirty-five years, with credit to himself and satisfaction to the company. The company's new hall in Mincing-lane is nearly finished. There are, it is understood, many candidates for the vacant appointment. The company's almshouses for ten men, founded by John Heath in 1640, and the chapel adjoining, in Monkwell-street, also those for eleven women, in Dean-street, Islington, founded by the Countess of Kent in 1540, were rebuilt under the able superintendence of Mr. Angell, the former in 1824, and the latter in 1854.

THE STAFFORD MEMORIAL.—The sum of £1,207, has been raised in aid of the proposed memorial to the late Augustus O'Brien Stafford, M.P. The committee have contracted for the stone and timber work at Limerick Cathedral for 800l. and for the stained glass for 400l. which works are now in progress. About 400l. more are required to complete the designs of the architect.

FALL OF A NEW BUILDING.—On Thursday, the 7th, the walls of a new building recently finished, belonging to Mr. Keith, dyer, and situated at the rear of his residence, on the north side of Bethnal-green, fell in. It appears that whilst the men employed by Mr. Keith were at work, their attention was awakened by a noise like the cracking of timbers, when immediately the walls of the new premises, which were intended as a manufactory, came down with a tremendous crash. Some of the workpeople were more or less seriously hurt.

THE INSECTS, ST. PETER'S, COLCHESTER.—The Rev. R. C. Billing, curate of St. Peter's, writes, that "the mites which have appeared in our church arise, I am informed by medical men, from the remains of old wood in the soil under the church, which the hot-water pipes, being close to the soil, have called into existence. They are, I am assured by medical men, perfectly harmless, and not such as will produce any cutaneous disease. I know that in other churches they have made their appearance, though, perhaps, in less numbers, and have never inconvenienced the congregation in any way."

THE VICTORIA-BRIDGE, MONTREAL.—The centre and longest tube (330 feet) was successfully fixed on the 26th of March. The scaffolding was built on the ice, but early in March the usual Canadian indications of approaching spring manifested themselves. The consequence was, it was necessary to work night and day from that time until the tube was actually placed *in situ*. On the morning after it was placed the ice began to "shove," carrying with it a portion of the scaffolding. The excitement at Montreal during the 25th and 26th of March was intense, and thousands lined the banks of the river. The tube is now firmly fixed. If the ice had moved before the ends of the tube were resting on the piers, the whole must have fallen into the river. Mr. Hodges, engineer and agent of Messrs. Peto and Co. the contractors for the bridge, had the entire superintendence, and made the arrangements connected with the fixing of the tube.

THE PAPER-TAX AND THE NEW PARLIAMENT.—Mr. Cassell, the chairman of the Association for the Repeal of the Paper-Duty, and Mr. H. Vizeley, the hon. secretary, have issued, on behalf of their committee, an address to the electors of the United Kingdom, urging them to press upon candidates at the hustings the question of the repeal of the paper-duty. "The tax on paper," as they remark, "shuts out light from the minds of working men, and bears, therefore, on the question of Reform: it weighs on all classes of manufacturers; as a source of revenue it is a delusion; and it hinders the spread of a wholesome literature among the people." The House of Commons itself condemned it, last June, as an impolitic tax. The committee of the News-paper and Periodical Press Association, therefore, urge electors to secure pledges, from candidates, that, if elected, they will give their votes for the repeal of this injurious impost.

SANITARY PROGRESS IN CROYDON.—The beneficial results arising from town drainage are showing themselves at Croydon more and more clearly as each year passes over. According to published returns, the deaths in the first quarter of the year 1859 were fewer, and the average mortality was consequently much lower, as compared with the population of the parish, than in any former year since 1848; and it need only be mentioned that, with a high character for salubrity, the deaths in Croydon in the first quarter of that year were at the rate of 39 in the 1,000, to show that the good name is now well deserved by a reduction in the rate to 15 in the 1,000. Only one case of fever has been registered (in the Norwood district), and one case of diphtheria. The mortality for the whole year 1858 in all England was at the rate of about 23 in the 1,000, and for the parish of Croydon about 19 in the 1,000.

ACTION FOR PLUMBING, AGAINST AN ARCHITECT.—In a case brought before the Law Court at Leicester, Mr. Norman, of Leicester, plumber, sought to recover the balance of an account for work done at Barwell Church, as was alleged under the orders of Mr. Goddard, architect. The original bill was 46l. 10s. 2d., 20l. of which had been paid. The defendant questioned the weight of lead on the chancel that was charged in the bill. Defendant was the architect of the works, and, according to plaintiff, had told him to cast the lead as near 7lb. to the superficial foot as he could. After it was cast, he believed the defendant saw some of it weighed. He examined the lead, felt of its thickness, and made no complaint as to its weight. Mr. W. Millican, architect, said, he had been over the lead at the church, had fourteen pieces cut out, and weighed them. Believed that the average would be 7lb. to the foot. Mr. Goddard said, he was the architect for Mr. Barrow, the rector of Barwell, and got the estimates for the repairs of the chancel of the church. Told Mr. Norman so, and asked him what he could take the lead off for, and put it on again. Plaintiff said it must be recast. He gave an estimate, and witness acted upon it. Calculated there were 77 cwt. on the roof. Saw sixty-four pieces of solder cut out; some weighing four or five pounds, others as little as one pound. Never told the plaintiff's foreman as to the 7lb. lead. It was not usual for architects to talk with foremen. Plaintiff offered to do it for 4s. per cwt., but he ultimately took it at 6s. At Christmas, 1854, the plaintiff brought in his bill, and witness said, "You'll never get the money, as the rector can't pay." Later saw the roof: there was nothing like 92 cwt. Had only received 33l. from Mr. Barrow to pay the bill. Mr. Shenton, architect, said he had measured the lead, and there were 1375 superficial feet, exclusive of "flashings." Had examined the lead, and 6s. would be a fair price. Judgment for 3l. odd.

SEVERAL-BLADED AXE FOR STONE-DRESSING.—Sir: In the *Builder* for April 16, a description is given of a several-bladed axe for stone-dressing, said to be invented by Mr. James N. Douglas. Allow me to observe that the tool in question is an American invention, the patent for which expired nearly twenty years ago; and it has been in constant use in Scotland for granite-dressing for the last fifteen years, and for very fine dressing, we use them with six and eight blades.—W. K.

DRINKING-FOUNTAINS AT HAMPESTEAD.—A drinking-fountain has been completed at the corner of Henth-street and Hollybush-hill, Hampstead. The basin, which is backed by a slab and surmounted by an entablature, is carved out of one piece of red granite, and polished,—the whole being let into the wall of the police-station of the S division. The water issues from a lion's head in bronze, and a galvanized iron ladle is attached to it by a chain. This fountain is the first of six to be erected about Hampstead. They are to be provided by subscription.

PRESENTATION TO THE BATH CITY SURVEYOR.—The Bath City Act Committee having resolved that the whole of the pitching and paving of the city should be let to a contractor, it was found necessary to discharge the masons hitherto employed by the Board of Health. A deputation from their body afterwards waited upon Mr. Parfitt, the City Surveyor, and presented him with a silver salver, on which was written the following inscription:—"Presented by the masons and workmen to George John Parfitt, esq. City Surveyor, their late master, as a token of their respect and esteem. April 18, 1859."

SURREY ARCHEOLOGICAL SOCIETY.—A general meeting of this society was held on the 20th April at Kennington. Mr. W. Roupeil, M.P., occupied the chair. Mr. W. H. Hart read a paper on the Manor and Royal Residence of Kennington, and said the Horns Tavern was built on the site of one of the royal palaces of times gone by. Mr. W. H. Black produced some notes of the history of the parishes of Battersea and Penze, tending to show that they were originally inhabited by, and derived their names from, the ancient Britons. M. J. W. Flower then produced a diary of Archbishop Laud, which he said related to the trial of the archbishop.

LIVERPOOL ARCHITECTURAL SOCIETY.—At the meeting of this society on Wednesday last, Mr. H. P. Horner in the chair, Mr. Chantrell exhibited the model of a furnace for reburning animal charcoal; the peculiarity of which was that brick chambers had been introduced, by which a great saving in fuel was effected; it would also, he said, be a very cheap way of producing peat charcoal for sanitary purposes. Mr. Chantrell also exhibited photographs of different seeds which he had collected on a visit to Brussels. Mr. Goodall exhibited, on behalf of Mr. Forrest, two specimens of plated glass, to show the advantage of coloured glass. Mr. Horner then treated the chair, and read the paper for the evening, entitled "Brief Notes on Architecture as a Fine Art." At the close a vote of thanks was passed to Mr. Horner for his able paper.

A SIXTH ORDER OF ARCHITECTURE IN LEEDS.—Sir: Have you seen the wondrous effect of skill exhibited in the new entrance to that station, except "central," in Leeds? I speak especially of the two columns, of hitherto unknown proportions and details, which support (ah, laborious task!) that delightfully-elaborate pediment with the gorgeously brilliant tympanum! For the information of such as have not yet had the gratification of personal inspection, let me say that the chief peculiarities of the new order are:—a very swiftness of entasis, and a very deep capital (the mouldings of which might, by persons of very lively imaginations, be supposed to bear some remote resemblance to the once admired, but now, alas! useless Roman Doric); also, the entire absence of any abacus (in the general reception of the term). The base is a sort of attenuated Attic, and the *tout ensemble* is of the most fascinating and most noble description.

RANDOM RODERICK.

TENDERS.

For erecting two shops and dwelling-houses at Great Crosby, near Liverpool, for Mr. John Pester. Mr. T. Mercer, architect. Quantities supplied:—

G. Rome, Liverpool	£1,541 0 0
J. Birch, Seaforth	1,381 0 0
J. Wainwright, Liverpool	1,330 0 0
J. Sawyer, Waterloo	1,300 0 0
Jump and Son, Bootle	1,255 0 0
J. Vevers, Great Crosby	1,236 0 0
Reduced Tenders:—	
J. Wainwright	1,155 0 0
J. Vevers (accepted)	1,150 0 0

The Builder.

VOL. XVII.—No. 848.

Dover Harbour of Refuge.



HARBOURS of Refuge for a maritime nation are so obviously necessary as to need no advocacy.

The only questions are when, where, and how? That England has singularly neglected the supply of this important want is certain. When it is said that property to the extent of a million and a half of money is lost every year in our waters, and that nearly 800 seamen are annually drowned in the same locality, the greatness of the want and the singularity of its existence are made even more evident. It was, perhaps, to be expected, after the drain upon the country's resources

caused by the long war in which England had been engaged at the beginning of the present century, that people would think rather of enjoying the blessings of peace than of making preparations, either offensive or defensive, for contest to come. But as time

went on, and different political questions of greater or lesser importance arose between the cabinets of this country and those on the Continent, it became evident that, if England would maintain her position and authority, her naval superiority must at any rate be unquestioned.

Napoleon only asked to be master of the British Channel for twelve hours, when he was awaiting the success of his manoeuvres to entice the British vessels of war from the Channel, and make a descent on our shores at the head of 165,000 men; and, if the aid of steam had been at his command for the transport of his troops, he would have asked for even a shorter time than he then named.

The necessity of being ready for all emergencies, and the admitted fact, that nothing so well prevents attack as being well prepared for defence, has constantly directed the attention of our statesmen to the state of the navy as our chief safeguard, and also, as inseparably connected with it, the question of providing stations for it, that the fleet might be at hand when, and where, required.

It was in 1840, that the first Royal commission on the subject of Harbours of Refuge was issued, appointing Rear-admiral James A. Gordon, chairman; and Captain Alexander Vidal, Lieut.-col. Robert Thompson, R.E.; Richard Drew, Elder Brother, Trinity House; James Walker, and W. Cubitt, civil engineers, to inquire into the subject.

This commission unanimously recommended Dover as the best site for a Harbour of Refuge.

The following extracts from their report show the grounds on which their conclusions were based, and they presented with their report an outline plan, which they recommended should be followed:—

"The situation which appears to us to be of the greatest importance, and at the same time offers the most eligible position for a deep-water harbour, is Dover Bay.

Looking at the locality as nearly equidistant from the South Foreland on the east, and the harbours and anchorages within the Isle of Wight on the west, and to its relative position with many harbours on the opposite shore, also to its proximity to the elevated promontory of Beechy Head,—we think, it offers important advantages, both as an asylum harbour and station for armed steam-vessels.

We consider that railways along the coast, on each side of Dover, may be made extremely useful

in sending support in the shortest possible time to any point where the presence of troops may be required."

Nothing definite arose from this report, but soon a complaint was heard that nothing was being done, and it was deemed advisable that the subject should be further investigated: a second Royal commission was therefore issued, composed of Admiral Sir Thos. Byam Martin, Lieut.-gen. Sir Howard Douglas, Rear-admiral Deans Dundas, Capt. Sir Wm. Symonds, Capt. Washington, Lieut.-col. Colquhoun, Lieut.-col. Alderson, Sir J. H. Pelly, Capt. Fisher, and Mr. James Walker, president of the Institution of Civil Engineers.

This commission went still further into the subject, both as to the want of any Harbours of Refuge, their site, and the principles of construction to be followed.

With the exception of Sir Wm. Symonds, who differed from his colleagues only on the question of the superiority of one site over that of another proposed in the same neighbourhood, their report was signed unanimously, and the following extracts from it give the ground for their conclusions:—

"As the advanced post of England on the south-east coast, the want of a harbour here of sufficient capacity for the reception of vessels of war, and for the convenience and reception of trading vessels, has attracted the notice of sovereigns and ministers from the earliest times, and has led to a large expenditure of money for the improvement of the present tidal harbour.

There are few places that in this respect [eligible position] possess greater advantages than Dover.

Mr. Pitt, when Lord Warden of the Cinque Ports, was earnestly intent on having Dover Bay enclosed.

With respect to the quality of the anchoring ground, her Majesty's steam-vessel, the *Blazer*, of 500 tons, and 150 horse power, was ordered there to test its tenacity to the utmost. The nature of the experiments, and the satisfactory result, will be seen in Captain Washington's report in the Appendix.

Dover, situated at a distance of only four miles and a half from the Goodwin Sands, and standing out favourably to protect the navigation of the seas, is naturally the situation for a squadron of ships of war. Its value in a military point of view is undoubted; but the construction of a Harbour of Refuge there is, in our opinion, indispensable, to give to Dover that efficiency as a naval station which is necessary in order to provide for the security of this part of the coast and the protection of trade. Entertaining, as we do, the strong opinion we have expressed of the necessity of providing without delay a sheltered anchorage in Dover Bay, we venture to urge upon your lordships' attention the advantage of immediately beginning the work.

If only one work is to be undertaken at a time, we give the preference to Dover, next to Portland.

Without any except tidal harbours along the whole coast between Portsmouth and the Thames, and none accessible to large steamers, there is now an imperative necessity for supplying, by artificial means, the want of harbours throughout the narrow part of the Channel."

With the exception that the second commission recommended rather a larger plan for a Harbour of Refuge in the bay at Dover than the first commission did, the general recommendations of the two commissions were the same, and the opinions expressed in Parliament at the time were in favour of their being at once proceeded with.

After a second meeting and report of the commission in 1847, to consider the general principles to be followed in the construction of the work, the Lords of the Admiralty gave them in charge to Messrs. Walker and Burges (now Messrs. Walker, Burges, and Cooper), engineers, who had been engaged in a large number of important hydraulic works in the kingdom, and the first of whom was president of the Institution of Civil Engineers.

Accordingly, in October 1847, a commencement was made of the pier, which has now stretched itself far into the deep water of the Channel, and though the progress up to the present time has not been such as to justify the expectation of the works being completed as a Harbour of Refuge in any reasonable time, and a strong opinion is entertained by

some, that the mode of construction should even now be changed, with a view to expedition and the reduction of cost; still the advantages that have been already gained, and which are no part of the Harbour of Refuge scheme, are thought to show, that if at any future time it should become necessary to station a fleet in the Channel, the advantages that will be derived from such a work will be immense.

It must also be remembered that invaluable as the Downs are as an anchorage in ordinary weather, no shelter is found there for large vessels, such as would use the proposed harbour, with a strong wind from the south-west, which is the prevailing wind in the Channel, and which blows with great violence, and with a very heavy sea, during the winter months. The Downs, therefore, cannot be relied on as a safe anchorage at the time most needed by large ships, such as ships of war.

The great object sought in the construction of the works at Dover, was a station in time of war for a Channel fleet, from which no storm could drive them, and where they might be at hand whenever their services might be needed; thus obviating the necessity of periodically returning to the nearest dockyards (Chatham or Portsmouth), for fuel and supplies of different kinds;—which would practically be offering eligible opportunities for annoyance or attack from small vessels of war, such as could issue from the ports on the opposite side of the Channel. The feasibility of this will readily be understood when it is stated that, during the French war, even sailing vessels used to sail out on such occasions as these, and, in the sight of people now inhabitants of Dover, capture merchant vessels off the very mouth of the harbour.

What might not have been done in this way with the agency of steam?

Lines of railway from the dockyards of Chatham and Portsmouth, and the camps of Aldershot and Shorncliffe, are already in existence, close up to the pier; and it is proposed to continue these lines down the pier to the jetties, by which means the landing and embarking of troops, horses, baggage, or naval stores, would be effected with ease.

The depth of water allows troop-ships of great draught of water to come alongside at all times of tide; and the outer landing jetties, which will shortly be in hand, have 42 feet depth of water at low water of spring-tides, sufficient for the largest ships of the line at the lowest tides.

Only a few days since the *Melbourne* troop-ship came alongside the pier, and landed 600 men of the 58th regiment, from Waterford, in 15 minutes. The horses and baggage, the latter to the amount of forty tons, were put upon trucks on the line of railway alongside the jetties, as fast as raised from the ship's hold, and arrived with the troops at the camp at Shorncliffe.

Again. The certainty with which the Continental, Indian, and Australian mails are both received and despatched from the pier, is no small advantage. Who that was exposed to it does not remember the inconvenience of being put into a small open boat, on, perhaps a rough and dark night, if business or pleasure led them to cross the Channel? Or what commercial men do not remember the annoying and often-recurring notice in the papers, "That in consequence of the rough weather in the Channel, the Paris and foreign mails did not arrive at the usual time?" But since the pier has been extended, and with the aid of a good and efficient packet service, the mails are transmitted with the regularity of the inland post; and passengers crossing to and from the Continent can do it with certainty and ease.

The Indian and Australian mails transmitted weekly, and of a bulk sufficient to swamp the boats, that a few years since would have been used for the shipping of them from the shore, now find facilities at Dover by which the public are great gainers; and Dover harbour no longer presents a bank of shingle to bar its entrance to vessels, just at the time when they most need the accommodation it affords within.

The opinion expressed by the Royal Commissioners in favour of upright walls, founded

partly on the scientific evidence it had taken, and partly on the want of suitable stone in the district, was acted on; and accordingly, the engineers' designs were completed on that plan.

At starting there was a double object in view, which will account for the alterations in the mode of proceeding which have since been adopted; and it was thought most desirable, that while a commencement of the Harbour of Refuge was being made, a pier should at the same time be constructed, which should offer to the public at the earliest period the facilities for embarking and landing, which such a work should afford.

Accordingly, a timber structure of a much more solid character than that which now does the duty of a temporary staging for the purposes of the work, was erected in the first instance: this was to be extended as far as the landing jetties, and to serve the double purpose of a temporary stage for the construction of the work, and an approach to the jetties. Some modifications were made in this as in the progress of the work were thought desirable, and eventually the present system of staging was adopted on the principle of gaining the greatest amount of stability for itself, by offering as small an opposing surface as possible to the heavy seas that roll through it during storms. To effect this round timber is employed for the piles, from 90 feet and 100 feet in length, and of a size not to be obtained unless imported for the purpose. The superstructure is timber, strongly trussed with iron, in order to gain strength without corresponding surface; and 100 fathoms of mooring chain to each pile, maintain the staging in its position.

The outer pile of the staging is always so marked, that during heavy gales the vertical rise and fall of the waves may be observed from the shore, and perhaps there are few places more favourable for observations of this sort than on these works. The pile stands in 62 feet of water at high-water, and well in advance of any masonry that could affect the height of the wave, while the mean level of the sea is readily obtained from the gauges inside the harbour.

In the October gale of the year 1857, wrought-iron stay bars of 2 inches in diameter were broken at 12 feet above the level of high water, and the waves were observed to reach as high as 16 feet above the same level: thus giving a vertical rise and fall of 32 feet.

It was a great object with the engineers to employ whatever materials the district would afford in the construction of the works, but unfortunately the chalk is not of the hard quality there that it is on other parts of the coast, and the Kentish rag-stone, we are told, cannot be obtained sufficiently large to be used with advantage. Of shingle it was considered by some that there was not only enough, but that its quantity was so great that it would eventually be the cause of great shoaling inside the harbour, by gathering seawards until it reached the entrance by which it would enter. It is sufficient here to state, that so far from that being the case, the supply of shingle from the westward has not of late years proved equal to the quantity required on the works, and that a large establishment for making concrete blocks, has been formed west of Dungeness, whence they are brought by barge to Dover.

The system of construction is illustrated by the accompanying engraving,* and may be shortly described as follows.

The bottom having been levelled, and all loose materials excavated by the diving-bells, the foundation course is accurately set by the divers, after which the granite facing and backing of concrete blocks of the courses above are placed, tier upon tier, until the work is brought up to low-water level (marked by the water, in the engraving), a height of about 45 feet, from which level the work is raised in the ordinary way.†

The accuracy of the work thus done by the divers is such that, without the usual assistance derived from mortar or cement in rectifying errors in level, the extreme difference of level in the 45 feet in height of under-water work, from end to end of a year's work, seldom exceeds 1 inch, and this of course is easily rectified when the work appears above water. The granite facing, as far as possible, is composed of stones of 8 tons and upwards, and the concrete blocks are also made to average about the same weight, it being desirable on all grounds to have the material as large as possible. These weights, too, are such as are most easily handled by the bells, and are as large as the quarries will produce in the quantities required.

The diving-bells, shown in the engraving, are of cast-iron, and weigh between 4 and 5 tons each, their dimensions being 6 feet by 4 feet 6 in. and 5 feet high. Signals are made by a wire working through a small stuffing box in the crown of the bell, or by tapping the sides of the bell with a hammer, the sound being readily conducted to the surface, and intelligible to the men above, even in the greatest depth of water. A steam-engine pumps air into the bells through pipes which run along the centre of the staging, between which and the bells double leather, or leather and india-rubber hose, conduct the air to the divers. Considerable assistance is also derived from the diving-helmet for setting the work under water, but this part of the English coast is not the most favourable for their operations.

Directly the chalk which bounds the shores in this neighbourhood is washed by the waves, the water in the neighbourhood becomes obscured, and the divers find themselves in total darkness. Their services are therefore more of an auxiliary nature,—most useful during the fine weather of the summer months, but not always to be depended on in the winter time.

The concrete blocks are made of shingle, sand, and Portland cement, worked together in steam cylinders, which, by a peculiar rotatory motion and a fixed number of revolutions, ensure the proper mixture of the materials. The concrete is then shot out into moulds, previously fixed to the form required, and left to harden two or three days; after which the frames are removed, and the blocks lifted and stacked away, to undergo the further hardening necessary before they are allowed to go under water. Above high-water level, concrete, poured in (not in blocks), is used for the interior of the pier.

The length founded at this date is 1,250 feet; the superstructure is completed of 1,050 feet. The width of the pier at the base is 84 feet; at the quay level, 45 feet. The area enclosed will be 320 acres, with upwards of 4 fathoms in depth at low water. Messrs. Lee, as we mentioned last week, are the contractors, and Mr. Edward Druce, is the resident engineer.

The progress of the work has hitherto been regulated by the Parliamentary grant, which has never exceeded 34,000*l.* per annum; but it is urged that a much greater amount of work could, and ought to be, done; and it is evident that if the work is to be of use to those now living, it must be proceeded with at a more rapid rate. Either the work is being done on the best principle, or it is not. If there be reasonable doubt on the question, fresh propositions and inventions having been made since the commissioners reported, steps should be immediately taken to set that doubt at rest. If there be not, money should be granted to a sufficient amount, and the works should be forced on with the greatest energy. A proper harbour here in time of peace will, it is quite evident, be of immense advantage; and if, unfortunately, war should threaten our shores, there will be, where most wanted, a safe refuge for our fleets, the mere existence of which will prevent any dispute as to who is to be master in the Channel. We must do without it at present if the ambition, malignity, or madness of individuals, who are permitted to hold in their hands the lives and fortunes of their fellow-creatures, should bring this mighty evil upon us at once. Nevertheless, let England

be but just to herself, and she need fear no foreign enemies. Hearts of oak are our ships (to say nothing of iron); hearts of oak are our men; we have thrashed them before, and we'll thrash them again, if the sad necessity arise. Heaven avert it!

THE ROYAL ACADEMY.

THE first idea of the establishment of an academy for the study of the fine arts in England seems to have been thrown out in the reign of Charles I. when, according to Sir Horace Walpole, an academical institution was founded by the king under the title of *Museum Minerva*. None below the rank of those who could prove themselves gentlemen were to be admitted to education there, where they were to be instructed in arts and sciences, foreign languages, mathematics, painting, architecture, riding, fortification, antiquities, and the science of medals. Professors were appointed, and Sir Francis Kingston, in whose house in Covent-garden the academy was held, was named regent. There is an account of the design of this academy, with its rules, &c. published in 1636, but it fell to the ground when the king got into trouble.

From that date until the middle of the last century nothing could exceed the apathy of this country in matters of art. Sir Godfrey Kneller suggested the advantages which would be likely to accrue from the establishment of a national institution for the promotion of the arts, and, although immediate results did not arise from this suggestion, it may be said to have mainly contributed to the advancement of the proposed academy; for Sir Godfrey promoted meetings amongst artists, who resolved upon establishing an academy at their private expense. It was held in his own house, in Great Queen-street, Lincoln's-inn-fields, and they placed him at its head. This was founded in the year 1711, and there the indefatigable George Virtue studied the human figure.

Sir James Thornhill had long been zealous in his endeavours to promote a similar institution for the cultivation of the fine arts, and had drawn out a plan for a Royal Academy, with an estimate for the building, with apartments for the professors; and suggested the site for its erection, at the upper end of the King's Mews, Charing-cross. This estimate he delivered to Lord Halifax, who, it appears, was inclined to promote the plan; but although the sum required did not amount to more than 3,000*l.* the scheme failed.

Sir Godfrey Kneller died in 1723, when it appears a schism arose among the members of his academy; so that in 1724 they separated: one party established a separate academy in a building that had been used as a sectarian meeting-house; the other party followed Sir James Thornhill, who built a large room behind his house, near Covent Garden theatre, procured a collection of casts from the antique, and opened it as an academy—which continued until his death in 1734. The other institution was of short duration.

On the death of Sir James Thornhill, this academy was discontinued, and the members separated; but another society was soon established, composed chiefly of foreigners, which held its meetings in the house of Mr. Hyde, a painter, residing in Greyhound-court, Arundel-street, in the Strand. They procured living models to study from, and appointed Mr. Moser to the office of principal conductor: here the numbers increased, and it became necessary to remove to St. Martin's-lane; and this led to that academy in which many celebrated painters, sculptors, and engravers, enrolled themselves.

On the death of Sir James Thornhill, the casts from the antique, some of which were very fine,—that had been used in his academy, devolved to Hogarth, who had married the daughter of Sir James. These Hogarth generously lent to the society in St. Martin's-lane. This society was the precursor of the present Royal Academy, which was incorporated in 1768. The first exhibition in Somerset House took place in 1780, and consisted of 136 pictures.

Besides those connected with the Academy, the number of artists was small. There were two or three giants in command, but the rank and file were few. Instead of one annual collection of works of art, "the Exhibition," as it was called, we have now eight; and in lieu of a band of artists, we have an army.

The present collection in the rooms of the Royal Academy consists of 1,181 pictures and drawings, including architectural subjects, 19 engravings, and 152 models and pieces of sculpture, contributed by about 550 artists.

* See p. 313. For view of the proposed Harbour, see p. 317.

† Some valuable information touching the use of concrete, and the relative cost of blocks or that material and brickwork, will be found in the Report on the Harbour, published in 1817, and a extract of which was given in our Vol. V. p. 441.

The works of art now exhibiting in the metropolis alone, the production of the year, amount to the number of 4,773. The money spent annually in the purchase of such works by the public is to be reckoned in thousands of pounds; and, with a body of unquestionable facts before us, we have no hesitation in pointing to the operations of the Art-Union of London as a chief cause of the existing desire to possess works of art and the spread of a capacity for enjoying them,—an Institution which the Royal Academy at its annual dinner thinks fit to ignore. Nor is the Academy alone in this; for, with the worthy exception of the directors of "the Artists' Fund" (Sir John Swinburne's Society), at whose annual dinner the prosperity of the Art-Union has for years been a prominent toast, we are not aware of its proper recognition at any annual artistic public gathering. Those who write the history of the progress of art in Great Britain hereafter will have something to say on the subject, or they will not execute their task correctly. However, let that pass just now; and let us glance at the present collection of pictures in Trafalgar-square, where, by the way,—thanks, probably, to the elections and the coming war,—the sales are at present few. The majority of the best pictures, however, are commissions, and therefore not for sale.

The finest picture in the Exhibition,—one of the finest pictures ever painted in this country,—comes early to hand. We mean 15, "The Vale of Rest," by J. E. Millais, associate. Two nuns dig a grave for a companion in the deserted burial-ground of the convent. The younger is at work in the grave, the action well expressed, the mould turned out, the grass around, are perfect marvels of imitative painting: the elder sitting near, her hands on her knee, looks on and out of the picture: she has buried her hopes long ago, and is careless of what may be buried next. There is a touch of the fanatic, too, in the countenance, and though nine out of ten call it ugly, and half that number show that it is out of drawing, it fixes itself in the mind, and is not soon forgotten. The background, a hedge of cypress-trees against the clear evening sky, is wonderfully painted, and full of beauty. A leading critic says, "no more impressive or powerful landscape has been seen since the days of Giorgione." Giorgione (the beautiful Giorgio) could, perhaps, have painted an equally impressive landscape, but that he ever did so, we really do not remember any existing example to prove. The hard lilac cloud might be improved; but we take the picture all in all, and point to it as the great work of the year. For the same painter's second picture, "Spring," 298, though a remarkable work, we have less admiration. Mr. Herbert's "Mary Magdalen with Spices approaching the Tomb of our Lord," 165, is another superlatively great work to be mentioned out of its order; and if we were called upon to name the next most noticeable half-dozen pictures, we should point, without "placing" them, to 105, "The Poet to his Wife," by D. Maciste; 174, "The Good Shepherd," by W. Dyce (better had it been under another title); 193, "Cordelia receives intelligence how her father had been ill-treated," by C. W. Cope; 305, "The Chess-Players," by W. Gale; 400, "Home Again," by H. O'Neill; 456, "Silent Pleading," by M. Stone; and 557, "Not Guilty," by A. Solomon, the companion picture to "Waiting for the Verdict," both the property of Mr. Lucas, the contractor. It would not be difficult to find fault with each of these pictures; but we must balance qualities. O'Neill's picture, though not so likely to attract attention as his "Eastward Ho" seems to us superior as a work of art. It was an error to paint the same side of the vessel as in the first picture, since the resemblance is thus too great. Mr. Frith, busy on his great picture, from the story of Claude Du Val, the highwayman, sends but one contribution, a portrait of Mr. Dickens, 210, very like, but coarse and a trifle vulgar. There is a little mystification about the legs of the chair, too, which should be set right.

Mr. E. M. Ward is in force again, and sends four works: the most interesting of them is (125), "Marie Antoinette listening to the Act of Accusation." Mr. E. W. Cooke, industrious, tasteful, and painstaking as ever, has three pictures, the largest, with a sea somewhat over chalky, is "A Dutch Peon running for the Port of Harlingen," is driven in a heavy Squall outside the South Pier Head" (388).

Mr. Cropsey, the American painter, has sent three pictures, which have been but ill-treated by the hangers. The largest and most important, 524, "Pasture," is very poetically treated, and solidly painted. It shows the great Doric

temple, the precursor of the glories of the Athenian Acropolis, suffused in the light of the setting sun.

Sir Edwin Landseer, with four pictures, is not strong. His principal contribution, 175, is a wide waste of water (and, with all respect, of canvas also), with a swimming stag, and dog in pursuit. His 426, called "A Kind Star," showing a celestial attendant on a dying animal, which two people out of three would name wrongly, is wild in the extreme. Mr. Leslie, too, is very weak. Mr. Mulready has but one indifferent picture, 167, "Just as the Twig is bent, the Tree is inclined." Mr. F. R. Pickersgill, also, is less satisfactory than usual. With great appreciation of beauty, he has not given life on the present occasion to the figures he has portrayed, and they fail to touch the sympathies. Stanfield has some charming "Stanfields," and that is praise enough. The chief is, 237, "A Maltese Xebec on the Rocks," a tug rendering assistance, the castle of Ischia in the distance. You may think you have seen the picture before, but you have not. F. Goodall has a large painting, 329, showing "Felice Ballarin reciting Tasso to the People of Chioggia;" but, like a large proportion of those in the collection, it does not touch us, and we pass on. We are forced to say the same of Mr. Egg's "Night before Naseby," 40, a brown picture, showing Cromwell praying in his tent, the cold moon shining at the back. Instead, however, of looking for the works of those whose names are best known, and not always finding what can be admired, let us begin at the beginning, and name a few of the pictures which please us most. 32, "Pavonia," by F. Leighton, is one of the most powerful heads this artist has painted, and would engrave well. 55 is a charming head, by Sant, where you,—

"Seem to see
Thought folded over thought."

63, "A Hafl," by J. Phillip, is an admirable piece of painting, fully sustaining the reputation the artist has acquired by previous works. His portrait of Mr. Egg is very like. (70) "The Coast of Cornwall, near the Land's End," by F. R. Lee, is a more interesting picture than his larger work, "The Bay of Biscay," 511, consisting of two large waves and a stormy sky, neither agreeable nor truthful. 173, "England and Italy," painted in the Val d'Orno, by J. B. Hay, is a very clever and pleasing picture, the sturdy "obstination" of the Italian boy particularly well expressed. The way in which the name is entered, has misled the critics. Many of our readers will remember works by the same artist, when she was Miss Benham.

Mr. J. Clark maintains his newly-acquired reputation in "The Draught Players," 210—218. "The Emigrant's Last Sight of Home," by R. Redgrave, has a capital landscape, a little too much in the manner of Hook, so far as want of atmosphere goes. Mr. Hook himself has several good specimens of his skill, the best where this his too common fault is avoided is 250, a landscape characterized by the lines, —

"And out again I curve and flow,
To join the brimming river;
For men may come, and men may go,
But I go on for ever."

In 229, "Consolation," by T. Brooks, we have a sympathizing clergyman comforting two sisters: the head of the comforter and of the darker girl are full of feeling. Before leaving this room we would point out for examination, in addition to those already indicated, (14) "Our Village Clock-maker solving a Problem," by J. Campbell, jun.; (61) "A Grey Morning," by H. Moore; (185) "Interior of a Cottage in Brittany," by D. W. Deane; (190) "Barley Harvest on the Welsh Coast," by C. P. Knight; (222) "Milton dictating 'Samson Agonistes,'" by J. C. Horsley (the working of the poet's mind and the sympathy of the wife well expressed); and (271) "The Farewell Sermon," by A. Rankley.

Amongst the portraits (a wide field) there are some remarkable likenesses, for example, Dean Milman, by H. W. Phillips (22); the genial Bishop of Salisbury, by Richmond (23); Sir Edward Belcher, by Pearce (43); Mr. Carpenter, of the British Museum (261), by Mrs. Carpenter; Mr. Turnley, of the Merchant Tailors' Company (364), by J. P. Knight; Dean Trench, of Westminster (510), by G. Richmond. Whilst for elegance, irrespective of likeness, the Countess della Torre, by Buckner (63); Miss Macnoe, by D. Macnoe (245); Thorburn's "Posthumous Portrait" (44); and several others, will find plenty of admirers.

Here, however, we must stop for the present,

first garnishing our notice with some lines sent us by an enthusiastic art-lover:—

SONNET.

WRITTEN AFTER A VISIT TO THE ACADEMY.

PAINTING, thou God-bestow'd! thou mighty Art!
How great thy power to seize the human heart,
And drag it down in homage at thy feet!
We careless gaze: then comes a sudden start—
A hush: our throbbing pulses cease to beat.
At length, a stifling gasp, they throw again,
Each fresh pulsation bringing a fresh pain.
Whence comes this anguish? Whence this inward smart!

'Tis that we read, writ in that mimic life,
The evidence of passions that make strife
In our own hearts. And thence the enchanter's skill
To snatch,—perchance from long forgotten tomb,—
Those memories that crowd the brain, and fill
The eye with tears, the troubled soul with gloom.

THE MANCHESTER ASSIZE-COURTS DESIGNS.

We resume our notice of the exhibition of designs at Manchester. Subject to some exceptions in the plan, important though they be, the design by Mr. John Robinson ("Let Right be done"), which received the third premium, is a work of considerable merit. In determining upon the principles on which his project should be based, the author says he was influenced by the consideration that a public building like that intended, should, with the utmost convenience and compactness of plan, combine a "noble and monumental character;" and that it became evident to him that the styles of the Mediæval period, or any based thereon, would not fulfil the conditions he had laid down, affording, also, opportunity for high-class decoration without extravagant expenditure. Therefore, taking as his type the class of edifices to which belong the halls lately erected at Liverpool and Leeds; and making the plan his first care, he based the design of his exterior on Greek models, though endeavouring "at the same time to attain that originality and elegance in composition which the advanced state of the arts in England now demands in every public building." Whatever the result he has produced, some of the reasons here given, or alluded to, are such as might be repudiated by those who have paid particular attention to the question raised; and Mr. Robinson had no occasion to advance them. His design is sufficiently corroborative of the view of the present value of the classical and columnar architecture, of the field which it offers for original art-manifestation, and of the perfect harmony of its expression with modern ideas and requirements; and the design, moreover, avails itself of associations which, in the case of halls of justice, are at least as decided in one style as in the other. He has grouped the masses of his design, and distributed the plan of his portico, so as to realize an amount of dignity and effect never found in the feeble attempts of architects of the pseudo-Grecian school, thirty or forty years ago, in London as well as Manchester. Especially has he well managed the projections at the ends of the principal front, which have very broad ante at the angles, and intermediate pilasters, with entablature ranging somewhat lower than that of the portico. A defect in the design is the introduction of a second pediment similar in character to that of the portico, in the rear of the latter, and terminating a portion of the edifice built up for effect not quite harmoniously with the actual plan. In some other designs which we may have to name, where a classical manner is followed, the true form on plan, of the great hall or of the courts, appears externally. The plan in Mr. Robinson's design, consists of a central hall, with columns, 106 feet by 70 feet, entered from a vestibule and the hexastyle Corinthian portico, by an ascent of steps. Immediately opposite the entrance, as in Mr. Waterhouse's plan, is a lobby leading to the judges' retiring-rooms. Here, however, resemblance of the two plans may be said to end; for, whilst in both cases the central hall runs north and south (speaking approximately of the direction), the courts in the design we are noticing, are east and west, instead of parallel with the hall, and have one of their entrances, and that the principal one, directly from the hall, instead of the whole of the entrances from corridors. But by the plan of each court, and the position given to the rooms, the "witnesses immediately wanted," attorneys, counsel, and jurors, have all to pass through the portion of the court devoted to the public. The judges' retiring-rooms, however, can be reached by a private way from the lodgings. The latter occupy the north end of the plan, and are entered from a garden space 14 ft between the building and Cotham-street. A corresponding entrance at the end of the building in South Hall—

street, gives ready access for barristers, attorneys, and others. From the central hall, besides the two chief courts, sheriffs' courts (one at each end), the library, the robing-room, the grand jury room, and rooms for witnesses, are directly entered; but the library and robing-room are on the side opposite the courts, whilst the clerk of the crown's office is inconveniently placed upstairs. The corridors extending from the hall to the north and south, are well lighted from open areas, and are in conjunction with the three main staircases. In the plan of the criminal court, the dock is proposed to be placed at one side, as in some other designs, in order that the prisoner may be close to the witness, and both opposite the jury. Mr. E. M. Barry, in adopting this arrangement, speaks of high legal authority as in favour of the change. It would, however, detract somewhat from the impressiveness of the proceedings, and might expose a witness to danger from a vindictive culprit. The Liverpool courts, so often spoken of as defective for hearing, were noticed by us on the occasion of a visit some time back, when the proceedings were watched with regard to the particular question of the prisoner's interest as affected; but the errors at that time in the conduct of justice did not arise from those of the architecture and planning. Looking at the design of the exterior of Mr. Robinson's work, the principal front has a rusticated basement, finished by a continuous ornament of festoons and pateras, above which, in two stories, are windows, filling in the whole of the deeply-recessed space of each interplaster, and grouped together. The ornament and inscription of the frieze, and insignia on other parts of the building, are well placed, and are Roman in origin, though properly allusive to the purpose of the building. The order is finished by a balustrade, the pedestals of which, of large dimensions at the angles, are crowned by terminals of the pine-cone character, with bordering scroll-work. The upper pediment has a group of sculpture at the apex, the line of roof projecting at right angles from the attic wall which crowns the area of plan of the hall. The hall has a semicircular ceiling, with sky-lights in the centre part, between the ribs. The courts have lantern lights. The sections show elaborate ornamentation of the interior, in classical taste, well designed and drawn.

The design (S.W.) by Mr. Walters, would be somewhat similar to the last, described in plan, so far as regards the courts entered directly from a large hall, and the adoption of the judges' lodgings as part of the main building. In the present case these occupy one wing of the front to Great Ducie-street. It is curious that whilst some of the competitors have gladly incorporated the lodgings with the general building, as means of getting greater effect from dimensions, others, as Mr. Waterhouse, have kept them as much as possible detached, apparently with a view to effect from contrast. In Mr. Walters's design the hall, 106 feet long and 45 feet wide, is entered from an arcade of the same length, on steps; the whole building being elevated in appearance by the lower flight of steps and dwarf wall, which edge the inclined roadway as noticed in our last. The style is Italian. The hall shows as a recessed centre between wings, of which the wing to the south contains the sheriff's courts. Portions of wings next the arcade centre, break forward, and are decorated with superimposed orders, and a pediment and sculpture. The general design in the wings consists of a low rusticated basement, with semicircular windows, carrying coupled columns of the Ionic order freely treated—a balustrade and oval-formed terminals to the pedestals. Windows with coupled lights and a centre shaft, are introduced in parts of the front. Columns are attached to the piers of the arcade, and to the front of the hall, which last is lighted by arch-headed windows, and is spanned by a semicircular vault divided internally in the length by bold ribs, rising above salient columns bearing statues—the bays of the ceiling filled in with coffers set diagonally. The roof of the hall, externally, is either too low in pitch, or should have been differently treated, and the decoration of the wall surface with broken entablature does not harmonize with it. The design generally, and in many details, as those of the courts internally, and the recessed centre with arcade for barristers' entrance in South-street, displays taste. The architect expresses a decided opinion as to the unsuitableness of "Roman or Greek temples, or lofty domes of any kind," in the case of so confined a site. The courts are formed in plan, semicircular at the ends, and are restricted to the height of 35 feet, chiefly, it appears, from "a very decided opinion" as to what is required for good hearing.

The design—Gothic ("Prêt d'accomplir")—with alternative design (Italian), by Messrs. Isaac Holden and Son, is like the last, one of the seven selected, and has attracted considerable attention. More elaboration of detail, rather than other requisite in design, seems to us its leading quality. Many of the details, as the finials and the pinnacles on corbels, are much exaggerated; and the external arcade, with small shafts, darkening the windows of the upper story, and the gables placed where there is no projection on plan, are surely questionable, and not quite according with the good principles of Gothic. The spikes and ugly ornament on the roofs in the Italian design equally are objectionable. Parts of the Gothic design, internally, show skill. In the plan an arrangement greatly differing from any that we have described is adopted. There is a central hall, 58 feet by 48 feet, running east and west, and the courts are placed north and south of it, with corridors, to which access is also gained from entrances at the ends of the building. At the end of the hall a grand staircase is shown, and some of the corridors of the upper floor look into the staircase-hall on one side, and into the courts on the other. The effect here, internally, with that of a projecting gallery, lantern stage, and bracketed ribs, is the best part of the design. Externally there is merit in grouping, and in the oriels in the wings; but the roofs are too obviously for mere effect.

The half-dozen designs, or modifications of designs, Grecian and Italian (S. P. Q. R.), by Mr. Leigh Hall, must have been singled out on the principle of appeal to the committee, *ad misericordiam*, for we can find no ground of merit for the preference. In plan, in decorative design, and in drawing, defects equally exist. The author prefers to leave the northern ground in Great Ducie-street unoccupied, by which he encounters difficulties of the South Hall-street incline peculiarly awkward for his Grecian Doric. He utterly sacrifices whatever of value there is in his models, by placing the columns on pedestals, uses porticos where there could be no way into them, and so as to darken windows; and, in short, repeats the mistakes which brought the classical architecture into contempt, because it fell into the hands of those who lacked knowledge of first principles in all architecture. The plans seem to have been arranged in every possible way that could be thought of, specially to create confusion.

There is more knowledge of the requisites of good planning in the seventh design ("Experience"), by Mr. John Johnstone, of Newcastle-on-Tyne; though the sort of Gothic exhibited ought to have prevented the preference given to the design. The principle of the plan is somewhat the same as that of Mr. Waterhouse's design. In some respects, defects by intersection of streams tending to the courts appear greater: on the other hand, it is noticeable that the galleries for the public have their separate entrances from the street.

In Mr. C. G. Searle's design ("Secundum Artem"), there is an arrangement of the plan which may be worth mentioning. The courts are at right angles to one another, and each has a separate entrance from one of the main streets. The decorative character of the design may be best understood from the author's statement, that "after much consideration, he has determined to adopt the national style of architecture, as it flourished in this country in the early part of the fourteenth century;" and that in his decision he has been influenced by the adjudication in favour of the style for the public offices. The sheriff's courts surmounted by a high clock-tower, are proposed to be placed at the angle. Parts of the decorative design are well managed, as one of the towers; but the whole is too conventional or ecclesiastical, and the portion of the building at the angle resembles a church.

Mr. J. T. Knowles's work ("For he beareth not the sword in vain"), is incomprehensible as a design from his hand, so bald and ugly is it in what is hardly to be called the decorative part; and so defective in some parts of the plan. On looking further, however, the internal arrangement and decoration are found to possess features deserving of notice. Having accomplished safely the ascent of twenty steps in unbroken flight, we enter in the centre of the front in South Hall-street, to a hall or promenade 20 feet in width, and extending for 130 feet of the length of the front. Opposite the entrance, at right angles with the promenade first mentioned, is a hall 82 feet by 30 feet, with columns; and the courts are on each side this last, with a judge's consulting-room at the end, intermediate. The courts are designed to have hollow-domed ceilings, for acoustic effect—draperies being spoken of, as preventive of reverberation. The author puts the cost of his design,

and of such buildings as the Leeds Town-hall, at 5d. per foot cube. Certain other competitors have estimated the amount at 6d. He has an alternative design of mediæval character, and which is more attractive: it has pointed arches springing from square piers, and windows of geometrical tracery.

Mr. J. M. H. Hahn's design ("Utilitas"), of Italian character, is one of those with a recessed centre, and an arcade,—here of eleven arches, on steps. The plan has a central hall, east and west, with the courts on each side; and the roofs of these, curved in outline, appear externally, and are finished with iron railing. The wings, as to the basement, have not been sufficiently considered. The arcade has an attached order continuous of the main order of the building, which, as in most of the designs proposing to place the front to Great Ducie-street, is, with the principal floor, considerably above the street level. Terminals to the pedestals over the coupled columns should not have been of the same dimensions as those of the single columns; that is to say, statues if used should have been in pairs like the columns. The roofs are grouped on the right principle; yet there is harmony wanting between them and the body of the building, which there is not wanting in the true French Italian. The judges would be lodged in a separate building, inferior in character of design, at the north, and would have a private entrance to the courts.—The design marked S. P. G. which essays the Gothic character, adopts the arrangement of the central hall in the form **L**, with corridor and gallery, and places the courts in the internal angles of the figure, but otherwise does not call for notice.

The next group of drawings is not inferior in ability to any in the collection. They are by Messrs. Kendall and Mew, and are marked "Fiat Justitia," with an elaborate device on the margin of each drawing. There are two designs, "eclectic Gothic," so called, and Grecian, to the same plan, with slight modifications, the chief of which is the position of the judges' lodgings. The ground fronting South Hall-street is proposed to be built upon; and, in the Gothic design, the lodgings are planned as a detached building (but connected by a wall and gateway and a court-yard), at the west end, fronting in the same direction; whilst in the other case the ground which they would have occupied is given up to an extension of the *soubassement* and terrace, and the lodgings are then placed fronting Great Ducie-street, in line with the end of the main building; which position, since they are at the Great Ducie-street level, would be out of the question; for, the view to the south, from the windows, would be hemmed in, at the distance of a few feet, by blank wall. Both designs, however, have merit of a high order; and we recognize this in spite of an error which may render the whole of what in the drawings appears so admirable in grouping, only "the baseless fabric" of a vision. The perspective views in both designs show what seems excellent management of the masses,—parts of the front in the upper level being recessed, and the courts and the central portion of the hall being carried up and surmounted with their own roofs; whilst in the Grecian design, the rusticated basement and the wide double terrace-stage give the dignity of character which we have ourselves often asked for through similar contrivance, but seldom are able to find. But, when it is noticed that the horizontal line in the drawings is placed as though the buildings would be seen from an eminence, half the merit of the treatment is dissolved; and we find in the Gothic design that a circular window to the courts would be half of it concealed; and in the Grecian design, that the whole of the structure above the general cornice level would be ruined, and that the accessories of the basement would be obstructions, and not sources of effect. The arrangement of the plan as regards the hall or promenades, and the courts, is somewhat similar to that which we have described with the aid of the figure **L**; but the entrances for the public to the courts, right and left from the upright portion of the figure, are in recesses; and, besides the main entrance (from external staircases), there are entrances at the ends of the plan, on the lower level, with internal staircases to the principal floor. The three entrances give access to the corridor or promenade parallel with the front of the building, about 18 feet in width, with a total length of about 150 feet, the body of the hall at right angles being about 45 feet by 28 feet. The barristers' room is at the end of the hall opposite the entrance, and over it is a conference-room for the judges, reached by private stairs. The principle of the plan allows of the desired separation of the witnesses' entrances to the courts, from the entrances for the public.

Each court, 51 feet square, is lighted on three sides; and has a gallery attached, over the recess of the hall and public entrance. Externally, the walls of the courts are carried up with gables and the rose windows before alluded to, and are covered with high-pitched louvered roofs; that is to say, in the Gothic design. The centre division in length, of the hall, square on plan, is carried up to a greater height, as a tower, with corbel stage, battlements, and slate-covered tabernacles or pinnacles, and a lofty roof, capped by a clock and bell-turret. In the same design the staircase pavilions also are covered with high-pitched roofs, truncated, and the raking line of the stairs is marked by the positions of the windows. The end of the hall terminates in the main front with a lofty gable, with broad piers at the angles, carrying tabernacles or square pinnacles, somewhat similar to those of the tower. Groups of chimneys, and the lanterns, add to the variety and effect of the sky-line, and to that produced by the recesses and projections. There is a certain squareness and massiveness in all the main forms, combined with some exaggeration in the details; but at the same time there is character as well as union throughout. In the Greek design, there is one entrance under a portico of four Corinthian columns, widely placed between square piers or ante, and there are porticos in the wings, *in antis*, their intercolumns filled in with portions of the building one story in height—an arrangement suggested, no doubt, by that in St. George's Hall, Liverpool, and which is to be seen in many of the designs. The other parts of the design are treated as simple masses with ante, and with fret-work cleverly introduced in the friezes; but at the Great Ducie-street, and there are four columns *in antis*; whilst there, the terrace extends beyond the building in a sweeping curve as before alluded to, and has a wide ascent of steps; and on that part of the terrace a monumental structure with statue is placed. The upper portions and middle of the hall are carried up as clerestories with windows and ante and low-pitched roofs. In both these designs we say, notwithstanding the mistake and the falseness of the representation, there is manifested a perception of the true qualities of art in architecture, which is unusual and most refreshing. Designs of this class go far to prove that the superiority of one design over another, does not arise from any advantage of style. The true artist recognizing the necessity of invention, and of attention to all modern requirements, may take either style as basis; and the real question, as we have always said, is, in which will the *art* be most readily and fully appreciated by the public.

In the design marked "Sigma," a hall 190 feet long and 80 feet wide, or larger than St. George's Hall, Liverpool, with "some what the form of the Ancient Hall of Justice or Basilica," is shown; and this decoratively is the best part of the design. Externally the effect is less satisfactory: there is too much of mere blank walling-in to the intercolumns. There is a portico of superimposed columns, octo style.

Messrs. Green and De Ville's design ("Ars probat Artificem"), Greco-Palladian in character, with octo-style Roman Doric portico, quadrant corners, with columns and entrances thence to staircases, and domes, one on each side the portico, to the courts, is better decoratively than in the planning. For, seemingly under some mistake as to the ground and levels, the mere frontage next Great Ducie-street is utilized; and the courts are placed upstairs. The staircase to them, moreover, has many of the defects to which we have recently been striving to draw attention; for, there is one long flight of stairs 19 feet 6 inches in the "going,"—an arrangement simply dangerous, or suitable only where there are no risers and very wide treads, as usually in external steps. In decorative effect, however, the staircase, with loggias or corridors at the sides, is better. There is a platform and steps to the whole front, with statues on pedestals; sculpture also is introduced in the pediment and in panels, and the breaks and recesses are well planned. Besides the domes to the courts, too wide apart, the staircases at the quadrant corners terminate in features of the decorative design. But the whole does not attain the character of the court of justice, as do the designs of more Greco-Roman impress. The plan of the courts, a square under the dome, with four recesses, a column at each angle, is thought by some of the competitors to be not favourable to hearing.

Regarding this matter of the acoustic properties of particular form and plan, the design by Mr. T. B. Smith is interesting. It, moreover, justifies the motto, "Classification." The external char-

acter, French-Italian, based on the type of the Hôtel-de-Ville at Paris, but denuded of much of the ornamentation, assimilates with the idea of British courts of justice even less than Italian of either kind last referred to. What Mr. Knowles meant to say in the report attached to his design, when he spoke of the combination of the palace and the prison as giving the fitting expression of an assize court, was somewhat nearer to the right principle—however he failed to embody it. The style generally called Italian, is one of all countries: the French-Italian, though before this time influential upon the architecture of our country, is rather a particular national one. It is a style of great value for purposes of study; but our own works, if not of character cosmopolitan, should be at least not markedly French. The author of the design "Classification" thinks that a Gothic style, "though not out of place in Westminster, would hardly harmonize with the various admirable buildings already in Manchester, or be in keeping with the size and the object of the structure;" and whilst other competitors appeal to the latest decision as to the Foreign Office, Mr. Smith quotes the previous decision in favour of his style, for the two public offices, by "one of the most competent of tribunals." In his plan, the building, placed next Great Ducie-street, has three entrances—each of these with external steps well arranged for effect; and the middle entrance, exclusively for the public, leads into an octagonal hall, near to which the courts are placed side by side, with a small intervening space for various accessories. Each of the four sides of each court admits one of four classes of occupants, namely, the judges, the public, the barristers and attorneys, and the juries and witnesses. The barristers and attorneys, who have to pass frequently from one court to another, enter from the sides that adjoin, through an ante-room common to both courts. The juries and witnesses, persons engaged in one court only, enter from the opposite sides, those which are entirely disconnected, in the one court from the other; and the distinct external entrances subserve this classification. The arrangement of the fittings in each court, also, has been properly studied. The witness-box and jury-box could be altered in position to suit the views of individual judges; the lighting with reference to the different positions has been considered; and by arrangement of the seats, and a curve given to the bench, the prisoner is brought very near to the jury, the judge, and the witness; whilst the seats of the counsel are not cut in two by the projection of the dock. The seats for the public would be in a gallery. The centre of the civil court, as in some other designs, is planned with a communication from the cells in the basement, so that it might be turned into a dock when required. The author says—"The form of plan, the arrangement of ceiling, the contraction of both height and width round the bench, have all been arranged to promote what are the chief points of acoustic success, namely, the avoidance of loss of sound above and behind the speaker, the prevention of echo, and the providing against excess of resonance on the one hand, and the entire absence of it on the other." "It is of great importance that near the speakers there shall be no recesses and nooks, nor yet large unoccupied voids where the voice may be lost; while away from them there should be no large, flat, unbroken surfaces, from which it would be reflected." The author adopts a moderate height to avoid the danger of reverberation, and provides "the flat centre to the ceiling, and the large cove joining it to the walls," as "arrangements which have been found admirably successful in other instances." These views seem to be not inconsistent with those of the author of the design marked S. W. and we cannot help doubting whether the committee have taken time to profit by the opinions and ideas, in all particulars, which have been so abundantly offered them.

It is impossible to make rapid way with our review, do justice, and offer what may be suggestive to our readers, without great trespass on our space. We must revert to the drawings; but shall regret if we are compelled by absolute necessities to omit descriptions of designs as meritorious as some that we have been able to speak of at length.

WROUGHT-IRON BEAM.—To make the description clearer of a wrought-iron beam, alluded to in our last number, we may say that the girder is of boiler plate, in two thicknesses, the heading joints of one thickness "breaking joint" with those of the other. The strength of the beam depends entirely on this.

THE LIFE AND WORKS OF BALDASSARE PERUZZI.*

IN the notice of the life of Le Taroilly prefixed to "Les Edifices de Rome Moderne" (the noble work of that indefatigable architect and author), it is remarked that, although he possessed a just admiration for the works of Bramante, Sangallo, and Vignola, the artist he preferred was Baldassare Peruzzi; and so great was the admiration of Le Taroilly for this "artista valente" (as he is styled by Milizia), that he compares him to Raffaele from the resemblance he found in their characters and in the nature of their talents!

The preference evinced by such excellent authority, and by one so eminently qualified from the direction of his labours and studies to form a correct judgment, has induced me to bring to your notice the works of Peruzzi, feeling assured that there are still among you some who have not been entirely led away from their early studies of Italian architecture, and that even from the Mediæval benches (crowded and so honourably occupied as they are upon this evening of their triumph) I might possibly elicit some sympathy, if not admiration, for so distinguished an architect of the Renaissance period as Baldassare Peruzzi.

Peruzzi was born, early in the year 1481, at Accajano, near Siena, and he was sometimes called "Baldassare da Siena," but Vasari states that both Florence and Volterra (as well as Siena) put in their respective claims for the honour of his birth-place. I believe, however, that we shall not be in error in considering him a Sanese.

His early days appear to have been passed in the workshops of the goldsmiths and jewellers, after which he commenced the study of painting, copying, and imitating the works of the best masters, as well as drawing from nature; and upon the death of his father, about this period, his exertions and progress were such that he was enabled to support himself by his art, and to aid both his mother and sister. We may remark that it is probable his early studies as a painter (more particularly those of a decorative character) produced in him afterwards that freedom and facility in his architectural designs for interior ornamentation, of which he has given us such exquisite specimens in the Massimi Palaces, and other of his works.

I regret that I have not sufficient data to place before you the works of Peruzzi in chronological order. I will adopt, therefore, the arrangement in which they are classed by Vasari, who informs us that Baldassare's first work (after some important ones at Siena) was a small chapel, near the Florentine gate at Volterra, where he painted certain figures with "infante grace," after which he proceeded to Rome with his friend and brother artist, Pietro da Volterra. Peruzzi's early days at Rome appear to have been devoted to his studies as a painter, and he obtained great praise for the excellent manner in which he executed in fresco the Chapel of the Great Altar in the church of San Onofrio. He was next engaged in painting two small chapels in the church of San Rocco a Ripa, and, having now attained some eminence, he was invited to Ostia, where he executed some beautiful historical representations in the chiroscuro in the apartments of the tower of the fortress. Many of these represented combats, in which were introduced ancient armour and equipments of war. These decorative paintings are considered among the best of Peruzzi's works in that style, though it is but fair to state that he was assisted in them by Cesare, of Milan.

Upon the completion of his labours at Ostia our artist returned to Rome, where he formed an intimate friendship with his celebrated brother Sanese, Agostino Chigi (the rich banker and amphibian of his day), and with his assistance he was enabled to remain in Rome for some time, prosecuting his studies (more particularly those relating to architecture) with distinguished success; so much so, indeed, that he secured the patronage of Julius II. the Cardinal Raffaele Riario, Bishop of Ostia, and of Messer Ulisse da Fano, for each of whom he executed painted decorations; but his chief architectural work at this time was the celebrated "Farnesina Palace," for Agostino Chigi, on the Lungara. Le Taroilly gives 1510 as the date of this admirable production (so well known, I have no doubt, to most of my audience), a work to which Vasari applied the happy expression of "Non murato, ma veramente nato."

Situated as the building is upon the spot formerly occupied by the gardens of the Emperor Geta, Baldassare composed his plan upon the most simple arrangement, evidently considering

* Read by Mr. Samuel Angell, Fellow, at the Royal Institute of British Architects, April 4th, and already referred to.

it as devoted to pleasure and entertainment, rather than for a domestic residence.

Le Tarouilly's three plates convey an admirable description of the edifice, with the sole exception that one of its most attractive features (the exquisite colouring of the ornamentation), is not rendered; this omission, however, is in a great measure supplied by the beautiful coloured plate in M. Gruener's noble volume, and in the Italian prints tinted in body colour.

The Farnesina owes much of its celebrity to the beautiful pictorial embellishments of those eminent masters Raffaele, Giulio Romano, Sebastiano del Piombo, Daniele da Volterra, and Annibale Caracci; and, with all his fond preference for Peruzzi, Le Tarouilly allows that many parts of the exterior architecture are open to criticism: the design however is full of grace and elegance, and the ornamentation is deserving of all praise. Great portion of the enrichments in "terretta" are by Peruzzi's own hand, and the great Titian himself is said to have been deceived by the marvellous imitations of reliefs.*

Peruzzi was next employed, according to Vasari, in executing a façade in "terretta" between the Campo de' Fiori and the Piazza Giudea. It is described as an admirable performance, particularly the perspective views which were introduced in it. This work was a commission from one of the Pope's chamberlains.

In the Chiesa della Pace our artist painted a chapel for Messrs. Fernando Ponzetti (who was afterwards made a cardinal): he also printed in "fresco" in the same church, a picture for Messer Filippo da Siena, representing the Virgin ascending the steps of the temple: this picture contained a great variety of buildings, with many beautiful ornaments of various kinds.†

A palace in the Piazza de' Satiri, at Rome, has been ascribed to Peruzzi; but although the plan has sufficient merit to be worthy of this great master, the authorship does not appear so firmly established as to warrant a longer notice of it.

The Palazzo Costa in the Borgo Novo (built for Jacobus Brixianus, surgeon to Leo X.) is not far distant from St. Peter's. Some attribute the architecture of it to Raffaele, but Le Tarouilly (the best authority upon such points) is inclined to ascribe it to Peruzzi. The design is of unpretending character, and the ground floor (as in many instances in the Italian palaces) is occupied by shops. Much study has been given to this design, particularly to the rustication, and it is upon the whole well deserving the attention of the student.

The author of "Les Edifices de Rome Moderne" has devoted three plates to the Palazzo Linotte, in the Vicolo dell' Aquila. This palace is situated near the Cancelleria (the great work of Bramante), but little is known of its date or history, and it is attributed to Peruzzi more from its style than from any authentic source. It has been ascribed also to Bramante, and to Michelangelo, but there are no traces of the distinctive styles of these architects, and if not the work of Peruzzi, the claims of San Gallo I believe would be considered as most worthy.

The Palazzo Ossoli, in the Via de' Balestrari, is attributed to, rather than positively known to be the work of, Baldassare. The simple and masterly arrangement of the plan, and the elegance of the façade, partake of the master mind and hand of Peruzzi, and I think there can be no doubt that Le Tarouilly is correct in naming him as the architect.

The Cligi Chapel in the Church of Santa Maria del Popolo, has been generally attributed (both as to its architecture and pictorial embellishments) to Raffaele; but we owe it to the study and research of Le Tarouilly, supported by the opinion of his countryman, Lalande, that the architecture is from the hand of Baldassare: the style and imprint are his, and the "Corinthian Order," as published by his pupil, Serlio, resembles in a great degree the one that has here been employed. Peruzzi's intimate friendship with Agostino Chigi may be fairly adduced as an additional reason for believing that he was employed in this chapel as architect, while Raffaele (as in the Farnesina) was commissioned with the pictorial embellishments. This chapel is certainly a "Capo d'Opera!" and although I may be venturing upon tender ground this evening, in daring to uphold the Italian architecture of the sixteenth century for ecclesiastical purposes, I am

* It was in this palace that Agostino Chigi gave the celebrated entertainment to Leo X. when he ordered the silver plate as it was removed from the tables to be thrown into the Tiber. A contemporary Italian saying here, "Se non è vero è ben trovato."

† Annibale Caracci copied this picture: the drawing he made was in the late Duke of Devonshire's collection.

bold enough to admire this fine specimen of the taste and genius of Peruzzi, enriched by the master-hand of the divine Raffaele, and to join in the enthusiastic language of Le Tarouilly, "Honour then to Chigi, to whom we owe this chef-d'œuvre, and who has immortalized himself by joining his name to those of the two great artists, to whom he was the Meccenas!"

Peruzzi's fame was now so well established as a painter, that he was appointed one of six eminent artists to paint a picture in honour of the arrival in Rome of Giuliano de' Medici, when he was made commander by the Holy Church: he selected as his subject "The Betrayal of the Romans by Julia Tarpeia;" and this picture is said to have borne away the palm. Vasari also mentions that he was employed upon painting the façades of a house near the Piazza Altieri, for Francesco Buizio, on which the portraits of all the Cardinals were introduced in the frieze. Baldassare, however, did not confine himself strictly to architectural subjects, for we find him engaged in painting an extremely beautiful bier, for the removal of the dead to the place of their burial, for the brotherhood of Santa Caterina, of Siena.

About this period (1520) Peruzzi appears to have been invited to Bologna, to enter into the famous competition for the designs of the façade of the Church of San Petronio; an event which appears to have excited as much interest in those days, as the struggle for the Government Offices or the Spurgeon Tabernacle in our own times. We learn that Peruzzi sent in two designs, the one Italian, and the other Gothic: they are still preserved in the sacristy of the church, and Vasari is loud in his praises of a perspective view: this, I presume, applied to the Italian design; for I suspect that Baldassare was more at home with the five orders than he was with the pointed arch, and buttress, and pinnacle of the Mediavalists. While at Bologna, Peruzzi designed the portal of the Church of San Michele, in Bosco, and embellished the Monastery of the Monks, di Monte Oliveto, in the environs of Bologna.

The Cathedral at Carpi was also designed by Peruzzi at this period. For the Count Battista Bentivogli he made a design in chiaro-scuro, "The Nativity of Christ and the Adoration of the Magi." As this drawing is now in our own National Collection, we ought to be enabled to judge whether its merits deserve the enormous Vasari has bestowed upon it, but unfortunately it is placed in so dark a position on the staircase as to be quite invisible to the eye of critic. The catalogue, however, throws some little light upon its history, for we learn from it that the drawing was made in 1521, and was engraved on wood by Agostino Caracci in 1579. The three Magi are portraits of Italian, Raffaele, and Michelangelo.

While commencing the church of San Nicolo, at Carpi, our "painter architect" was called upon to enter a new sphere of action, and to bring to bear his engineering knowledge, in planning and superintending the fortifications for the defence of his native city, Siena. Upon the completion of these works, Peruzzi again repaired to Rome, where, upon the death of Raffaele in 1520, Leo X. appointed him architect to St. Peter's, when he was called upon to design a new model, upon which it is said he employed so much talent and skill, that even the fastidious Milizia considered it worthy of praise. Serlio (who was Baldassare's pupil) describes the plan to have been a Greek cross, terminated at each extremity by a semi-circular apse. There were four square sacristies, over which campanili could be erected. At each extremity of the cross was a semi-circular porch, through which, by three openings composed with four detached columns, was an entrance to the building. The great altar was in the centre surrounded by four large piers, supporting a cupola 138 feet in diameter (within 1 foot of that since executed). Each of the four naves had two side aisles, with cupolas at their intersections 48 feet in diameter.*

The tomb of Adrian VI. in the Chiesa dell' Anima, is the work of Peruzzi; and the Vigna of Papa Galbo, on the Flaminian Way, although ascribed to Sansovino by Vasari, is considered by Le Tarouilly as the work of Baldassare. It is a most charming and elegant composition, and we are at a loss which to admire the most, the grace and simplicity of the whole, or the exquisite delicacy of the detail.

Peruzzi's genius appears to have been nearly universal; for we next find him engaged painting two scenes for the representation of the "Calandra," a drama written by the Cardinal

* Peruzzi's salary as architect to St. Peter's was only 250 scudi per annum, and it is wonderful that with so meagre a remuneration he died in poverty.

Bibiena,* and performed before the pope: these scenes are said to have served as models for whatever has been since done of that kind. The preparations for the coronation of Clement VIII. were also entrusted to the care of Peruzzi in 1521.

The Courtyard of the Palazzo Altemps, in the Piazza Fiammetta, at Rome, is attributed to Peruzzi by Le Tarouilly: there are many parts of the details and ornamentation which certainly appear to be from his hand, while at the same time there are other portions of the design (for instance, the attic and the arrangement of the windows on the side of the cortile) which do not render me over anxious to claim this work for our "artista valente."

A small palace in the Via Giulia, at Rome, is also given to us by the indefatigable author of "Les Edifices de Rome Moderne," as the work of Peruzzi, and it presents an excellent specimen of the great extent to which external ornamentation was formerly carried. The decorations are described to have been in some instances in "fresco," and in others, painted in imitation of bronze and gilt; and portions are said to have been executed by Baldassare's own hand: they are composed in a grand style, and after the manner of the antique. The fresco figures were still tolerably preserved in 1823; but, since that period, the palace has been used as infantry barracks; and I regret to say that the inmates have proved themselves no great admirers of the fine arts; for poor Peruzzi's ancient warriors have been most scurvily treated by their degenerate descendants. A portion of arabesque from the ceiling of the staircase has been preserved, and is shown by this enlarged copy from Le Tarouilly's sketch. The doorway under the vestibule of this palace is made to diminish in width upwards: the same method has been adopted by San Gallo, at the Palazzo Farnese, and upon this Le Tarouilly remarks, "that at this epoch (the sixteenth century), when there was a general feeling for the antique, and when the cultivation of ancient art had become, as it were, the true religion among all the professors; when learned commissions were instituted to make commentaries upon Vitruvius, it is not to be wondered at, that the two eminent architects, Peruzzi and San Gallo, studying together the ancient monuments, should about the same time have made the same application, from what they had studied."

With the exception of Peruzzi's last great work at Rome, his crowning effort, the Palazzo Massimi, I believe I have gone through (but in a very slight and imperfect manner) his principal works in the Eternal City; and I have now to refer to the misfortune which overtook poor Baldassare, at the time of the lamentable sack and plunder of Rome by the Constable de Bourbon, under the banners of Charles V.†

The unfortunate Peruzzi was taken prisoner by the Imperial soldiers, lost everything he possessed, and was grievously maltreated; for it so chanced, says Vasari, "that Baldassare, being a man of noble, grave, and commanding aspect, I was believed by them to be some great prelate or other man of high rank in dignitie, and one who could pay an enormous ransom: finally, however, those most impious barbarians discovered that he was a painter, and one of them, who was a devoted adherent to the Constable de Bourbon, compelled our artist to take the portrait of that "Sceleratissimo Capitano" (as the indignant Vasari styles him), the enemy of God, and all good men: either by showing him his corpse, or by some other means, perhaps by giving him sketches of the face, or describing it in words enough; they compelled him to make the portrait.‡

Poor Baldassare at last made his escape from Rome, covered with wounds; but misfortune was still in his train, for upon making his way to Porto

* The accomplished historian of Leo X. says "that Bibiena gave sufficient proofs of his literary studies in his celebrated comedy of the 'Calandra,' which, although not, as has been asserted, the earliest comedy which modern times have produced, deservedly obtained great reputation for its author."

† Bourbon, without any artillery, arrived quite unexpectedly at Rome, on the night of the 5th May, 1527, with 40,000 men: the assault took place the following morning.

‡ The portrait I present to your notice is, I submit, in accordance with Vasari's description. It has been obtained from the frontispiece to the works upon the Massimi Palaces by Sir John H. Haden, at my friend, Mr. Charles Kelsey, the excellent sculptor of several of the enrichments at St. George's Hall, Liverpool.

§ It was this same Constable de Bourbon that the brave Gedeone Celio takes credit to himself for having killed by a shot from his arquebuse. All historians agree that Bourbon fell by a musket shot, early in the assault, while distinguished by his white mantle, with a scaling-ladder in his hand, leading his troops to the walls, and, although Benvenuto was a great boaster, I know no reason for depriving him of the honour of killing the "Constable."

Ercole, and from thence to Siena, he was attacked and stripped on the road, and at length arrived at his native city in a most pitiable condition, having been deprived of everything but his shirt* (fortunately for our poor sufferer it was during the summer months that this calamity happened to him). It may readily be supposed that he met with the kindest reception from his friends and relatives in Siena, and it was not long before he entered the service of the republic of that state, and was appointed superintendent of all the works connected with the fortifications of the city.

About this period Peruzzi executed the beautiful altar, and the Chapel of St. John the Baptist, in the Cathedral of Siena. The villa Belcarro, near that city, and the fine portal of the Sacramenti Palace, at Ferrara, were also designed by him at this date, and it was probably about this time that he painted his celebrated picture for the Church of Ponte Giusta, at Siena, representing "The Sibyl announcing to Augustus the birth of Christ," which is said to be his masterpiece. So highly was this picture esteemed by Lanzi, that he says, "the painter gave it so divine an enthusiasm, that Raffaele, treating the same subject, as well as Guido and Guercino (whose Sibyls are so often met with) probably never surpassed it." Forsyth describes this picture in the following terms:—"Peruzzi's Sibyl at Ponte Giusta is a sublime figure, but, perhaps, too sedate for the act of prophecy."

Peruzzi was once more called upon to exercise his services and talents upon military engineering, for the Imperial and Papal armies having advanced to the siege of Florence, his Holiness ordered Baldassare to the camp, there to give his aid and counsels for the conducting of the siege: he appears, however, to have entered upon this employment with great reluctance, as it was against the wishes of his fellow countrymen, the Senese, who were good Ghibellines, and whose sympathies were all with the Florentines. In a note, however, by Mrs. Foster, in her admirable translation of "Vasari," she states, from a letter by Baldassare himself, as cited by Gaye (Carteggio inedito), that he really did serve against Florence, and that he adverted to the possibility of attacking the city from the Poggio Imperiale. At all events, his conduct in this affair was greatly displeasing to the Pope; and upon the termination of the war, Peruzzi, being desirous of returning to Rome, was obliged to avail himself of the good services of the Cardinals Salviati, Trivulce, and Cesarini, to obtain his Holiness's permission, and through their kind offices he was reinstated in such appointments as he previously held.

Upon his return to Rome, Peruzzi commenced the designs of two beautiful palaces for the Onsini family, which were erected on the road to Viterbo, and he designed some buildings to be constructed in Apulia. Our artist found time to study mathematics and astrology (in which it is said he took great delight). He also commenced a work on the antiquities of Rome, with a Commentary on Vitruvius, and prepared drawings in illustration of the same, which latter were in possession of his pupil, Francesco da Siena, at the time Vasari wrote his life.

We now arrive at the greatest, as well as the last and crowning work of Peruzzi, the pyramidion of his fame—the celebrated Palazzo Massimi.

In the fifteenth century the illustrious family of Massimi possessed in the central quarter of Rome a spacious residence, situate in the Strada Pontificia (now known as San Pantaleo, from the name of the neighbouring church). There was nothing, however, remarkable in the building to excite attention, but there was one noble recollection attached to the residence:—in 1445 Pietro Massimi established a printing-press, and produced the first specimens of typography that appeared in the Eternal City. The editions which issued from this press are still known under the title "In Domo Petri de Maximis." Domenico, the son of Pietro, inherited this property. At the sack of Rome in 1527 (an event which I have already referred to), the mansion of the Massimi family was pillaged and burnt. After this fearful calamity, and when Rome was free from the horde of invaders, who for nine long months occupied the city, Domenico Massimi died, leaving his estate to his three sons, Pietro, Angelo, and Luca, who being desirous of restoring the family mansion, consulted Peruzzi, and commissioned him to furnish plans for the new building.

The palaces of the two brothers, Pietro and Angelo, were adjoining to each other, but that of the third brother, Luca, was on the opposite side of the Strada Pantaleo. Peruzzi had great difficulties

to contend with, in the arrangement of his plans, to accommodate them to the old foundations, in order to observe the requisite economy imposed upon him by his employers. Pietro Massimi, being the eldest brother, was the possessor of the larger of the two palaces; and as the family were originally designated by the title of "Del Portico" (afterwards changed to that of "Delle Colonne"), Peruzzi considered it imperative upon him to embrace a portico in his design, and Le Tarouilly, who by some great good fortune became possessed of many of the original drawings of these palaces, is thus enabled to give us much interesting detail, which I regret the limits of this paper will not allow me to introduce.

In the noble volumes of "Les Edifices de Rome Moderne" no less than twenty-four plates, with several pages of letter-press, are devoted to the Massimi Palaces; and the author has evidently worked *con amore* upon these *chef-d'œuvre* of his favourite architect. The result is alike honourable to the master mind of the artist who designed the work, as it is to the care and labour of the illustrator; and it is in some measure consolatory to find that poor Baldassare, who was the victim of misfortune during his life-time, has had full justice done to his finest works, and that, notwithstanding three centuries have elapsed since their construction, they are now presented to us in their full beauty by the exquisite plates and accurate descriptions of his warmest admirer, Le Tarouilly.

The architect to the Massimi Palaces, in the adaptation of his plan to the limited and perplexing site, and the obligation to preserve existing foundations, under injudicious notions of economy, had no common difficulties to contend with; but the genius and invention of Baldassare overcame all obstacles. The curved line of the frontage, which would have been to many a *pons asinorum*, was rendered by him a *pons triumphalis*.

A detailed description of these two palaces would occupy more time than the prescribed limits of this paper will allow; but I am well reconciled to dispensing with it, as a glance at Le Tarouilly's plates will convey a far better impression of the works than the most elaborate accounts I could prepare.

Many of the Roman palaces are upon a larger scale than this, and are more imposing in their exterior architecture; but I doubt whether for beauty and grace of ornamentation any can compare with the Massimi.

The strict injunctions to economize prevented Peruzzi from employing any expensive or rare materials; for, with the exception of two marble columns only, in the loggia of the Piano Nobile, the construction is of Trastevere stone of brick-work faced with stucco, and of wood. This example is cited as a lesson of economy; and when we consider that the exquisite enrichments derive all their beauty and elegance from the masterly design and execution, without any aid from expensive materials or costly adjuncts, we may well join in the homage that has been bestowed upon Peruzzi by French architects.

I have already had occasion to remark that more than three centuries have elapsed from the period of building the Massimi Palace to the time when Le Tarouilly was engaged in carefully measuring and taking note of every portion still remaining; and, at the date of his labours, some thirty-five years since, when I had the gratification of being in Rome, the Massimi was generally in a fair state of preservation; but I am grieved to say that it now no longer remains so, for my excellent friend and our esteemed brother Fellow, Mr. John Davies, who last year made a pilgrimage to Italy, and revisited the scenes of his early studies, after an interval of some thirty-seven years, thus describes the present state of the palace:—"When I was in Rome, in October last, I went all over the Massimi, and was grieved to see the shameful state in which it was, the beautiful open vestibule and ceiling next the street falling to pieces."

Le Tarouilly concludes his notice of Peruzzi in these terms:—"It was about the year 1532 that Peruzzi commenced the Massimi palace, and at that period he was in the full energy of his talents. The taste and infinite variety he has displayed in the ornamentation are a proof how well he accomplished the work studied by him in the most minute details; but soon his health underwent a sad change. Intense anxiety and continued fatigue undermined his constitution, and it is even said that poison, administered to him by some unworthy rival, anxious to succeed him as architect to St. Peter's, cut short a life so well occupied and so laborious." The probability of his having been poisoned is also mentioned by Vasari; but let us

hope for the honour of our profession that the suspicion was not well founded, and at all events that it was not the work of any rival architect. During Peruzzi's last illness Pope Paul III. sent him 100 scudi by the hands of Giacomo Melighi, accountant of San Pietro, accompanied with the most friendly offers and promises; but the illness of Baldassare increased, the offers of his holiness arrived too late, and poor Peruzzi died in 1536, at the age of fifty-five, in a state bordering upon misery. We cannot be altogether surprised at this melancholy termination, for he had to labour for a numerous family, and his income was never proportionate to his merits, or his services. According to Vasari, the rich personages who profited by his talents took advantage of the gentleness of his character, his modesty, and extreme reserve, and they thought less of recompensing the artist, than they did of praising his works.

As in the case of Raffaele, Peruzzi terminated his career by his *chef-d'œuvre*, which he left incomplete; but, with much resemblance in their character, and in the nature of their talent, their fate was far different. Raffaele lived in opulence, beloved, esteemed, and in the enjoyment of all his glory; Peruzzi, on the contrary, never gained a comfortable subsistence. His labours, although acknowledged, neither obtained favour nor applause, and this unjust coldness of his own age has been in a great measure perpetuated. His name has never become popular, and is but little known excepting by those interested in the study of architecture. How is it then that he has not become illustrious? For he was at the same time a great painter and a skilful and sublime architect. Such are the unjust ways of blind Fortune and the capriciousness of Fame!

Peruzzi's most distinguished pupil was Sebastiano Serlio, who was twenty years of age at the time of the lamentable death of his unfortunate master. Serlio remained in Italy three years after this event, and then proceeded to France, where he executed, together with Pierre Lescot, Jean Bullant, and Philibert Delorme (all worthy students of the same school) some of the finest works in architecture that France possesses of that period; and it is I believe principally owing to the careful study of the works of such master minds as Vignola, Peruzzi, and their disciples, that the French architects have acquired that exquisite taste in ornamentation so prominent in all their works. It is to the same pure sources that I would most earnestly entreat the students of our own country to have recourse, looking forward to receive the grateful tribute to merit by their brother architects, as in the distinguished instance we have had before us this evening, rather than being deterred by reflecting on the misfortunes sometimes attendant upon genius, as in the case of poor Baldassare Peruzzi.*

SEA WALLS.

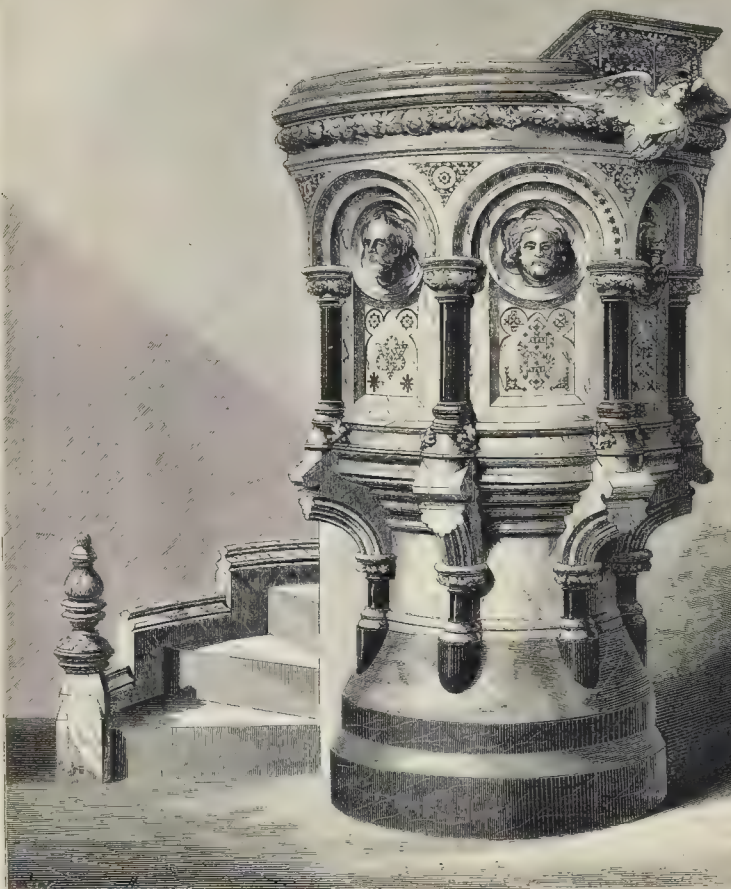
FROM time to time we hear of the sea encroaching upon some portion of the coast of our little Kingdom of Great Britain. In these inroads upon territory landowners are not the only, though perhaps the chief, sufferers. A few months since there appeared in the *Builder* an account of such a sea invasion at Dunwich, in Suffolk, in which it was stated that the sea has nearly exterminated the place, and that within the last two years it has carried off acres of the beach. Although it is no less true that this is compensated by the recession of the sea in other portions of our coast, whether the loss and gain are equal is a matter somewhat doubtful. Even were it so, it would be highly desirable and important that we should stop the ravages of the sea if possible, and increase the size and extent of our country, and thus gradually also add to our dominions. The possibility of this, although necessitating without doubt an immense expenditure of money, and perhaps also requiring a century or two for its accomplishment, would be of vast benefit to our descendants, and can be proved

* Chronological table taken from Le Tarouilly's work:—

Names.	Date of Birth.	Country.
Alberti	..... 1398.	Florence
Sanzallo (Giuliano)	1443. 1517.	Florence
Brancante	..... 1444. 1514.	Castel Durante
Sanzallo (Antonio)	1470. 1546.	Murello, near Florence
Michelangelo	1474. 1534.	Capre-c, near Arezzo
Sanzio	..... 1479. 1570.	Florence
Peruzzi	..... 1481. 1536.	Acciano, near Siena
Raffaele	..... 1483. 1520.	Urbino
Giulio Romano	..... 1492. 1546.	Rome
Vignola	..... 1567. 1573.	Near Modena
Palladio	..... 1518. 1599.	Vicenza

From this it would appear that Peruzzi was 26 years older than Vignola, and 37 older than Palladio, 11 years younger than Antonio Sanzallo, and 7 younger than Michelangelo.

* Milizia says he arrived at Siena "nudo come nacque."



PULPIT IN THE CHAPEL AT BLENHEIM.—MR. S. S. TEULON, ARCHITECT.

to be perfectly practicable. We have a proof of what may be done in the way of permanent utility, in this respect, by the sea-wall at Brighton. This was executed in a comparatively brief period, and is still, it is believed, as sound and strong as when first built, although it has stood about twenty years. In those parts of the coast where the sea recedes, and thus gives us an accession of land, it would amply remunerate the outlay, if, after the accumulation of some years, a fresh sea-wall were built in advance of the original one, to be replaced by others from time to time, as the necessity occurred.

W. D. M.

PULPIT IN THE CHAPEL AT BLENHEIM.

THIS pulpit is erected in the chapel of the palace at Blenheim, his Grace the Duke of Marlborough having commenced a complete recasting of the whole arrangements. The pulpit has a base of rich Devonshire marble, and the whole of the upper part is in Staffordshire alabaster, inlaid with glass mosaics, and with shafts of red marble. The sculptures are medallions of our Blessed Lord and the evangelists. The book-tray is of wrought brass, by Skidmore, and the execution of the marble and alabaster was by Forsyth. This, with stall-work, organ, and painted glass, is now, with a very rich reredos, proceeding under the direction of Mr. Teulon, of Craig's-court.

PROPOSED SPANISH COMPETITION.

SEVERAL influential persons in Madrid have suggested the propriety of building a church in the city, and they have obtained the sanction of the royal family to do so. It has been said that a competition, open to all countries, will be invited, and inquiries have already reached us. We learn, however, that although there have not been wanting some too ready to send in designs, the site even has not yet been decided upon, nor has anything been finally settled. It may be worth mentioning, that all drawings for public buildings in Spain have to be sanctioned by the Spanish Royal Academy before being executed.

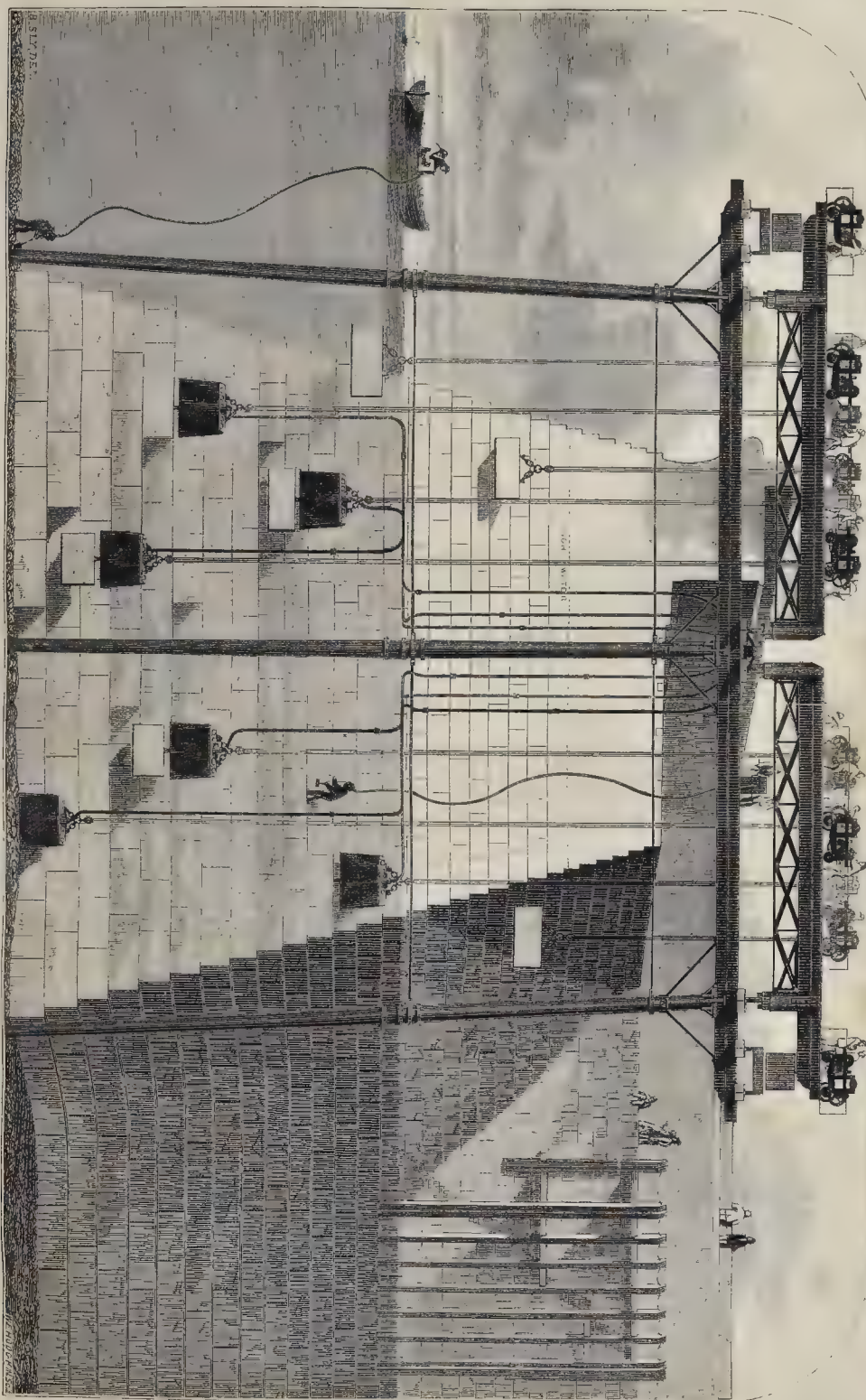
FRANCE.

THE spire at the intersection of the nave and transepts of Notre Dame, Paris, is being rebuilt from a drawing in the collection of the late M. Gilbert, born in 1783, and who died 14th January, 1858. The original was covered with lead, and measured 104 feet from the ridge of the nave to the weathercock. M. Gilbert was devoted to antiquarian pursuits, and studied the Gothic architecture of all periods, having published notes on Notre Dame de Paris, Notre Dame de Chartres, the Cathedral of Amiens, the old Abbey of St. Riquier, in Ponthieu, the Church of St. Wolfran d'Abbeville, &c. For many years he was *conservateur* of Notre Dame de Paris.

The municipal committee of the town of Lille adopted, a short time ago, the plans of the alignment of the streets, boulevards, and public squares of the enlarged city. Lille, which covered only 200 hectares, is to be increased to 500, and the population greatly raised. The project adopted embraces three new "communes:" four large boulevards, opening into each other, bear air and life to this great centre of industry, where space was wanting for the working classes, so numerous in the town. In all the public squares and thoroughfares sites have been judiciously reserved for public edifices and all sorts of monuments that the city, now becoming an important one, can desire.

The architects De Luys, Partoes, and Dugniolle, all three members of the Royal Commission of Monuments, arrived in Nivelles a fortnight ago, and made a minute inspection of the remarkable building St. Jean de Nivelles, recently struck by lightning. It is difficult, in fact, to convey an idea of the terrible shock to which this ancient construction was subjected, and which it bore with an ease almost incredible. The cupola at the base of the belfry, which was destroyed, dates from the eleventh century; and visitors are astonished at the immense weight of rubbish, of all sorts, that rests upon it.

CAMBERWELL PARK.—The new park at Camberwell has been opened.



DOVER HARBOUR OF REFUGE: CONSTRUCTION OF THE PIER.—Messrs. Walker, Birnes, and Co., Civil Engineers.*

METROPOLITAN TOLLS.

The question of the highway tolls in the suburban districts of the metropolis has for some time past powerfully attracted a large amount of public attention.

Parish authorities state that next to the support of the poor, the maintenance of the roads is the largest and most important charge. In Clerkenwell parish the cost of the highways has been 39,819*l*. 13*s*. 1*d*. This parish has about twenty miles of road to maintain, which had cost during the three years ending Christmas last 12,557*l*.—the greater portion of which had been absorbed by highways: this is at the rate of more than 4,000*l*. per annum. It appears that the number of horses kept in this parish amounts to 580, so that if, as has been proposed, a tax should be put upon the horses of particular parishes for the support of the roads, it would require a tax in Clerkenwell of more than 7*l*. for each horse. These 580 horses form but a small portion of the horses which use and cause the wear and tear of the roads in Clerkenwell.

The Royal Commissioners have suggested that the funds for the repair, &c. of the turnpike roads should be levied by a rate over the whole metropolitan districts, including those parts of it which have no tolls in existence: others propose a tax on horses and carriages over the whole district. A committee of the Clerkenwell vestry are of opinion that each parish should support its own roads. For thirty years this parish has made and maintained its own roads, and the tax has not been particularly complained of by the inhabitants.

In Islington and other districts, where a large portion of the expenses of the highways is defrayed by tolls, many of the owners of property, particularly that which is let for the dwellings of the poorer classes, say that already the taxes, including that for metropolitan improvements, are so high, that the increased burden of the roads would, without increase of rent, take away the small profit derived by the holders of this description of property.

A very considerable portion of the London tolls is paid by omnibuses and the drays of the large brewers; and it is argued that if the tolls are abolished, and the expense of them levied on rents and property, the public will not derive advantage from cheaper fares or other matters.

The 9,000 or 10,000 cabs which daily and nightly roll along the metropolitan streets have evidently a great effect upon the roadways, and yet over the chief parts of the metropolis, where the tolls have been abolished, no revenue is derived from them for local purposes, although a very large sum is gathered from this source which goes into the national treasury. Considering that the Parliament has refused to assist the metropolis in those improvements which the present condition of this great capital of the country requires, it is but just that the revenue derived from cabs should be applied towards the maintenance of the roads or other necessary matters.

The license duty on cabs, a general road-tax on omnibuses, drays, carts, carriages, and horses, would produce a considerable sum, which would materially lessen the rates for the public roads. It would, however, be but fair that this should be divided in proportions equal to extent, &c. of all parishes.

It is plain that the highway tolls of this bustling metropolis cannot be much longer borne with, and it therefore becomes necessary to consider how the abolition can be carried out without too much pressing on interests which are at the present time suffering.

THE SANITARY INSPECTION OF DWELLINGS.

The reports which are from time to time made by officers of health confirm all that we have said for years, and show the necessity that exists for increased legal powers to prevent the destruction of health and the spread of vice and immorality. The law now orders and allows the visitation of admitted lodging-houses, which are set apart for the reception of a large number of persons of limited means. There are, however, as we have before mentioned, dwellings which are sublet in many instances, each room to a separate family, over which no control is exercised. In an amount of space which is not sufficient for the wholesome accommodation of three persons, seven, eight, nine, and more, are nightly lodged, without the separation of the sexes.

We know the difficulty there is in dealing with this evil. The poverty, and sometimes other causes, which make it impossible to pay more than

a certain amount of rent, and the jealousy of the poor as to undue interference, make it a matter of some delicacy, even to introduce measures which would be of undoubted benefit. The necessity for interference, however, is increasing.

Crowds of Irish and others, who have been accustomed to crowd together, have been driven to occupy parts of houses totally unfit for the purpose; and even parts of rooms are sublet.

From time to time we have noticed with satisfaction the manner in which the section of the police who are entrusted with the management of the licensed lodging-houses perform that duty. We have found them patient, civil, and intelligent in the discharge of their duties; and the effect of this supervision is shown by the cleanliness and improved order which are now seen in those places, and the marked decrease of fever and other similar diseases.

The reports of the officers show, however, that there are in houses over which the law gives at present no power of interference arrangements which render both good health and a proper average of life or morality almost impossible; and that the power of stopping overcrowding, which is practised to a dangerous extent, is needed.

It would be advantageous to distinguish the sanitary police of the metropolis by some mark which would show their mission. This would prevent the unpleasant feeling which is caused in some neighbourhoods by the visits of policemen, who are supposed to make calls only in connection with crime.

The City Officer of Health, in his last report, urges the necessity of attention to an important question to which we have frequently directed attention, viz. the need of providing dead-houses, properly situated, for the reception of the remains of unknown and homeless persons previously to interment. After mentioning that several of the dead-houses along the margin of the river, to which bodies in a state of decomposition are conveyed until they can be claimed on an inquest held, are situated close to the windows of dwelling-houses and in other improper places, Dr. Lethely remarks that, by the Sewers Act and the Burials Act, 1852, power is given to provide a dead-house for the reception of such bodies, "and I cannot but think that the exercise of your power would be conducive to public decency and public comfort. A convenient locality might be chosen for a dead-house that should not only receive the bodies that are found in the highways of the City, but should also afford accommodation to the poor, by giving them an opportunity of removing the dead from the midst of the living. At all times this is a matter of consequence, but in times of pestilence it cannot be too much overrated."

THE ROYAL ALBERT BRIDGE, SALTASH.

THE Albert Bridge, which has been formally opened by the Prince Consort, is on the Cornwall Railway, and must be placed amongst the most remarkable achievements of engineering skill. It consists of nineteen spans. Seventeen of these spans are wider than the widest arches of Westminster-bridge, while two, resting on a cast-iron pier of four columns, cross the whole stream of the Tamar, at a leap of upwards of 900 feet, or a greater distance than the breadth of the Thames at Westminster. The total length of the structure from end to end, is 2,240 feet. Its greatest width, as formed only for a single pair of rails, is 30 feet at basement, its height from foundation to summit no less than 260 feet, or more than 50 feet higher than the monument.

Mr. Brunel was, unfortunately, not able to be present. Mr. Brereton, the resident engineer, supplied his place. The *Times* gives a very full account of the structure, and from that we take the following particulars:—The seventeen smaller spans consist of massive double columns of solid masonry, 11 feet square, with wrought-iron longitudinal beams of boiler plate, to carry the roadway on either side. The main stone piers are at the water's edge, and support the ends of the great spans crossing the river. These two of course are of the most solid kind. Each is of granite, 29 feet wide by 17 feet thick, and no less than 190 feet from foundation to summit. It is, however, on the main pier, in the centre of the river, on which both the great spans rest, that all the pressure and vibration comes, and for this was required a tower of such proportions that nothing short of the solid rock itself would suffice for its foundation. But to reach this was a matter of no ordinary difficulty, inasmuch as some 70 feet of sea water, with 20 feet of mud and concrete gravel, lay between Mr. Brunel and the

stone on which he wished to build. A cofferdam for such a depth and in such a tideway, was out of the question; yet, by a most ingenious application of the coffer-dam principle, what seemed an insuperable obstacle was at last overcome. An immense wrought-iron cylinder of boiler-plate, 100 feet high and 37 feet in diameter, and weighing upwards of 300 tons, was made and sunk exactly on the spot whence the masonry was to rise. From this the water was pumped out and air forced in; the men descended, and working as in a gigantic diving-bell at the bottom of the river, cleared out the mud and gravel until the rock was reached and hewn into form to support the cylinder evenly all round. Powerful steam air-pumps were necessary to keep the labourers supplied below, and, as a matter of course, they worked at an atmospheric pressure of upwards of 35*lb*. to the inch. On this massive pile, built in the cylinder, the iron columns for the centre pier are raised. Until these ponderous masses were cast, metal works of such dimensions were seldom dreamt of. There are four octagon columns, 10 feet in diameter and 100 feet high. Each stands 10 feet apart from the other in the centre of the granite, forming a square of about 30 feet, and all bound together with a massive lattice-work of wrought iron, which checks vibration, and prevents any lateral thrust. The weight of each column is 150 tons, each being cast in 6-feet joints, 2 inches thick, and supported inside with powerful ribs and angle irons. The great spans, each end of which rests on two of these columns, may be best described as being made on the principle of a double bow. The lower bow is of chains, carrying the roadway; the upper is a tube of wrought iron, to which the lower is attached by powerful supports. Thus a great weight on the lower bow only tends to give additional support by straightening the upper, and *vice versa*: each, in fact, counteracts the effect of the other, so that there is no lateral thrust from either side, an indispensable requisite where no buttresses could be erected to resist it. Each arched tube is elliptical in form, being 12 feet by 17 feet, and both are made throughout of inch boiler-plate. At intervals of 20 feet the insides are wrought-iron diaphragms, with tie-rods and angle-irons throughout their entire length. The curve of the arched tube is 28 feet, and the tension chains of the lower bow are of course the same. The double chains are exactly similar in principle to those of an ordinary suspension-bridge, only, instead of each link being composed of seven and eight bars, those at Saltash are of fourteen and fifteen bars, each bar being 1 inch thick and 6 inches broad, and each link having been tested with a strain of four tons to the inch. Both the chains and tubes are bound together by wrought-iron trusses to each other. The spans before being lifted were tested with a strain (including their own weight) of 2,300 tons. When the whole bridge takes its bearing, the pressure on the centre pier foundation will be more than eight tons to the foot. The total quantity of wrought iron used has been 2,700 tons; of cast iron, 1,300 tons; of masonry and brickwork, 17,000 cubic yards; and about 14,000 cubic feet of timber.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At a general meeting of the members held on the 2nd of May, the following were elected office-bearers for the year ensuing:—President, Earl de Grey. Vice-presidents, Messrs. H. Ashton, R. C. Hussey, and George Godwin. Honorary Secretaries, Messrs. C. C. Nelson and T. H. Lewis. Honorary Secretary for Foreign Correspondence, Mr. T. C. Penrose. Ordinary Members of Council, Messrs. F. J. Francis, G. Morgan, W. W. Pocock, F. W. Porter, R. L. Kinnien, J. P. St. Aubyn, J. H. Stevens, S. S. Teulon, G. Vulliamy, G. B. Williams. Treasurer, Sir W. R. Farquhar, bart. Honorary Solicitor, Mr. W. L. Donaldson. Auditors, Fellow Mr. J. Tarring; Associate Mr. A. H. Morant.

Mr. M. Digby Wyatt, in resigning the office of honorary secretary, has addressed a letter to the members of the Institute, wherein he says,—

"In announcing the fact of my retirement, I desire to express, to each one alike and to all of the members of the Institute, my gratitude for the kindness and courtesy, the support and encouragement, with which my humble endeavours to be useful have been invariably received.

"In my late colleagues, to whose long and arduous labours my comparative inaction has offered but a poor contrast, I shall ever cherish sentiments of the warmest regard and esteem,—sentiments in which I may, I do not doubt, confidently reckon upon the sympathy of all well-wishers to the Royal Institute of British Architects, than whom none can be more zealous than I.—Dear Sir, yours truly,
M. DIGBY WYATT."

The zeal, ability, and good-will with which Mr. Wyatt has discharged the duties of the office for the last three years will be admitted with feelings of thankfulness by all who have been connected with the Institute during that time. Let us say the same thing of one who has worked even longer in the same capacity, and still consents to do so.—Mr. C. C. Nelson. Mr. Nelson devotes an amount of time and labour to the duties of the office which could not be expected from any honorary officer.

THE CHARTER AND BY-LAWS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A LETTER on the above subject has been addressed by Mr. Charles Gray to Mr. C. C. Nelson, honorary secretary of the Royal Institute of British Architects, and at the request of the writer we publish the material part of it. Mr. Gray, after pointing out that he considers the time has arrived for a revision of the charter and laws of the Institute, and that he desires to obtain a revision of the existing laws of the Institute, to be carried out under the auspices and with the full concurrence of the members themselves, says:—

But, before I proceed to describe in detail the alterations which I have to suggest should be made in the existing laws of the Institute, I presume that you will, to a certain extent at least, deem it incumbent upon me to show cause, as the lawyers have it, upon what grounds I form the opinion that a modification of the existing laws of the Institute is necessary, and how that body, with its present constitution, falls fairly to represent all classes of the architectural profession.

Firstly, then, I imagine it to be the invidious, and, to my mind, unfair distinction which is so rigidly preserved in the management of the Institute between the two principal classes of its members—the Fellows and Associates; and the fact that the class of Fellows monopolize the management of the Institute to the total exclusion of that of the Associates, is in my opinion a very reasonable ground of complaint against the Institute, as it at present exists. Now both these classes, as I remember, are composed chiefly of practising architects (the list of members for the present year shows that three fourths of the class of Associates are practising architects), of men who, outside the walls of the Institute, in matters of ordinary business, and in the management of other societies connected with our profession, meet and vote totally irrespective of their degrees of membership in the Institute, on terms of the most perfect equality, and that too without a question being asked.

To give a practical illustration of this, I will mention a circumstance in my own knowledge, of a matter of business in dispute between two architects, both Fellows of the Institute, and recently referred by them to arbitrators; and as if to furnish me with about as good an argument as possible to establish my case, the two architects, in question, agreed to appoint an arbitrator between them (and I presume it was done deliberately), who, although he is to decide the matter in dispute between them, is himself only an Associate, and consequently, if the present constitution be a proper one, occupies only a subordinate position in his profession to these two architects, upon whose conflicting opinions he is deputed by their mutual consent to deliver a binding judgment.

Now could anything be more absurd than the case I have cited? (and I presume it is not an isolated one, for here we have two architects occupying the rank of Fellows within the Institute, deliberately deferring to the judgment of another architect, who only possesses the subordinate rank of Associate with that body, and who by the laws is actually excluded from voting upon the simple question of an adjournment of its meetings (see the caution to Associates given by the chairman at a recent meeting of the Institute, as reported).)

The gist of my complaint is, then, that the younger men of the profession (and I, as one of them, address myself to you)—those who are represented by the Associates of the Institute—have not within that body the position and privileges which rightfully belong to them, and by the charter are kept in too subordinate a position, ever to expect them heartily to co-operate in promoting any scheme calculated to advance its interests as at present constituted; and, in writing to you thus, I know that I accurately express the sentiments of many of the Associates of the Institute with whom I am acquainted; while, on the other hand, I know that there are others—and they are not a few—who purposely decline to connect themselves with that body at all, considering, and justly so, that, as practising architects, or fully qualified to act as such, they would lose caste if they joined the Institute in the subordinate capacity of Associates, the charter debarring them from claiming the advantages and privileges of full membership.

Now there would be no great objection to the existing arrangement of degrees of membership in the Institute, if the distinction could be maintained on a guaranteed claim of superiority of the one class over the other; but when it is notorious that the only additional qualification required to become a Fellow of the Institute, instead of an Associate, is that he shall have been engaged as a principal for at least seven years, and the payment of an increased subscription (which, by the way, is often a tax on the usually poor purses of our brethren), it appears to me monstrously unjust to deny to another member of the profession, less fortunate, perhaps, in being unable to provide the requisite pecuniary qualification, but not necessarily less qualified as an architect, equal rank among his compeers, simply because he has only a narrow balance at his banker's, or has not had the good luck to enable him to mount a brass plate on his door, dubbing himself architect and surveyor for seven years. For, after all, and I urge it as a strong point in my case, it is good fortune,—*id est*, good connections and property,—that has, in nine cases out of ten, more to do with providing the necessary qualification for the charter, than the character of an architect to assume the rank of Fellow above that of Associate, than anything else.

And then, again, in support of my assertion that the

Institute, as at present constituted, does not fairly represent the whole profession, I think the fact that other architectural societies have been organized within the last few years, with kindred objects in view to those of the Institute, but independent of, and in a more or less degree antagonistic to, that body, is pretty good proof of the correctness of my statement. For instance, the Architectural Association, and the Architectural Exhibition. Now both of these Societies, by their formation, and more particularly by the success with which the efforts of each have been attended, and the fact that there existed a necessity for their being established, and that they supplied a want of the profession which the promoters of each Society clearly saw existed, but which the Institute, although it was certainly its duty to do so, failed to recognize. And I may remark further, that I know, having been actively connected with both, that the promoters of each Society felt that it was next to impossible to carry out the objects contemplated by either within the Institute; and although I should be sorry to say that the *secte* mentioned were established in a spirit of rivalry to the Institute, still I do venture to assert that it was from the strong conviction on the part of the promoters of both the Association and the Exhibition, that the management of the Institute was of too exclusive a character ever to expect the executive of that body cordially to act with them, if they were officially connected with it, that led to the establishment of both as independent societies.

It is useless now to contend, as it was urged at the time of the formation of the Association, that the students' class of the Institute, or at least the student and Associate class combined, amply provided all that the Association promised to supply; and that the existence of an independent society, such as the Association became, was unnecessary, and only tended to the detriment of the Institute between the older and younger members of the profession.

It is not, however, my object now to enter upon an apology for the Association, to weary you with a history of it; but I cannot help comparing the small amount of benefit conferred on the student and Associate members of the Institute, by its students' and Associates' class, and the advantages which have accrued to them through the instrumentality of the Association, with the position of the student and Associate members of the Institute, who have belonged to the Association but would readily admit, if questioned, that it is to the benefits he derived when a student by attending the class of design in the Association, and the advantages afforded him there for the free and unrestrained discussion of all subjects connected with our art, that he is to a considerable extent at least indebted for much of the knowledge he has attained, apart from his private studies.

I have referred also to the Architectural Exhibition, and to the fact that that society, like the Association, was established, and has been conducted ever since, quite independent of the control of the Institute. Now, in itself, it was the province of that body, as the leading society of the profession and with funds at its command, to have taken the initiative in the establishment of such an important undertaking as this, while, in my knowledge, it afforded the slightest assistance to the scheme, either by contributions to its funds, or by the offer of co-operation at the time when such assistance was most needed, and would have been in a corresponding degree appreciated. In short, until the success of the Exhibition became a certainty, and it was no longer possible or prudent to ignore the existence of it, the Institute studiously avoided recognizing it, and it is not without some reason that in this very time it has never officially contributed to its funds.

Further, when the Institute has taken in hand with apparent goodwill the consideration of questions affecting the general interests of the profession, it has somehow or other been singularly unfortunate in its treatment of them, and its deliberations have been singularly barren of results; and for the good that has ever accrued from the consideration of the Institute upon the part of the members of that body might as well have left the consideration of them alone. Take, for example, the subject of architectural competitions and the diploma question. By both these subjects the members have been in solemn convulsion, and have attempted (sincerely, it is to be presumed) to find a satisfactory solution to the difficulties of each case presented, but with what results it is needless now to dilate upon. I suffice it to say, that both questions are now about as far from practical solution as when the Institute first took them in hand. Now surely, if your society did fairly represent the profession as it ought to do, the very least that could be expected from it is that it should be able authoritatively to solve such simple questions as these, and be able, when so deciding them, to secure the hearty concurrence of all the members of the profession.

This brings me to describe in detail the alterations I have to propose in the existing laws of the Institute, with the view of rendering it worthy the position it ought to occupy as the representative society of our profession.

That the existing name of "The Royal Institute of British Architects" be retained.

Classes of Members.

That the class of Associates be abolished, and all the by-laws and regulations relating to this class of members be repealed.

That the Institute of British Architects shall for the future consist of only two classes of members, to be respectively called Fellows and Honorary Fellows.

(Note. That the class of Fellows, when re-organized, shall enjoy all the privileges and advantages now possessed by the present class of Fellows.)

Qualification of Members.

That all the members of the class of Associates shall be eligible as Fellows without re-election.

That persons engaged in the practice of architecture as principals, on the recommendation of two Fellows, shall be eligible for election as Fellows.

That all other persons engaged in the study of architecture for at least seven years, and having attained the age of twenty-four years, on the recommendation of two Fellows shall be eligible for election as Fellows.

(Note. That, after one year from the present date, all persons, whether engaged in the practice of architecture

as principals, or simply engaged in the study of architecture, wishing to become Fellows, shall, before becoming eligible for election as such, undergo an examination as to their qualifications, before a board of examiners, to be appointed by the council for the purpose.)

That the class of Honorary Fellows be admitted as members of the Institute on the terms and conditions as determined by the present charter and by-laws.

That the existing class of students be preserved. That, from the present time, it shall be obligatory for all persons engaged in the study of architecture, now under twenty-one years of age, to belong to it for at least two years before they shall be eligible for election as Fellows.

That all students, in addition to furnishing the recommendation of two Fellows, shall undergo an examination as to their qualifications before they shall be eligible for nomination and election as Fellows.

That the several forms for the admission of members set forth in the present by-laws of the Institute be modified so as to accord with the amended laws.

That, from the 1st of November, 1859, no person shall be eligible for election as a Fellow, on any pretence whatever, unless he has previously passed an examination before the Board of Examiners as to his qualifications to practice as an architect.

The Council.

The Council of the Institute shall, besides a President, three Vice Presidents, and two Secretaries, consist of fifteen other members of the class of Fellows.

Contributions of Members.

That the contribution of each Fellow, residing or practising in London, or within ten miles of the General Post-office, be two guineas for admission, and two guineas for annual subscription; or he may, on his entrance, compound for his contributions by the payment of twenty guineas.

Each Fellow residing or practising at a greater distance than ten miles from the General Post-office shall pay two guineas for admission, and one guinea for annual subscription, or he may, at his entrance, compound for his contributions by the payment of ten guineas; provided always that should a member, after having paid, by composition, practise or come to reside in the London district, he shall pay such additional subscription as shall be due and shall be bound to have to pay a composition in the event of his having been resident or practising in London at the time of his election; and if he should not have compounded for his annual contributions before the annual subscription of two guineas as a London member.

That the contribution of each student shall be half a guinea per annum.

That all other by-laws of the Institute as to the council, officers, property of the Institute, meetings, altering of by-laws, committees' adjudication of medals and premiums, donations and bequests, remain in force as at present.

Having described to you in detail the alterations which I suggest should be made in the charter and by-laws of the Institute, I will conclude my letter to you by briefly showing the advantages I imagine will accrue to the profession and to the Institute by the adoption of my proposals. Firstly, then, by the abolition of the class of Associates, and reducing the members to one as a matter of class, an opportunity will be afforded for materially increasing the list of members; and I imagine it may be reasonably anticipated that every architect now practicing as a principal, and every other member of the profession eligible for election as a Fellow, will at once qualify as a Fellow, instead of the 300 members of all grades of the profession now belonging to the Institute, the roll of members will be increased at least three-fold; and that limiting the time to one year for all eligible members of the profession to qualify as Fellows, without examination, will insure the immediate rise in the number of members I anticipate. And although I am not unmindful of the objection of increasing the number of persons to the membership, still I think that, by taking the precaution to require the recommendation of two Fellows before a new member can be eligible for election, no very great injury need be apprehended, and that the increased roll of members will be amply compensated for in the fact, that after a very limited period, an examination as to qualifications would be an additional guarantee to the mere personal recommendation of two Fellows for the admission of new members. And I venture to think that the Institute, becoming a society to which it will be morally, if not legally compulsory, for all architects to belong, and as a condition of membership, for all architects to accept of (reason becoming necessary), a very close approximation to a solution of the diploma question will be attained; and also, by gaining as members the whole profession will give in their adhesion,—the Institute will, with comparative ease, be able to legislate authoritatively upon many questions which now agitate the architectural world, and which they are now powerless to solve; and from the fact that all classes of the profession will in a greater or less degree have a voice in the discussions of the Institute, that body will be able to insure respect to its decisions. I think, also, that by increasing the number of members, and thereby increasing the reduction of the subscription of members by one-half without decreasing materially, if at all, the total receipts of the society, which are apparently more than sufficient for present purposes, a substantial benefit will be secured.

C. GRAY.

PULBOROUGH, SUSSEX.

On Wednesday, the 27th April, the parish church was re-opened, after having undergone a refitting and restoration in the interior. The galleries with which it was crowded have been removed, the tower at the west end has had its fine arch re-opened, and the chancel, which the arrangements of the last alterations had shut off from the church, by erecting a pulpit, with huge "parabolic" sounding-board, like a fan, in the centre of the chancel arch, has again been united to the church. The new seating is of deal, stained. The pulpit and desk are of oak, with a stone base to the former. The chancel is paved with Milton's tiles. Within the communion rail, a pattern has been devised, to allude to the words of the

84th Psalm, "The sparrow hath found her an house, and the swallow a nest, where she may lay her young; even Thy altars, O Lord of Hosts." The masonry throughout has been cleaned from the many coats of whitewash, and the result has been to give a dignity to the church which few could have discerned in its late dress. Some good stained glass, by Messrs. Lavers and Barrard, of London, has been placed in the triplet window, in the east end of the chancel; and another small stained glass window, the gift of a friend, has also been placed in the church. Accommodation is now afforded for about 500 persons. The cost of the works has been about 700*l*. including the retained glass. The work has been very satisfactorily executed by Mr. Bushby, of Littlehampton. Mr. Gordon M. Hills, of London, is the architect. The organ has been successfully converted to a finger-organ, and enlarged by Mr. Cobby, of Bugbury, and now stands on the floor, at the side of the chancel.

This concludes a series of works undertaken by the Rev. W. Sinclair, the rector, in this parish. Within two years a school for 120 children, with a master's residence, has been erected in the village, at a cost of about 1,000*l*.; and two schools, in outlying hamlets, at a cost of 500*l*. and 350*l*. All these are in full operation, and the two last are used for divine service once on the Sunday. They have been executed by Mr. Dewdney, of Horsham, and Mr. Hollish, of Pulborough, under the same architect as the church.

METROPOLITAN BOARD OF WORKS. PROPOSED APPLICATION TO PARLIAMENT FOR WAYS AND MEANS.

THE chairman of the Metropolitan Board of Works, Mr. Thwaites, has issued a printed circular to the metropolitan Members of Parliament and others, of which the following is an abstract:—

Finding it either impracticable, or an undue aggravation of the existing burdens of the ratepayers, to raise, by means of direct rates, imposed chiefly on house property, the sums required for effecting the extensive public works demanded by the requirements of the metropolis, the Board deem it their duty to bring their claims under the notice of the Government and of Parliament, praying for that addition to their pecuniary resources to which they consider themselves justly entitled, on behalf of the ratepayers whom they represent.

They propose, first of all, to represent their position to the Chancellor of the Exchequer, and endeavour to obtain the sanction of Government to such measures of relief as in the result may be considered just and expedient.

The estimated net cost of the works ordered by the Board and now in progress for the formation of new thoroughfares and other objects,—in addition to the main drainage, for which the Board are empowered to raise 3,000,000*l*.—exceeds 500,000*l*. They are also looked to for the disbursement of other heavy sums, such as 216,820*l*. for a park to Finsbury.

A Parliamentary return shows the amount levied by rates in 1857, exclusive of certain parishes and localities which made no return, to have been 1,317,893*l*. 12*s*. 8*d*. This, however, does not include the main drainage rate of 3*d*. in the pound, and the total annual sum raised by rates in the metropolis would, probably, not fall far short of 2,000,000*l*.

The Board consider it obvious that no additional taxation ought to be cast upon the ratepayers without the most pressing necessity, and they believe that no adequate grounds can be urged for imposing the whole cost of public improvements upon the rates of the metropolis. They are perfectly willing, however, that the cost of works of a local character, such as the ordinary sewerage and drainage, and even the intercepting drainage works, as well as paving and road-making, should be provided for out of rates.

But very different considerations apply to vast and costly works such as the Thames embankment, the formation of parks, and the making of new and spacious thoroughfares, to meet the exigencies of a city which is at once the seat of the Imperial Government and the centre of the commerce of the world.

The position of the Board, therefore, is this,—they have vast obligations cast upon them by recent changes in the law, and they possess no corporate funds: practically, there is a limit to the sums which can be raised by rates, and to meet these obligations it would be necessary to pass that limit. Under these circumstances they feel they are entitled to apply to the Legislature for aid; and as they are not called upon, neither are

they in a situation, to propose any new tax, it remains for them to urge their claim to those amongst existing imposts which might be made available, for the objects which have been described, with the least detriment to the ratepayers and the public in general. The duties which appear to the Board to present this characteristic are those on hackney carriages, and the whole or a part of those levied on coals in the metropolitan district. The amount of duty charged in the metropolitan districts on hackney carriages alone is 80,368*l*. The coal duty yields 233,000*l*. It was originally imposed for the purpose of establishing a coal market, and was continued for the express purpose of "providing a fund for the opening of poor and densely-populated districts in the metropolis, or for keeping open spaces in the immediate vicinity of the same, as a means of promoting the public convenience, recreation, and health."

One thing, adds Mr. Thwaites, is undoubted, and that is, that the longer the task they have to perform is delayed, the greater will be the difficulties attending its execution; and those incur a heavy responsibility who, in presence of the evils which surround them, defer promptly grappling with the mischief, and thus offer serious impediments to the adoption of effectual remedial measures adapted to the exigencies of the case. They therefore ask for the active support of the metropolitan members to the steps contemplated—namely, the application to Government and Parliament for ways and means.

COMPETITION.

Burnham Clock Tower.—Ninety-two designs were submitted in competition for this building. The first premium was awarded to Messrs. Bellamy and Hardy, architects, Lincoln, who have been employed to carry out their design. The second premium was awarded to Mr. W. H. Nash, architect, Reading.

STAINED GLASS.

Wandsworth.—Messrs. Thomas Baillie and Co. of London, have just completed and fixed up in the chancel of All Saints' Church, Wandsworth, a new stained window, "The Transfiguration" (by subscription of the congregation). The group includes our Saviour, Moses and Elias, with St. Peter, St. James, and St. John: in the border of passion-flower which surrounds the same, are the figures of St. Matthew, St. Mark, St. Luke, and St. John, with medallions containing the Lamb, A.O., and I.H.S., with text. The church has been closed for some weeks, for the purpose of providing additional seats, and has been painted and embellished; the whole carried out by Messrs. Nicholson and Sons, builders, of Wandsworth. The church was reopened on Good Friday.

Newbury.—A new stained glass eastern window has been put up in the restored church of Thatcham, according to the *Reading Mercury*. The subjects are—Christ feeding Five Thousand, and the Manna in the Wilderness; The Last Supper, and the Paschal Lamb; The Woman of Samaria, and Moses striking the Rock. Two stained glass windows are to be added probably to the south aisle of this church.

Blackburn.—A memorial window has just been placed in the east end of St. Paul's Church of this town. The window is of three openings, of Grecian character. In the centre one, which is 44 feet wide, is represented the Conversion of Saul. In the background is seen a distant view of Damascus, the whole surrounded with a border. The subjects occupying the two side openings show forth the power given to Paul after his conversion: on the left he is represented striking Elymas blind; and on the right he is raising Eutychus to life. The artists were Messrs. R. B. Edmundson and Son.

Bolton.—Messrs. Edmundson and Son have also completed and fixed a large stained glass window in the chancel of the Holy Trinity Church, Bolton. The window is of nine lights wide, and two tiers high, with tracery above. The subjects in the principal lights are—The Birth, Baptism of the Saviour, Last Supper, Agony in the Garden, The Crucifixion, Ascension, and Descent of the Holy Ghost, with suitable texts to each. The canopy work is so arranged as to form three lights into one panel, which contains a subject running over the three. The Pentecost occupies three openings in the tracery, and four others are filled with figures of the evangelists: the remainder is filled up with scroll ornament, emblems, monograms, and texts.

MONUMENTAL.

Burnham, Somerset.—George Reed, Esq. of this town, having decided upon erecting two monuments to the memory of his deceased children, including the late Major Reed, formerly M.P. for Abingdon, and major in the Royal London Artillery,—one to be placed in the parish church of Burnham, the other in that of East Brent, of which latter place he is the Lord of the Manor,—several designs were submitted for inspection, and the one chosen is that of Messrs. Casentini and Barnard, modellers and sculptors, of Lambeth, who are also entrusted with the execution of the works, under the supervision of Mr. Robert Salisbury, of Burnham. The two monuments will be *five similes* of each other, and placed against the wall. They will be French Gothic in style, about 12 $\frac{1}{2}$ feet when completed, each containing a centre panel or tablet, and side splay, with canopies, figures, and marble columns, each splay to contain a niche, in which will be a figure representing Perce, standing 2 $\frac{1}{2}$ feet in height, one bearing a palm, the other a crown of laurels, standing on enriched octagon pedestals. The niches are to be gilded in the background, and separated from the centre compartment with polished Purbeck marble columns, surmounted with enriched caps, canopies, pinnacles, crockets, and finials. The tablet, which will be of statuary marble, is much larger than the side splay, and will be surmounted with the family crest and coat of arms (also in statuary marble), enriched spandrels, quadrifolds, filled with different coloured marbles, and finished with pinnacles, crockets, and finials, to correspond with those over the figures; the whole to be supported upon an enriched corbel, with a projecting pendant at each intersection in a line with the marble columns. Caen stone will be used for the work. The cost of each will be about 200*l*.

Stephenson Monument.—The committee have resolved to report to the general meeting of the subscribers, to be held in Newcastle, on the 11th of May, *inter alia*, that the best site for the monument is on the triangular space at the junction of Westgate-street with Neville-street, in case the assent of the corporation of Newcastle can be obtained. They recommend that Mr. Lough should be invited to produce a model of the statue and pedestal, or other accessories, upon such a scale as to enable them to speak with more confidence upon so important a question, as the selection of the artist; the model so furnished to be submitted to the opinion of a committee constituted of the Duke of Northumberland, Lord Ravensworth, Sir George Grey, Sir William Armstrong, Mr. Robert Stephenson, and others. The amount subscribed on the 20th April, for the monument, was 1,856*l*. 2*s*.

CHURCH-BUILDING NEWS.

Mancroft.—St. Peter's church, Mancroft, has been fitted up with gas, the cost defrayed by private subscriptions. The work has been done by Mr. Pank. The standards for the burners are twenty-four in number, each comprising four lights. A spiral shaft rises out of a fluted column, and is surmounted by a perforated coronet, from which spring a straight stem and three branches, ornamented with oak leaves and acorns. The fluted column is painted a deep blue, and the rest is burnished.

Bishop Stortford.—The new church, dedicated to the "Holy Trinity," has been consecrated. It stands south of what visitors to Stortford recognize as "the town," in a district known as "New Town," on land adjoining the New Town schools. It is built of Kentish rag-stone, in the Early English style, and consists of nave, chancel, and transept, containing seats and vestry. The roof and seats are stained in imitation of oak. The total cost of the building is about 1,800*l*. of which sum about 350*l*. was wanting before the consecration. The seats are all free. The architect was Mr. Clarke, the diocesan architect, whose plans have been carried out by Mr. H. W. Young, builder, Bishop Stortford.

Newton Abbott (Devon).—The foundation of a new church, to be dedicated to St. Paul, was laid by the Earl of Devon, on the 26th of April, on a piece of ground given by his lordship for the purpose, near the railway station, and in the centre of that portion of an estate which is laid out for building purposes. There are already a very large number of houses built in that locality. The church has been designed by Mr. J. W. Rowell, of this place, architect. The style will be Early English. The walls will be of grey limestone in random courses, with windows and dressings of Bath stone. The plan is cruciform, consisting of nave with north and south porches, transepts,

choir, and sanctuary; the east end of the latter terminating in a polygonal apse. There will be a central oak bell turret, resting on the diagonal trusses of the roof of the transepts, surmounted by a spire covered with partly-coloured slates. The roof will be open, showing the framing of the timbers, and, together with the open benches, prayer-desk, and pulpit, will be of stained deal, the latter having a stone base. The floor under the benches will be of wood, the passages of the nave and the whole of the choir and sanctuary of tiles. The contractors for the portion of the building intended to be first erected (the nave) are Messrs. Wilcox and Woodley, of Teignmouth.

Welch Bicknor.—The description of the rebuilt church of Welch Bicknor, quoted recently in our columns from the *Hereford Times*, being, it is said, incorrect, we have obtained fresh particulars, from which we quote as far as our limits allow. The work has been carried out at the joint expense of the Rev. J. Burdon, rector of the parish, and Stephen Allaway, Esq. of Court Field. Welch Bicknor is a very remote spot, unknown, probably, to any of our readers, except such as have taken boat from Ross to Monmouth in search of the beauties of the "Sylvan Wye"; moreover, the population is very small, consisting of about ninety persons. The church consists of nave, chancel, and south aisle, the west end of which is terminated by a tower. With the exception of the tower, which is of late Perpendicular character, the original church was of early architecture, the nave being Norman, with a First Pointed chancel and aisle. As the two latter dates could not be improved, they were received as type for the restoration, the form of the old church being strictly adhered to. The details were of such miserable character as not to warrant reproduction. The west entrance is Norman, with deeply-sunk mouldings, enriched with the zig-zag ornamentation of the period. This is surmounted by four small semicircular-headed windows, also moulded and carved. Between the glass line and the internal face of the wall is a kind of passage or arcade, formed by a row of insulated columns and arches: above these, and in the centre of the gable, is a circular window, treated in a somewhat similar way. The north side of the nave is lighted by two narrow, single, semicircular-headed windows, deeply splayed, at the sill of which runs a moulded and carved string course. The east window is triplet, the internal face of which is arched and supported on polished marble shafts, with moulded and carved caps and bases, which are tied to the external portion of the window by zones. The whole of the building is of stone, plaster having been entirely abandoned. Underneath the east window of the aisle is a niche for the reception of a recumbent stone effigy of a Countess of Salisbury, who is said to have been nurse to Henry of Monmouth (Henry V.), and to have died at Court Field, in this parish. The contrast between the west end of the nave, which is Norman, and the other parts of the building, is said to add greatly to the general effect. Mr. T. H. Rushforth was the architect.

Cardiff.—Canton Church has been re-opened. The plans were furnished by the diocesan architects, Messrs. Pritchard and Suddon, and the church, which is of the early geometrical Decorated period in style, is intended, when complete, to consist of a nave, and north and south aisles (now erected) extending eastward, so as to embrace a tower, which will be situated between the nave and chancel, and will be surmounted by a spire. Farther eastward, beyond the tower, will be the chancel, with a sacristy attached on the north side. It was resolved, according to the *Cardiff Guardian*, to complete the church by three separate erections; first the nave, then the side aisles, and lastly the chancel and tower. Accordingly they commenced with the nave in the spring of 1854; and the contractors, Messrs. James and Price, completed that portion of the building by December in the same year, and it was then opened for divine worship. The main portion of the building was thus completed, and accommodation afforded for about 250 persons, at a cost of about 1,400*l*. By this time the subscription-list had been increased to 1,300*l*, and in the summer of last year the building committee, having received further encouragement by subscriptions and donations, determined on erecting the second instalment of the building—the north and south aisles, with entrance porches—the nave being much too small for the requirements of the market. The aisles, as finished, give further accommodation for about 250 persons; and it is the re-opening of the church on their completion that we now record. The church, as now complete, will seat 500.

Birkenhead.—St. John's Church, Grange-lane,

Birkenhead, has been consecrated. The church is cruciform in plan, and has a tower surmounted by a spire at its east end. It was built by Messrs. Jackson and the late Mr. Mallaby, at a cost of 4,500*l*. in the year 1845, from designs by Mr. Charles Verelst, architect. The foundation-stone of a new chapel has been laid in Park-field, Birkenhead, for the Welsh Presbyterian denomination, or Welsh Calvinistic Methodists. Mr. Thomas Clegge Thomas is the architect, and Mr. Isaac Roberts, of Liverpool, is the contractor.

Moseley.—The first stone of a new church, about to be erected at King's Heath, Moseley, has been laid. The church, which will be in the Early Decorated style, will accommodate 430 persons, and is estimated to cost 2,750*l*. of which about 600*l*. yet remain to be collected. The architect is Mr. Freedy, of Worcester, and the contractor Mr. Isaac Clulee, of King's Norton.

Sheffield.—The new congregational church, Cemetery-road, is now near to the roof. The committee, says the local *Independent*, have decided on having the spire erected at once, so as to complete the plan of the architect, Mr. Joseph James, of London. The entire cost is to be 3,000*l*. of which 1,200*l*. remain to be subscribed.

Leeds.—The foundation-stone of a new chapel and school, on Burley Lawn, Leeds, for the United Methodist Free Church, was laid on Good Friday. The building is Italian in style, and of brick, with plain stone dressings and moulded cornice with circular medallions along the front sides and pediment. Total cost estimated at 1,300*l*. The designs have been prepared, and are to be carried out, under the superintendence of Mr. G. Smith, architect, Leeds.

York.—The sums already subscribed for the York Minster organ amount to 1,200*l*. and Messrs. Hill and Son, the London organ-builders, have undertaken the repairs and improvements for 1,250*l*. It has been recommended that a further sum of 250*l*. should be laid out in providing a hydraulic engine to supply the bellows.

Glasgow.—The Jewish synagogue, recently erected at the corner of John-street and George-street, has been opened for divine worship. Above the entrance of the body of the synagogue stands the gallery, which is occupied by women alone.

THE NEW ASSIZE COURTS, MANCHESTER.

STR.—Since the decision of the committee in the above matter, from the importance of the work, affects not only the principle of justice to the competitors themselves, but also the interests of the profession at large, as being deeply involved in the competence and disinterestedness of committees and the character of the adjudications they make, you will perhaps allow me the opportunity of noticing, in your widely-circulated journal, a few of the most salient defects, which are evident at the first glance, in the selected design; these being, moreover, so fundamental, that they affect the very principle of the arrangement of the plan, and not only err against the instructions most grossly, but are of first importance to the facilities for transacting the business of the courts when erected.

In the first place, the courts in the successful plan are so arranged that the mass of the public coming from the great hall enter at the side, and, absolutely, also, at the end, close by the judge's seat, and between that and the jury-box, and stand between the jury-box and the juror's retiring-room, keeping up a constant tumult and noise close at his ears, while the jury may always be reached by interested parties even in court. Now the public ought always to enter at the opposite end to the seats of the judge, the jury, and the counsel, so as to keep them quite distinct from the parties engaged on the trial and the business of the court.

2. The judges' rooms, although close together, have a public corridor passing between them.

3. Absolutely no jury-room at all is shown on this plan to the criminal court, and there is no room for one either, because the space allotted to this room in the other court is here occupied by the sheriff's court.

4. The jury-room to the civil court is so placed that the passage by which the mass of the public enter the court is between this room and the jury-box, so that the jury retiring to consider their verdict pass through the public crowding at the doors. Such of your readers as are sharp attorneys can say how much business can be transacted while the jury are fighting their way through the crowd; or suppose a case of intimidation. Now it is of first importance that the jury-room

and box be so placed that none but the officers of the court can possibly communicate with them, and the only door from their room ought to lead immediately into court, so that they may be placed beyond all reach of external influence when once engaged on the trial.

5. The witnesses' rooms are so placed with the public passages between them and the court, that no possibility occurs of secluding this class when necessary to prevent bribery, intimidation, or collusion, to say nothing of the distance they are placed from the witness-box in each instance, and their being obliged to fight their way through the public to get to their station in court.

6. The female witnesses' room is placed next to the public conveniences and urinals in each instance.

7. There appears to be but one sheriff's court; at least, only one is shown on the plan. The other required in the particulars cannot be over it, because this one is lighted from above. Is this court, as well as the jury-room of the criminal court, left to the imagination of the public? Here, too, we have the public passage intervening between the judges' room and the court. I need not say how many instances occur in which a judge would prefer to be beyond the reach of unsuccessful suitors or their friends.

The above are the more salient defects of the successful design; but they are such as affect the very principle of the plan, and are in direct contravention of the instructions issued by the committee. When the choice of the committee was announced, the competitors and the public both naturally presumed that so speedy a decision proceeded from the manifest and indisputable superiority of the plans selected, and rested content; but an examination of the plan has completely dispelled the illusion, and excited the astonishment of all capable of judging the question, more particularly of those who have studied the matter carefully to avoid all such defects, supposing that they would have naturally influenced the decision of the committee. I have only two conclusions to draw,—either the committee were most incompetent, or influenced by interest.

Trusting to the interest of the case, your own love of fair play, and even to the desire the committee themselves affect of doing justice to all parties, for the privilege of a little space in your journal,—I am, &c.

AN ARCHITECT.

DESTRUCTION IN HANSDLOPE CHURCH, BUCKS.

STR.—As a non-professional reader of the *Builder*, I have often been deeply grateful to its columns for telling me of some work of Medieval design that was being carefully tended by those to whom the restoration of churches were entrusted, and my antiquarian propensities have rejoiced at the good you have done in this case. May I, on the present occasion, ask your powerful aid to stop one of the most wanton acts of vandalism I have ever heard of? The church of Hanslope, in Buckinghamshire, a view of which appeared in your periodical some years since, is being repaired internally. The restorers, finding the surface of the wall uneven, and intending to plaster it and make it into stone-like compartments, discovered that there was an abundance of polychrome decoration on the walls: they wanted to see what they looked like, and uncovered about a square yard, which revealed a representation of Purgatory, and figures of saints, the Blessed Virgin Mary, devils, and grotesques of all sorts in an elaborate scroll-work, and of brilliant colour. Will it be believed, that men could now be found deliberately to have this picture pecked down bit by bit, in order that the wall should be granulated to receive the even coating of plaster! Such is the fact. One compartment has vanished, but, by your aid, it is hoped such an outcry will be raised that the plastering process will not be allowed to be proceeded with.

While on this subject, I may mention that about sixty years since an oak dado was raised, high above an ordinary man's head, and placed round the entire chancel, and behind this are sedilia, piscina, and a large quantity of Norman tracery, all of which I am informed from one who remembers having seen a portion uncovered, are of superior workmanship and in fair preservation.

I should take it as a favour, if you will kindly draw the attention of the Oxford Architectural Society to this church of Hanslope, and so set a watch upon the restorers there, who will then no longer be enabled to carry on their work of mischief.

AMANTUENSIS.

THE NON-OUTLAY-PAID SYSTEM.

Sir,—Whenever allusion is made in your pages, as in a recent controversy, to the effects of remuneration according to outlay, some dependant on that system tries to convey to your lay readers the impression that it is attacked without or before providing a substitute. By referring to the *Builder*, for 1857, page 570, they will see nothing of the sort has been done. No one has proposed to pay artists in proportion to the amount of their own work, the "amount of design," without first discussing amply how this is to be measured, and by whom; not that there is, or ever was, the slightest difficulty in these questions to a non-professional mind, or any having a will to answer them. The framers of the present Metropolitan Building Act have not shown a sense of such difficulty in devising the scale of fees to district surveyors; and the labour of revising designs with regard to a particular utilitarian purpose, is plainly proportional (as exactly as any labour can be practically valued) to the labour of making those same designs, decoration excepted; or superintending their execution, decoration excepted, for which a distinct charge (the regulation of which was there discussed) is necessary. All I protest against is, the attempt to make it appear that the miserable system in question is the only one in practical operation, or that every one who writes "architect" after his name touches it; whereas a directly counter system is just as practically at work as the "outlay-paid," however unequally the two may divide the architectural practice of Europe between them just at present.

E. L. GARBETT.

MANAGEMENT OF COMPETITIONS.

The mismanagement of competitions has so often been treated by clever persons than myself, that I scarcely like bringing forward any new projects; but still something ought to be done, and I cannot help thinking that most architects throughout the kingdom would not mind paying a voluntary tax, which, with so many architects as there are at the present day, could not come to much, and appointing, say two or three referring architects, in London, at a fixed salary, and that all competition drawings should be submitted to them for their decision. If the plan seemed likely to be of avail, a committee might be formed, and something arranged; and then let advertisements be put in all provincial papers, asking to compete in future for works without the final decision be given by these referring architects. In my opinion it would effectually stop competition for paltry works, and for others we should know the plans would have their fair chance, which at present they have not; for, putting aside the supposition of any unfairness on the part of the committee, how is it possible for those who know nothing of architectural drawings to judge of their respective merits or demerits?

ARTHUR WILSON.

THE NINE-HOURS MOVEMENT.

Mr. EBBOT.—If the building operatives claim that ten hours as a day's work is too much, what would they think of fifteen or sixteen hours? That is, I believe, about the time that master builders and others work. My father and myself rise about a quarter to five, a.m. and are about our business; and leave off estimating, writing, planning, at ten or half-past, p.m. allowing about two hours for meals, &c. I do not think that workmen have much to complain of; if they have some of the anxieties connected with the carrying on of large jobs, and many things not going altogether exactly right, or the thoughts of Saturday afternoon coming round, and being rather short of cash; besides many other and similar benefits belonging to the master builder's position.

A BUILDER'S SON.

P.S. What would the men think of the hours of a builder's clerk?

THE BOROUGH ENGINEER OF LIVERPOOL.

We learn from the newspapers, that in the Court of Queen's Bench, on the 29th ult. Mr. Milward moved for a rule calling upon the publisher of the *Builder* to show cause why a criminal information should not be filed against him for a libel published in that journal, imputing to the applicant, James Newlands, corruption in the exercise of his office as town surveyor at Liverpool. The report goes on to say:—"The article appeared in the shape of a letter in the *Builder*, in the month of January last."

Mr. Milward.—Would you say it imputes?

Mr. Milward.—It imputes this, my lord. It imputes that, having employed gentlemen as assistant surveyors, the borough engineer of Liverpool was induced by *them* to give certificates of qualification to several of his assistants.

Lord Campbell.—No one seems the worse for this matter.

Mr. Milward said the applicant's main object in coming to this Court was, that he might have an opportunity of publicly denying the charge upon his oath.

Lord Campbell said he was glad he had done so, and it appeared there was not the smallest ground for the imputation.

Mr. Milward said that, under the circumstances, he should not press the matter any further.—Rule refused.

statement. Mr. Newlands's name was not mentioned in our columns, and we had no reason whatever to know that the objectionable observation was intended to apply to that gentleman. The letter spoke of "a certain officer" in "one of the principal reports in Lancashire."

We had not the slightest knowledge as to whom it was intended to apply. The writer of the letter, himself a surveyor to a local board of health, withdrew the charge on being requested to explain his statement; and for our-

selves we said at once that the denial was altogether unnecessary if the statement was intended to apply to Mr. Newlands, and expressed in strong terms our reprehension of the writer's want of caution.

THE HASTINGS COTTAGE IMPROVEMENT SOCIETY.

We are glad to hear that this society is still extending its usefulness. The society was founded in January, 1857: its first property was purchased in March, 1857: it commenced its operations with a paid-up capital of 850*l.*: its first half-yearly dividend, at the rate of 6 per cent. per annum, was paid in October of the same year: the same rate of dividend has hitherto been paid half-yearly: it now possesses about seventy small freehold houses in different parts of the old town of Hastings; and its paid-up capital amounts at present to 5,600*l.* (divided into fifty-six shares of 100*l.* each), which has been managed with great economy.

The principal field of the society's operations during the past half-year has been East Hill-passage (in the parish of All Saints), where, at the date of the last report, four tenements in a very dilapidated state had recently been purchased. East Hill-passage with the immediate neighbourhood has for some years been notorious as one of the dirtiest, noisiest, and most disreputable parts of the whole town. At present, out of twenty houses at the upper part of this passage, sixteen are the property of the society.

The receipts and expenditure of the society during the past six months have been as follows, viz.:

RECEIPTS.	
Net rents	£155 0 7
Interest on reserve fund ...	0 8 1
Interest on Exchequer bills ..	4 7 0
	£159 15 8
Balance due to treasurer ...	6 10 9
	£166 6 5
EXPENDITURE.	
Dividend	£117 3 9
Officers' salaries	47 10 0
Postage, printing, &c.	1 12 8
	£166 6 5

PROVINCIAL NEWS.

Birdingbury Hall.—It will be remembered, remarks the *Northampton Herald*, that one wing of this building, the residence of Sir Thomas Bidolph, bart. was destroyed by fire, in February last. The building, it would appear, had been insured in the County Fire Office, for we are informed that Mr. John Bromwich, builder, of Rugby, has instructions from that establishment to rebuild the portion of the edifice that was destroyed.

Lichfield.—The Lichfield Museum and Free Library has been inaugurated by the Earl of Lichfield. The building is Italian in style, and the material is white brick and stone. The two principal fronts are similar, consisting of a basement with stone string course, on which rest the bases of piers which divide the façade of the ground story into an arcade by arches turned from pier to pier, the windows being in the interspaces. The upper portion, which, from the fact of the museum being lighted from the roof, needed no exterior openings in the wall space, has been relieved by a colonnade of arches of less span than the lower story, supported on stone shafts. A cornice crowns the whole. At the angle of the two fronts is introduced a detached tower, which rises to an elevation of 58 feet. This tower forms the entrance, and leads on the ground floor to a library, 42 feet by 23 feet; to a reading-room, 25 feet by 15 feet, and to a retiring-room. The hall is paved with Maw's encaustic tiles, and a stone staircase leads to the first floor, which is appropriated entirely to the purposes of a museum. It is lighted by a sky-light extending along the full length of the room, giving the wall space for exhibition. On the basement are store-rooms for packages, or suitable for casts or heavier objects. There is also a residence for the hall-keeper. The cost has been 1,350*l.* and the building has been erected by Messrs. Lilley, of Mesham, from the designs of Mr. G. Bidlake, of Wolverhampton.

Walsall.—The building for the Blue-Coat Schools approaches completion. The style is Early English, the erection presenting a succession of gables and angles, projections, and recesses, further varied by porches. The site

is narrow, and irregular in shape. The architect is Mr. Cooper, of London. The main part of the walls is composed of red interspersed with blue bricks, the latter forming outer arches to the windows. The dressings are of Bath stone. The roofs are steep, and covered with Welsh blue slates, varied with bands of the green slates of Westmoreland. The most striking external feature of the building is a tower, square at the base, falling into an octagon at some distance from the ground, and surmounted by a stone cap, from which rises an open bell-turret of oak, whence a slender octagonal spire, covered with oak shingle, and terminated by a gilt cross, rises to the height of 60 feet. Each of the larger school-rooms—one for each sex—consists of two divisions running at right angles, and capable of being separated. The larger portion of the boys' school-room is 70 feet by 18 feet, and that at right angles with it, 45 feet, and of the same width as the other portion. Two class-rooms, fitted up with galleries for collective lessons, are each 16 feet by 14 feet. The larger portion of the girls' school-room, is 53 feet by 18 feet, and the smaller, extending at right angles, of the same width, is 39 feet long. A large industrial-room, 21 feet by 16 feet, fitted up with cooking stove, adjoins, and next to it is a wash-house. The girls have also a class-room, 14 feet by 20 feet, with a gallery. The height of the school-rooms from floor to underside of ridge of roof, is 31 feet. The walls in the interior are of white and red pressed Broseley bricks. A wood subbase runs round the rooms, 3 feet 6 inches from the floor, and below this the wall is lined with encaustic tiles. The contractors are Messrs. Highway, of Walsall. The site cost upwards of 700*l.* and the contract, with extras, architect's commission, &c. will amount to about 4,000*l.*

Miscellaneous.

SPIRAL HEAT-DIFFUSERS.—Messrs. Gwynne and Co. propose the use of twisted plates of metal, which, when introduced into the tubes of steam-boilers, produce, it is said, a change of circulation of the heated products of combustion in their passage through the tubes, and arrest a large measure of heat, transmit it to the water, and convert into working steam that equivalent which, without these appliances, would escape through the flues and be lost.

THE GREAT WESTMINSTER CLOCK.—A few days before the prorogation of Parliament Mr. Hankey moved for a return of the time when the Westminster clock would be actually going, and some particulars of its history. Some information has, in consequence, been extracted from Lord John Manners, who has since issued a Parliamentary paper on the subject. According to a report from Mr. Denton, the clock will be going before the new Parliament meets, as the works are now at the palace, ready to be fixed as soon as the plasterers and bricklayers shall have done their work. The total cost of the clock up to the present time has been 20,307*l.* and it is estimated that a further sum of 1,750*l.* will be required before the work is complete. The cost of the clock itself and the dials has been 8,279*l.* and the bells 5,966*l.*

GLASGOW SCHOOL OF ART.—The public distribution of prizes to pupils connected with this institution took place in the centre hall of the Glasgow Gallery of Art. Sir A. Alison, bart. president, occupied the chair. Mr. Wilson, superintendent of the School of Arts, read the annual report, according to which the number of students who have received instruction during the session now in progress is as follows:—Central school, 808; external schools, 1,353; otherwise, 40; total, 2,201. Sir A. Alison, in his address, expressed his belief in the general utility of drawing, which ought not merely to be studied by those persons who intended to adopt painting or designing as a profession, but which should form part of liberal education for all persons, both male and female. It proved beneficial in professions with which it appeared to have no connection. He had been early in life an enthusiastic drawer, and for eight or nine years was accustomed to devote five or six hours a day to the practice of it, and he had found it of the greatest possible benefit to him later in life. The greater part of the undeserved success which his writings had met with he ascribed to the habit of drawing, which enabled him to form a conception in his own mind of what he wished to describe: and, having formed that image in his mind, it belonged to the pen to transcribe it. Sir Archibald said he would give prizes of three guineas and two guineas to be competed for by the students.

BURIAL IN CHURCHES.—We are glad to see that an order of council directs that certain purifying operations are to be performed in the vaults beneath the churches of St. Mary's, Whitechapel, Christ Church, Spitalfields, St. Luke's, Middlesex, and St. Mary's Roman Catholic chapel, Wigan. By another order in council it is stated that the privy council will, on the 3rd of June next, take into consideration a representation urging that for the protection of the public health burials should be forthwith discontinued in the churchyard of Christchurch, Spitalfields. A vast number of interments must have taken place in this ground: owing to the closing of many of the metropolitan grave-yards, a rush has been made to those which have been allowed to remain open. We notice that increased competition is going on amongst the undertakers to meet the necessity of conveying the dead to the suburban cemeteries; and we believe that there will shortly, in all parts of London, be the means of providing for this necessity at a cost but little, if at all, beyond the cost of interment in those crowded grave-yards which have been properly closed.

SUPERHEATED STEAM.—A very important experimental improvement in steam machinery has been tried down the river, on board the Peninsular and Oriental Company's ship the *Valetta*. The improvement consists of a simple apparatus for working marine engines by means of superheated steam. In the success or failure of this experiment are involved results so important as to affect materially all ocean-going steamers,—and, indeed, steam machinery of all kinds. To be able to work machinery with superheated steam means to command increased power with a 30 per cent. reduction in the consumption of fuel. A simple and effective working of the principle, however, has been an engineering difficulty. This obstacle has now, according to the *Times*, been effectually overcome by Mr. Penn. His method is to place in the smoke-box of the boiler, through which the hot hair from the furnace first passes, as large a number of small pipes as is consistent with allowing a free draught from the furnaces. Through these all the steam from the boilers passes in its way to the cylinders. By this plan an immense heating surface in the pipes is secured; the steam is in a subdivided form, so as to be readily acted on, and the waste heat from the furnace is utilized at the point where its intensity is greatest, and where the greatest conveniences exist for applying the apparatus. By the means of three ordinary stop-valves the whole contrivance can be shut in or off from the engines at pleasure. By the superheating process the steam is raised in passing along the pipes in the smoke-box (where the heat is about 650 deg.) from a temperature of 250 deg. to 350 deg.; and so enters the cylinders at 100 deg. in excess of the temperature due to its pressure. Singularly enough, a smaller amount of cold water is required to condense the steam at this high temperature of 350 deg. than when at the ordinary heat of common steam.

BRITISH WORKMEN ABROAD.—Whereas divers British subjects, who have entered into engagements for employment abroad as railway labourers, miners, engineers, stokers, and firemen, on board steam vessels, and in other capacities (such engagements in general containing no provision for the maintenance of such British subjects, or for furnishing them with the means of returning to this country), have applied to her Majesty's consuls in foreign parts for relief as distressed British subjects, and considerable expense has been incurred in relieving such persons, and in sending them back to this country. The notice given on the 11th of July, 1856, is hereby repeated, warning all persons accepting engagements for employment in foreign countries, as such railway labourers, miners, engineers, stokers, and firemen, as aforesaid, or in any other capacity, that they are not considered by her Majesty's Government to be entitled to relief as distressed British subjects, or to be sent back to this country at the public expense, and such persons are hereby warned that her Majesty's consuls abroad have received orders not to afford relief in such cases.—*Gazette*.

PETER NICHOLSON.—Sir: My object in writing this note is for the express purpose of bringing into prominence the recognized qualities of a great man, whose high reputation gained universal praise in all scientific journals. It would be superfluous in attempting to say anything respecting his works, as it is a recognized fact that they laid the foundation of staircases on a true mathematical and geometrical principle. What I want is, some public monument of his past qualities as a benefactor to the trade. I want a demonstration in honour of Peter Nicholson.

JAMTS WILD.

SOUTH WALES INSTITUTE OF ENGINEERS.—This institute held a meeting at Newport, on Tuesday, which was largely attended, and a discussion took place on the "Relative Practical Value of the North of England and South Wales Steam Coals." A paper was read by Mr. A. Wilson, of the firm of Messrs. Cammell and Co. of Sheffield, "On the Manufacture of Steel," and illustrated by specimens of the work in all its stages, from the iron ore itself to the finished steel bars of every kind. The discussion of this paper by the Institute is deferred until their next meeting, which we hear is likely to be held at Swansea in August next.

PILE-DRIVING MACHINES.—A patent has been taken out by William Toshach, of the Railway Work, Bristol-road, Gloucester, engineer, for improvements in pile-driving machines. The timber framework of Toshach's machines, according to the specification, is similar to that of pile-driving machines in ordinary use, with the exception that the leaders are made wider, to allow room for wedge-formed pieces or inclines to slide up and down clear of the back plate, for freeing the hammer, as described. On the main shaft of a crab is fixed a cast-iron wheel, made of such a shape as to fit into and give motion to an endless pitch chain, which moves behind and as close to the leaders as possible, and round a similar wheel on the top. The chain is formed to receive iron pins put through any of the links, and sufficiently wide to carry them up true and square. The pins referred to are made long enough to catch a fork that is attached to and projects from the hammer. The pin, by the motion of the endless chain, carries up the hammer with it, until the chain is forced back clear of the fork by the wedge pieces, which are adjusted as required on the leaders. The hammer thus freed falls on the pile, after which another pin is ready to again take it up, and so continue the process until the pile is driven. The greatest advantage to be gained by this machine is the continual motion of the endless chain, which is always ready to pick up the hammer immediately after it falls on the pile, thereby saving the time usually taken up in pulling down "nippers" and slack chain.

THE BESSEMER PROCESS MISUNDERSTOOD.—The following paragraph has of late been going the round of the newspapers:—"It is said from Sweden that the 'Bessemer process' for the manufacture of iron, which for a time made so much noise in England, has been tried with much success in the casting of steel. In the experiments that had been made with iron ore, it was found impossible to produce metal of a suitable kind; but it is affirmed that by its adoption steel can be cast of a superior quality, and at a comparatively trifling expense." Now, in the first place, what has been done to the readers of this process is nothing new to the readers of the *Builder*, since we informed them of it in the course of last year, and probably nearly twelve months since. In the next place, one of the chief purposes which Mr. Bessemer himself had in view, was the cheap and easy production of steel by his process, and the main difficulty connected with that process consisted not in the production of steel, but in that of malleable iron by its means, inasmuch as to this end all the carbon in the cast iron, and then in the steel, produced in the outset, required to be burnt out of it by means of the air blast, which contributed oxygen to the red-hot and fluxed metal, and kept up the combustion and the fluidity without other fuel; whereas the more the carbon was burnt the less fluxible the mass became, till at last the metal, which was first cast metal, then steel, ceased to flow at all as it approximated to the state of pure or malleable iron, which is inflexible, and hence the mass became far more difficult to manage, to any useful end, as the combustion expired, and the whole clotted into one tough inflexible mass of malleable iron, having no external fire in this self-heating Bessemer process to keep it workable. A difficulty in getting rid of phosphoric acid in it was also spoken of. Lastly, what the Swedish firm alluded to (the name of which we gave, but do not now remember) succeeded, after costly failures, in doing, was simply to effect one of Mr. Bessemer's own objects, in which he had himself already succeeded, namely, in making good and cheap steel, without separate fuel, or by means of this process: that is all. The production of malleable iron by its means, however, is certainly a further desideratum, which it would be of still greater importance completely to realize; but how far Mr. Bessemer or the Swedish iron masters have, as yet, gone towards this great end in view we do not know.

METROPOLITAN BOARD OF WORKS.—The entire time of the board was occupied on the 29th April relative to the appointment of a surveyor to take out the bills of quantities for the contract for the erection of the new offices at Spring-gardens, and a return was ordered relative to the correspondence and proceedings that have taken place upon the subject.

WORKMEN'S DINNER.—On Saturday last a demonstration of unity between master and man took place at Mr. Coleman's, Southsea, where, under a spacious booth, 420 workmen, foremen, clerks, and superintendents, connected with the works and firm of Mr. George Smith (contractor for docks, &c. Portsmouth), and under the arrangements of Mr. W. Austin, manager, sat down to a substantial dinner of old English fare.

THE SAW MANUFACTURE.—Messrs. Atkin and Peace, of Celtic Works, Sheffield, says the local *Independent*, have exhibited a hand saw of the length of 43 feet, and 6½ inches broad, and made at fifteenth wire-gauge thick by them. It is for the purpose of cutting logs of unusual thickness, with a saving in labour and material.

NEW ACT AS TO PLACES OF RECREATION.—An Act to grant facilities to provide recreation-grounds for adults and playgrounds for children, has received the Royal assent. Corporations and parishes may now provide such places, which the Act declares to be much required; and benevolent individuals may bequeath property, not exceeding 1,000*l.* in amount, for such purposes.

LAMP-POSTS AND CHIMES.—Will you allow me to notice how much the town would be improved by a more ornamental description of lamp-post, those at present in use being about as ugly as can possibly be conceived. I would likewise take the opportunity to ask if we are never more to have Chimes at our public buildings. Surely they are still manufactured in some parts of the world, if not in England.—G. S.

THE ATLANTIC TELEGRAPH.—The terms offered by Government to the Atlantic Telegraph Company are said to be as follows:—A guarantee of eight per cent. upon the capital to be employed, not exceeding 600,000*l.* This guarantee to be for twenty-five years, conditional upon the successful working of the cable at a rate of not less than 100 words per hour. A postal contract of not less than 20,000*l.* per annum for the business of the Government. The company's contract with the American Government, whereby a further sum of 14,500*l.* per annum is secured to the company, is to be allowed to subsidize, so that the guaranteed revenue of the company will be 31,500*l.* per annum.

THE STREET FOUNTAIN MOVEMENT.—At Barnstaple Sir William Fraser, M.P. has contributed 50*l.* for the erection of a white marble fountain, in any part of the town which the corporation may consider most suitable.—The Mayor of Hanley (Mr. W. Brownfield), intends to signalize his year of office by erecting a drinking-fountain in a central part of Hanley, besides building, at a cost of 500*l.* a news and general reading-room for the working men of the town.—Mr. Alderman Padmore's fountain, at Worcester, is partly of stone and partly of iron, and was erected in the Market-house, by Messrs. Wood and Son, builders. The stone basin in which the fountain stands, has an internal diameter of 13 feet. The middle basin has a diameter of between 6 and 7 feet, and the upper one is proportionately smaller. The upper jet, which discharges a bell-like stream of water over a pair of Cupids, has an altitude of about 15 feet from the pavement of the Market-house. The stream from this jet is thrown downwards for convenience.

POOR LAW EQUITY.—"Why, sir, the Bank of England itself, and that's Dives, I think, occupies the best part or the whole of the parish of St. Christopher-le-Stock; and though its premises are worth fifty thousand pounds a year, it only pays a farthing a pound to the London poor. That is its crumb to Lazarus. The actual total is not more than is paid by a single house in other parts of London: it is not half as much as is paid by the *Times* printing-office; not a third as much as is paid by the Apothecaries' Company. The Bank of England pays Lazarus a farthing in the pound. The poor parish of St. Nicolas Olave pays eight shillings in the pound. The richer a parish grows, the less it has to pay. The poorer a parish grows, the more it has to pay. Very reasonable, eh? When Regent-street was built, an immense number of poor dwellings were destroyed, no substitutes for them were erected, and the poor were tossed into surrounding parishes, to fall on their legs if they could. When the improvements were made in the Strand and Trafalgar-square the same happened.—*Dickens's "All the Year Round."*

The Builder.

VOL. XVII.—No. 849.

Modern Mortar and Modern Masonry.

The Liverpool and Birkenhead Dock Walls.



It occasionally hears much of the wonderful masonry of antiquity, and know something as to the inferiority of some of the masonry constructed at the present day. Masons of olden times have certainly left enduring monuments of their skill, and, as certainly, modern masons have outlived their slight and ephemeral works; but to do justice, a balance should be struck; and as we only see "the best" of antiquity, we may (without injustice) point to the best masonry of modern times. There are many sorts of masonry, from rude dry rubble to the purest Grecian, in which design and

workmanship are both perfect. It is not, however, our purpose to describe the colossal monuments of Egypt, almost monolithic, or the accurate bedding and jointing of the Parthenon; though work of each class has been executed in Great Britain, and little has been said about it. The piers of the Britannia-bridge are composed of blocks of limestone (Anglesea marble), many of which are cyclopean in dimensions (25 feet by 4 feet by 2 feet), and some even larger, which stones have been set at elevations up to 150 feet above the surface of the water. Then, as to accurate bedding and jointing, there are thousands of cubic yards of ashlar masonry at the Liverpool Docks, wrought as truly as any stones ever were or could be dressed, at any time. This work was never set to the face of the stone, but to the joint, and bed and face were subsequently "pared" truly to line or curve, when in place. Each bed and joint were set, stone and stone throughout. The beds and joints of the stones composing the Parthenon were "rubbed," so as to ensure close fitting; and, as marble is finer and closer in grain than sandstone, the beds and joints may look closer, but there has not been more care, nor is there more truth than in some of the Liverpool Dock-walls. For boldness, and truth in work, and in carving, the masonry of the New Houses of Parliament, Westminster, never has been surpassed. Look at the great tower. The very beggars gaze at it, and stand, all weary, soiled, and starving, as they tramp past. There is no lack of cunning workmen now-a-days. Let our Government and merchant princes employ our best architects and engineers, ask for the best class of work, and find the necessary cash,—and we do not fear for the results. Finely-wrought masonry was common in the East. Solomon's Temple must have been a splendid example; and, no doubt, the smooth beds and joints facilitated destruction. The hand of man would readily separate "one stone from another." If age is to be the test of quality in masonry, some of the least skilled—the rubble masonry—may rank with the cyclopean masonry of the world. There are mortars as enduring as the granites. There are structures of rubble masonry older than history. India Proper, the East (Asia), Africa, Italy, the Continent

of Europe generally, and Great Britain, contain ruins, and buildings more or less entire, of rubble masonry, in which the mortar is the soundest and best wearing part. The rubble-heating of many a church, monastery, abbey, and castle, has alone been left to show where walls once stood; and where the entire wall has originally been of rubble, there it stands, sound as the day it was erected,—any destruction having come out of utter neglect, or having been brought about by the hand of man. It has not been possible "to separate one stone from another," because the joining medium is stronger than the stone.

All ashlar masonry is necessarily liable to rapid decay. Simple forms and plain surfaces are most enduring, and these, in proportion to the quality of the stone, care in selection, in arrangement, and in working and setting. Climate must also be considered. As plainness is departed from, so is premature decay provided for, until the richest styles become the least enduring. Florid Gothic ought to be executed in some other material than ordinary stone; for, most certainly, laminated sandstones and lime stones cannot be worked into high reliefs for exposure to the atmosphere, with safety. But to return to rubble masonry and to mortars. As we have said, there are many ancient examples of this class of work and material, and volumes have recently been published on mortars and cements. The Hindoos and Easterns mixed their mortars with honey, and now use sugar. The Romans used pozzolano, pounded tile, and pounded lava, as also sands.

In early ages, it seems to have been discovered that lime required other ingredients than clean sands to produce "setting" or hardening and enduring qualities. As priests were frequently the architects, and as mystery was necessary to faith, so we find that there were superstitious observances connected with mortar-making. The Romans consulted their augurs, slaked their lime, and heaped it in huge mounds, leaving it to swelter and to ripen for years, before mixing it for use. The Hindoo priest poured out the sacred mixture of honey and water to give consistency to the holy concrete with which the sacred dome was to be formed; and Mediæval architects and builders in our own country consulted astrologers or "ruled the planets," to learn the days upon which to slake lime, and upon which to make mortar. The priestly superstition, the religious ceremonial, and the vulgar planet-ruling had their uses, in so far as they induced manipulative care. That the Egyptian priests understood something of chemistry, is more than suspected; and we may grant similar knowledge to the priests of Hindoostan, China, Mexico, and Peru. How shall we presume to define the knowledge of the ancients? Why should we arrogate to the moderns so much of discovery and invention?—which may only be rediscovery—that is, revival. We have learned that pure limes alone will not (with sand) make enduring mortar, but that other ingredients are necessary—clay, iron, silica, &c. There are natural limestones (the blue lias and others) which contain these ingredients in the required proportions; but some of our manufacturers add to their ground limes the "setting" ingredients, if the limestone is poor. Our advertisement sheets set forth the particulars of many modern cements and limes—blue lias, Portland, Roman cement, &c. &c. Any of these limes or cements, as delivered by the best makers, will produce good work, provided they are mixed and used with sufficient care. The best samples may be utterly ruined by neglect. Hydraulic limes and cements must be preserved dry: they should be used fresh, and at the first tempering. The sand should be sharp, angular in its quartz-grains, and clean: one, by measure, of ground-lime to one and a half of sand and half of furnace ashes, properly incorporated on a clean floor and ground in a mortar-pan,—then used new and hot liberally, will make good work. For brick-work the bricks should be previously wetted by immersion; for rubble masonry, the stones should be free from loam or dirt; and grout, made from the mortar, diluted to a pouring consistency, should be

so used as to wet the whole wall and fill every interstice. This is the great secret for producing enduring masonry: good mortar, cleanly made, used fresh, with wet bricks, and with abundance of grout in rubble-work, and in walls of brick where more than a brick and a half in thickness is set. Mortar should never be stinted, neither in beds nor in joints, but full and outflowing quantities should be insisted upon. Thin beds of mortar and half-filled joints never produce work so strong and enduring as where the beds are thicker and fuller. Some of the oldest rubble masonry and brickwork are one-third or one-fourth mortar. And these are about the proportions of some of our best modern rubble masonry and brickwork.

A few of the old Lancashire proverbs indicate the ideas of the Mediæval masons:—

Consult the stars, and rule the planets well, before you build a house, or sink a well.

A castle wall, to be stout, must be full of mortar and grout.

Bricks are never well set, unless they are first well wet.

If you would make a wall stand, use good lime and clean sand.

The river and dock walls at Liverpool and at Birkenhead may be examined as modern examples of rubble masonry, on a grand scale. Some of the work is granite rubble, some new red sandstone rubble, and some irregular wall-stone, with ashlar binders, and rubble backing—a sort of hybrid masonry. There are also fence-walls of granite rubble, and vast piles of brick warchouses, in which stones, mortar, and bricks form solid walls. They may, certainly, be thrown down, but only in vast masses, such as it is worth undertaking a pilgrimage of many miles to see. In consequence of deepening the great float at Birkenhead, and the sub-soil being running sand or quick loam, some of the side walls have given way, but in such a manner as only excites admiration for the materials and workmanship used in them. There are vast masses of wall split through stone and mortar, from top to bottom, and from back to front of the walls, in the most extraordinary manner: the splitting is through the solid, and not a separation at the joints of the stones. There are fragments of wall of almost fabulous dimensions, such as 300 feet by 30 feet, and an average thickness of 9 feet, or a block of wall-stone, ashlar, and rubble—masonry, entire as to mass, turning over like a solid slab, and weighing not less than from 4,000 to 5,000 tons. Who shall say, after this, that modern engineers cannot execute sound masonry? The sceptical reader may ask,—"How sound masonry?" when it is said to be falling. We simply say sound in mass, and this the dimensions of the fragments of the falling walls prove. Stone, mortar, and labour cannot be better put together than in these dock-walls—the failures are the result of other causes. The true test of rubble masonry and brickwork of this class is cohesion in mass, and this masonry may be quarried, or be cut up into blocks, through mortar and stone; but, to separate stone and stone, at beds and joints, is not practicable by ordinary means.

Modern architects and engineers have advantages unknown to any of the earlier builders, but the best materials may be spoiled in use, or may be misapplied. Good lime requires good mixing, and good mortar requires to be used fresh, without stint, and all the materials so to be wet as to ensure incorporation. Mortar half mixed, bricks dry, and joints scamped, as in modern house building, can only produce work without cohesion; and, necessarily, without any power of endurance.* Jesse Harley, the Liverpool Dock engineer, through the whole course of his long life, has worked for posterity in stone and bricks, upon the grandest scale, and so long as Liverpool endures, there will be samples of his masonry in existence equal to anything of the kind the world has yet seen.

* In some recent brickwork at the Wigan Waterworks (brick and Roman cement), it took forty-eight days' labour of a man, to cut out a pipe 2 feet in diameter, built some 6 feet in the outlet culvert. Bricks and cement never parted but as a solid.

THE BILLS OF QUANTITIES FOR THE NORTHERN HIGH-LEVEL SEWER OF LONDON.

WHEN the Metropolitan Board of Works, with undignified haste, passed a vote of censure on one of their body, Mr. Leslie, for the observations he made in connection with the bills of quantities supplied to contractors by Messrs. Gotto and Roberts, asserting that great inaccuracies existed in these bills, and that the opportunity for fraud had been afforded, we said the matter could not rest there. Feeling that not only was the public largely concerned in a pecuniary point of view, but that professional character was involved in the inquiry, we have sought information on the subject, and are bound to say that the errors seem to us to be of such an extraordinary character as to require a most searching investigation. We would avoid making any charges on the subject, because we may be deceived, or what seems to us erroneous may admit of explanation; but this explanation we demand, and we proceed to give, briefly, proof of its necessity.

The quantities having been referred to Mr. Bazalgette for examination, he finds, we perceive, under the head of "excavation" every item, in the case of twenty-one sewers, too large. His reduction is considerable, but Mr. Leslie makes it larger still. Thus, to take three or four instances: for the sewer 9 feet 6 inches by 12 feet Mr. Roberts has put down 51,132 cubic yards, Mr. Bazalgette 40,110, and Mr. Leslie 38,931.

For the sewer 10 feet by 10 feet 9 inches:—

Roberts.....	71,552
Bazalgette.....	64,443
Leslie.....	62,499

For the 8 feet 6-inch barrel sewer:—

Roberts.....	49,167
Bazalgette.....	40,537
Leslie.....	39,812

For the 7 feet 6-inch sewer:—

Roberts.....	14,697
Bazalgette.....	10,611

And so on throughout, the result being that, according to Mr. Bazalgette, now that the matter is mooted, there are 77,000 cubic yards too much provided for in the bills of quantities, and according to Mr. Leslie 104,000 cubic yards!

This is striking enough; but, glancing through the bills of quantities, we light upon some amounts equally extraordinary. Thus, for a certain length of 6-feet barrel sewer, the drawing shows that a tunnel is to be made 84 feet by 84 feet. This would obviously give, for every foot forward, using whole numbers, 72 cubic feet of excavation; yet, if we mistake not, this is put down at 135 feet for digging and for carting away. The angles of the square tunnels are shown to be filled up with concrete. The external area of the sewer is 534 feet, and this being deducted from 72 feet, the whole area of the excavation would seem to leave 184 feet for concrete; yet we find in the quantities 98 feet! There seem to be similar discrepancies in two other tunnels; and, as the lengths to which these apply are considerable, the total excess would be very large.

The difference between the highest and lowest of fifteen contractors who tendered was enormous. Here is a list of the tenders showing the differences:—

	Amount of Tender.	More than the lowest tender.
Hosken.....	2,779,000	241,779
W. A. Smith.....	2,779,000	114,292
C. J. Smith.....	2,779,000	107,429
N. J. Smith.....	2,779,000	89,530
J. J. Smith.....	2,779,000	81,790
W. J. Smith.....	2,779,000	59,458
W. J. Smith.....	2,779,000	42,250
Batterbury.....	2,779,000	35,750
J. and E. Bird.....	2,779,000	36,969
William Hill.....	2,779,000	34,445
Dechek and Thirst.....	2,779,000	33,570
McLellan and Bird.....	2,779,000	29,919
W. H. Rowe.....	2,779,000	28,083
Webster.....	2,779,000	16,600
Moxon.....	2,779,000	152,431 Accepted Tender

And the question, of course, arises, did all these intelligent and, doubtless, honourable contractors prepare their tenders on the same grounds, or did some find out that the quantities were in excess, and cut them down accordingly? Furthermore, we should like to know the exact terms of the contract made with the lowest tenderer. Is it to execute the work set forth in the bills of quantities? (in which case there would be large deductions to make hereafter, and the ratepayers would only pay for what they have); or is it for the construction of the sewers in accordance with the drawings and specifications, and without reference to the bills of quantities, when the result, of course, would be very different? At any rate, here is matter which requires explanation, and, on the part of the public, we request to have it

forthwith and precisely. We shall then have something more to say.

THE ROYAL ACADEMY.

ARCHITECTURE.

REMEMBERING the large number of architectural drawings now on view in the Conduit-street Galleries, it is not very surprising to find that the designs and drawings in the present exhibition of the Royal Academy are but sixty-one in number. Few of them are of any importance, and the whole are mixed up with oil-paintings in a manner not greatly calculated to increase their attractiveness. Mr. S. Smirke is the only architect connected with the Academy who exhibits, and he sends but one small drawing (1060), "Interior of a Church," designed in the Early Christian style, and proposed to be erected in Yorkshire. The columns separating the nave and aisles are shown to be of green marble, and the pavements tessellated, but it calls for no special comment. 1017 represents "Allsopp's New Brewery, and other Buildings in course of erection at Barton-on-Trent," by Stephenson and Hunt, a colossal establishment, in the arrangement of which convenience and substantiality have been the chief points aimed at. 1050, "A Design for Christ's College, Brecon, to be modified previous to execution," by Frichard and Seldon, is a little prim and flat; less successful than the same architect's design for "Remodelling the Exterior of Elington Park" (1109), one of the best designs exhibited. This comprises turrets, gables, and a traversed arcade. The openings are in sty square-headed, with a central column. The effect produced is nevertheless more ecclesiastical in parts than is desirable; and there seems no satisfying reason for the high roof over the porch in front of the upper story of the house, and obstructive to the windows.

In 1051, Mr. Ashpitel, who has already exhibited his idea of ancient Rome, shows us the city as it is, including the ruins of the Palace of the Cæsars on the Palatine Mount, looking across the terraces of the Farnese Gardens, upon the Capitol, the Forum, and the Colosseum. Mr. Ashpitel must have made good use of his time when he sojourned in the Eternal City. Mr. E. Tulkner has a drawing of great beauty close by, 1058, "Interior of the Mosque of Ballat in Asia Minor, looking towards the Mekkrah," the niche indicating the position of Mecca. It well deserves the study of those who would be architectural draughtsmen. 1061, "The Morning-room at Ashbridge, one of the Seats of the Right Hon. the Earl of Grosvenor," by M. D. Wyatt, is an elaborate piece of work of Renaissance character boldly set forth. Mr. Street sends one frame (1062), containing plans and views of the small village churches to be built in Yorkshire and Hampshire, Early English in style, with a trimming of Gothic from Italy. 1070 is a design for the south front of a national institute of arts and science, "adapted for the site of Burlington House, Piccadilly," by J. B. Waring. It has a glass dome, and turrets with glass terminations; is Italian in style; and has some life given to it by sculptured panels and other carving. 1076 and 1113 show Mr. J. P. Jones's design "for the church of St. Peter and St. Paul, in Cork," concerning which it will be remembered some letters appeared in our journal. It is Geometrical in style, displaying externally a rose window in the west front, and a lofty *fiche* at the junction of the nave and chancel;—the materials are a mixture of brick and stone. Internally colour is obtained by the use of stone, brick, and marble. It has merit as a reproduction. 1085, "Pen-y-Warr, Aberystwith, the Seat of F. R. Roberts, Esq.," by R. K. Penon, is a good serviceable-looking stone and tiled house, to which a character is given without effort. The centre Hall of the New Westminster Palace Hotel, if it be like 1088, by W. A. Mosely, will be a good feature, 1091 is an admirable drawing by W. Slater, of the restored Choir of Sherborne Abbey Church; it is etched with brown. 1098, New Lodge, Windsor Forest, erected for M. Van de Weyer, the Belgian minister, by T. Bury, is a satisfactory reproduction of a Tudor house, with mullions, gables, chimneys, and the other usual elements. 1108, the drawing-room and other additions to Barton Manor, Oxon, by S. S. Teulon, gives no indication of what is new and what old. 1146 shows some of the works going on at Shadwell Court, Norfolk, Sir Jacob Buxton's, under the same architect. The additions to this building we illustrated some time ago. Mr. Pocock's design for Mr. Spurgeon's Tabernacle, 1119; the Gallery of the Architectural Exhibition, Conduit-street, by J. Edmeston, 1135; and Messrs. Finch Hill and Paraire's Britannia

Theatre, Hoxton, 1167, have also been illustrated in our pages, and described at length. In the view now exhibited of the Architectural Gallery, which gives the effect of much greater size than exists, the ugly festoons contemplated at the time our engraving was made have given place, advantageously, to a series of paintings in the panels of the ceiling.

In 1114, design for a Jardin d'Hiver, for the Sultan of Turkey, by G. O. Lane, handsomer forms are introduced than are usually seen in iron buildings. 1120, "Cromwell House, Mortlake," now being erected for Mr. James Wigan, by R. P. Pope, shows a good bold brick front, with straight-headed windows, without mullions, a clever porch and brick chimneys. 1122, "Design for Merchants' Office, Mark-lane," is another addition to the valuable set of studies for such buildings produced by Mr. Edward P. Anson. Semicircular-headed windows with marble columns, on each floor, are bound together in couples, by a pointed arch, formed with a darker material, on the face of the building. The absence of shadow in the drawing makes the front look flat, and the small medallions of coloured marbles, in the spandrels of the arches on each floor, have a spotty effect, which might be easily avoided. In the front of the Telegraph Station, Threadneedle-street, now being erected for the British and Irish Magnetic Telegraph Company, set forth in No. 1131, Mr. Horace Jones has shown much artistic skill, while setting at naught some received canons of taste. The drawing is considerably injured by being mounted with a polished metallic border, which reflects like a looking-glass. G. Goldie sends a view of "St. Peter's Church, Scarborough" (1130), capably drawn; C. Gray, a residence about to be erected, in his manner, at Highgate-rise; E. San several designs for interior decorations; W. Webb, a perspective view of "Normal College Training Schools, Upper Bangor;" Murray, Breckspere, Nicholls and Joseph Clarke (1147), designs for Churches; R. Rawlinson, "The Wallasey Water-tower" (1153), a handsome and consistent structure; and Wigge and Oliver, a view of the "New Schools recently erected for the Parish of St. George the Martyr, in Theobald's-road," which pleasantly varies the street line, the front of the building being set back to admit of the projection of a small turret.

WHAT IS AN ARTIST?

ONE evening—exact date not material, but in this year of grace—at a certain gallery of pictures—localization not important to the story (the place, however, has been spoken of in these pages)—there assembled, pursuant to arrangement, a party of artists well known by name, some architects, and the narrator included. The artists in question meet at sundry times to "ease their ears with prate," discuss the topics of the day, and criticise the latest acquisitions at the National Gallery, or the works in the exhibitions that may be open, and generally to sharpen the wit of one another. There may be no Johnson, Burke, or Goldsmith of the club, nor has the mantle of Sir John fallen precisely on any one in the modern company who fraternize on ordinary occasions in a not well-ventilated room, somewhere in the region of Leicester-square; but, good comes of the meetings of kindred spirits beyond the gratification of the hour. So, to resume, the friends migrated for a night to a distant quarter, to inspect a "fine-arts gallery" which has been formed with a view, as put forth, of raising "enobling and refining thoughts, and of creating and fostering a taste for the beautiful," and of leaving "healthy impressions," and thus awakening "a desire for pure and elevating pursuits,"—objects these, we may say, which ought to be within the scope of art,—may, which should form the constant aim of the artist of first rank. Some incidents of the inspection have raised in us, at this season of exhibitions, the disposition to ask whether by the general body of modern painters, the nature and aim of high art is well understood.

Now the gallery we are referring to has a rather heterogeneous collection of works; but amongst them are, or were, some good pictures, and some of elevated character of subject, the latter less capable of being appreciated where they are, or, perhaps, in any crowded gallery, than with other accessories. Amongst the number a picture, by Horace Vernet, with the title "Death purifying the Soul," may be particularized. The treatment is of course mystical, and requires a certain degree of thoughtful observation to be understood; yet it is such as human feeling, combined with artistic perception, would, we might think, hardly fail to penetrate. Our readers shall have means of

judging how far this perception of art was existent with one at least of the visitors on the evening spoken of,—a painter who has great executive power, and has had accorded to him, by award of premium at Westminster Hall, and otherwise since, high rank—we by no means wish to say unduly. The picture by Vernet represents a female figure, clothed in white, being gradually raised from a couch by a dark hooded figure,—whilst at the couch kneels a man in agony of grief or supplication. Could there be any doubt that the hooded figure was to represent death, and that the “soul” purified, was that of the man by the greatest affliction the heart knoweth, or human life can experience? Who that has faculty at all, has memory unmingled with some sadness, some regret, some feeling of much not done—for which now the future of mortal life has no retrieval? Such is the power of death and sorrow, to purify “the soul of man.” Our artist, however, could not see the meaning of the picture, thought the soul was depicted allegorically by the female figure, and condemning, perhaps with reason, the drawing, forgot that for art, a moral and poetry of conception are of equal importance with execution. Therefore we have put the question for consideration by all who would exhibit art on the canvas, or in the marble,—What is high art, and what is an artist?

It has indeed been clearly enough shown, by Sir Charles Eastlake for example, that there are many different kinds of “art,” so called, and worthy of pursuit, from the imitation of still life to the work of greatest poetry of composition. Nay, whilst, according to one line of thought, we might view drawing and portraiture as different from art, or the drawing as only the mechanism, and the art as constituted only by the invented part, it is obvious that the distinction is not definable in practice; but that the best draughtsman is one who has at least appreciation of art; whilst there can be no exhibition of invention except with the aid of the mechanical expression of it. The question how far there may be after all some distinction between the faculty which originates, and that which merely appreciates, or perfects the power of copying, is too abstruse for us at present. It is clear, however, whilst good portraiture, even in photography, requires aptitude of perception and appreciation undistinguishable from positive art, as well as it requires imitation, that there is a creative power called for as exercise in the works of the highest class in painting and sculpture, as well as in architectural art—just as there is the power called for in poetry. This inventive element, the arts of our English school—great as is their excellence,—have yet to attain. That the poetic element, or that of originality, by no means involves obscure allegory, we fully believe; though the artist should be able to expect that his work will receive a thinking observation, rather than that sort of attention which is given to pictures by the ordinary visitors to galleries, and which attention must necessarily leave unappreciated some of the finest works that have ever been produced. Towards this, some further preparatory education is required, as well by artists as the public. The artist, painter or sculptor, must learn more of the principles of art-universal, however he may wisely limit his practice or range of subjects; he must also, like the poet, feel with the pulsation of the time in which he lives, or with social progress—narrowing his mind to no mere craft, and extending his reading to other books than those novels and romances suggesting to him subjects. The public have to learn “how to look at a picture,” to appreciate the fact that there are, in the words of Mr. Wornum, “the uneducated and the educated eyes, which, though regarding the same objects, may see different things.” Our school may be great in colour, and even in drawing, as in some of the requisites of composition; but so long as the notion prevails that mere illusion is the object of painting, so long will the first place in art be denied us as a nation, and unsought for by the efforts of our artists. Works of art, of the first class, cannot be only pretty things to look at, or mere refractions of incidents; they must be works such as are the result of thought, and will inspire thought; and the producer of works like these, alone can claim to rank equal with the poet; such poet in painting or in sculpture, alone, is the highest embodiment of the artist.

MALBY.—The church here has been rebuilt, from the plans of Mr. Boyce, of London, architect, by Messrs. Chadwick and Son, of Marnborough, the contractors, at a cost of 1,700*l.* or 1,800*l.*

THE MANCHESTER ASSIZE COURTS DESIGNS.*

Mr. J. T. Rothead, under the motto, “The Ides of March,” has two designs very different in character, though having some reference to one general plan. The principal design is Roman columnar; the other, “Anglo-Palladian,” has the superimposed orders and windows of the Venetian Italian of the sixteenth century, and masses raised at the angles of the composition; and is elaborate, but without sufficient attention to grouping. The Roman design is excellent as regards the provision for internal effect, by symmetry of the plan and arrangement of the columns and the recesses, and by the decorative character of the ceiling-lights in coffers, to the great hall and the corridors. The principal front has a loggia or portico of twelve columns, the order being continued by pilasters; and the returns of that portion of the building have hexastyle porticoes, projecting two inter-columns. These north and south porticoes are the principal entrances to a grand hall; but there are also entrances from Great Ducie-street to the outer halls, each end, contrived by ways leading from the steps which there are in the centre of the Great Ducie-street front, at the back of an inclosure, which in the view appears as a rusticated basement at the ends, to the columnar portion of the design above. What we have said will sufficiently show the merits and the defects which there are in the design; that is to say, both the value which there is derived from Roman models, and result of a different kind—that of making uses secondary to imitation. The plan extends for a considerable distance along South Hall-street; the judges’ lodgings form the centre of the front on that side; and the two courts are placed thereabouts, with the refreshment room and library intermediate. The order, Corinthian, is surmounted by an attic; and there is a lantern-story, or clerestory, set back, in which are lunette-lights to the hall.

Messrs. Dean and Bellhouse’s design, with a device marked with the words “Internal Convenience; Picturesque Outline; Adaptation of Site; Combined,” is one of the few designs which provide the main entrance at the angle of the ground, a position for which there are many arguments, though not exhaustive ones. The courts are at right angles to one another; but the seat of the judge in each court is not placed so as to derive all advantages from the arrangement. There is a carriage-porch, with columns; and a dome at the angle of the plan. The general character is Italian.

The design marked “Nunc aut Nunquam,” occupies the South Hall-street portion of the ground, and is more Romanesque in character than “a modification of the Venetian.” It has very prominent square masses as towers in the centre; between these an arcade entrance and vestibule give access to a hall, 84 feet by 61 feet, which internally has a resemblance, which, even though slight, is a defect, to the hall of the Euston Station. Across this hall is a staircase, and the courts are at the sides of the latter.

The design by Mr. G. Fowler Jones has the main front towards South Hall-street, and three principal entrances, whereof that in the centre leads into a hall, 38 feet by 49 feet, separating the courts. The judges would pass from one court to the other by a corridor, round a portion of the plan projecting in semicircular form, at the back, on the line of the hall. The building is Palladian in style, but with lofty pavilion roofs; and there is a tower at the angle.

Mr. Henry Bowman’s design, “Ad Justitiam,” with the front to Great Ducie-street, has one entrance in the centre, one from South Hall-street, and one in the corresponding return at the north. This arrangement is not so desirable as that of one entrance of ample dimensions in the centre of a front or at the angle, or that of three entrances in the same front. The courts are placed rather far apart, the magistrates’ and barristers’ rooms being made the key-note of the plan. There is also an entrance-hall 50 feet by 28 feet. Considerable space seems to be absorbed in corridors; but this results from what is itself very desirable, namely, separate provision of communications for judges and magistrates, barristers, and public. A comparative estimate of the advantages and space occupied under respective arrangements of corridors, central hall, or long wide gallery, adopted in different plans, might afford data of the utmost value; but all advantage of this kind, educational we may call it, from competitions, is what is denied to us and to competitors, as we have before observed. In decorative treat-

ment, Mr. Bowman’s design is Roman columnar—an amplification of the type of Sir Charles Barry’s building in which the designs were exhibited. Besides the principal portico, there is a portico of six columns in *antis* at the north end, and a portico on a segmental form of plan at the opposite end. This last-named feature, and a certain disproportion between the porticoes and the doorways, are the exceptional characteristics. The design, however, though it may appear to have no remarkable novelty, would build with good result an effect.

Mr. H. A. Darbishire’s design, “Exegi,” belongs to the same class, so far as style is concerned; but both the plan and the decorative treatment are on a larger scale of magnificence. Very great space is given to the halls and corridors; the courts have side galleries extending over the corridors of communication; and the principal front towards Great Ducie-street has a many-columned portico or colonnade somewhat on the type of the Bourse of Paris. The best part of the design is the central hall. It has superimposed columns and galleries, and a highly effective ceiling with cove, and coffer-lights.

The design by Messrs. Haig and Low, “Lex,” also of the columnar class, but of later Italian character than those last mentioned, with a good portico and a lofty dome, we have made note of as equally meritorious. Very different to it, externally, is the design marked “Arrangement,” by Messrs. Bellamy and Harly and Mr. Giles, in which the high-pitched roofs are discordant with the other parts of the Italian composition; but, as in many of the designs defective in one particular, there is something, for example a matter of plan, that would be recognizable as merit or be suggestive of remark, had we space.

Mr. E. G. Bruntton’s design “In Manus,” is one of those with the entrance at the corner of the ground, and the courts at right angles to one another. The decorative character is that of Italian Gothic; and a dome is introduced. The entrance is in a circular portion of the plan, placed in a re-entering angle between the courts. The design by Messrs. Fisher and Son, “Lycurgus,” and that by Messrs. Pennington and Bridgen, “Salford,” of classical character, and columnar, both partake of the merit which there is in the Roman and Palladian designs generally; but the last-named design is one of those which so strangely, omit roadway for the front entrance, and enclose the ground, whilst setting the building back.

Mr. Bateman’s design, “Justitia,” has the principal front towards Great Ducie-street, and three main entrances to a long hall or gallery, giving access to the courts. In plan and in the decorative detail (Italian), the design has considerable merit. The *foei*, so to speak, of the external effect, are the three entrances, which are treated as large arches with columns and sculpture in effective combination.—The design by Mr. James Murray, “Concilio et Labore,” is remarkable for its plan, and for excellent grouping of the roofs and recessed portions of the upper part of the building in perspective. There are three principal entrances, with a *soubassement* of steps. There is a corridor opposite the centre-entrance leading to the retiring-rooms of the judges and juries, which are between the courts; and the access for the public is from a hall which at each end of the arrangement, is reached from the staircase, that leads up from the end external entrance. The public halls, with their staircases, projecting considerably, externally are terminated by wide and lofty arches, spanning an order of columns, and are crowned by steep-pitched, flat-topped roofs; whilst there is a high curved roof to the central portion of the plan, where the courts occur, with turrets. The more prominent details are pilasters, coupled and rusticated. There is *character*, and there are otherwise excellent qualities, throughout this design.

The design marked “In honorem Legis,” by Mr. E. M. Barry, and alluded to in our last, has a plan which is rather peculiar. The South Hall-street ground is occupied; but the entrance front is the end in Great Ducie-street; and here there is an eight-columned portico (well planned, with internal columns and recessed centre) between masses at the angles, the latter being occupied by the sheriff’s courts. The portico on the level of the principal floor has a terrace footway in advance of the steps, reached by curved ascents, the terrace stage being carried by rusticated arches as entrances whereat carriages would set down, these latter entrances, of course, communicating with internal staircases. The order (Corinthian) is continued by pilasters, on the flanks which break forward in the centre. These latter portions of

* See page 397, *ante*.

the building are one story in height, though with two tiers of openings, and have low turrets on the angles, for ventilation; and beyond, or in the centre of the plan, rises the square mass or crowning feature of the external design. The feature in plan is a great hall, leading up to the courts. These are placed side by side, a barristers' corridor only intermediate; and the judges' lodgings occupy the most convenient position in rear of the courts, and form part of the general mass. The public would pass through the great hall and ante-hall to the courts, a distance of about 200 feet. The attorneys and witnesses could reach the court by a distinct corridor, leading out of the great hall from a point nearer to the portico, and communicating en route with the different rooms and offices. In each court the bench occupies a recess, to which there is one corresponding opposite, or where the public entrance is; the lighting advisedly is managed by side lights, "lunettes," as well as by ceiling lights; and for acoustic requirements a large cove is designed as facilitative of hearing, broken, however, by the lunettes and groining, with a view to prevention of echo. The great hall, 156 feet long and 60 feet in the extreme width, would be covered by a vaulted ceiling, divided by ribs rising from coupled disengaged columns, and would be lighted by lunette-openings at the sides. The ante-hall has columns in the centre, carrying a coved ceiling and domical light. It will be seen that the plan aims at great area for the hall, as well as effect, and that classification in regard to the entrances to the courts, and the convenience of the judges, have been carefully attended to.

The design by Messrs. Moffat and Coe, "*Plat Justitia*," must not be confounded with either of those under a similar motto, to which it is very different. We should, however, in this case, have to trust to recollection in saying in what the merit which we remarked in it, exactly consists. The entrance, in the centre of the Great Ducie-street front, where there is a portico of coupled columns, leads into an octagonal hall, which is crowned externally by a lofty turret in several stages, effective in character—the style of the whole building being the pure sixteenth century Italian. The courts are placed with reference to their entrance from this hall, but we think not obliquely to the axis of plan, as in some of the designs. There are, however, designs which adopt, more or less, the arrangement just referred to, or that of the Four Courts, Dublin, Mr. T. Turner's design, "*The Lip of Truth*" shall be established for ever," perhaps is one of this character: for in some of its decorative details, it is identical with the design (like Mr. Turner's, from Belfast), by Messrs. Lanyon and Lynn, "*Octagon*," which last is a very able exemplification of what may be got decoratively as iconographically from the principle or basis of the radiation and central circle or octagon. There is certainly a considerable element of effect in Mr. Turner's curving wings with hexastyle portico—an element similar to that in the plan of Blenheim. Both the designs we have just named have a bold quadrant sweep at the corner of the land, carrying the colonnade round; and in both cases the intercolumns there are filled in for a portion of the height. There is a large and prominent dome in Messrs. Lanyon and Lynn's design, and an analogous feature, square on plan, in Mr. Turner's. Mr. Pocock's arrangement in his design ("*Manchester*") is partly on the same principle of central hall and radiating entrances to the courts. The design, regarded decoratively, is a failure—doubtless because the author "narrowed his mind" by beginning on the idea of a reproduction of the Pantheon, afterwards making other objects to fit. Besides the failure of one kind, which such a course with any model engenders, there is the further source of failure, inasmuch as defects, which there are even in the "*pride of Rome*," are copied; and the reproduction will lack that freshness and character which excuse a certain amount of deficiency in an original. The merit of the Pantheon lies internally in the leading proportions, the coffering of the vault, and perhaps some details of the lower order, and externally in the portico. The conjunction of the circular form and the portico is questionable; the latter was later in date than the rotunda; and even the dome externally, whatever the effect with its original decorations, is now capable of considerable improvement, and requires this where made the culminating feature of a building. The upper story of the front in Mr. Pocock's design is later in style, and not harmonious in character with the order that carries it. The order, however, and the portico are drawn with feeling and taste.

The design by Mr. George Morgan, "*Curie Justitie*," is more satisfactory in plan than in the decorative character of the exterior. The author defends his adoption of Mediæval architecture on the ground that "its associations are eminently religious, and calculated to excite awe and reverence;" and therefore that the style, modified, is fitted for courts of justice. "Practically" also, he thinks, it is "most suited for assize courts;" essentially an architecture of truthful representation, it is best and most economical for a building combining apartments for different and varied uses: "every part can be treated as a whole or separate building;" "in the present instance the courts are made visible;" and each other part bears "the impress of its intended use." "One feature in this design, the tower, may not be consistent with severe economy;" but "it is hoped that the tower is a work of art, and a joy for ever." The design, generally, is of Continental Gothic character, and is certainly unfavourably shown in the drawings. In the plan there are two entrances in Great Ducie-street, conducting to halls each 80 feet square. The halls are connected by a corridor 194 feet by 30 feet, and opposite the street entrances are those to the courts. The corridors seem contrived for the requisite classification.

Equally Gothic and continental in character, though otherwise different, is the design by Mr. Thomas Worthington, with the motto, "*Artis est celare Artem*." The style resembles that of the richly decorated town-halls and palaces of justice of France and the Netherlands. There are very high-pitched roofs, for effect and purposes of ventilation, curving inwards in outline, and in harmony with the body of the structure; and the principal front has a recessed centre, terrace, and steps, pavilions, and a carriage porch to each of the two principal entrances. The design also is remarkable for its window openings, which are in several stories, in the chief front, and for the richness of the decoration on the piers. The drawings, outlined and tinted in aqua, are extraordinary specimens of minute and painstaking execution. The same labour and merit are apparent in the design. The general plan and the arrangements of the seats and fittings of the courts, have been very carefully studied. The internal arrangement in the main features, may be described as that of the figure *L*, the two spaces bounded by perpendicular lines marking the positions of the two courts, and the outer perpendicular lines, and the horizontal line, the form and position of a wide corridor or promenade. There are three entrances: those at the end, however, having the carriage porches already mentioned, are those which are principal. The central corridor, perpendicular in the figure, gives access to the barristers' rooms and library; and bridging it at an upper level, or that of the bench, which in this design is placed at the end of the court nearest to the main front of the building,—is the private corridor for communication of the judges from court to court. The rooms of the officers of the court, theatronets, and witnesses, are at the extreme ends of the plan. It will be seen that the arrangement is very favourable to the object of classification; and the middle portion of the promenade, horizontal in the figure, having an external door which communicates only with a terrace to be kept private, would generally be free for consultation between barristers and clients. Also there is a private staircase for the judge, to a gallery communicating with the lodgers, which occupy the north end of the plan. A method of heating and ventilation has been considered and described; though the author, like most of the competitors, deprecates reliance on mechanical and expensive systems, and for heating would rely mainly on open fire-places. As regards acoustics, he observes that since "if a stone is dropped into water near to a wall, the concentric waves in the water become elliptical," "therefore the end wall of the court has been made of elliptical form;" and, like others, he alludes to loftiness of a court as a disadvantage acoustically. He has adopted a ceiling of somewhat similar form to that of the House of Commons, but "with a double reflecting surface," to "assist the refraction of sound to the lower part of the room." The galleries would be of curved form on the underside, to throw off the sound; and a sounding-board, suspended from the ceiling, is suggested over the central seats of the counsel. Flat ceiling surfaces, the author says, he has avoided.

We must mention some of the other designs in a concluding notice.

WOOLWICH SCHOOLS.—Large additions are in course of erection, and the schools will soon accommodate nearly 1,000 pupils at one time.

THE FOREIGN SECRETARY OF THE ROYAL INSTITUTE OF ARCHITECTS.

We alluded last week to the retirement of one of the honorary officers of the Institute of Architects. There has been a second retirement, which demands even more special notice,—the retirement of an officer whose services entitle him to more special thanks. We allude to the resignation of Professor Donaldson as Honorary Secretary for Foreign Correspondence, after fulfilling the duties of the office for, we believe, twenty years, in a manner which has tended to obtain for the Institute a reputation abroad of the highest character. Mr. Donaldson was peculiarly suited for the position: kind-hearted and impulsive, he was always ready even to take a responsibility rather than not do a kindness. He met and corresponded with foreigners in their own manner, as well as with their own language, and gave no opportunity for the usual reproach as to English coldness. His hospitality in the service of the Institute has been extended for years to foreign artists visiting London; and every member owes him gratitude for his exertions in this respect, as well as for his constant assistance at the meetings, which it is to be hoped will long be continued. We do not hesitate to say that there is no individual living to whom the profession as a body are more indebted than they are to Professor Donaldson.

EXHIBITION OF MODERN ART IN PARIS.

By an imperial decree of the 27th December, 1858, an exhibition of works of art by living artists of all schools was ordained, and it was publicly opened on the 15th of April last. The total number of works of all classes in the exhibition is 3,887, of which 3,045 are pictures, 472 sculptures, 160 engravings, 96 lithographs, and 114 architectural. By very judicious divisions of space, the pictures are much better seen than in the exhibition of 1857, although the catalogue describes 213 more works than in that year. It is in the same, or northern galleries, of the *Palais de l'Industrie*, now called *Palais des Champs-Élysées*. Fifteen saloons are devoted to the pictures; the central one being the largest; and although herein some of the most important works are placed, still there is a fair distribution through the other saloons. Besides these saloons, the corridor next to the interior garden, on the north side of it, is occupied by engravings and smaller examples of sculpture; the larger sculptures ornamenting among the shrubs the garden itself, which, with its fountain and flower-beds, makes a very charming place for promenade or repose. The exhibition is open every day from ten to six o'clock; on weekdays by payment of one franc, but admission is given from eight to ten o'clock, a.m. by payment of five francs. On Sundays the admission is free to all comers, and it need not be added, that vast as the space of the galleries is, the crowds are so great that circulation in the saloons becomes difficult. A buffet for slight refreshments is installed at each end of the exhibition, and a restaurant in the garden, where those whose eyes are weary may refresh and return again to the examination of this enormous amount of painting and the other works of art. Notwithstanding the extent of the works in the Exhibition, report says that 4,000 were refused admission. There are the usual complaints of injustice, &c. Some artists are indignant at the rejection of their performances on the score of being offensive to decency, and have placed them elsewhere for the public to judge; but this, although asserted by the artists themselves, can only be partially true, to judge by other specimens exposed to full view of visitors in the Exhibition. A distribution, upon the plan somewhat of the London Art-Union, has been established: the price of each ticket is only one franc, for which the proprietor will have the chance of obtaining a picture or other work of art at the drawing, which will take place at the close of the Exhibition on the 15th of June ensuing. A number of very pleasing works are already purchased for this distribution, and are placed separately in the entrance-hall. The emperor and empress took 10,000 tickets in this lottery.

The architectural drawings are placed in the eastern corridor overlooking the garden. They consist of works executed, works projected and proposed to be erected, drawings and details of remarkable edifices of antiquity and architectural excellence in France, executed for the archives of historical monuments in the Department of the Minister of State. In the class of executed works M. Denuelle exhibits the internal decoration of two apartments in the Hôtel de Ville at Lyons, in

the style of the Renaissance, and has also several drawings made for the archives in the offices of the Minister of State. M. Tony Desjardins, a pupil of M. Duban, has four drawings of a market-house he has built at Lyons. It is a longitudinal hall of great dimensions, perhaps about the same as Westminster Hall, possessing more of the useful than the ornamental, being little beyond a conservatory in the Crystal Palace style. Edouard Moll has constructed a hospital at Angers for 900 afflicted persons, thus divided—old age, epilepsy,* foundings, and general complaints.

The Palace of Gabary, near Alexandria, now being prepared for construction there, in Paris, by M. Ed. Schmitz, is represented by four drawings of the exterior section through the rotunda, *idem* the gallery and the ground plan. It is a very showy and ornamented design—quite Oriental; but there is no information about the materials of which the construction is now being executed. Probably it is only the ornamental parts which are in hand in Paris. Two unimportant designs, although graceful, by M. Stillière, for a fountain and a commercial school at St. Denis, near Paris, nearly complete the drawings for works erected. Of works proposed or projected, are designs by M. Arangoiti for a school and naval museum at Ventosa, in Mexico; E. Baillet, design for a theatre; P. Chabot, slaughter-houses for Bayonne; J. E. Chapelain, for a tomb at Barcelona; A. Margent, for a re-arrangement of all the public buildings and private residences in *L'Île de la Cité de Paris*; J. M. Tetaz, design for a theatre at Amsterdam; F. E. Trilhe, design for the abode of the embassy and factory in Cochinchina; and A. E. Villian, a reconstruction of the theatres on the Boulevard du Temple, to accord with the new arrangement of the roads.

Among the painters, Messrs. Courbet, Meissonier, Ingres, H. Vernet, Decamps, Brascassat, and Mdlle. Rosa Bonheur, do not contribute. However, the honours of the *salon* are worthily sustained by many others of great talent. The Count de Nieuwerkerke, who is director of all the imperial and national museums, conceived the idea of congregating all the sacred subjects in one room, which, however vast, could not contain all. It is really painful to say that religion is outraged by the displays, on vast canvases, of the most sublime and touching episodes vulgarized by garish colour, feeble invention, and entire want of suitable expression. Ary Scheffer and Ingres appear to have laboured in vain, during the present generation, to inspire their brethren with what is due from art to divine revelation. In purely historical subjects the French artists are more happy, particularly on military feats. Yvon has a vast spread of canvas portraying the Assault of the Malakoff, on the 8th September, 1855, a violent scene of death, and all the horrors of slaughter, but marvellously forcible in execution; it is intended for the Museum in the Palace of Versailles. Several other excellent pictures represent various occurrences in the Crimean war. The other historical pictures are respectable enough, but do not demand a separate notice. But in the domestic or *genre* scenes, it is that the present French school possess the ascendancy, and many of the artists whose names are familiar to English amateurs, have sent pictures of the most charming character. Plassan, Fichel, Girardet, Duverger, and a host besides, render this section of the exhibition the most enchanting. Knaus, of Dusseldorf, has one of his highly studied works, called "*La Cinquantaine*," being a peasant couple celebrating the fiftieth anniversary of their wedding. It were hardly possible to convey more faithfully the *bonhomie* of peasant life, both in the principal couple, or in the attending groups. In landscape there are some daring attempts at novelty of treatment, and successful too, by Daubigny, Rousseau, and Posini; the latter an Italian, but with a firmness of touch, a breadth, and a daylight, in the fullest degree of excellence. In cattle subjects, with landscape, Troyon surpasses everything he has previously done. "*The Return to the Farm*," a very large picture, with numerous cattle, with a warm evening glow over a breadth of landscape, most masterly executed, is, without doubt, a *chef d'œuvre* of its class. Auguste Bonheur, the brother of Mdlle. Rosa, has made such rapid advances, that his talented sister must look to her laurels. In still life St. Jean, the flower painter of Lyons, has produced his greatest work. An oaken panel, on which is carved a representation of La Madonna della Sedia, is hung with a garland of flowers, of magical execution and lustrous colouring. The portraits show no particular ex-

cellence, although the artists appear to have profited by those of the English school, which they saw at Paris in 1855.

The British artists were invited to contribute, but there is as yet only one, Charles Lucy, and he is a resident in Paris, who sends a picture. It may as well be added that tickets for the French Art-Union can be procured at Mr. Gambart's Gallery, in Pall-mall.

DRINKING-FOUNTAINS FOR LONDON.

WHILE the first public drinking-fountain for the metropolis was in preparation we hinted some objections, as well to the proposed design as to the intended site, the dead-wall of the burial-ground of St. Andrew's, Holborn, against which lie the piled up remains of many generations. What we said as to the latter may have had effect: at any rate the site was changed for the south-east corner of St. Sepulchre's churchyard, where the fountain is sufficiently above the ground to prevent unwholesome associations. It is to be regretted that our observations on the first head were not heeded: they were conveyed gently, out of consideration for the well-intentioned gentlemen who had the matter in hand; but, in the interest of the metropolis, since a gentle hint is unheeded, and many other drinking-fountains are about to be put up under the same direction, we are compelled to speak plainly, and to say that what is done is exceedingly unsatisfactory in an artistic point of view. A Norman window-opening appears to have given the suggestion, but so ill-proportioned a Norman window was never seen. The central portion—two short columns and semicircular arch—is of Aberdeen granite and marble; a shell of the latter material, from which the water runs, being stuck flat against the wall under the arch. Around this are other concentric arches in *Portland cement*, including a coarse zigzag ornament of stem, leaves, and flowers, in the same enduring substance. The central portion alone, if the mouldings had been decently profiled, with an additional moulding round it of granite or marble and a proper spout substituted for the absurd shell, would have been a thousand times better. We are sorry to find fault, but there is much at stake, and we are quite sure that it will not be long before the munificent donor will himself regret that the words *Erected 1859 by S. Gurney, Esq. M.P.*—in large letters, trebly gilt,—have been placed so prominently as they are on this very unsatisfactory production.

We said there is much at stake, and so there is. For a society has been formed to carry out the admirable desire of Mr. Gurney and others to provide pure water for London wayfarers; a number of the most prominent positions in London, such as the Regent-circus, Charing-cross, and the Royal Exchange, are at once to be supplied with drinking-fountains; and, if the same sort of taste is to prevail in these that is exhibited at the corner of St. Sepulchre's churchyard, not simply will an admirable opportunity to adorn the metropolis be thrown away, but our streets will be positively disfigured. We are quite sure that the excellent gentlemen who are moving in the matter desire, as their honorary secretary has said in a published letter, that these fountains should "present an elegant and attractive exterior;" and we therefore counsel them most urgently, before making their selection when the designs are sent in for which they have advertised, to obtain the best possible advice, and be guided by it.

THE DRINKING-FOUNTAIN MOVEMENT.

At Brighton, very good progress is being made with this movement. The water company have offered to supply a limited number of fountains gratuitously. The mayor has obtained liberty for a lady friend of his to erect two fountains, one in Egremont-street and another in an adjacent street, at her own cost; the plans to be under the direction of the town surveyor. Permission has been given to the local Central Fountain Committee to erect two fountains according to a pillar design submitted, but under the direction of the surveyor: one of these is to be erected on the cliff at West-street, but the site of the other is not yet fixed. Mr. W. R. King is also to be allowed to erect one on the Marine Parade, opposite Lower Rock-gardens, on a plan specified, under the surveyor's direction.—Mr. S. Hurrell is to erect three fountains at Cambridge at his own cost, the water to be supplied by the council.—The six fountains erected at Salford, from designs by Mr. Denny, the resident engineer of the corporation, are made of cast-iron, and are something like an ornamental

pillar letter-box, each having a suitable basin and two galvanized iron ladders. The waste water from the basin runs into two small dog-troughs at the foot of the column, raised a few inches above the pavement. The total cost of each fountain is about 10*l*. The water is allowed to run, night and day, at the rate of about twenty gallons per hour, or 500 gallons daily. The cost of the water to each fountain (at the usual charge of 6*d*. per 1,000 gallons) is 3*d*. per day, for which sum 7,000 persons can each be supplied with half-a-pint of pure water.—At Glasgow, no less than thirty-two drinking-fountains were simultaneously opened last week in different parts of the city, two in each of the sixteen municipal wards. These fountains have been erected under authority of a late Act of Parliament granted to the magistrates and town council of Glasgow, for the introduction of water-supply from Loch Katrine.

THE METALLURGY OF LEAD.

CONSTRUCTION OF FURNACES.

A PRACTICAL and interesting paper on the "*Metallurgy of Lead*," by Mr. John A. Phillips, was read by the Society of Arts, on 27th April. In giving the following abstract, we have chiefly had in view the details as to the proper construction of furnaces:—

Although lead forms an essential element in a large number of minerals, the ores of this metal are, strictly speaking, far from numerous. Of these the most important is sulphide of lead, or galena. This mineral, which possesses a metallic brilliancy, and has a lighter colour than metallic lead, presents, in its cleavage, all the variations, from large facettes and laminae indicating a cubic crystallization to a most minutely granular structure. It is extremely brittle, and its powder presents a brilliant, blackish-grey appearance.

It would appear, from recent experiments, that the silver contained in the finely-granular varieties of galena often occurs in the form of sulphide of silver, mechanically intermixed, whilst in the more flakey descriptions of this ore, the sulphides of lead and silver are chemically combined.

Galena occurs in beds and veins, in granite, gneiss, clay-slate, limestone, and sandstone rocks.

The next most important ore of lead is the carbonate, which is a brittle mineral, of a white or greyish-white colour.

The sulphate of lead does not often occur in sufficient quantities to be employed as an ore of that metal. In appearance it is not unlike the carbonate, but may readily be distinguished from it by its not dissolving with effervescence in nitric acid.

Phosphate of lead, when crystallized, usually presents the appearance of hexagonal prisms, of a bright green, brown, or yellowish colour.

The other minerals containing lead seldom occur in sufficient quantities to be of much importance to the smelter.

The extraction and mechanical preparation of ores is the business of the miner, and not of the metallurgist.

English Process.—Treatment by Double Decomposition.—Every process that has for its object the reduction of lead ores by double decomposition, comprises two principal operations. 1st. The reduction of galena, by the aid of heat and atmospheric air, to a mixture of sulphide, oxide, and sulphate, which mutually decompose each other with the elimination of metallic lead. 2nd. The reduction of the oxysulphide by the addition of carbonaceous matter.

The Reverberatory Furnace.—The reverberatory furnace employed for the treatment of galena is composed, like all other furnaces of this description, of three distinct parts, the fire-place, the hearth, and the chimney. The hearth has to a certain extent the form of a funnel, of which the lowest point is on the front side of the furnace immediately below the middle door. The molten metal descending from every side along the inclined bottom or sole, is collected in this receptacle, and is ultimately run off by means of a proper tap-hole. This tap-hole is, during the operation, closed by a pellet of clay. The inclination of the hearth is more rapid in the vicinity of the fire-bridge than towards the chimney, in order that the liquid metal may not be too long exposed to the oxidizing and volatilizing influences of a current of strongly-heated air. The dimensions given to these furnaces, as well as the weight of the charge operated on at one time, vary considerably in different localities, but in the North of England the following measurements are usually employed:—The fire-grate is 5 feet 9 inches by 1 foot 10 inches; and the thickness of the fire-bridge 1 foot 6 inches: the length of the

* Why is there no hospital in England, with all its charities, for the epileptic?

sole is 9 feet; and its average width, 7 feet. The depth of the tap is about 2 feet 6 inches below the top of the inclined sole. The height of the roof at the fire-end may be 1 foot 4 inches; and at the other extremity, 11 inches. The introduction of the charge is in some cases effected by the doors of the furnace, whilst in other instances a hopper, placed over the centre of the arch, is made use of. On the two sides of the furnace are placed three doors about 11 inches by 9 inches, which are distinguished as 1, 2, and 3, counting from the fire-bridge end. The three doors on the one side are known as the front-doors, whilst those on the other side are called the back-doors. Immediately beneath the door on the front side of the furnace is situated the iron pan into which the molten lead is tapped off. The bottom of this arrangement is in most cases composed of fire-bricks, covered by a layer of vitrified slags, of greater or less thickness. In order to form this bottom, the slags are introduced into the furnace, the doors closed, and the damper raised. An elevated temperature is thus quickly obtained, and as soon as the scoria have become sufficiently fused, they are, by means of rakes and paddles, made to assume the required form. The charge employed, as before stated, varies in almost every establishment. In some cases the ore is introduced raw into the furnace, whilst in others it undergoes a preliminary roasting previous to its introduction. Rich ores are generally smelted without being first calcined, but the poorer varieties, and particularly those which contain large quantities of iron pyrites, are, in most instances, subjected to roasting in a separate furnace. The total duration of the operation may be about six hours.

To build a furnace of the above description, 5,000 common bricks, 2,000 fire bricks, and 25 tons of fire-clay are required. In addition to this must be reckoned the iron-work, the expense of which will be much influenced by the nature of the armatures employed, and the locality in which the furnace is constructed.

Slag Hearth.—This consists of a small blast-furnace, having the form of a rectangular prism, about 25 inches in length, 22 inches in breadth, and 33 inches in height. The bottom is composed of a thick cast-iron pan, which is made to incline slightly from the tyre towards the breast of the furnace. Cast-iron bearers are placed on each side of the iron plate, and on these is supported the fore-hearth, which consists of two stout plates of cast iron. A space of about 5 inches is thus left between the front and bottom of the furnace, and an additional height of 21 inches is obtained by placing between them a row of fire-bricks laid on their flat. The loss of lead, however, experienced in smelting by the slag hearth, is very great, even under the most favourable circumstances; and it has consequently, of late years, been gradually superseded by the Castilian furnace.

Castilian Furnaces.—Within the last few years a blast furnace has been introduced into the lead works of this country, which possesses great advantages over every other description of apparatus which has been hitherto employed for the treatment of lead ores of low produce. This apparatus, although first employed in Spain, was, I am informed, invented by an Englishman (Mr. W. Goumry), who was employed in the reduction of rich slags in the neighbourhood of Cartagena.

This furnace is circular, usually about 2 feet 10 inches or 3 feet in diameter, and is constructed of the best fire-bricks, so moulded as to fit together, and allow all the joints to follow the radii of the circle described by the brick-work. Its usual height is 8 feet 6 inches, and the thickness of the masonry invariably 9 inches. In this arrangement the breast is formed by a semi-circular plate of cast-iron, furnished with a lip for running off the slag, and has a longitudinal slot, in which is placed the tapping-hole.

On the top of this cylinder of brick-work a box-shaped covering of masonry is supported by a cast-iron framing, resting on four pillars, and in this is placed the door for feeding the furnace, and the outlet by which the various products of combustion escape to the flues. The lower part of this hood is fitted closely to the body of the furnace, whilst its top is closed by an arch of 4½-inch brick-work laid in fire-clay. The bottom is composed of a mixture of coke-dust and fire-clay, slightly moistened, and well beaten to the height of the top of the breast-pan, which stands nearly 3 feet above the level of the floor. Above the breast-pan is an arch, so turned as to form a sort of niche, 18 inches in width, and rather more than 2 feet in height.

When the bottom has been solidly beaten, up to the required height, it is hollowed out so as to

form an internal cavity, communicating freely with the breast-pan, which is filled with the same material, and subsequently hollowed out to a depth slightly below the level of the internal cavity. The blast may be conveniently conducted to the nozzle through brick channels formed beneath the floor of the smelting-house.

LOCK, WALLS, AND GATES OF THE VICTORIA DOCKS, LONDON.

INSTITUTION OF CIVIL ENGINEERS.

On April 19, Mr. Joseph Locke, M.P. president, in the chair, the paper read was "Description of the Entrance, Entrance Lock, and Jetty Walls, with the Wrought-iron Gates and Caisson, &c. of the Victoria (London) Docks," by Mr. W. J. Kingsbury.

The Victoria (London) Docks were briefly described as being situated in that part of the Plaistow Marshes, Essex, which, projecting forward towards the south-east, was bounded on three sides by the River Thames, which there formed a loop, or bend, extending from Bugsby Reach, just below Blackwall, to Gallion's Reach, below Woolwich.

The entire area, comprised within the dock, was shown to be about 200 acres, of which one half, or 100 acres, was water space. This consisted of the entrance, with its lock—the tidal chamber of 16 acres, and the main dock of 74 acres. In general terms, the basin and dock together were 4,050 feet in length, and 1,050 feet in width, at the level of high-water mark.

In addition to the quay room afforded by the sides of the basin and dock, four jetties, each 581 feet long, and 110 feet wide, were projected from the north side into the dock: these jetties, with the sides of the dock and of the basin, provided a length of three miles of quay space.

The general surface of the original marsh land was about 8 feet 6 inches below Trinity high-water mark; and the tidal water of the Thames was always excluded by an embankment, which was maintained at a height of 5 feet above T. H. W. M.: that level was, therefore, adopted for the top of the copings of the entrance and of the lock walls. Taking T. H. W. M. as the datum, the bottom of the docks was stated to be 24 feet below datum,—the depth on the upper gate sill 25 feet 6 inches, and on the lower gate sill 28 feet, which latter depth was maintained throughout the entrance from the river; and as the mean fall of tide was 18 feet, there was a depth on the lower gate sill of 10 feet, and on the upper gate sill of 7 feet 6 inches, at Trinity low-water mark.

The subsoil was described as consisting of beds of yellow and blue clays, of varying thickness, and of a total depth of 5 or 6 feet; then a depth of from 5 to 12 feet of peat, and then a good bed of gravel overlying the London clay, which was found throughout the length of the lock at a nearly uniform depth of 37 feet below T. H. W. M.; and on this foundation, at a depth of 37 feet 6 inches, both the upper and the lower gate platforms were laid.

The sides of the entrance, of the channel leading to the tidal basin, and of the lock, were composed of concrete walls, faced with cast-iron piles and plates. The main piles were driven at intervals of 7 feet 1 inch from centre to centre, the intervening space being filled by cast-iron plates, whose lower edge rested on the upper end of four cast-iron sheeting piles, which with them occupied the entire space between each pair of the main piles. These latter were each in two lengths,—the lower 25 feet, and the upper 12 feet 8 inches, and the metal was about 2 inches thick, cast in a trough form, 18 inches in width. The sheeting piles were each 20 feet long, of similar form: the three interspersing iron plates for every bay were each 5 feet 11 inches wide, and 5 feet deep, cast with back feathers to give the necessary strength, and provided with a top flange to carry the stone coping of the wharf. In the rear of each main pile, and at a distance of 18 feet from it, a timber land tie, 20 feet long, was driven to a proper depth, and secured to the iron piles by two eye-bolts and nuts, and behind them a wall of concrete was filled in, varying in thickness from 12 feet to 6 feet at the top, where the stone coping of the wharf was laid. The main piles were driven 5 feet into the ground, and the sheeting piles about 2 feet 6 inches into the same stratum. Clay puddle and concrete were also used to render the lock chambers perfectly sound.

As the London clay was met with at a depth of 37 feet below T. H. W. M. advantage was taken of the circumstance to dispense with an invert, at the gate platforms, by substituting ordinary brick-work. This was accomplished by laying open,

down to the clay, the necessary areas for the upper and lower platforms, surrounding them by single rows of elm sheet piling, 16 feet long and 9 inches thick, driven close, to a depth of about 7 feet into the solid clay: these were covered by wallings, and, within the space so secured, the brickwork of the platform was laid. In this mode of construction it was essential to take out all the gravel, to lay the bricks directly upon the clay, and to use close-piling, in order to prevent the possibility of any water getting beneath and blowing up the brick-work. Upon these platforms the side walls, which were 20 feet in thickness where they joined the concrete walls, were carried up in brickwork.

The hollow quoins for the gates, the external arris of the gate recess, the caisson quoins and sill, and the copings and bedstones for the anchors, which constituted the bulk of the stonework employed, were of a compact sandstone, called Duke's Quarry stone. The bricks used were almost all made from clay excavated from the site of the docks, laid in mortar composed of Halling lime and clean sharp sand; the latter also from the excavation, whence the gravel and sand used in the concrete also proceeded; so that these essential ingredients for the structure were found on the spot.

The paper then described the sluices and the pipes for filling and emptying the lock, with the precautions for examination and repair; and in general it appeared that every facility was provided for access to every part liable to wear and tear, or injury, and for remedying all defects.

The cost of the piled and concrete wall of the lock chamber was stated to be 171. 0s. 7d. per foot run, and that of the entrance to be 194. 6s. 10d. per foot run, or 517. and 581. per yard run respectively. The price of the cast iron at the time of the construction of the docks was 61. per ton, and the weight of the iron averaged about 1½ ton per foot lineal of the wall.

A description was then given of the three pairs of lock gates, viz. the lower and upper gates of the entrance lock, and the inner gates separating the tidal basin from the main dock. All these were constructed of wrought iron, nearly alike in dimensions and general arrangements. The objections to the use of timber were enumerated; the introduction of cast-iron ribs, with timber planking, was noticed; and the gradual employment of wrought iron for the frame, the plating, the diaphragms, and all the parts, except the heel and mitre posts, was described. It was shown that, on account of the large dimensions of these gates, and more particularly their amount of curvature, timber would have been inapplicable; the lower gates being 80 feet in the span by 31 feet in height, with a versed sine of 20 feet, or one-fourth of the span. The form of the outer curve of the gate was an arc of a circle, having a radius of 50 feet. The distance between the skins, at the heel and mitre posts, was 2 feet, and at a point midway between them 3 feet, the inner boundary being two arcs of circles struck from centres 9 feet 5½ inches apart, with a radius of 59 feet 9½ inches. There were fourteen horizontal diaphragms in each lower gate, the distances between them varying from 1 foot 11 inches at the bottom to 3 feet at the top. Beneath the bottom plate, which was 1 inch thick, a piece of timber to meet the shutting sill was fixed by bracket pieces. The horizontal diaphragms generally were ½ inch thick, and were attached to the skins by T and angle irons. There were also two vertical diaphragms passing continuously from top to bottom, and dividing each gate into three equal parts. These tended to prevent twisting, and added strength to the structure. The outside plating varied in thickness, according to the strain to which it was subjected, from ½ inch at the bottom, to ¾ inch at the top. The plates were disposed with their lengths vertically, and all the joints were provided with strips on the outside and on the inside, to render the structure water-tight.

The heel and mitre posts were of green-heart timber, and were firmly attached, by angle irons and bolts, to the gates. The chain attachments were made to draw upon both skins and upon the entire frame of each gate, and to be accessible at low water. The gates were opened and closed by Armstrong's hydraulic machinery.

The peculiar arrangements for the moveable hand-rails of such curved gates were then described, and it was shown that, by the use of swivel sockets, the curved rail could be made to shut down quite close, to permit the passage of the towing ropes.

The pivots and foundations were then described, as were the shutting cills, with the means of securing them, the roller paths, and the rollers, the latter demanding peculiar arrangements, on

account of the curved form of the gates and their great weight. They were so arranged as to be easily accessible outside the gate, and by releasing a nut, the column which fitted into a recess in the upper part of the roller-frame could be removed, and the roller could be drawn up by chains in the guides, be examined, and repaired if necessary, and be restored to its place without disturbing the gates.

The large anchors were also fully described, as were the modes of securing them.

The upper and inner gates were stated to be somewhat lighter than the lower and outer gates: the material was thinner: and there were fewer horizontal diaphragms: in other respects all the gates were nearly identical. The inner gates were not worked by hydraulic power, and the sluicing was done directly through four apertures in each of the gates themselves, instead of through the side walls. The weight of metal in the gates was:—

Wrought Iron.—In the inner gates, including the cast-iron pivot stop piece, 198 tons; in the upper gates, 128 tons; in the inner gates, 138 tons, including sluices.

Cast Iron.—In the shutting cills, pivot-crosses, anchors, rollers, roller-paths, foundation-plates, &c. with the bolts for each pair of gates, 59 tons.

The ancient river bank, which was about 5 feet above T.H.W.M. and protected the marsh from the overwinding of the river into the low district, formed a natural dam, behind which the inner works of the lock-chamber, the brickwork of the gate-opening, and the other operations, were carried on, and outside of which a considerable portion of the piling and the concrete walling was executed.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

THE present exhibition consists of 299 drawings; and though we are not prepared to echo what was said very loudly at the private view—that it is the best exhibition the old society have made for some time—we fully admit its great excellence. About 2,300^l were spent there by the public at that said private view; but since then, it seems, the troubled state of the times has made itself evident, as it has done at the Academy, where the sales up to this time have, we understand, been much less than usual.

The great picture in the Water-Colour Exhibition is not a large one: it is called "The Widow of Wollm," by F. W. Burton, and consists simply of a woman and child on their knees before an altar not seen, simple in arrangement, touching in sentiment, and admirable in manipulation. The child's face is perfection. It was painted, as we understand, for a 200-guinea commission; and the owner of it may congratulate himself on the possession of as fine a work in water-colours as was ever painted. 266, "An Apple Girl," by the same artist, is also a first-rate work. For the picture next in excellence to "The Widow," we must look to the landscapes, and find it in 181, "First approach of Winter—Scene Inverness-shire," by A. P. Newton, a very masterly representation of mountains under snow. The foreground of the left side is less satisfactory than the rest of the picture. Duncan is supremely good: the sweep of the sea over the sand in (22) "The Life Boat," and the sky in (31) "Wreckers—Coast of South Wales," cannot be overpraised. 41, "The Interior of the Church of St. Lawrence, Nuremberg," by S. Read, is an excellent and pleasing picture; but the artist has rather painted Longfellow, who speaks of the pix there—

"Like the foamy sheaf of fountains rising through the painted air."

than the place itself, which is ordinarily clean, cold, and sharp. Mr. Frederick Taylor's large picture of "Prisoners taken at a Conventicle" (72), is less satisfactory in its class than his "Roosting Time" (239), an admirable piece of bird painting. (84), "Darley Churchyard," by D. Cox, has all the greatness of this master's earlier works, and shows how well he understands what really constitutes a picture. T. D. Harding has not painted anything better than "The Valley of Chamouni" (92), for some time; and Topham has several charming works. Hunt is admirable as ever, though we are not prepared to applaud the expenditure of his time on the representation of the interior of an oyster-shell. Miss Gillies, we are glad to see, has a fresh model; we would especially point to 51, "A Father and Daughter." There is considerable power in 188, "Returned from India," by S. Palmer. His picture of "The Comet" (175), where with a dark stormy sky we have abundance of bright stars, is less satisfactory.

P. J. Naftel has considerably advanced: see, for example, his 192,—"Up the mountain stream,—Head of Loch-Lomond." S. P. Jackson, too, is making way like his own "Merchantman on a Lee Shore" (180); and Branwhite, Joseph Nash, and Gasteau are in force.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE last meeting of this session of the Liverpool Architectural and Archaeological Society was held on Wednesday evening, the 11th inst., in the Royal Institution, Colquitt-street; Mr. H. P. Horner, the president, in the chair. Mr. Verelst, in awarding the society's prize for the best design for a bank, the competition being confined to the student members, congratulated the meeting upon the creditable designs sent in; remarking that seven sets of designs, the largest competition which had ever taken place since the formation of the society ten years ago, had been sent in, and they were all of a very high order of merit. The first prize was awarded to Mr. Reeves, the second to Mr. J. F. Doyle, and the third to Mr. Parslow. The annual report as to the position of the society, which was read by Mr. Stubbs, the secretary, gave an account of the operations during the past year. The list of members showed an increase in number, there being at present 180 members on the books, 4 for life, 6 honorary, 27 professional, 123 associate, and 23 student members. The finances of the society were also in a flourishing condition, and the transactions of the session would be immediately published. Mr. H. P. Horner was unanimously re-elected president for the ensuing year; Messrs. Weightman and Barry were appointed vice-presidents; and Messrs. Verelst, Ellison, Rees, Higgins, and Bradley, were appointed as the council. Mr. Stubbs and Mr. F. Horner were re-appointed secretary and treasurer respectively. The president then read his annual address; and, after the usual complimentary votes of thanks, the proceedings of the session terminated.

PROPOSED EXHIBITION IN SPAIN.

FOR the exhibition of works of industry in 1862, to be held at Madrid, the following is the royal decree:—

"Taking into consideration the reasons adduced by my council of ministers, I have decreed as follows:—

Art. 1. On the 1st April, 1862, will be opened, in Madrid, a public exhibition of agricultural and manufactured products, workmanship, and objects of art, as well for the peninsula and for the adjacent islands as for the foreign provinces and our African possessions.

Art. 2. To compete at this exhibition are invited all the American republics of Spanish origin, also the kingdom of Portugal.

"Art. 3. A council, presided over by the king, my well-beloved spouse, and composed of competent persons, will, in as short a period as possible, take the most efficacious means of carrying out this design in all its branches.—Given," &c. &c.

SPAIN.

IN the jurisdiction of the town of Yrun (at the Spanish and French frontier), and at a short distance from the highway, has been discovered a rich vein of coal: according to the owners it is equal to English coal in quality. The company formed to develop the mine has already begun work actively. It is needless to say that the importance cannot be overrated of such a discovery in the immediate proximity of the Northern Spanish Railways.

The section of the Madrid and Guadalajara line, which has been already opened for some time for goods traffic, will be inaugurated on the 13th. May next. Thus, the inhabitants of the neighbouring towns will be able to travel from San Isidro to Madrid and back again on the same day.

They are actively working to finish the cable which, traversing the Miño at Tuy, will place Spain in direct communication with Lisbon. There will then be four wires of communication between Spain and Portugal, two by Galicia, and two by Estremadura.

The construction of six postal sorting-vans for the Mediterranean Spanish lines was advertised for a second time by the companies, but extraordinary to say no one contractor offered.

On account of the increasing development of public works in Spain an augmentation in the staff of the corps of civil engineers is to take place. The Gazette publishes that the engineers of roads, canals, and ports, are to be composed of five inspectors general, fifteen district inspectors,

thirty first-class engineers in chief, 50 second-class ditto, eighty first-class engineers, 120 second-class ditto, 15 candidates of the first-class and twenty-five of the second. The decree also dictates all regulations necessary for entering the corps and the rules of promotion.

SANITARY GUIDES AT READING.

WITH reference to some observations on the proceedings of the Reading Board of Health, in our number for April 30th, Alderman Brown writes to say that the memorial presented by him "was signed by 911 *bona fide* ratepayers (nearly half of the whole body)." "The division was not, as insinuated, against any system of drainage at all, but solely against the scheme submitted by the surveyor, which, being considered incomplete and impracticable, was, in consequence, after four hours' deliberation, abandoned."

We could scarcely suppose that any body of sane men would have the hardihood to pronounce openly against having "any system of drainage at all," but when one of the opponents of a scheme (whether bad or good we know not) asserts that "it is *impious* to say that disease is preventible," and another, the mover of the amendment rejecting it, that it has not been shown that "the public health has been benefited to the slightest extent by adopting any drainage scheme," the state of opinion amongst them becomes pretty evident. However, we willingly receive Alderman Brown's statement, and look to see him initiate forthwith such a scheme for the effectual drainage of the town as may obtain the support of the ratepayers. To suppose that drainage alone will ensure a satisfactory average of health for a town is erroneous; but it is the first great necessity towards a proper state of things, and without it all other improvements and ameliorations would fail to obtain the desired result.

WORKS IN PROGRESS AT DOVER CASTLE.

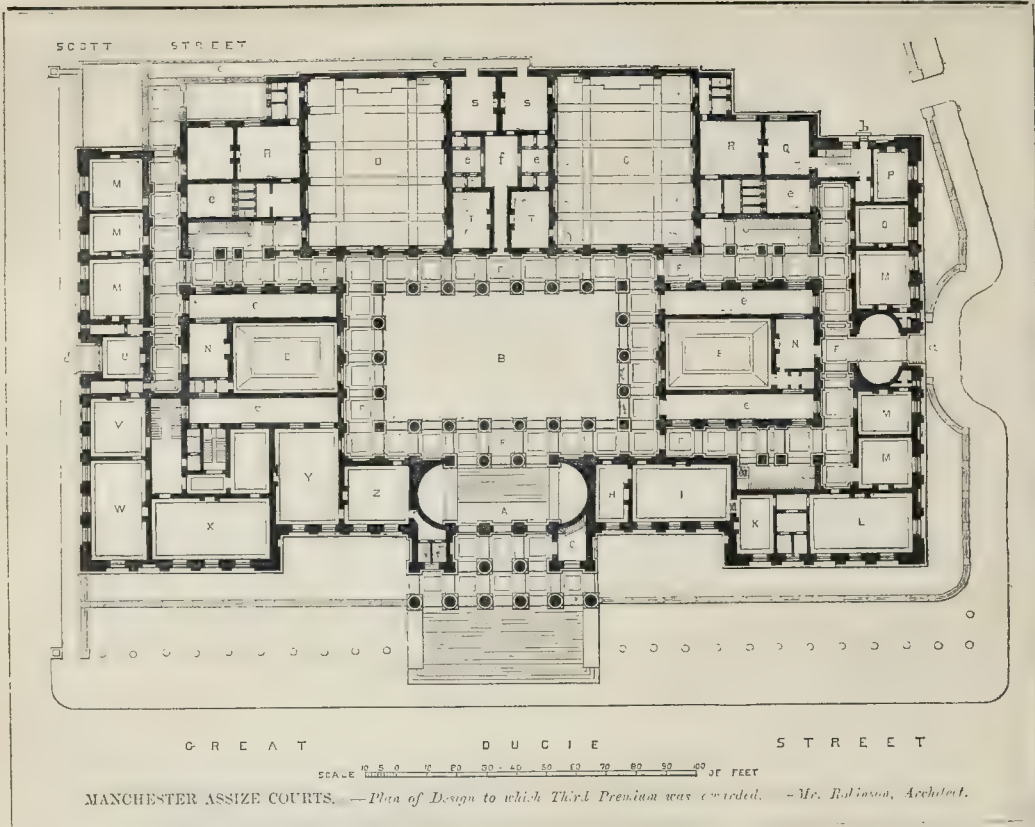
VARIOUS important works are in progress at Dover Castle, particularly quarters for married soldiers. This is a Gothic building, with Bath stone dressings, and Kent rag rubble masonry, to contain fifty-four families, each to have a separate room, 14 feet by 12 feet, and 11 feet high, every room fitted with a dwarf cupboard, shelves, and pin-rail, and small cottage range with oven, and ventilated by means of Jennings's patent air-flue. The landings and stairs are of stone. Water is laid on to each passage, so that every occupant may be supplied with water without going out of doors. The stairs and landings are to be lighted with gas. In the rear of the building there is to be a roomy laundry and washing establishment, fitted with boiling-coppers, washing-troughs, with hot and cold water laid on, risers, wringing machines, and drying-closet. The ironing-room will contain a Baker's patent mangle, ironing stove, &c. The whole of these fittings are to be supplied by Jeakes, of Great Russell-street, Bloomsbury.

In connection with this establishment, and the barracks in the keep-yard, a new kitchen is in course of erection, fitted with Capt. Grant's cooking apparatus, for 500 men.

New bath and washhouses have been erected at the north entrance to the keep-yard, fitted with enamelled iron baths; and provision is made for supplying each with hot and cold water. Moreover, the ventilation of the whole of the barracks has been improved, and gas is shortly to be laid on, externally and internally, to the whole of the Castle and barracks. All this sounds very well, and we shall hope to find the impression confirmed when we have the opportunity to see for ourselves.

PUBLIC HEALTH AT ST. THOMAS'S HOSPITAL.

ON Friday, the 6th, Dr. Greenhow read the introductory lecture of his course of lectures on this subject in the theatre of St. Thomas's Hospital, and dwelt properly on the importance of preventive medicine. St. Thomas's, he said, was the only hospital which had dedicated a Chair to the subject. The lecturer brought forward a number of facts, all well known to our readers, to prove the effect which the want of sanitary arrangements produces on the public health, and showed that if the average mortality of the healthiest districts of the kingdom everywhere prevailed, there would be three hundred deaths a day less. He was glad to hear that improvements had been made in Liverpool, but reiterated his statements as to the frightful unhealthiness



even now of outlying parts of the town. Dr. Greenhow had a quiet fling at lay sanitary reformers, some of whom he had invited to hear him, admitting that in certain departments they had effected good, but claiming for the medical profession the whole credit for any improvement which had been effected in public health. The lecturer showed, we regretted to observe, an inclination to adhere to the opinions he has expressed in our pages as to "contagious diseases." With the best possible feeling, we would suggest to Dr. Greenhow that greater things are at stake than victory in a discussion; and we invite him to give the question a cool and candid re-investigation, and lend his aid to dispel a mischievous error. Since the appearance of the discussion in question, several distinguished medical men have confirmed us in our views in the most emphatic manner. We shall hope to find Dr. Greenhow's course well attended by the pupils of the Hospital.

ALL SAINTS' CHURCH, MARGARET-STREET, REGENT-STREET.

Mr. DYCE, R.A. has completed his paintings in fresco, on the east wall of this church, and the building is now ready for consecration. Our readers have before now heard something about it, and a view of the exterior will be found in one of our volumes. They know that it is a very remarkable structure, glorious in mosaics, polished marbles, stained glass, carvings in alabaster, mural paintings, and metal work. The paintings in question are in panels, formed by beautifully carved alabaster canopies and columns, three stories in height, and comprise on the lowest the Infancy of the Saviour, represented in the lap of the Virgin, with three of the Apostles on each side; the Crucifixion, with the six other disciples, three on each side; and at the top, the Saviour throned in glory, surrounded by the Apostles and the Virgin. Mr. Dyce has produced a very successful result. The Virgin, in blue against red drapery, and the infant Christ, with the exception of the legs, are beautifully painted. The heads of the Apostles are varied and expressive, and the draperies most effectively treated. The least successful portion of the second range is the figure of

the Saviour on the cross, which has a too easy and unconstrained an attitude. In the crowning group the figures, including the symbols of the evangelists, have a projecting metallic nimbus, which takes the mind back to the assumed origin of the practice in the antique times, the actual protection of the heads from the birds and other defacing agents. The figures have a diapered gold background, and the whole will undoubtedly serve to raise the already high reputation of the artist. The altar table is of varied woods.

The vaulting of the chancel is fully enriched with colour in smaller and more satisfactory patterns than are on the walls of the nave, which are also covered with coloured patterns; indeed, every inch of surface shines with colour, gilding, or inlay work. The organ is divided, and occupies the chancel aisle on both sides. Very elaborate and handsome iron and brass grilles with gates separate it from the chancel. There is a brass lectern in the chancel, and a low screen of alabaster divides the latter from the nave. The font, placed near the door at the west end of the church on the south side, is of white and coloured marble, less harmonious, perhaps, than magnificent. A carved and gilt oak canopy is suspended above it, from the vaulting over. We shall have occasion before long to return to this singularly magnificent interior.

ARCHITECTURAL ASSOCIATION.

On Friday, the 29th ult. Mr. J. K. Colling read a paper on "Architectural Botany," the substance of which has appeared in our pages. A discussion followed.

Class of Design.—On May 6th, the president of the class, Mr. Randall Druce, in the chair, a number of sketches were contributed for "The Entrance to a Railway Tunnel."

A lengthened discussion took place, in the course of the evening, on the proper meaning of the terms symmetry and uniformity as applied to works of architecture, the proper application of the principles of the same to design, and how far nature might serve as a guide in ascertaining these principles.

The half-hour's sketch was, "A Gas Standard

for a Church." The subject of the sketch for Friday evening, May 20th, will be "A Pigeon-house."

THE SELECTED DESIGNS FOR THE MANCHESTER ASSIZE COURTS.

We give in our present number a view of the selected design by Mr. Waterhouse, of which the plan of principal floor has already appeared. To this we add the plan of the design by Mr. Robinson, to which the third premium was awarded. A description of both designs will be found in our previous numbers.

The following references will further explain Mr. Robinson's plan:—

- A. Vestibule.
- B. Public hall.
- C. Criminal court.
- D. Civil court.
- E. Sheriff's courts.
- F. Corridors.
- G. Porter.
- H. Witnesses' room.
- I. Grand jury's room.
- K. Grand jury's retiring-room.
- L. Barristers' and grand jury refreshment-room.
- M. M. Attorney's rooms.
- N. N. Sheriff's retiring-room.
- O. O. Consultation-rooms.
- P. Governor of New Bailey.
- Q. Articles to be produced on trial.
- R. R. Jury's retiring-rooms.
- S. S. Judges' retiring-rooms.
- T. T. Witnesses immediately wanted.
- U. Prothonotary's room.
- V. Breakfast-room.
- W. Drawing-room.
- X. Dining-room.
- Y. Library.
- Z. Robing-room.
- a. Public entrance.
- b. Prisoners' entrance.
- c. Judges' private entrance to courts.
- d. Judges' entrance on street level.
- e. e. Areas.
- f. Lobby.

PROPOSED MANCHESTER ASSIZE COURTS: SELECTED DESIGN.—MR. WATKINSON, ARCHT.



FRANCE.

THE Academy of Moral and Political Science has just awarded the Bordin prize, the subject of which was "To seek out the principles of the Beautiful in their application to Nature, Poetry, and the Arts," and declared the paper sent in by Mons. Lévêque, professor of Greek and Latin, at the College of France, to be the best.

On Monday, the 18th ult. the valuable collection of paintings belonging to Mons. Junius Van Hemert, of La Haye, were sold by auction by M. Charles Pillet. It comprised fourteen small paintings, of the Flemish school, and of the first merit. A "View of the Rhine, near Haarlem," by Van Goyen, fetched 2,280 francs; a "Chaudière," by Van Capel, 600 francs; an "Interior of a rich Palace," by Van Delen, 660 francs; a "View of a Dutch Town," by Molensart, 950 francs; the "Passage du Gué," by Moncheton, 1,450 francs; a "Landscape," with cascade, by the same, 710 francs; "Moonlight," by Van der Neer, 2,000 francs; "Portrait of a Magistrate," by Netscher, 1,800 francs; another "Portrait," by Van Spronck, 1,400 francs; "Landscape," by Ruysdael, 10,000 francs; the "Peace of Munster at the Moment of Swearing in the Plenipotentiaries," 30,000 francs; the "Horse Dealer," by Wouvermans, put up at 8,000 francs, was withdrawn for want of a purchaser.

The Academy of Fine Arts has published the usual annual notice, intimating to such persons as may be disposed to compete for the annual prize of a gold medal, worth 500 francs, for a cantata to be set to music, to send in their productions before the 18th May.

The new quarters for the Imperial Guard, in the Louvre, are just finished. For some time the first six companies of the 1st battalion of the Gendarmes have been installed there; and now the 7th and 8th companies of the same battalion have removed thither from the Bonaparte Barracks, in the Rue de Lille.

The erection of the great steeple of Notre Dame de Paris continues actively. Already, judging from the height and dispositions of the scaffolding, one can appreciate the effect likely to be produced by its great elevation—greater than that of the St. Chapelle.

The ancient towers of the Palais de Justice, known under the names of Cesar's Tower, the Silver Tower, and the "Tour Bombée," have been for these last four years objects for important works of restoration. The foundations have been underpinned to a depth of 2m. 50c. and in front has been constructed an area with handsome stone coping and elegant iron railings. Several openings in the lower stories, brought to light in the course of the excavations, have been carefully preserved and restored to their primitive state. The most western of the three towers—*la Tour Bombée*—the only one embattled at the top, has been furnished with a temporary wooden staircase on the outside during the completion of the accessories to the Palais de Justice. At the present moment they have commenced the complete restoring of the pepper-box roofs of these buildings, which are not the least curious portions of this ancient dwelling of the French kings.

The works have been commenced for the perforation of the new street which is to open into the *axe* of the Conservatory of Arts and Trades, and to display upon the Boulevard de Sebastopol a view of this monumental institution, so valued for its precious contents. This street, from its width and position, will be more a square than a street, properly so called. A garden in the English style is to be arranged in it, so as to break the monotony of the great line of the Boulevards, and it is asserted on good authority that on one of the sides a new theatre is proposed to be built on a large scale.

STATE OF THE ARTS

AND OF THE SCIENCES IN FRANCE IN THE SIXTEENTH CENTURY.

PERHAPS among all the countries of Europe, ^{as} seats of civilisation, France is the most remarkable in many respects—in its situation, in its fine arts and industrial arts, in its fortifications and military works, and in the products of all kinds of luxury. One of the principal considerations which makes her esteemed is, that the whole of the country is now inhabited and cultivated; there are no moors, marches, or deserts; no vacant spaces now; nothing which has not been converted to some use. France was always reputed to be the most rich and full of every commodity; abundant in all things necessary to human life. Placed in the heart of Europe, exactly in the middle of one of the temperate zones, which contributes to the

great number of rivers with which it is watered; which serve as much to the fertility of the soil and to the production of the kindly fruits of the earth, as to pleasure and to health, and still more so to commerce and to traffic. It is said that there are more great navigable rivers in France than in all the other parts of the world. She is continually receiving the works of other countries. The Seine is the most useful and the most adapted to navigation. With regard to woods for fires, for furniture, and construction, forests abound with every species of trees. Of metals and minerals she is not destitute; there are a number of mines, copper and brass ones; gold and silver make it flourishing in riches.

The people that France has produced have always been distinguished for their bravery and prowess in arms. Many quarters of the world, many colonies and cantons where they have raised their ensigns of victory, testify to their valour and enterprise. How many times have they passed armed through Asia and Africa to drive away the infidels, the Saracens and Turks; to deliver the Holy Land, and the Christians whom that set of men had enslaved. The influence of much classical and foreign art and learning has been shed on the arts and literature of their capital, of their cities and provinces, by means of the several crusades, expeditions, and campaigns in Egypt, Greece, Italy, Spain, and Constantinople. A king who commands so fertile and so well-furnished a country ought to be rich, powerful, and great. The excellence of the kingdom of France results from the antiquity of the unbroken race of its monarchs, which lasted twelve hundred years. What country can show in its annals such an antiquity of race, so long a succession of so many kings? There is nothing comparable to such succession and extraction of crowned heads and sceptred hands elsewhere.

* The period we select commences with the reign of François I. His accession was the beginning of absolute monarchy. The first years of his reign loaded him with glory, because he commanded himself, and did not allow his battles to be fought but by wise ministers and experienced generals. Then soon came the period of French reform. Every period carries a particular physiognomy, which differs from that which has preceded or followed it. Europe was in peace. It was an epoch of the greatest enterprises, and the most celebrated inventions. All the means created by the great discoveries of the fifteenth century were tried and developed conjointly with the religious reform in the sixteenth century: everything announced that this was an era of activity, of struggles, and of progress; and yet they were far from being the *good old times*. There was no sovereign so well obeyed in Europe as François I. after his victory over the Indomitable Swiss, at Marignan. All feudal resistance had disappeared. Especially recommendable for love towards his people, whom, notwithstanding his urgent affairs, he always supported, he acquired by this means the name of father of the people. It is scarcely credible with how much honour, public magnificence, and courtesy, he received into his kingdom, and at his palace, the Louvre, in 1534, Charles-Quint, who had been his principal rival and adversary. Charles was successor to Maximilian, but greater than he for his skill in all kinds of exercises, for his military virtues and politics. His life was one of continued exertion, and remarkable for the number of different voyages that he made, and for his abdications, his retirement, and his death at a monastery in Estremadura.† Here in his last day he cultivated gardening with great pleasure, and pursued literature. Titian was his painter; he had always much admired him, and loaded him with distinctions and with presents. He gave to him an order of chivalry, paid him a thousand crowns of gold for each of his portraits, for which the emperor and his family sat many times; assigned to him a pension of 200 crowns of gold upon the revenues of the kingdom of Naples; and tradition relates, that in his enthusiasm for this great painter, whom he used to go to see working in his studio, he on one occasion himself picked up the brush that had fallen from the artist's hands, saying that "Titian deserves to be waited upon by an emperor." The greater part of the emperor's collection of pictures were by Titian. From the

* Hierome Bignon, "De l'Excellence des Rois et du Royaume de France," Paris, 1609. The *Mémoires* of du Bellai contain the whole reign of François I. It was a luminous point, but did not dispel some obscurity. In his time and in that of Louis XII. architecture was often seen with the Greek orders mixed with the Gothic style similar to the *pué-mêle* state of the then existing society, and many after-existing societies.

† Lenglet, *Méthode pour étudier l'Histoire*; Paris, 1713. M. Mignet, *Charles-Quint*; Paris, 8vo. 1854.

Vasari, *Vie di più eccellenti pittori, scultori, ecc.*

love also that François I. bore to letters and to the learned, whom he sought, whom he brought together, whom he encouraged, he was named the Father and Restorer of Literature. He and Louis XII. wrote in Latin with much elegance. His brilliant qualities, however, were tarnished by faults and an abuse of power. France was filled with doctrines and with erudition in all sciences, and principally influenced by the University of Paris, which, it has been said, was never so flourishing as in his reign. The French language appeared in 1535 in a grandeur that it never had before, though it did not attain a form, a body, till under the star of Louis XIV.* All honoured the arts in the time of François I.; but he loved them. L. da Vinci visited him, painted for him, and died in his arms. The great painter was idolized; his costume and Italian manners were imitated. Artists were the Roman hat and the velvet coat with slashed sleeves, since adopted and called the *cinqe cento* dress. As François I. declined by age, his love for pleasure forsook him, and greater was his passion for the arts. He showed in what manner the influence he possessed would be exercised to the most advantage. His promise to Cellini,—"I'll suffocate you with gold,"—is well known; and to Rosso, on completing the paintings in one of his palace-galleries,—"I will make you a canon,"—reminds us of what is related of other kings and queens, who have for the most part been the nursing-fathers and the nursing-mothers of the arts and artists. He built Chambord and Saint-Germain, embellished Fontainebleau, and commenced the Louvre. Among the foreigners at his court was Lascaris, of Constantinople, who revived the study of the Greek language in France, founded the library in Fontainebleau, and was ambassador to Venice. Rosso, of Florence, decorated with his paintings the château de Fontainebleau; Primaticcio, of Bologna, continued the works of Rosso, and drew the plans of Chambord; Andrea del Sarto, Julio Romano, Titian, Benvenuto Cellini, and a host of others, were honoured with royal commissions and received royal gifts. The arts acquired a perfection which reflects all the glory of the reign of François I.; Italian painting served to ornament the royal residences; historical monuments, breathing Hellenic grace and majesty, arose at the side of strong towers, vestiges of the feudal or middle ages.

A glorious series of French artists commenced with the painter Cousin, the sculptors Germain Pilon, Gonjon,‡ Pierre Bontemps, the architects of the Louvre and the Tuilleries, Lescot and Delorme. France rivalled Italy, for learned and scientific men were sought out; and the king employed them with success in his councils, and in his embassies. The three brothers Dubellay were at the same time, diplomatists, men of war, and distinguished writers. Pelicier, Dancs, George Silv, served their country by negotiations, and enlightened it by their knowledge. Dandé, who cultivated the whole circle of the sciences, and also the beautiful Greek language, was provost of the merchants of Paris. He was the "prodigy of France," said the sage of Rotterdam, Erasmus, whose genius shone bright after a long night of dark ages, whose school of philosophy had found in him an opponent. After them came César Scaliger, restorer of the Latin language; Joseph Scaliger, restorer of chronology; Robert Estienne, the learned printer; Rams, the disputatist against Aristotle; Maret, and others. Erudition was the great passion of this epoch, and philology the favourite science; literature then became disputative and profound. Paris was the focus of ambitious passions. Poets had a difficulty in getting either a reading or a hearing. The Lutheran spirit, which invaded everything, choked the imagination, and thwarted the poetical bias. The sixteenth century had its enthusiasm for the intellectual treasures of antiquity; but, though striving to create a new world, and destroy or discard the old, it was inferior, in many respects, to the middle age. Michelet, in his "History of France" in the sixteenth century, says, that the factious Dr. Rabelais § had done for the French language, what Dante had done

* Preface to Bescherelli's French Dictionary.

† In the imperial library, Paris, are preserved the plans and description of this ancient château by Henri Martin.

‡ See their works, the one in the "*Sculpture de la Renaissance*," Museum of the Louvre; the other, in the friezes of the front elevation of the old chaudière. Dolorme's translation of Vitruvius, with commentaries and notes, and some of his own designs, is an interesting book for the student. He was a clever man, but committed some faults in the garden-front and south front of the Tuilleries. The latter has been recently restored.

§ Rabelais, in his "*Pantagruel*" and his "*Gargantua*," which appeared in 1533, and in 1553, attacked thrones, creeds, social order, science, philosophy, and showed an anarchical spirit like the times in which they were written.

for the Italian. He had employed and fused into it all the dialects, the elements of every age, and of every province, which the middle age gave him, and added to it a number of technical expressions, which the sciences and the arts furnished. Another, he adds, would despair at such an immense variety. France could then furnish numerous materials to the annals of the human mind.

The invasion of the ancient books having brought on a kind of restoration of all antiquity, the scholastic philosophy of the middle age fell before the works of the Greek philosophy recently discovered. The schools were dazzled, and as if intoxicated with Plato, they imitated him, they commented on him, they adopted him with folly and without judgment, they had the faith strong as you give to an evangelist; but after all they were only learned in philosophy, but rarely philosophers.* The sixteenth century, so hardy a reformer, had not dreamt of applying to science the Lutheran idea; full of admiration for the treasures of antiquity, it had devoured the ancient books without criticism and without reason; it was content to amass from them instruction, to employ its memory, to be learned. Three great men in Germany, in Italy, in England, made at once a positive and scientific application of the principles which Luther announced to reclaim the right of controlling authority: so true it is that the great explosions of the human mind are inevitably brought on by the force of things, and the natural progress of general ideas, in such a manner that men of genius who attach their names to these memorable revolutions are themselves carried by their age. These three men were Kepler, Galileo, and Bacon.

Kepler, who was born in the year 1571, gave to astronomy another step; until his day men had not sought to calculate the apparent movement of stars, without seeking to explain them: examining everything, demonstrating everything, assigning physical causes to celestial phenomena, such was the method by which he found the laws of the movement of planets.

Galileo, born in 1564, was the first to apply the knowledge of mathematics to experience and to natural philosophy; he consolidated the system of Copernicus in showing the immobility of the sun in the centre of the world, a discovery which raised against him all the upholders of the ancient doctrines, and for which he was deferred to the Inquisition, and obliged to abjure "the heavy heresy of the movement of the earth."

Bacon, born in 1561, generalized the ideas that Kepler and Galileo had applied to the physical sciences; true father of experimental philosophy, he demonstrated that in the positive sciences there is but one means of arriving at truth—it is to observe nature in its apparent phenomena and in those that may be discovered by experience; he proposed to re-establish the entire system of the sciences, and attempted a method of induction to guide men in the search of truth.† It was among the people the most advanced in civilization, and in a language which had then been much studied and refined, that was completed the revolution of a free examination in science.

Descartes, born 1596, was the father of philosophy; he resumed and developed until its end the great principle of the sixteenth century. Commencing by doubting everything, excepting that which itself doubts in him—the thoughts he entertained the opinion that man's conscience of himself and of God was his reason: "I am only myself, because I think." Descartes did for modern philosophy what Socrates had done for the ancient philosophy.‡

Marie de Medicis married Henry IV. The kingdom prospered by the vigilant attention of the king, by his economy, and especially by the cares of his minister Sully. It is an immortal honour to the memory of Henry IV. to have given all his confidence to this austere minister, and one little indulgent to the weakness of his master. He had not found in his kingdom, after signing the treaty of peace, either organised army, or commerce, or industry: marshes and forests still covered immense parts of the soil, where there were no roads nor canals; an enormous debt burdened the treasury; considerable pensions had besides been accorded to the captains of the Ligue, and the credit of France was destroyed. Sully, master of artillery and superintendent of the finances, created in a few years an imposing

material of war, and put the army upon a firm footing. He established at last, in all the branches of administration, order and the most severe economy, revised the condition of the state, and soon abolished many vexatious taxes. Agriculture became the object of his special care; he permitted the exportation of grain, and almost doubled the price of land. "Labour and agriculture," said Sully, "are the two breasts with which France is nourished; the true mines and wealth of Peru." Industry attracted also the attention of the minister: he gave to it a powerful impulse in suppressing a tax that had been a long time levied upon all selling merchandise; but it was against his will that the king encouraged the fabrication of articles of luxury. He thought they were not convenient or suited to a number of people whom the manufacture employed, and who were likely to be soldiers. Henry IV. established manufactures of woollen and silk tapestry, worked with gold; and they commenced about the same epoch to make in the ateliers of France the coloured glasses in the taste of those in the island of Murano, near Venice.* The king loved the luxury of palaces and the gardens in which they were enclosed, without neglecting any of the works useful to the state; by his cares, and by those of Sully, numerous communications were established in the kingdom; they caused to be constructed bridges, they repaired the roads, Paris was enlarged and embellished. Henry IV. joined the borough St. Germain to the city and paved it; he constructed the Palais Royal, finished the Pont Neuf, commenced the canal of Briare, and conceded the project of joining the two seas. The people were not slow in appreciating the fruits of such a wise administration. His assassination, in 1610, is a tragedy in the history of monarchical history. Parliament declares Marie de Medicis regent. A remarkable feature in the government of these times in France is, that Parliament threatened capital punishment against those who taught anything contrary to the doctrine of Aristotle. The barbarous use of duelling was one of the complaints in the kingdom, and cost, it is said, in a single year, 4,000 souls to France. Henry IV. passed on this subject severe edicts. He condemned the duellists to pain of death, and ordered that the tribunal of marshals should satisfy the differences between them; he could not, however, but imperfectly triumph over a ferocious prejudice deeply rooted in the national manners. After a summary of the character of Henry IV. by the historian De Bonnechose,† he adds, France can have but one voice in absolving and in blessing the best of her monarchs.

Letters and the arts progressed in France under his reign. The president, de Thou; the cardinals d'Ossat and Duperron, formed his councils. Pierre Pithou, one of the authors of the satire "Menippée," wrote the treatise on the liberties of the Gallican Church; Jerome Bignon commenced his great works on jurisprudence; Armand and Etienne Pasquier were the glory of the bar; Regnier distinguished himself for nerve in satire. Henry IV. was the founder of the Royal Library; he gave a strong impulse to works of architecture; he enlarged and decorated the royal residences of St. Germain, of St. Monceaux, of Fontainebleau, and especially the Louvre, a noble gallery of which at this day is named after him; he allotted apartments in this part to artists of every description. When Don Pedro of Toledo was sent by Philippe III. on an embassy to Henry IV. he could not recognize any more the city which, when he last saw it, was so forlorn and so degraded. "It is that formerly the father of the family was not there," said the king to him; "now that he has care of his children, they prosper."‡

Richelieu, minister of Louis XIII. gave the most attention to the progress of literature; he regarded the construction of the language as a serious part of his vocation; and it was in the elevated aim to give to France unity of idiom, base of political unity, that he instituted the French Academy § (1635), destined to purify, to rectify, to fix and to preserve the language. It was, besides, a means of turning to account the power of literary men at an epoch when they began to exercise their influence. He pensioned writers, and admitted them into his intimacy; he founded the Royal printing-press; he founded the

first journal that was ever seen in France, the *Gazette* of Renardot, to which he himself contributed some articles. He represented dramatic pieces of young aspirants after celebrity in his palace, with a great degree of magnificence. The cardinal, with his taste for luxury and for the arts, not only favoured literature; he was the enlightened protector of Simon Vouet, and of the illustrious school formed by this master; he loaded Poussin with honours, and sent for him from Rome, where his studio was, in a street near the Piazza di Spagna; he ornamented the Royal houses with the best works of Lesueur, Champaigne, Sarrazin, whose music delighted the king. He magnificently rebuilt and re-adorned the Sorbonne (of English as well as of French fame), and embellished Paris; he erected the Palais Cardinal (now the Palais Royal), a noble piece, and most happy application of the Tuscan order, where he lived, and which he adorned with paintings, with statuary, with books, with antiques; he founded the Garden of Plants; he improved and supported all the manufactures created by Henry IV. He seemed the soul, the lever, and the inspirer of art and of all those great men who lived to adorn and throw light and lustre upon the following year.* A single man appearing in the midst of darkness and ignorance often dissipates that state of things only by his genius, and by the culture that he has given to it; he enlightens and warms his age, and carries his nation to a degree of intelligence and of perfection to which it might have never attained without him, or which at least it would not have attained to but after centuries of labours and studies. Never has a work of genius appeared without causing some revolution, or at least awakening emotions and sentiments not commonly experienced; it seizes a whole people, and the impressions which remain with them are sometimes eternal. That people is unfortunate who produces a man or men of genius without there results from them advantages for more than one generation. All ages are not equally fertile in great artists. There were ages when the arts languished, as there have been others when the arts and the sciences yielded flowers and fruits in abundance. Compare the productions of poetry in the age of Augustus, and the productions of the same art in the age of Gallienus. Was painting the same art, so to speak, in the two centuries which preceded the reign of Leo X. as in the time of that pope? He was one of those who made artists love the country which they honoured and illustrated.

The most faithful mirror of the manners and of the character of every period is found in its national establishments; but the superiority of certain ages over others is too well known for any occasion to stop here to prove it. The moral causes which operate in favour of the arts are for artists an opportunity and means for perfecting themselves and their genius, because these render their work more easy, more marked with that character and quality, which it is difficult to mistake, and because they excite emulation, and by rewards, study, and application. The moral causes of the perfection of the arts, are the happy condition in which the country finds the painters and poets, fostering their career; the inclination of their sovereign and the citizens for the fine arts; in short, the professors and masters then living, who furnish examples to them, and whose instructions abridge studies and secure their fruit. It is interesting to see the success with which some men have pursued their studies and their profession, and the eminence they have attained under a pressure of difficulties, and when the times are changing the face of things. Nothing is so praiseworthy as the efforts which at some memorable periods, yet almost continually, industrious, striving, and inventive men have made by which they have become at the same time useful both to themselves and to society, although their labours in science and in art, have often been much suspended by civil and religious wars, and by revolutions. We learn from the country, which we have sketched, and we may learn from many others, how much kings and their ministers have promoted art, and rewarded those who excelled in it; and after wars, what an opportunity has been offered to cultivate it after concluding a treaty of peace. We only have to read history to find that peace, after victory, generally brings as a recompense riches and prosperity, though horrid war has put the country to great expense—indeed, sometimes has brought it to ruin. But the nation, after what it has endured, arouses itself, and seems

* Théophile Lavallée, *Histoire des Français*.

† T. Lavallée, *Histoire des Français*, 10th cent.

‡ Descartes' work, published in 1637, has only the title "De la Méthode."

* About this period Archbishop Laud introduced into the windows of his chapel, in London, coloured glass, with figures of saints—Rapiet's "Histoire d'Angleterre."

† De Bonnechose, *Histoire de France depuis l'Élection de François sous Charles jusqu'à l'Assemblée de Louis Philippe*. Paris, 1848.

‡ Bonnechose, *Histoire de Paris*.

§ See Feller's history of this Academy. The members often signed their works "One of the Forty," that being the number to which the members were limited.

* T. Lavallée, *Hist. des Français*. The feeble light of Louis XIII. is quite put out, in the eyes of posterity, by Richelieu; it is an instructive spectacle, the picture of this incapable king, voluntarily curbed, until his death, under the genius of a proud minister whom he hated, but without whom he felt himself unable to reign.

to prosper more than it did before the calamity occurred. All the individual energies are developed by these wars. Peace then cultivates the arts for which it was so favourable, as well as for capital and commerce, for which liberty of mind is necessary: useful institutions and resources are established; probably more material prosperity, more true liberty, and more real justice are guaranteed to the people than there were under the reigns of former kings, or in times of rebellion and persecutions. The arts of Greece, for instance, flourished after the violent and stormy years of Athens, and under the peaceful influence and quiet undisturbed liberty of Pericles; those at Rome were developed after the last convulsions of the dying republic, and under the propitious reign of Augustus, and the patronage of Mæcenæ; those in Italy prospered under the last of the Medici, and among the French, under Louis XIV. after the Fronde; but such was the power, the excellency, and the pre-eminence of that monarchy, then in its apogee, and the flourishing country under it, that even the troubles of the Fronde did not interrupt the progress of the arts.

FREDERICK LUSH.

THE HARMONIC LAW OF NATURE.* ARCHITECTURAL ASSOCIATION.

THE impression of a sound, whether simple or complex, when made upon the ear, is instantaneously conveyed to the mind; but, when the sound ceases, the power of observation also ceases. But the eye can dwell upon objects presented to it so long as they are allowed to remain pictured on the retina, and the mind has thereby the power of leisurely examining and comparing them. Hence the ear guides more as a mere sense, at once and without reflection; whilst the eye, receiving the impressions gradually, and part by part, is more directly under the influence of mental analysis, consequently producing a more metaphysically æsthetic emotion. Hence, also, the acquired power of the mind in appreciating impressions made upon it through the organ of sight under circumstances, such as perspective, &c. which to those who take a hasty view of the subject appear impossible.

The harmonic law of nature by which the arts—drawing and seeing—are governed was either originally discovered by that great philosopher, Pythagoras, who existed upwards of five hundred years before the Christian era, or a knowledge of it was obtained by him, about that period, from the Egyptian or Chaldean priests. By the generality of the biographers of Pythagoras, it is said to be difficult to give a clear idea of his philosophy, as it is almost certain he never committed it to writing. But whether he committed his discoveries to writing or not, his doctrines regarding the philosophy of beauty are well known to be, that he considered numbers as the essence and the principle of all things, and attributed to them a real and distinct existence; so that, in his view, they were the elements out of which the universe was constructed, and to which it owed its beauty. He, amongst other things, discovered the numerical relations of sounds on a single string, and taught that everything owes its existence and consistency to harmony.

In so far as I know, the most accurate account of this that is known of the Pythagorean system of numbers is the following:—"The monad or unity is that quantity which, being deprived of all number, remains fixed. The duad is imperfect and passive, and the cause of increase and division. The triad, composed of the monad and duad, partakes of the nature of both. The tetrad, tetractys, or quaternion number is most perfect. The decad, which is the sum of the four former, comprehends all arithmetical proportions."

Although little is known for certain of the manner in which Pythagoras systematized the law of number; yet, from the teachings of this great philosopher and his disciples, the harmonic law of nature, in which the fundamental principles of beauty are embodied, became so generally understood, and universally applied in practice throughout all Greece, that the fragments of the works which have reached us, through a period of two thousand years, are still held to be examples of the highest artistic excellence ever attained by mankind. In the present state of art, therefore, a knowledge of this law, and of the manner in which it may again be applied in the production of beauty, in all works of form, must be of singular advantage, the more especially as it is the nature of the Pythagorean system of numerical harmony in sound or form to be so simple that any unprejudiced person, of an ordinary capacity

of mind, and having a knowledge of the simple rules of arithmetic, may, in a very short period, easily comprehend its nature, and be able, by an ordinary degree of perseverance to apply it in practice.

The elements of the Pythagorean system of harmonic numbers, so far as can be gathered from the writers of the period, seem to be simply the indivisible monad (1); the duad (2), arising from the union of one monad with another; the triad (3), arising from the union of the monad with the duad; and the tetrad (4), arising from the union of one duad with another, which tetrad is considered a perfect number. From the union of these four elements arises the decad (10), the number which, agreeably to the Pythagorean system, comprehends all arithmetical and harmonic proportions. If, therefore, we take these elements and unite them progressively in the following order, we shall find the series of harmonic numbers (2), (3), (5), and (7), which, with their multiples, are the complete numerical elements of all harmony, thus:—

$$\begin{aligned} 1 + 1 &= 2 \\ 1 + 2 &= 3 \\ 2 + 3 &= 5 \\ 3 + 4 &= 7. \end{aligned}$$

These are the simple elements of the science of that harmony which pervades the universe, and by which the various kinds of beauty æsthetically impressed upon the senses of hearing and seeing are governed.

In order to render an extended series of harmonic numbers useful, it must be divided into scales, and the following are seven of such scales:—

	C	D	E	F	G	A	B	H	c
I. (1)	($\frac{1}{1}$)	($\frac{2}{1}$)	($\frac{3}{1}$)	($\frac{4}{1}$)	($\frac{5}{1}$)	($\frac{6}{1}$)	($\frac{7}{1}$)	($\frac{8}{1}$)	(1)
II. (1)	($\frac{1}{1}$)	($\frac{2}{1}$)	($\frac{3}{1}$)	($\frac{4}{1}$)	($\frac{5}{1}$)	($\frac{6}{1}$)	($\frac{7}{1}$)	($\frac{8}{1}$)	(1)
III. (1)	($\frac{1}{1}$)	($\frac{2}{1}$)	($\frac{3}{1}$)	($\frac{4}{1}$)	($\frac{5}{1}$)	($\frac{6}{1}$)	($\frac{7}{1}$)	($\frac{8}{1}$)	(1)
IV. (1)	($\frac{1}{1}$)	($\frac{2}{1}$)	($\frac{3}{1}$)	($\frac{4}{1}$)	($\frac{5}{1}$)	($\frac{6}{1}$)	($\frac{7}{1}$)	($\frac{8}{1}$)	(1)
V. ($\frac{1}{2}$)	($\frac{1}{2}$)	($\frac{2}{2}$)	($\frac{3}{2}$)	($\frac{4}{2}$)	($\frac{5}{2}$)	($\frac{6}{2}$)	($\frac{7}{2}$)	($\frac{8}{2}$)	($\frac{1}{2}$)
VI. ($\frac{1}{3}$)	($\frac{1}{3}$)	($\frac{2}{3}$)	($\frac{3}{3}$)	($\frac{4}{3}$)	($\frac{5}{3}$)	($\frac{6}{3}$)	($\frac{7}{3}$)	($\frac{8}{3}$)	($\frac{1}{3}$)
VII. ($\frac{1}{4}$)	($\frac{1}{4}$)	($\frac{2}{4}$)	($\frac{3}{4}$)	($\frac{4}{4}$)	($\frac{5}{4}$)	($\frac{6}{4}$)	($\frac{7}{4}$)	($\frac{8}{4}$)	($\frac{1}{4}$)

It will be observed, from the relations which the scales bear to each other, that their number may be multiplied to any extent simply by the quantities in each successive scale being reduced ($\frac{1}{2}$).

The harmony existing amongst these numbers or quantities consists in the numerical relations which the parts bear to the whole, and to each other; and the more simple these relations are, the more perfect is the harmony. It will be observed that the harmonic numbers are here used as divisors for its primary element, instead of the indivisible monad, and represents a quantity which may be indefinitely divided, but which cannot be added to or multiplied.

The latest investigator is Mr. Penrose, an architect of London, who, while in Athens, in 1816, observed some peculiarities in the Parthenon, of which no adequate notice had been taken in the works of any former investigator. He therefore obtained, through the Society of Dilettanti, the necessary facilities for a careful examination of this great work of ancient art, the results of which have been since published, and evince on the part of the author the most careful and minute research; and I believe no one can examine the contents of his splendid book without being convinced of the accuracy of the various measurements, and the care that must have been bestowed on every detail. Notwithstanding this, the conclusion he has arrived at, with respect to the æsthetic developments of the Parthenon, are far from satisfactory. And this has evidently arisen, in the first place, from making length, and not direction, the standard of comparison, as the following instance will prove. Mr. Penrose, like all who have studied the subject, has arrived at the belief, that by some means or other a law of harmonic proportion seems to govern the orthography of this structure, and he anxiously searched for its development in the portico of the principal front. But he did so amongst the lengths and breadths of the various parts of which it is composed, and the only approximation to harmony which he found amongst these were the following ratios: 7:12, 6:25, 89:9, 1:50.

This result is quite sufficient to show that the harmonic proportion of the portico of the Parthenon does not exist in the lengths and breadths of its parts; for the ratios which Mr. Penrose has found amongst these are not at all harmonic. Some time before the work of Mr. Penrose appeared, I had adopted the portico of the Parthenon as a test for the truth of my theory; because I

considered that structure as not only remarkably simple in its outline, but as pre-eminently symmetrical in its beauty, and beautiful in its symmetry. It was fortunate for my theory that I had done so; for the lineal measurements which Mr. Penrose had so carefully taken of that structure were by him put in comparison with those of the outline I had made of it, according to my angular system of harmonic proportion. This he published in No. 539 of the *Builder*; the result of which was, that whoever examines the figures there given must be surprised at the extreme clearness of coincidence between theory and fact.

With reference to this result, the editor of the *Builder* received the following letter, which he published in his Journal, No. 542:—

"Will you allow me, through the medium of your columns, to thank Mr. Penrose for his testimony to the truth of Mr. Hay's revival of Pythagoras? The dimensions which he gives are, to me, the surest verification of the theory that I could have desired. The minute discrepancies form that very element of practical incertitude, both as to execution and direct measurement, which always prevails in materializing a mathematical calculation under such conditions.

It is time that the scattered computations by which architecture has been analyzed—more than enough—be synthesized into those formulae which are emblematic of omniscience. The young architects of our day feel trembling beneath their feet the ground whence men are about to evoke the great and slumbering corpse of art. Sir, it is food of this kind a reviving poetry demands—

'Give us truths,
For we are weary of the surfaces,
And die of inanition.'

I, for one, as I listen to such demonstrations, whose scope extends with every research into them, feel as if listening to those words of Pythagoras which sowed in the mind of Greece the poetry whose manifestation in beauty has enchaind the world in worship ever since its birth.

And I am sure that in such a quarter, and in such thoughts, we must look for the first shining of that lamp of art which even now is prepared to burn.

I know that all this sounds rhapsodical; but I know also that until the architect becomes a poet, and not a tradesman, we may look in vain for architecture: and I know that valuable as isolated and detailed investigations are in their proper bearings, yet that such purposes and bearings are to be found in the enunciation of principles sublime as the generalities of mathematical beauty. (Signed) ANTOCHON."

I am perfectly ignorant as to the author of this letter, but the circumstance of its being inserted in a professional paper is a sufficient guarantee for its value and for the position of its author.

Agreeably to my method of applying the law of harmonic ratio, I find that every figure in architecture, whether rectilinear or curvilinear, must have an angle which regulates its individual proportions, and at the same time determines its proportional relation to such figures as enter into combination with it, whether they represent a projecting or retiring surface. I now exhibit to you a diagram of the portico of the Parthenon, framed upon the following series of harmonic angles, of which the right angle is the fundamental tonic, or monad represented by (1) and divided into—

Tonic angles.	Dominant angles.	Mediant angles.	Subtonic angle.	Supertonic angle.
($\frac{1}{2}$)	($\frac{1}{4}$)	($\frac{1}{8}$)	(1)	(2)
($\frac{1}{4}$)	($\frac{1}{8}$)	($\frac{1}{16}$)		
($\frac{1}{8}$)				

These angles, agreeably to their quantities, are in perfect harmony with the right angle, as also with each other.

To the portico of the principal front of the Temple of Thescus, as measured by Mr. Penrose, I have applied the same angular process of harmonic ratio, and the result is equally satisfactory with its application to the portico of the Parthenon.

With regard to the truth of this system of proportion being a law of nature, I fearlessly appeal to my treatise on the human figure, where it will be seen that lines drawn from the two extremities of the figure, form, with the vertical line, the $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{1}{5}$ of a right angle, and that these determine every point of importance in the outline. And with equal confidence do I now appeal to the diagrams of the Parthenon before you, where the angles $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, and $\frac{1}{5}$ (see illustration No. 2) of a right angle determine so vast an amount of the outline, and regulate so harmo-

* We supply some further portions of Mr. Hay's paper. See p. 281, *infra*.

nously the proportion of that celebrated specimen of architectural beauty. The theory in both cases is precisely the same. The most beautiful form in nature, and the most beautiful form created by art, must be governed by the same law; and to one law I have, I trust successfully, attempted to reduce them.

Before I direct your attention to the nature of the visible curves employed in the embellishment of the rectilinear forms of Grecian architecture, I may here notice that the probability of some method of applying this law of nature in the proportioning of architectural structures was the great practical secret of the Freemasons of that early period, from which has been handed down to us those remains of the beautiful and interesting monuments of the piety of our ancestors; for in these we find symmetrical elegance of form, as well as harmonious proportion of parts, with beautiful geometric arrangements throughout their tracery. This induced me to apply my system of the harmonic law to the proportions of one of the most beautiful of those remains which this country affords, viz. Lincoln Cathedral; and the result has greatly strengthened the probability to which I refer.*

It is merely to the rectilinear application of the harmonic law that I here refer, as its curvilinear application, which I am about to enter upon, belongs exclusively to the architecture of ancient Greece.

I have shown you that the elementary figures which belong to the forms employed in Grecian architecture are simply the equilateral rectangle, the oblong rectangle, the equilateral triangle, and the isosceles triangle.

Now, with each of these rectilinear figures I find a curvilinear figure to be naturally and harmoniously associated as follows:—With the equilateral rectangle, the circle; with every oblong rectangle, a corresponding ellipse; with the equilateral triangle, an equilateral composite ellipse; and with every isosceles triangle, a corresponding composite ellipse.

Although this may be the first time that such an arrangement of curvilinear figures has appeared in any lecture or work on architecture, yet I cannot help feeling fully convinced that no other curves than these can produce the beauty of harmony in the curvilinear forms of an architectural structure.

Vitruvius says nothing definitely regarding the nature of the visible curves employed in the Doric order of architecture; and since his time many conflicting opinions have been advanced by those who have written upon the subject.

The fact appears to be that, simple as it is, the nature even of the regular ellipse is little known, and seems to form no part of architectural education at the present period. Mr. Penrose says, "By whatever means an ellipse is to be constructed mechanically, it is a work of time (if not of absolute difficulty), so to arrange the foci, &c. as to produce an ellipse of any exact length and breadth that may be desired." This, however, is far from being the case; for any one acquainted with the nature of the ellipse can in one minute arrange its foci so that the relative proportions of its length and breadth may be at once determined.

THE "AMATEUR MUSICAL SOCIETY."

A CONCERT of much variety before a crowded and brilliant audience, brought the thirteenth season of this distinguished metropolitan society to a close with *celato*, on Monday evening last. Although not engaging ourselves to musical criticism as a rule, yet when, as in this case, the growing advancement of a sister art amongst that large and enlightened section of the public who follow without *professing* it, is placed before our eyes in a tangible and evident form, we feel it a duty as well as a pleasure to record the doings of a society which, whatever its faults, has established a wide reputation, and for which, if once dissolved, a substitute might not readily be found to supply its place.

A steady progress has marked the playing of the orchestra since Mr. Leslie assumed the conductorial baton, and a code of stringent rules for ensuring attendance and the judicious adoption of a double rehearsal have obtained their result in a more thorough *ensemble*, a greater observance of light and shade, a superior intonation, and a more refined expression than we have before observed.

Our recommendation for discarding Haydn this

season and replacing him by Beethoven, Mendelssohn, and Spohr, has been justified by the result; for though the latter author was not invoked, and his E flat is a charming symphony, yet the triumphs achieved by the band in the C major, B flat, and C minor of Beethoven, and, above all, the inimitable A minor of Mendelssohn, proved conclusively that the greater the difficulty the greater the interest awakened, and as a natural consequence the more satisfactory the effect produced.

Three other points too, well worth consideration, are gained by restricting Haydn to his fair proportion amongst the great symphonic writers. 1. The "Amateurs" escape the awkward imputation of being supposed capable of playing his works only;—an imputation generally cast upon them in the shape of an encouraging and approving pat upon the head, for their judicious choice of their author,—and a strong recommendation to them never to venture beyond him and Mozart, and the latter with caution! 2. Some of the best men retain their seats, who would otherwise secede. 3. Their audience listen to Haydn's symphonies with more apathy than they exhibit towards more modern writers. We might add to these, that Haydn is by no means so easy as he appears to be, for though his plan is so simple, and his melodies so charmingly primitive, yet his inventive ingenuity taxes the care and skill of the executant fully as much as his more showy and elaborate successors.

Too much caution cannot be exercised in the admission of fresh members; for if one black sheep infects a flock, how much more do half a dozen incompetent players in a band frustrate the efforts of those who are fairly equal to their pretensions. Another element in the success of a society like this should be a perfect freedom from the wish for individual display; and to the existence of this element may be mainly attributed the great success of Mr. Leslie's choir. It is the struggle for front seats and solo passages that lowers the standard of art, as well in music as in her sister arts.

There are exceptions, however, to every rule, and when Mr. Louis D'Egville, after a voluntary retirement from solo-playing of two or three seasons, met the wishes of the Society by performing one at their last concert, we felt that there was no pretension with him that would not be redeemed to the letter. Mr. D'Egville's performance of a solo by Alard, from the opera of "Maria Padilla," was marked by all that depth of expression, largeness of phrasing, and masterly execution which distinguish him as, probably, the most consummate amateur violinist in London. Could not Madame D'Egville be induced to play a concerto or in a duet with her husband next season? *A propos* of violin solos, where is Mr. Rougemont? As a summary way of distinguishing four violinists at once, we would suggest the quartette of Maurer for next season.

But before instancing individual talent further, we will briefly allude to one or two departures of the Society from their ordinary beaten track. The introduction of a selection of Mr. H. Leslie's "Judith" was novel, judicious, and highly successful, though the want of chorus, of course, deprived it of one of its most essential elements; and here the question suggests itself how far the addition of a chorus at some of the concerts of this Society might be beneficial—but of this the oratorio of "Judith" possesses features peculiar to itself in partaking of the dramatic as well as the sacred element, and so far blends the better with other music of a purely secular character. The "selection" might well have embraced a greater quantity of a work replete with beauty; but, as it was, the artistic singling of Mr. Sautley, Miss Leister, and Miss Rose, under which latter modest title we believe we recognize the accomplished daughter of one of her Majesty's Barons of the Exchequer, left that impression of satisfaction behind which is one of the best tests of excellence. Upon such first-rate pianists as Madame Rodde, Anglim, and Mr. Walsey we need not expatiate; albeit the brilliant execution of Madame Rodde found but an unequalled theme in the difficult concerto of Chopin in F minor.

Mr. Dobree's retirement leaves a gap not easily filled, in what, from some cause or other, is incomparably the weakest part of the band—the violoncellos. From all participation, however, in such defect, Lord G. Fitzgerald, one of the mainstays of the society, and Mr. Church, stand entirely exempt.

Amongst the many amateur vocalists whom we mention, we ought not to forget Mrs. Hunter Raymond, and Miss Griffith.

At the concluding concert of the season, the

prettiest and shortest of symphonies, the G minor of Mozart, showed for the last time the capacity of the instrumental amateurs for the Classic, whilst the singing of Mlle. Puzi, daughter of the eminent *celato*, and Miss Johanna Martin, niece of Madame Pauer, illustrated respectively the Italian and German schools of vocalization. The former lady possesses a soprano of sweet quality, and a florid and artistic execution that elicited great applause. The latter has a powerful mezzo-soprano, but wants refinement.

In conclusion, we would advocate that never more than a quarter of an hour be consumed between the parts, so that the interest of the instrumentalists and their subscribers be not suffered to evaporate by want of employment.

To the indefatigable manager of the orchestra, Mr. Val Morris, and to Mr. Stanley Lucas, the honorary secretary of the society, the thanks of the members are justly due.

STAINED GLASS.

St. Gabriel's, Finsbury.—The east window of this church has been filled with stained glass, and this, with the three side windows put up previously, completed the chancel. The window, which is of large dimensions, contains in the lowest range of the seven principal openings, subjects from the old Testament; above these are thirteen others from the New Testament. They are all of good design, and are judiciously arranged, but lack that warmth of colour combined with general quietude of effect so desirable and so rarely attained. The work is, however, satisfactory, and it will take its place with other works by the same artist (Mr. Willmett) in the Temple Church, Hampton Court Palace, and St. George's Chapel, Windsor, &c.

Bosley (Cheshire).—In the old church of Bosley, a memorial window has just been put up. It is an Early English triplet. In the two side-lights are the Crucifixion and Resurrection, one on each side. The centre light contains two subjects, the Ascension at the top, and below is represented St. Peter raising Dorcas to life. The remainder is filled up with geometrical work in rich colours and forming medallions, which are filled with angels, &c. Messrs. R. B. Edmundson and Son were the artists.

THE ARCHITECTURAL EXHIBITION.

THE lectures here were closed on Tuesday, the 3rd, by one entitled "Some Architectural Hints to be derived from the Furniture and Ornament of the Sixteenth and Seventeenth Centuries." We are glad to hear that the galleries will be lighted up and open to the public and subscribers on each Tuesday evening, as it will enable many to study the collection who could not otherwise do so. We had received several letters urging the desirability of such an arrangement, and are glad that the committee have rendered the publication of them unnecessary.

PROVINCIAL NEWS.

Liverpool.—The schools erected in connection with St. George's Church, Everton, have been opened. The building, which is a large structure in the pointed architecture of fourteenth century, has been erected by Mr. Burroughs, contractor, from the designs of Mr. H. P. Horner, architect. The front of the entrance is in Northumberlandian terrace, and the playground runs back to Church-street; the whole space of land occupied being about 3,400 square yards, of which 723 yards are covered with buildings. The boys' and girls' school-rooms are each 65 feet by 21 feet, and that of the infants' 45 feet by 25 feet. The boys' room is 15 feet high, with a flat ceiling, broken by the girders carrying the floor above; the girls' school, 27 feet 6 inches high to the ridge of the open-timber roof, and 12 feet to the eaves; and the infants' is 16 feet to the collar-beam of the roof. The classrooms (mezzanine) are 13 feet in height. A bell-gable has been erected on the north wing; and there have also been provided residences for the teachers.

Leeds.—The Northall National Schools, erected in the parish of St. Andrew's, Leeds, upon a plot of land between Burley-road and Kirkstall-road, have been formally opened. The schools for boys and girls are separated by a sliding partition, which being removed, they form one room, nearly 50 feet by 30 feet. There is a class-room attached to each school, with houses for the master and mistress, and playgrounds. For these schools the parish is indebted to Sir Thomas Beckett, bart. and Messrs. Wm. Beckett and Edmund Denison

* To those who wish to go into further details on this point, I may refer to "The Harmonic Law of Nature applied to Architectural Design," price 2s. 6d. Published by W. Blackwood and Sons, 37, Paternoster-row.

The building is a brick structure, with stone dressings, and has been erected under the superintendence of Messrs. Perkin and Backhouse. It is in the Early English style, and the total cost will be about 2,600.

Elgin.—The number of new houses now in course of erection in this city, says the *Forbes Gazette*, is twenty-four. The large block of buildings, in High-street, east corner of the School-wynd, was some time since purchased by a tailor and clothier who has entered into contracts for the erection of new premises on this site. The design of the buildings is by Messrs. Matthews and Petrie, of Elgin, architects. It is to be in the Italian style, embracing two frontages; the length of both being about 140 feet, viz.,—50 feet to High-street, and 90 feet to the School-wynd. The fronts will be polished freestone from a new quarry just opened at Loch Levenack, parish of New Spynie. The contractors are—for the mason work—Messrs. Cumming and Young; carpenter work, Mr. James McBeth; slater, Mr. John Wilson; plasterer, Mr. David Simpson; plumber, Mr. John Hunter.

CHURCH-BUILDING NEWS.

Offham (Sussex).—The *Brighton Herald*, in an article on "the pretty village of Offham and its new church," describes the progress of the church referred to. The edifice, which is three parts finished, is Gothic in style and Decorated as to period. The material is stone, the window dressings, &c. being of Bath stone. The tower is being crowned with a spire of the shingle kind; and this will be the chief drawback of the church, because it is not of sufficient height, and the material hardly accords with the solid character of the rest of the building. The tower runs up from the centre of the chancel, being supported on arches; and advantage has been taken of this circumstance to introduce a stone groined roof. The chancel terminates in an apsis. It is pierced for five small windows, which will no doubt be of coloured glass, and between each will be introduced a column of polished red, or serpent, marble. These windows will, of course, range in a semicircle around the altar. The chancel arch and corbels will be foliated. The window-heads throughout the building are simple, the stone-work being carved both on the outer and inner side. The church will hold about 100 persons. The architect is Mr. Christian, of London; the builders, Messrs. Ayres, Dover, who erected the new church of St. James, abutting on the Farm-road at Hove, Brighton.

Moseley.—The first stone of a new church at King's Heath has been laid. The church, which will be of the Early Decorated style, will accommodate 430 persons, and is estimated to cost 2,750*l.* of which about 600*l.* yet remain to be collected. The architect is Mr. F. Preedy, of Worcester; contractor, Mr. Isaac Chulce, King's Norton.

Bretherton.—About ten years since, according to the *Gloucester Chronicle*, the Church of St. Mary, Bretherton, was erected on the site of a small and dilapidated building, and remained untouched until the year 1857, when, in consequence of the death of Sir Edward Tierney, bart. the present owner, the Rev. Sir Lionel Darell, bart. determined upon increasing the size of the church, and making the additions a memorial of Sir Edward and Lady Tierney. The church is of the character of the transitional period, from Geometrical to the flowing Decorated, and originally consisted of a nave, north aisle, with north-western tower and spire, a base being a porch, chancel, and south vestry. The south aisle, with an arcade of four bays, a south mortuary chapel, and an organ-chamber, have been added. One pier of the new arcade is a semicircle of Irish marble, the offering of the recent tenants in Ireland. The chancel has been enriched by a carved stone canopy over the altar, canopies arched with marble shafts and panels, tracery, scullia, &c. The mortuary chapel is enclosed by a pair of wrought-iron gates, has an ending of stone and marble beneath the window, and contains a Caen stone bust of Sir Edward Tierney upon an angel corbel, under a canopy. This chapel black and white are introduced lightly, and the roof is covered with black tiles, a large cross in white on each side. All the things are of oak, and the walls are lined with sinewick ashlar. All the windows have been filled with stained glass, by Mr. G. Rogers, of Worcester; the western one in the nave representing the second coming of Christ to judge the world. The east window contains the Crucifixion, and the Virgin Mary, St. John, and St. Mary Magdalene. A large triangular window, in trefoiled tracery, above the organ, is filled with a choir of

angels; and the remaining windows are filled with subjects from our Lord's life, and single figures. The west window of the south aisle is a memorial to the late Sir Harry Darell, bart. and that in the chapel to Sir Edward and Lady Tierney. A new organ, with illuminated case and pipes, has been fixed by Mr. Nicholson, of Worcester. All the floors have been paved in a new pattern, with tiles, and all the roofs are coloured in blue, white, &c. by Mr. F. Wads, of Worcester. Externally considerable improvements have been effected. The whole of the new works have been executed under the direction of Mr. J. W. Huggall, of London.

DOVER HARBOUR.

Will you allow me to suggest that the deplorable delay in the construction of this great national work, may be avoided, by using the sandstone that is found in large quantities west of Dover, from the neighbourhood of Tonbridge Wells, into Mid Sussex. The quantity and the size are unlimited, and although it is not so hard as is desirable, still much could be had of excellent quality. Its proximity and cheapness would render it an excellent substitute for a better material. A few short tram-ways would place it at once on the Dover railway, and thus render the cost of carriage immaterial.

I would propose that rough blocks of this stone should be cast into the sea to form the two outer walls or faces of the pier, and that the centre should be simultaneously filled up with the best of the chalk in the neighbourhood. By the use of these materials in the way described, the harbour might be constructed at one-tenth of the expense, and in one-twentieth part of the time that will be consumed by the present process.

SINGLEHEART.

THE CHARTER AND LAWS OF THE INSTITUTE OF ARCHITECTS.

Sir,—The letter published in No. 848 of your journal, in reference to a revision of the Charter and Laws of the Royal Institute of Architects, seems to me, as an Associate of the above Institute, to set forth views which I trust may not be generally entertained amongst the body of gentlemen to which I have the honour to belong.

However much members of the Institute may, and do wish, to see the architectural profession united in one common institution, and honourably regarded as it should be, still they ought not, I maintain, to change their existing laws at the request or desire of gentlemen who are not of their body.

One complaint made is, that Associates may not vote; another of the division of the Institute into the two grades of Fellows and Associates; and it is stated in the letter above referred to, that an Associate is quite as competent to vote as a Fellow, and an instance is given of an Associate voting between two Fellows of the Institute. With regard to voting, I for one should wish to see the council chosen by the votes of the whole body of members. That there should be two classes of members, I think, highly desirable, for an Associate of the age of 22 or 23, has had generally but little real experience, and the period of seven years of actual practice required by the rules of the Institute, fits him for occupying the position of Fellow. And this brings me to remark that, though so much stress is laid upon the settlement of a dispute by an Associate, no mention is made of his age, or reason given for his not being himself a Fellow. It is stated also that the Institute, consisting of only 360 members, fails to represent the architectural body. In number it may not, but in fact I think it does. Gentlemen, not members, express themselves willing to join it, provided certain alterations are made. Why do not these gentlemen now enter the Institute, and by persevering in a consistent statement of their views, by a memorial to the council, and by a personal canvass of the Fellows, endeavour as members of the Institute to raise it to the position in which they would wish to see it? If the 360 members of the Institute so poorly represent the architectural profession, let the members of the Association, or any other society, obtain by their laws the advantages and increase of numbers which it is imagined will accrue to the Institute, which, as the senior Society, is, I think, rather entitled to give laws and revise charters than to adopt those proposed to it.

A. I. B. A.

HOW WE BUILD BARRACKS. GOSPORT.

Sir,—Your columns have contained many well-merited strictures on the way in which the public money is squandered on ill-contrived and badly-constructed barracks; and after all that has been written on the subject, it is from bad to worse the authorities are going in respect to barracks for our troops. Of all the barracks that have been constructed, those now about being finished at Gosport outdo them in display of reckless waste of public money and blundering on the part of the directors. In the first place, these barracks were intended to be bomb-proof, which they never would have been had they even been constructed as originally intended; but the design could not be carried out; for, had the arched roofs over the buildings been loaded by earth, &c., as proposed, the sustaining walls must have been crushed, and the buildings would have been a heap of ruins. One building, the commanding officer's house, was

so rent by half the weight intended to be put on it, that the authorities were obliged to abandon their fallacious scheme for rendering that building bomb-proof; and it was not until after that failure, it was found out, by your scientific men, that the whole beautiful system of rendering Gosport barracks bomb-proof must be abandoned.

After all that has been said on ventilation, no proper system of accomplishing that desirable object has been adopted in these barracks. The whole of the wells are so strongly impregnated with salt, that no human being can drink the water from them.

The Government will never put up proper barracks for our troops while their erection is intrusted to those who have the present control of them; and a more flagrant example of incompetency could not be had than has been displayed in the erection of Gosport barracks; a full and honest inquiry into which could not fail to convince the nation that it is the victim of a system which, if continued, must result in its entire and lasting disgrace.

ONE IN THE SECRET.

THE NINE-HOURS MOVEMENT.

Sir,—My attention has been drawn to a letter signed "George Potter," and which appeared in your publication of the 30th ultimo, which contains the following objection:

"The assertion made by a master builder, that we had solicited the services of the Rev. W. Cadman, and he had refused, is a most unwarrantable invention, and unworthy of the meeting."

This refers to a meeting of master builders, held on the 20th of April last; and, as the few remarks made at that meeting, which at all referred to the rev. gentleman, were made by myself only, I alone am responsible for them.

I distinctly deny having uttered any observable about any person or persons having "solicited." &c. What few observations I did make, were understood by those present to refer to the early closing movement, and arose upon the reading of a letter sent to the Master Builders' Association, signed George Potter; wherein it was boldly asserted, the claims of the nine-hours movement "are advocated from the pulpit." To this I did then, and do still, demur.

With other parts of the letter I have little concern; at the same time I hesitate not to say the statements and remarks appear to me to be altogether fallacious; and I must also add, I think it very unfortunate that both the employer and employed cannot be left to mind their own affairs, and not to have the good feeling, which I am happy to say subsists between a very large majority, interrupted by the chimerical and extravagant ideas of a few.

JAMES ABBOTT.

P.S. It is not my intention to intrude further upon your columns.

Books Received.

The Oxford Museum. By H. W. Acland, M.D. and John Ruskin, M.A., Honorary Students of Christ Church, London: Smith, Elder, and Co. Cornhill. 1859.

DR. ACLAND, who took an active interest, as one of the building committee, in the realization of the new Museum at Oxford, delivered a lecture on the subject before a meeting of architectural societies in the course of last year, when he promised to prepare his remarks from memory for the press. This he has now accomplished, and the lecture, together with two letters from Mr. Ruskin on the same subject, and one from Professor Phillips in regard to the geological nature and history of the various stones used, especially for the shafts in the corridors of the museum, has just been published, as we mentioned recently, in the form of the small volume under notice.

Mr. Ruskin's letters relate, as will be anticipated, to the art view of the new museum; whereas Dr. Acland, though also a lover of art, disclaims all authority on such questions, desisting therefrom, as he remarks in the preface, because he hopes that "the time draws nigh when the professional staff of Oxford will include a professor of art," in whose hands he would rather leave the matter. Meantime, however, we may observe, he offers a fair substitute for professional criticism in Mr. Ruskin's communications.

As to the object or purpose of the museum, Dr. Acland says:—"Our object is, first, to give the learner a general view of the planet on which he lives, of its constituent parts, and of the relations which it occupies as a world among worlds; and, secondly, to enable him to study, in the most complete scientific manner, and for any purpose, any detailed portion which his powers qualify him to grasp." And he then proceeds to describe the various professorships of astronomy, geology, physiology, &c. to be accommodated. Reverting to the grant of 30,000*l.* by the University for the shell of the building, he then goes on to speak of the style, plan, and execution of the work, recording his testimony to the "pains taken by Deane and Woodward to produce, often with great additional labour to themselves, the almost

impossible combination of artistic effect and complete convenience, with most limited means."

As we have recently illustrated the edifice, we shall proceed to Mr. Ruskin's portion of the little volume before us:—

"I am quite sure," he remarks, in the outset of his first letter to Dr. Leland, "that when you first used your influence to advocate the claims of a Gothic design, you did so under the conviction, shared by all the seriously purposed defenders of the Gothic style, that the essence and power of Gothic, properly so called, lay in its adaptability to all need; in that perfect and unlimited flexibility which would enable the architect to provide all that was required, in the simplest and most convenient way; and to give you the best offices, the best lecture-rooms, libraries, and museums, which could be provided with the sum of money at his disposal."

"So far as the architect has failed in doing this; so far as you find yourself, with the other professors, in anywise inconvenienced by forms of architecture; so far as pillars or piers come in your way, when you have to point, or vaults in the way of your voice, when you have to speak, or mullions in the way of your light, when you want to see;—just so far the architect has failed in expressing his own principles, or those of pure Gothic art. I do not suppose that such failure has taken place in any considerable extent; but so far as it has taken place, it is not in justice he laid to the score of the style, a nice precedent has shown, sufficiently, that very uncomfortable and useless rooms may be provided in all other styles as well as in Gothic. But I am much more anxious about the decoration of the building; for I fear that it will be hurried in completion, and that, partly in haste and partly in mistimed economy, a great opportunity may be lost of advancing the best interest of architectural, and in that, of all other arts."

Mr. Ruskin then points attention to the principles of Gothic decoration, an abstract of his more lengthened observations on which we may here give.

1. A given quantity of good art will be more generally useful when exhibited on a large scale, and forming part of a connected system, than when it is small and separated.

2. All art employed in decoration should be informative, conveying truthful statements about natural facts, if it convey any statement.

3. All architectural ornamentation should be executed by the men who design it, and should be of various degrees of excellence, admitting, and therefore exciting, the intelligent co-operation of various classes of workmen; and a great public edifice should be, in sculpture and painting, somewhat the same as a great chorus in music, in which, while, perhaps, there may be only one or two voices perfectly trained, and of perfect sweetness, yet, all being ruled in harmony, and each sustaining a part consistent with its strength, the body of sound is sublime in spite of individual weakness.

The Museum at Oxford was intended by its designer, he observes, to exhibit in its decoration the working of these three principles:—

"But in the very fact of its doing so, it becomes exposed to chances of occasional failure, or even to serious disfigurements, such as would not at all have attended the adoption of an established mode of modern work. It is easy to carve capitals on models known for 500 years, and impossible to fail in the application of mechanical methods and formalized rules. But it is not possible to appeal vigorously to new canons of judgment without the chance of giving offence; nor to summon into service the various phases of human temper and intelligence without occasionally finding the tempers rough and the intelligence feeble. The Oxford Museum is, I believe, the first building in this country which has had its ornamentation, in any telling parts, trusted to the invention of the workman: the result is highly satisfactory, the projecting windows of the staircases being as beautiful in effect as anything I know in civil Gothic. But far more may be accomplished for the building if the completion of its carving be not hastened: many men of high artistic power might be brought to take an interest in it, and various lessons and suggestions given to the workmen which would materially advance the final decoration of leading features."

The proposal which I heard advanced the other day, of adding a bold entrance-porch to the facade, appeared to me every way full of advantage, the blankness of the facade having been, to my mind, from the first, a serious fault in the design. If a subscription were opened for the purpose of erecting one, I should think there were few persons interested in modern art who would not be glad to join in forwarding such an object.

I think I could answer for some portions of the design being superintended by the best of our modern sculptors and painters; and I believe that if so superintended, the porch might and would become the crowning beauty of the building, and make all the difference between its being only a satisfactory and meritorious work, or a most lovely and impressive one."

Pursuing this subject of cultivating the invention of the workmen, Mr. Ruskin, in his second letter, says:—

"Perhaps I have been myself faultily answerable for this too eager hope in your mind, as well as in that of others; by what I have urged so often respecting the duty of bringing out the power of subordinate workmen in decorative design. But do you think I meant workmen trained or untrained in the way that ours have been until lately, and then cast loose, on a sudden, into unassisted contention with unknown elements of style? I meant the precise contrary of this: I meant workmen as we have yet to create them; men inheriting the best of their craft through many generations, rigidly trained in every mechanical art that bears on their materials, and familiarised from infancy with every condition of their beautiful and perfect treatment, informed and refined in mind, by constant observation of all natural fact and

form; then classed, according to their proved capacities, in ordered companies, in which every man shall know his part, and take it calmly, and without effort, to his allotted place. Not so,—and the more faithful and earnest the minds you have to deal with, the more careful you should be not to urge them towards fields of effort in which, too early committed, they can only be put to unserviceable defeat."

But then comes the ever-intrusive question of ways and means:—

"With respect to this finishing, by the last touches bestowed on the sculpture of the building, I feel painfully the harmfulness of any ill-advantaged parsimony at this moment. For it may, perhaps, be acknowledged by the advocates of retrenchment, that so long as the building is fit for its uses (and your report is conclusive as to its being so), economy in treatment of external feature is perfectly allowable, and will in no wise diminish the serviceableness of the building in the great objects which its designs regarded. To a certain extent this is true. You have comfortable rooms; I hope sufficient apparatus; and it now depends much more on the professors than on the ornaments of the building, whether or not it is to become a bright or obscure centre of public instruction. Yet there are other points to be considered. As the building stands at present, there is a discouraging aspect of parsimony about it. One sees that the architect has done the utmost he could with the means at his disposal, and that, just at the point of reaching what was right, he has been stopped for want of funds. This is visible in almost every stone of the edifice. It separates it with broad distinctness from all the other buildings in the University."

The Oxford Museum, Mr. Ruskin contends, "is literally the first building raised in England since the close of the fifteenth century which has fearlessly put to new trial the old faith in nature, and in the genius of the unassisted workman, who gathered out of nature the materials he needed." Still, he cannot conclude, he says, "without pointing out and warning the general reader against supposing that the ornamentation of the Museum is or can be as yet a representation of what Gothic work will be when its revival is complete."

Miscellaneous.

OTR POON.—Dr. Lankester is delivering a valuable course of lectures on Food, at the South Kensington Museum. Each lecture is made complete in itself, though all are consecutive. The second, delivered on Monday evening, the 9th inst., treated of starch and sugar, and included a review of the nature of animal heat, and the apparatus by which heat is produced in the human body, and showed that the fuel for human combustion was supplied by the heat-giving foods—starch, sugar, oils, and fats. The history, properties, and qualities of starch and sugar completed the lecture.

THE LONGTON SURVEYORSHIP.—The police commission of Longton being in want of a surveyor, various applications were made to them for the appointment, but ultimately the question rested between Mr. McLansborough, by appointment of whom, one of the commissioners remarked, "they might save the expense of an engineer," Mr. Blair, of Trentham, and Mr. Garnham, their own police inspector, "who had applied for the appointment." There were six votes for the first, fifteen for the second, and twenty for the third, when finally, by the casting vote of the chairman, the police inspector was appointed, on a renewed vote of twenty to twenty for Mr. Blair.

GAS LIGHTED BY ELECTRICITY.—Two "sun-lights," each containing seventy-five burners, have just been placed immediately under the ceiling in the centre of the music-hall, in the Edinburgh University,—the ceiling being 40 feet in width, and 50 feet from the floor. These burners have been successfully lit by an application of the electric current. The galvanic battery is placed in the cellar, and from it positive and negative wires are carried up the side of the hall and along the ceiling, to immediately over the burners. Then it is coiled round the poles of an electromagnet, to the keeper of which are attached a couple of wires bearing a platinum wire. On the current of electricity being established at the battery, the platinum wire, placed within an inch of the burner, becomes red-hot, and the gas being simultaneously turned on, the whole seventy-five lights, which are closely contiguous, immediately flash into flame. The electric current is then arrested, and the electro-magnet ceasing to be a magnet, its keeper, with the wires attached, falls three inches below the flame, so drawing down the platinum wire out of the way of the flame of the gas. Lighting by electricity is by no means an unprecedented novelty. It is long since a row of jets was so lighted at the Polytechnic Institution, and many years since the lighting of street-lamps by electricity was urged in the *Builder*.

ST. PAUL'S CHURCH, HAGGERSTONE.—The foundation stone of this church has been laid with the customary formalities, by the Lord Bishop of London. The site is at the corner of Broke-road and Marlborough-road, Dalston, and was purchased from Sir W. Middleton, Bart. about ten years since, but want of funds has hitherto precluded the execution of the work.

LONDON AND MIDDLESEX ARCHEOLOGICAL SOCIETY.—On the 5th the annual general meeting of the members of this society was held at the Society of Arts, John-street, Adelphi, for the appointment of officers and receiving reports from the council and auditors for the past year. Mr. John G. Nicholls in the chair. The financial statement showed the receipts for the past year (including a previous balance of 427. 2s. 5d.) to have been 1527. 7s. 5d.; and the expenditure for the same period, 997. 12s. 2d.; leaving a balance of 527. 15s. 3d.

DEATH OF MR. C. R. LESLIE, R.A.—We hear, with great regret, of the death, on Thursday 5th inst. at Abercorn-place, of this distinguished artist and author, in his 65th year. The exhibition of the Royal Academy, now open, contains two pictures by him,—one entitled "Hotspur and Lady Percy," and the other "Jennie Deans and Queen Caroline." If it had been known that his end was so near, critics would, probably, have spoken less strongly of the weakness apparent in these works as compared with others by the same accomplished hand.

TIMBER FOR SHIP-BUILDING.—A paper on this subject, by Mr. Leonard Wray, was read at the Society of Arts on 4th inst. One special object which the author of the paper had in view was, that the council of the society might be induced, in the interest of our naval and commercial marine, to address to Government a request that the Colonial Secretary should order the several engineer officers residing in Hongduras, Guiana, Assam, Tesserim, Malacca, and Western Australia, to send well-selected and well-seasoned specimens of the most durable timbers in their respective localities, home to the Government dockyards, for examination and testing by a commission of duly qualified men. The paper contained an interesting account of many woods hitherto little known, which promised to be of use in ship-building. Among others the jarrah, a species of *Eucalyptus*, which grows in vast abundance in Western Australia, was specially alluded to, and the remark was made that the question of the commercial success of such a great ship as the *Great Eastern* might be set at rest by sending her to Australia with cargo and passengers, and loading her with 10,000 or 15,000 tons of jarrah for home consumption.

THE ARTISTS' BENEVOLENT FUND.—The 50th anniversary of this excellent Institution was celebrated at the Freemasons' Tavern, on Saturday last, A. Beresford Hope, esq. in the chair. There was a good muster of Royal Academicians and others. The chairman ably advocated the claims of the Institution. "It had been said," he observed, "that the artist was more improvident than other men, because he lived in the ideal regions of fancy. But away with such suspicions! All genius, of course, must dwell in fairy palaces; but was it genius alone that did so? Why, the mere money-greedy dwelt in his own imaginative prison-house, the lawyer dreamt of fabulous briefs and the woollack, and the most prosaic occupations had their own peculiar excitements for the imagination. The accusation was unfair, ungenerous, and unjust. The society held out its hand to help the struggler who was striving to surmount the pinnacle of fame, and it enabled him to secure the welfare of the partner and helpmate of his trials and his glory, who might otherwise be unprovided for. It gave a provision for the children who might be the inheritors of his fame in other days, which, but for such an institution, they could not have looked for. And she, sitting by his side, the solacer of his trials, when the face grew pale, and the hair grew grey, and the fingers grew thin,—she, too, might receive the reward due to her virtue and to his merits, in a manner that the most shrinking delicacy—the most scrupulous self-respect—might accept." Mr. David Roberts responded. The health of the chairman was proposed by Dr. Lankester. Sir Charles Eastlake responded for the Royal Academy, Mr. C. J. Dimond for the officers of the Fund, Mr. Godwin for the societies connected with the fine arts in the metropolis, and Mr. Bohn for the stewards. The dinner passed off with much spirit and good pecuniary result. It is much to be desired that the rising artists of the day should become members of the Artists' Fund, and so provide against possible misfortune.

The Builder.

VOL. XVII.—No. 850.

Prevention and Cure.
Industrial Schools and Reformatories.



REVENTION is better than cure, whether with reference to morals or medicine. Individually, all would certainly agree in this, and even more certainly in the assertion that prevention is better than no cure, as it might be put. Nevertheless, collectively, we take little pains to show our belief in it. Let us put together a few facts bearing on this theme. Some days ago, two boys—one fifteen years of age, and the other only nine—were charged at

Worship-street with being found asleep in a back building in Hoxton. The eldest of these lads said that his father was a tailor, but that he had gone off to Birmingham or elsewhere, and that he had no mother. The other boy was in a worse case still: he was a mere child, most wretched in appearance, though with good, regular features. He had neither father, mother, nor home. His father had once lived in George-street, Camden-town, but was killed on the railway while at work near Chalk Farm Tavern, and his mother had died in the Gray's-inn-lane Hospital. He had neither brothers nor sisters, nor any person in the world taking interest in them. They had both lived by begging. Mr. D'Eyncourt considering the lads deserving, ordered them to be taken for the present to the Workhouse. Here we see what unfortunately too often occurs, though it is unknown, a mere child left in this great city exposed to the temptation of hunger, and of bad companions; uneducated, and with scarcely a chance of being put into the way of obtaining an honest living. What but the prison can be looked forward to for such. It should be some one's duty to pick these waifs and strays from the kennel, and lead them into proper courses, if we are all agreed that prevention is better than cure.

Another incident. In Farringdon vegetable Market, in the centre of the wealthy City of London, there is an unoccupied space, dimly lighted, and which offers a curious contrast with the bustle of the adjoining streets. Here, on most days, may be seen crouched in corners—sometimes groups—in other cases, solitary, specimens of the houseless and destitute. More dismal pictures than these present cannot easily be conceived. The last time we looked in, the groups consisted of two lads about twelve years of age, and three or four girls, from fourteen to sixteen. The language to be heard on passing was of a frightful character. From what tree came such fruit? Whose fault is it that a mould exists whence come such impressions? Not far off were young girls, who seemed comparatively decent, but who were also without a home. In another part was a woman nursing an infant: elsewhere, girls, women, and boys, most of them sleeping. The sun was shining brightly outside, but here the unfortunates—like owls and bats—had sought the dusky shelter.

Some of the girls had slept in the casual wards of workhouses, and had been turned out upon the streets penniless early in the morning. One said she had walked about the streets the whole night, driven from place to place by the police; and others told sad tales, which might be more or less true. In either case here were destitute, untaught, unaided, unadvised creatures, verging on womanhood,

exposed to temptations, which must sadden all who will think of the matter. What is there to prevent their falling into crime? Good principles? Who has implanted them? Fear of the sinking in the opinion of those about them? They know none about them but outcasts like themselves, who have probably already fallen. Can nothing be done to change their course? Prevention is certainly better than cure! and cheaper too!

Scattered over the town there are a few Industrial Schools and Reformatories, the first for prevention, the second for cure; but these are insufficient to reach the mass, and are not supported as they should be, few as they are. It is said, too, that Government propose to withdraw, in certain cases, the grants of money which have contributed to the success of many of them. Considering the good which has already been effected, and the promise of still further benefits held out for the future, it is to be hoped that, in this instance, report may not speak truly. The withdrawal of the Government assistance would probably lead to the closing of some of these establishments, even now labouring under pecuniary difficulties. Not long since an Act was passed by the Legislature, the chief object of which was the maintenance and training of vagrant, destitute children, who were in danger of becoming, as criminals, a permanent public burden. In the belief that it was better to pay 15*l.* a year for a child, with the chance and hope of making him a useful member of society, instead of 30*l.* for an adult criminal, it was determined to grant from the public purse a share of the expense of Industrial Schools. Touching this, Mr. G. W. Bell, a gentleman who has given the subject much attention, says:

"I believe, with regard to the Government aid, all who have paid attention to the working of this law are convinced that the Government pecuniary assistance is too small. Beyond the half rent, and an allowance for tools and raw material, the amount of which is no criterion of the usefulness of the school, the Government contribution is five shillings a head per annum, except in the case of boys amenable to the Vagrant Act, and sent to the Industrial School by a justice of the peace. For these an allowance of 5*l.* each is made."

As at present constituted, the Industrial Schools depend for their support,—

- 1st. On Government aid;
- 2nd. The remunerative work of the children;
- 3rd. The enforced contributions of parents; and,
- 4th. The voluntary subscriptions of benevolent individuals.

Mr. Bell remarks that remunerative works thus become, from necessity, a matter of undue importance—undue, because it is highly desirable that, until each inmate of the Industrial School has passed through the settled routine, training, and discipline of those establishments, he should not be drafted into the self-supporting class. The contributions of parents are not generally to be depended on.

In order to show the working of these schools, let us walk into "The Boys' Home," an institution for the training and maintenance, by their own labour, of destitute boys, not convicted of crime. This Home was the first established under the Industrial Schools Act, and was commenced, where it now is, at No. 44, Euston-road, near King's Cross—a ten-roomed house, containing 22,000 cubic feet, and having a yard of 3,600 feet area.

The care of this establishment is entrusted to an efficient master, who for many years has been a sergeant in Her Majesty's 38th regiment. There are now 36 boys in it, of ages varying from 6 to 16. A number of the boys, some time ago, were employed in out-door work—some at a type-founder's—others at carpenters' and bricklayers'—one at a hatter's—some at news-agents' and chemists'; and it is satisfactory to learn that these lads, who but for this Home would have been either ragged wanderers in the streets or the inmates of prisons, were well spoken of by their employers. Just now only two are employed out of doors. The boys are provided with clothes for Sundays and for working-days, and are well looked after. Their

condition, at the time of their admission here, is, in most instances, deplorable—covered with dirt—in rags and misery.

Inquiring into the position of some of the inmates at the time they were admitted, we found that one, a fine, handsome-looking youth, sixteen years of age, had not been here many weeks. He had been left almost from infancy without father or mother; he had no relations or any one to care for him; he had suffered all kinds of privations, but had, nevertheless, kept clear of prison. He obtained employment as a shoe-black; but became, as he told us, too big for that, could not find any other employment, and fell into starvation: his body was covered with sores, and nothing could be more desolate than the condition of this youth, just verging on manhood. The change made in his appearance in a short time is remarkable, and it is likely that before long he will be turned into a smart soldier, having a fancy for the service.

Another lad, born and bred at Croydon, where both his parents died of cholera, was about fourteen years of age. Too old to go willingly to the workhouse, and having no relatives who would receive him, he wandered to London, fell in with other boys, begged, shivered, rested under arches, starved, and generally led the life of the vagrants among whom he was cast. Eventually he found his way to the Field-lane Refuge, the master of which sent him to this Home. Casual help, in this instance, would have been of no avail, and but for some comparatively permanent stay and support, the boy must have been ruined. How it is he was not a puzzle. This case was received gratuitously, and the boy was then earning 7*s.* a week at a hatter's in London—residing still at the Boys' Home. Placed under the same circumstances, and exposed to the same temptations, some who are now lights of the world might have fallen.

In another instance, a gentleman's coachman died, leaving his widow helpless with a son. She had been a cook, but with the burden of the boy could get no situation. On applying for parochial relief, the mother was told that she and the boy might "enter the house." A lady, who kindly interested herself on behalf of the widow, obtained for her a situation of 16*l.* a year, and instead of mother and son becoming paupers, the boy is now maintained in this establishment by the honest labour of the mother.

Take another case: a lad, aged fourteen, the son of a widow in London, was sent, at his own request, on board the flag-ship at Portsmouth, in which he served for eight months: at the end of that time, not being considered strong enough for sea life, he was put ashore with 2*l.* in his pocket, and his railway-fare paid up to London. Arrived there, he found his mother dead. Helpless, and without a home in this vast wilderness, he soon spent his little earnings, and wandered from house to house in search of work. He was sent to this institution by a subscriber, who found him in the street, hungry, ragged, and in despair. After being several months at the Euston-road, and showing himself a steady, willing, and grateful lad, he was sent to a situation which enables him to earn his own living. The greater number of the boys here have been in a similarly destitute condition.

Industry and order are strictly enforced; a proper hour is appointed for every thing, and while the lads are taught to work, a course of religious and moral education is going on. Some of the smaller and weaker boys are put to tailoring and needle-work. They are taught to wash and mend their own clothes; to assist in cleaning the rooms, windows, and furniture; and in cooking their meals; and some are employed in carpentry and fire-wood chopping.

To show the need of both the Government and voluntary aid, it may be mentioned that the probable expense of rent, salaries, maintenance, and tuition for twenty-five boys, will be about 500*l.* a year:—

The in-door labour should produce	£50 a year.
The boys' wages (who are engaged out) ..	150 do.
The payment from parents and others	50 do.

250

At present but few commitments of desti-

ture boys have been made by magistrates: any child sent under the Act to an Industrial School by a magistrate, must be legally a vagrant; yet a vagrant child, not liable to be convicted and sent to a reformatory, is consigned to the next workhouse. The operations of this part of the Act seem to be ineffectual, and thus the Government are not called upon to contribute 5*l.* a-year each towards the support of boys committed under those circumstances. It turns out, therefore, that the Government aid to a school, such as has been mentioned, will scarcely amount to 50*l.* a-year; but even this sum is a consideration in some cases, and it is well worthy of thought whether it will not be more beneficial to increase this sum, than to take the whole away. For such a school as that in Euston-road, it becomes necessary, besides other means of support, to raise yearly 200*l.* by voluntary contributions, and this is not easy. As Mr. Bell remarks,—"The fearful accidents which remind the public constantly of the value of our hospitals—the exciting reports of disease the thrilling records of unfortunate crime, which have sometimes rendered the phrase of 'pet criminal' not altogether undeserved, all these materially assist the funds of other institutions, keeping them prominently before the public eye, and opening freely the public purse. To this highly remunerative public interest, the Industrial School can owe but little help: its value is a negative one—it prevents crime, and withdraws idleness and sin from the public gaze. Those who will take the trouble to inquire into, and who will examine for themselves the working of those schools, rarely fail to appreciate their large and extensive usefulness. But the actual visitors here are comparatively few, and the even tenor and silent working of the Industrial Schools, while weeding the streets of their reclaimable vagabonds, will remain comparatively unnoticed, because by their practical working, the Industrial schools will remove the most obvious inducements to public generosity."

The cleanliness of the house, and other arrangements, reflect great credit on Sergeant Raynour, the master, who appears to rule with firmness, but with kindness. In establishment of this kind, everything depends on the head of "the family." There must be heart in the work, or there will be no hearts touched.

Even more so is this the case in the institutions which have been opened to attempt the cure of those who have fallen, the necessity for which, we are satisfied, will become less as the numbers of those first described, under proper management, become greater. We have but to walk a short distance in the same thoroughfare, Euston-road, and we shall find, near Tottenham-court-road, a Reformatory, known as the London Preventive Institution, where about 100 lads and young men are lodged, fed, and taught some useful trade. These are literally all brands from the burning. Nearly all of them have been convicted, and but for the means of gradual retrieval here offered to them, would be preying upon society, and falling lower and lower in crime. The frontage of the institution towards Euston-road is only that of an ordinary shop, where the fancy furniture and other things made within, are sold. But behind, the premises are large, including a number of workshops and other buildings, erected round a yard. The trades taught are turning, cabinet-making, and joinery, printing, bookbinding, smiths' work, French polishing, tailoring, and shoemaking. Each department is presided over by a competent workman. In the smiths' shop, there were sixteen lads; in the tailoring and shoemaking, eighteen, and so on. Nearly all the inmates whom we saw busily occupied on those various works, had become tired of crime. Most of them had been left in early life without the care of parents, or with parents who were worse than none. They had no chance of doing well; scarcely any knew a trade, and they fell almost as a matter of course to thieving. The number who can be received here is but a tithe of those who make application for admission. One of the chief causes of a large amount of crime in towns, is the want of means of getting honest employment after leaving the prisons. We

have sometimes seen groups at the door of a prison waiting for those whose term of confinement had expired. Some are welcomed by decent persons who, with tears in their eyes, have taken the offender to a home, and given him a chance of reformation, but these are few. Others have been met by thievish companions, and welcomed to their old way of life. Others have had no living creature to care for them, and have slunk away to fare just as it may happen. However good may be their intentions, they have no chance of doing otherwise than evil.

We found that a considerable number of the inmates of the Reformatory had been recommended by the chaplains of prisons, and this is one of the chief uses of reformatory establishments, that after a course of prison discipline, those who are dismissed and have no means of obtaining a proper livelihood may be strengthened by training, and put into the way of making an honest living.

It is satisfactory to learn that the accounts from the large number of youths who have passed through the regular term of instruction here are satisfactory. As is the case in all those institutions which have been attended with benefit, the stay of each is voluntary, and this is the great advantage which the reformatory has over the prison. In the former the inmates see a chance of becoming useful members of society, and feel that they are bound in honour to endeavour to do right. It appears that during the first two or three weeks after admission some few who enter leave, but those who get over that time become accustomed to the regulations, and set earnestly to work to acquire such a trade as they may have chosen to learn. The time appointed for this purpose is twelve months, and during that period the lads have generally acquired so much skill as to be useful, and are then assisted with the means of emigration to some suitable colony.

The cost of the reformatory is considerable. Those who have lived a year in such establishments are beginning to work profitably, but aid is wanted from without. The dormitories are unoccupied during the day, and although the quantity of air admitted at night through the various openings is very great in comparison with the chief of the metropolitan barracks, we hear no complaints of colds, or of those diseases of the respiratory organs which have been so fatal amongst soldiers.

A chapel, which is also used as a school and lecture-room, has been recently built. The wooden rafters of the roof are illuminated with passages from Scripture, and on the walls are various useful pieces of advice. The arrangements for cooking are excellent. An apparatus has been presented by Captain Shaw, which has effected a saving of nearly 2*l.* a-week we are told, in the cost of food: this is also so arranged that the same fire serves to heat the water required in the wash-house and drying-room.

It is only six years and a half since the energetic and benevolent founder of this reformatory commenced with six boys; since then, by his unremitting exertions, after the hours and fatigue of ordinary business, this shelter has grown until there are now (independently of the superintendents) ninety-eight inmates within the walls. There is room enough for fifty more if funds could be found sufficient for their support.

We would strongly urge those who feel an interest in this matter to pay a visit to the establishment, in order to form a judgment of its usefulness, and to see in what way needful help can be given. A meeting was held there on Tuesday last to encourage, with good wishes, twelve of the inmates who are about to emigrate. Prevention is better than cure, but the means of cure must be also cured for.

FATAL ACCIDENT AT GLOUCESTER CATHEDRAL.—In repairing the great west window of this cathedral, preparatory to filling it with stained glass as a memorial to the late Bishop Monk, the scaffolding was broken, while a stone mullion of about 2*½* cwt. was on it, and two men fell to the ground, one of whom was killed, and the other narrowly escaped with his life, but was seriously injured.

ROYAL ACADEMY.*

In the middle room there are several interesting pictures in addition to those we have already mentioned. Faed's "Sunday in the Backwoods" (310), will have plenty of admirers, though it looks little like the truth, and its prettiness suffers from the power of its neighbour, "Spring." We prefer Mr. Faed's smaller work, "My ain Fireside" (555), where the male model, painted in 310, has also done duty. Rankley's "Evening Song" (368), with a brave sky, is injured by the geese. Mr. Rossiter is equal to better things than "Brighton and Back for 3*s.* 6*d.*" (378). 420, "The Interior of the Church of St. Mark," Venice, by David Roberts, is by far the better of the two pictures this excellent landscape-painter exhibits. We may not now look for the careful finish which distinguishes his earlier works, but for effect and suggestiveness this picture demands high praise. 427, "Dogberry's Charge to the Watch," by H. J. Mark (Ducherry apparently studied from Mr. Robson), is full of character, and should not be passed over. 429, by Dobson, from the 2nd book of Samuel, "David bade them teach the Children of Judah the Use of the Bow," and which may be taken to typify the gentlemen who are anxiously striving to turn the peace-loving inhabitants of these isles into riflemen, and to induce them to "form," is a soundly-painted picture; but vastly inferior to the "Youths in the Market-place," or the "Dorcas" of Seasons gone by. The broad, big-footed youth, who is taking his lesson, fails to interest. The same painter's female head, "Der Rosenkranz" (316), pleases more. Dyer's "Contentment" (137), and Hook's "Cornish Gift" (439), are both capital pictures. We would also mention, in a milder tone, Dillon's "Evening on the Nile" (458), "Brunette," by R. Tait (466), and 168, "Man goeth forth to his work and to his labour, until the evening," by P. H. Calderon, where we see an old man cutting an inscription in the aisle of a Mediaeval church.

Coming into the west room, we find G. H. Thomas again successful in the portrayal of a review of troops,—in the "Champ de Mars this time" (478); and W. Cave Thomas displaying a power in manipulation, and an exercise of thought, the recognition of which has been delayed by the recalcitrant character of the subjects he usually selects. The present picture (479), "Donnicolo da Pavia urges Savonarola to have recourse to the fiery ordeal for a miraculous confirmation of his doctrines," would be improved by the removal of rigidity and the evidence of more wear about the upper part of the garments; (480), "The Burgesses of Calais," by H. Holiday, does not tell its story (it is one of the burgesses being prepared to go out with the rest, "bare-headed, bare-footed, bare-legged, and in their shirts, with halters about their necks"), but it is a work of considerable merit, and ought like many others to have taken the place of some of the very poor portraits on the line. There are some portraits, as we have already said, of great excellence; but there are more which have no business here at all—being utterly bad, and altogether uninteresting. The Linnells have several powerful landscapes (495, 546, 661), mannered, but admirable. Mr. Ansdell has two pictures (506), "Highland Tod-hunter," and (538) "Sheep-washing in Glen Lyon," good specimens of his style, and both badly hung. Mr. Ansdell's pictures are injured by the use of too much black. There is a want of transparency in the shadows. 525, "Marchlyn Mawr," by J. W. Oakes, conveys, very truly, the

"Solitary pool, fringed round with rushes wild."

Miss Mutrie and Miss A. F. Mutrie, the first in (614) "Garden Flowers," and the second in (621) "Travellers' Joy," have produced the two most perfect and charming pictures of their class in the Exhibition. "Saltimbanches comptant leur Recette," by C. Schloesser (189); O'Neill's "Statute Fair," "The German Patriot's Wife" (540), by J. E. Hodgson; 591, "Morning on the Lago Maggiore," by G. E. Hering; "Hieropolis," by H. Johnson (668); "French Peasant finding their stolen Child" (634); Hainnah's "Portrait of Hook" (636); Pickersgill's "Portrait of Mr. Gruisen," the energetic secretary of the Conservative Land Society (606); "Capture of Mediterranean Pirates," by J. Danby (649), are all noticeable works. Mr. Hughes's picture, "The King's Orchard" (609), whatever may be the manipulative skill shown in it, and the excellence of portions, is little short of a caricature. We step into the miniature-room before closing these notes, to single out the "Val d'Aosta" by

* See pp. 368, 378, ante.

J. Brett, as a wonderful miniature of a remarkable piece of nature.

THE MANCHESTER ASSIZE COURTS' DESIGNS.

It is impossible that we can offer through our review of the Exhibition at Manchester, of designs for the Assize Courts, any account that can do justice to the interesting and valuable matter brought together, or that we can print all those particulars even, which we were able to note down. We must omit description of many designs that well might deserve it, for their decorative character, if for no leading feature of plan distinguishing them from works already noticed. Amongst the designs which, not the best in the collection, of those in one or other version of classical and columnar architecture with the Roman element prevailing, testify to the fact that more enlightened study of examples is in vogue, combined with more accurate views of art, are the designs by Messrs. Clegg and Knowles ("Apropos"); Mr. E. Blatchley ("Repose"); Mr. Hamilton; Mr. W. Parnell ("L'Espérance"); Messrs. Hayley and Son ("Mente et Labore"); Mr. A. Trimen ("I and II"); Messrs. Starkey and Cuffey ("Spes et Fides"); Mr. E. Ashworth ("Nulli in Negabinus Justitiam"); Mr. T. Holmes ("Deschidado"); Mr. B. Wilson ("Athena"); Mr. R. M. Phipson ("Rose of Lancaster"); and Mr. Kirkby ("Protero"). The design marked "Allegro," of the same class, shows the arrangement of two stories of windows under a colonnade, which questionable for convenience, therefore cannot be fully satisfactory in effect. Mr. E. B. Lamb's design ("Pactet") is also one of the columnar class; and it has, in details, the originality to be found in other works by the same hand. Good outline and treatment especially characterize the dome which surmounts a central hall between the two courts.

Messrs. R. N. Shaw and Nesfield's design ("Veritate Gaudeo") is of Gothic character. There is less that is deserving of notice in the general design than in the drawing, and in the design of accessories, such as the fountain at the angle of the ground; the merit of these need scarcely be remarked upon to those who have seen the works of the authors in the Architectural Exhibition. Also Gothic are Mr. C. Brodriek's design ("Pacis Conciliator"), Mr. G. Aickin's ("Veritas Vincit"), Messrs. Lloyd Williams, and Underwood's ("Amor Patriæ"), Mr. S. Hewitt's ("Nec Prece nec Pretio"), and Mr. W. H. Crossland's. In all of these the Gothic has the Continental impress; and the general grouping, and the details of pointed-arched windows and prominent tower, seem too nearly reproductive of the models—the Doge's Palace at Venice and the Town-halls of Belgium and the Netherlands. Exceptions, however, may be allowed to this generalization. Mr. Brodriek's design has a larger amount of original thought than the other designs named; and the detail in Mr. Crossland's design is faulty only from its exaggeration. In Messrs. Williams and Underwood's drawings, however, much neat workmanship has been expended in making what is little better than an imitation of Mr. Scott's design for the Hamburg Town-hall. Mr. Hewitt's design, Venetian in character, is one of those which have the entrance at the corner of the ground; and as in a design which we have already mentioned, the entrance is placed within the angle formed by the two courts. Messrs. Frapp and Pontem's design, with the motto "Art has its beginning in truth; its end in delight," is Gothic of English character. "Decorated" it might be called, in the main. It is a work of higher order than the majority of the Continental Gothic class; and it is displayed in a neatly executed set of drawings. Mr. Truefitt's design is Gothic likewise, but different still from any that we have named. It has a square tower at the angle. The windows of the hall are the leading feature of the exterior. The plan is conceived on the same principle as that in Mr. Worthington's design; so far as regards the form of the hall or promenade, and that of the courts entered each at the side; but greater area is given up to the hall; whilst the judges' lodgings are placed in a building at the east, detached, though with covered way of communication.




Mr. H. B. Garling's two designs, as fully illustrating a position which we have advanced, and as each very meritorious, would deserve particular description. One design, "Alpha," may be called Greco-Palladian; and the other, "At Spes non Fracta," is French Gothic. The plans are very different. The first design has three entrances in the Great Ducie-street front; one from a hexa-

style portico at the principal floor level, and the others from the street level, in pavilion-masses at the angles. The plan in the Gothic design, is the best of the plans which have the principal public entrance at the corner, and the courts at right-angles to one another. In this case, other public entrances leading directly to the courts, being placed in the two fronts, the streams are distributed; whilst the judges' seats and retiring-rooms are, as it were, in one focus, to which the corridors of the attorneys and witnesses tend. The principal entrance leads into a corridor or promenade, 26 feet wide, which, with vestibules, reaches along each front the extent of the courts, or to a narrower transverse corridor of entrance already alluded to. Defects exist, for instance, in the distance of the clerk of the Crown's office from the sheriff's courts,—the former being at one extreme end of the building, and the latter at the other. In the view of the exterior, the courts form prominent central masses, rising one story above the general level. They are flanked by octagonal, conical-capped turrets, or projections, over the secondary entrances, and are crowned each by a curb roof with dormers, and metalwork cresting and angle pinnacles. The general details include buttresses to the principal story and basement, pointed-arched, and cusped windows, the heads filled in with blank or perforated masonry, so as to receive square sashes. The portion of the building at the angle is treated as a separate mass or pavilion; and a projection from it, which includes the entrance-porch, is finished as a clock-tower, with octagonal pinnacles, and a lofty lucarned and metal-crested roof. In both designs the judges' lodgings are at the north. In the Greco-Palladian design, the entrance from the portico leads into a public hall, extending nearly the whole length of the front, vaulted and domed in three bays, and terminated by columns at the ends, dividing it from the corridors. It would be lined with coloured brick. The courts are entered from this hall, the judges' and juries' retiring-rooms being placed between them. The barristers', attorneys' and witnesses' rooms are reached by corridors, external to this arrangement, whence there are doorways into the courts separate from those of the public; and there is a private entrance for barristers, magistrates, and attorneys in South Hall-street. On this side a considerable area is given to the street; and a drinking-fountain, as in many other designs, is suggested at the angle of the ground. The portico, with steps as side-flights, as at the National Gallery, is the best in design of porticos on that arrangement, which we can call to mind: the raking lines appear, and the steps are not concealed, as in the National Gallery, behind a mere extension of the podium; and the whole grouping of the portico with the other masses; the management of the major and minor orders, and of the plain wall surface; and the recession of the upper stories in the front, evince correctness of eye, knowledge, and taste. The pavilions at the angles, square on plan in the lower part, are each terminated by an octagonal lantern story, with a bold cornice, scotia, and roll-moulding, and a low conical roof-covering. The design, like most others, could not be satisfactorily described except by illustrative engraving.

Messrs. Travis and Mangnall's design—marked A. Z. Z. A.—contains much that is suggestive as regards heating and ventilating, lighting, and matters of equal importance, as well as in decorative detail. The general character externally, however, has been subordinated to some crotchets of the matters named, rather than arrived at, on principles of grouping and composition, calling for independent attention. Thus the design exhibits six towers, grouped round an arrangement like that of nave and aisles—the one-story portions projecting considerably at the end of the building, so as to leave a recess for an ascent of steps to the principal entrance. The towers, comparatively plain below, are each terminated by an overhanging story of piers or pilasters, with the interspaces apparently open for the escape of smoke or vitiated air. These towers are not inelegant themselves; but the repetition of them is fatal to the general design. The ornamental details, Renaissance in style, are better than the leading forms of the building. In the plan, two public halls are properly disposed at parts of the building the most remote from one another; the space intervening being occupied by the courts, and rooms in connection with them; and in the external entrances and internal communications, classification has been well considered. The two judges' rooms are in the centre of the plan, with a door of communication, and one to a corridor leading to the lodgings. Galleries are provided for witnesses in waiting, and

others. The arched form of ceiling has been adopted as most favourable to sound; and in addition, a structure, or ceiling at a height of 10 feet from the judges' platform, in metal and glass, is proposed—to extend over the space occupied by the judge, counsel, witnesses, and jury. The vault, or main ceiling, in each court, would be perforated in seventy large panels, to be filled with ground glass; and a cluster of gas-burners would be placed over each panel in a chamber, ventilated, and supplied with air for combustion. The lofty towers would extract vitiated air from the body of each court, and the building generally; and they would afford fresh air taken from a high level, and permit of concentration of flues in lieu of the alternative—fifty separate chimney-stacks. It is proposed within the courts, to follow the system of introducing fresh air at a high level, and extracting the vitiated air near the floor, on the supposition that only the nitrogen, called "the innocuous," and "smaller part of the breath," has the tendency to ascend, whilst the carbonic acid "has a natural determination to fall and remain at a low level."

Amongst works, to which, by reason of the time at our disposal in Manchester, we can now do no justice, we may mention the design by Messrs. Mills and Murgatroyd ("Be just, and fear not"), one of Greco-Italian character, shown in a careful set of drawings, including views of several portions of the interior. The twenty-eight drawings, bearing the motto, "Laus," include two designs, Italian and Gothic, to the same plan. The library and robing-room form the central group between the two chief courts. The sheriff's courts are placed up-stairs. The decorative features of both designs have been elaborately studied. And Messrs. Speakman and Charlesworth's design, "Elegi," dwells in our recollection, though not clearly enough for detailed description, as one of the very best of the Italian designs. It also was shown in a good set of drawings, which included a capital view of the middle of the hall or promenade, under the dome, with the entrances to the courts. Mr. Knightley's design ("K"), Italian, likewise should not pass unnamed. Messrs. Cawley and Radford ("Il Progettista") evidently paid great attention to their plan, and with good result; but their building, externally, was designed (with Ionic portico) on the scale of a small vestry-hall, and otherwise belongs to the pseudo-classic of former days, rather than to the better school which has happily grown up.

From the descriptions we have given, the professional reader will probably have no difficulty in separating the designs into several classes, according to the general principle adopted in the planning. Thus it is easy to notice the difference between the plans which we have engraved, where the hall is central and where there are corridors in connection, forming perhaps the sole access to the courts; those plans where the hall central, and two courts, are arranged as the figure , corridors round the courts or otherwise; those where a wide corridor, hall, or promenade, extends parallel with the front of the building, the courts and transverse corridors opening from it; those where a modification of the same principle is adopted—the form of the hall on plan (with narrow central corridor added,) being either that of the figure , or that of the figure , disadvantage of distance, which it was supposed there would be between the courts, being got over in some cases very ingeniously; those where the radiating principle is adopted; and those where the entrance is at the corner of the ground, and the courts are at right-angles to one another. That there is another question as to three distinct entrances in the one front, in connection with the wide corridor or promenade, relatively to advantage of one entrance of ample dimensions, and a central hall, has been perceived. But the settlement of the questions of general principle would leave many of the points affecting the value of plans unsettled; for, it is generally an error to assume, as some competitors seem to do readily, that re-arrangement of offices and rooms can be made "without in any way interfering with the general arrangement of the plan." Thus appear little different to one another on superficial inspection; which, through some modification of a foot or thereabouts, in corridors or halls, will be really essentially different: the relative merits, therefore, are not to be ascertained without elaborate estimate both of accommodation in the details of apartments and of total cost.

We have now brought our review of this most interesting collection of designs to a termination. We have done no full measure of justice; perhaps we have not even named designs which would

have deserved to be mentioned; and we may not have been able to apportion our notices in length in exact relation with the merits of the works that we have mentioned. We began by repudiating responsibility to remedy the errors from ignorance, and the haste of committees in matters in which as well labour and time, as experience and knowledge, are required. At double the length, we should not have got to the point of information at which the committees in this case should have arrived before venturing a judgment. Perhaps, however, we have succeeded in giving the particulars we contemplated, and in affording a body of hints for use on another occasion when assize courts have to be designed.

SIR CHRISTOPHER WREN AND ST. PAUL'S.

On the 9th inst. Mr. E. M. Barry delivered a lecture at the Clapham Atheneum on "Wren and his Times."

Having sketched the life of Wren, he quoted some of his observations. In one of these, speaking of France, Wren says, with no great gallantry:—"The women, as they make here the language and fashions, and meddle with politics and philosophy, so they away also in architecture: works of fligree and little knacks are in great vogue, but building ought certainly to have the attribute of eternal, and therefore be the only thing incapable of new fashions." I am not sure that if Wren could now walk through the streets of London, he would consider the foregoing remarks applicable to Paris alone. Certainly he would find that new fashions had arisen, and that many of his dicta would be boldly questioned. We have but lately heard it contended that as all our present buildings (including Wren's) are more or less failures, a new style must be brought to bear, and a reform made in our architecture of the future. However this may be, it is to be hoped that, while there is no disposition to resist reform because it is change, we shall hesitate to rush upon change on the chance of its ultimately proving to be reform. The greatest architectural difficulty of the present day is probably the right use of colour in materials, and otherwise. We have been so long accustomed to the dreary reign of churchwardens' drab, that we are perhaps disposed to be prejudiced on this subject, and I should therefore be most unwilling to deprecate the right employment of so delightful an aid to architecture as colour properly employed. A glance, however, at some recent examples must, I think, convince us that on this subject we have yet much to learn, and that the utmost judgment and caution are needed to achieve success. If, however, any real advance in art can be shown to be insured by this or other means, let us not hesitate to embrace them; but I think we should demand first to be perfectly satisfied that we are in the right path, and should ponder long before giving up the grand works of Inigo Jones and Sir Christopher Wren, if in exchange we are only to have some of those curious structures seemingly so fashionable at present, which, seamed with streaks and blotched with patches, cause us to speculate on the probable effect of a petrified chessboard or a harlequin in stones."

After referring to the erection of St. Paul's, Mr. Barry made some observations on the present use of the building. He said,—"However we may rejoice to see the vast cathedral open its doors to the multitude, we must, I think, feel that if the evening services are to remain as a settled institution, and not a casual excitement, permanent provision of suitable and dignified fittings should be made for their continuance. This is far from being the case at present: the means at the disposal of the authorities have been, as I have said, very limited, and the arrangements for divine service are little better than those commonly seen at a travelling circus, and are almost a disgrace to the cathedral. Moreover, the choir is entirely cut off by the screen, with the organ upon it, and thus the mere incomplete evening service appears to monopolize the building. I cannot but think that our cathedrals ought to throw open their portals to all comers, and would therefore gladly see arrangements made for rendering them permanently available for large congregations to attend all, and not one only of the services of the church. At St. Paul's there would seem to be little difficulty in attaining this object. The dome might, as at present, shelter the main body of the congregation; the screen which now cuts off the choir, might be removed, and the choir made to serve as a suitable and dignified chancel. If the altar should be found to be placed too far east for convenience, it might be brought nearer the dome,

and placed under a canopy, or against a screen, and the space behind it used as a chapel for daily service. The stall and seats for the singers might be arranged lengthwise in the choir, and the pulpit placed in a commanding position under the dome. I offer these suggestions with much diffidence, but I cannot help feeling that though it is most desirable to fill our cathedrals, it is far from desirable that the congregation should be led, by the ritual arrangements, to forget that the place in which they are assembled, is still a cathedral. And I may also be allowed to express my belief that if the authorities would put forth a careful and well-considered plan for carrying out some such arrangement as I have hastily sketched out, there would then be no want of funds to effect their object."

The lecture was illustrated by several diagrams of St. Paul's Cathedral, and Wren's design for laying out the streets of London after the fire. After the lecture, which was very numerous attended, Mr. P. Anson, who was in the chair, made some apposite remarks, in the course of which he adverted to the difficulties which there had always been in realizing such a conception as that of Wren, most desirable, though it still was, to amend evils adverted to by other speakers, but observed that London really was not inferior to the majority of foreign cities—of which he mentioned Genoa, with narrow lanes, but magnificent buildings, as an example.

GOOD COOKERY A SOCIAL WANT.

THE waste caused by bad cooking amongst not only the labouring classes of the population, but also those of a better condition, is enormous. In thousands of instances no attempt is made to prepare variety of food, and yet we have high medical authority for the fact, that if attention were paid to this the doctor would be less needed than is the case at present. In thousands of instances in the metropolis the Sunday dinner consists of a baked joint, and this is in a great measure necessary in consequence of the improper construction of the fire-places of the dwelling-rooms for the purpose of cooking. Notwithstanding, with a greater amount of knowledge in this respect, much might be done that is not thought of at present; and the same amount of animal food might be made to go twice as far by skilful management. We are, therefore, glad to learn that a school of cookery has been established at No. 90, Albany-street, Regent's-park, under the patronage of the Countess of Ripon, Lady Coleridge, Mrs. Archibald Tait (the wife of the Bishop of London), Lady Laura Palmer, Lady Bridges, Mrs. C. M. Lushington, and others. To this establishment, ladies becoming subscribers may send their cooks for lessons. Cooking for the sick is particularly attended to. No doubt, in an institution such as this, where a number of females can be taught not only the art of cookery, but also needlework and habits of order, neatness, and cleanliness, great good will result, and we trust that this institution will be appreciated by the class it is intended to benefit, and by its success lead to the formation of similar schools elsewhere.

WASTE LANDS: CONVICT LABOUR.

As enlightened Europe is about to prove the gigantic progress of recent civilization, by afflicting the advance guard of her sons of the Old World with all the antiquated horrors of war, I trouble you with a few lines on *Convict Labour*, and a use to which it might be directed in helping to diminish the risk of famine in Great Britain.

Who that has had the opportunity, has not noticed the listless and indolent manner in which felons almost invariably move in the Government dockyards? And who can be surprised at their morbid want of interest and energy on behalf of their country, as manifested in strenuous exertion, to oppose the accomplishment of an object which secures them no advantage? Now books inform us that England contains no less than 5,397 square miles of wastes *capable* of improvement, and 5,089 square miles of such as are reported to be in this respect inevitably worthless; and both these assertions may be true, when viewed by the light of economical practical speculation, for no landholder in his senses would undertake to reclaim any large quantity. But can you believe in the ultimate unprofitableness of the greater proportion of this immense aggregate of fallow and barren ground? Allow that excess of some particular ingredient mars, for agricultural purposes, one district by the preponderance of cold clay,—others by that of loose gravel, arid sand, compact chalk, or hard

rock,—will not a due combination of these minerals produce a rich fertile soil?—and cannot the excess of this region be exchanged for that of another, so that the wants of each to a sufficient depth may be supplied, and the desert be subordinated into a fruitful field, yielding desert to the deserving? Judiciously drain the subsoil, then transfer some of the surplus sand of a selected locality, to mix with the heavy argillaceous surface of another, and *vice versa*, and incorporating with each compost, broken chalk or calcined rock, and, as soon as practicable, manure, either liquid or condensed, from *city sewers*, and not imported from the neighbourhood of our antipodes.

With a proper code of regulations, and efficient, yet not inconvenient and excessively costly military control, the expensive, but, as far as manual labour is now concerned, useless, if not, by the example presented to the paid artisan, of permitted laziness, positively deleterious criminals, might in many cases be reclaimed; and whether *numbers* were so or not, each might be made to perform valuable and lasting service to his species while obtaining the capacity to appreciate his legitimate rights and opportunity to enjoy without abusing his liberty.

Explain to every individual of a certain gang of malefactors, that after a fair trial of his desire to reform, as exemplified by the industry displayed in removing, crushing, mixing, &c. the various earthen, and bringing a specified extent of ground into cultivation, he should at once have the ban upon him reduced, in so far as to give him, under surveillance for a definite time, the range of the convict district, with liberty to dispose of the vegetable growth off his temporary estate till the term of his probation should be accomplished, when the freehold plot should be fully resigned to one who had so long exhibited the wish to become a better subject, and to approach the distinction conferred upon such a one in the recognition of his title to the designation of civilian.

Some *real* inducement to forsake the path of evil would thus be offered to his consideration; and what private enterprise will not venture to attempt, might gradually, but, surely, be achieved, with little, if any, augmentation of the public expense.

By employing criminals somewhat in the manner indicated above, might we not, in some degree, assist to render, for the necessities of life, "The land of the brave and the free" less *dependent* upon lukewarm friends and open enemies?

L. BIDEF.

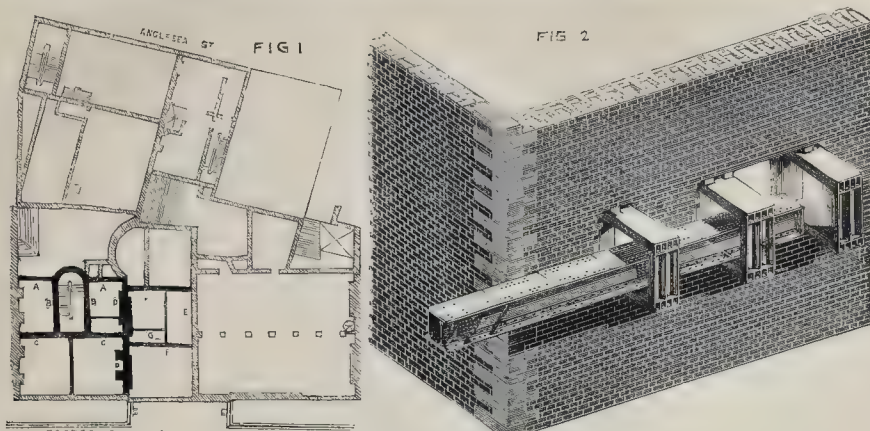
OUR WORKHOUSES.

THE terrible revelations made by the mayor of Cork, respecting the treatment of paupers in that city, gives an idea of the loss which is caused by the insufficiency of food, and other bad arrangements. A shameful destruction of human life has taken place: an immense percentage of young children have died; and in those who have passed through the struggle of early days few were left unattacked by scrofula and other diseases caused by neglect. Under the training here, scarcely any of those unfortunates will be able to fill a useful position in life, but must in the end become paupers, and increase pauperism. If the children were properly brought up, instead of being a constant source of expense, they would add to the industry and wealth of the country.

We have before remarked upon the bleached countenances and vacant expression of the faces of the young inmates of the metropolitan workhouses, and suggested that it would be profitable to improve the diet and manner of treatment.

In the report of the Commissioners of Lunacy to the Lord Chancellor, notice is taken of the great increase of lunatics in workhouses, the number having risen from 6,800 to 7,666, between January, 1857, and July, 1858. This report states that the treatment in workhouses is so reprehensible as to exceed belief,—not ours.

The rules in force to check disorderly conduct in common paupers are most improperly extended to the insane, who are in effect prisoners in those "bastilles" for life, incapable of asserting their rights, yet amenable to as much punishment as if they were quite sane. Of the metropolitan workhouses, the majority are of great size, old, badly-constructed, and situated in the midst of dense populations. The same statement applies to the houses in large provincial towns. The deficiency of the means of accommodation and exercise for lunatics is a source of infinite evil. These facts demand careful consideration. By the ill-management of our paupers we are adding to one of our greatest social evils.



A NEW MODE OF SHORING.

A NEW MODE OF SHORING.

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

At a meeting of this institution, held recently, Mr. W. Anderson read a paper "On a New Method of Shoring adopted in removing the two lower stories of the Royal Bank, Dublin."

After describing the position of the Royal Bank, the object of the alterations, and the reasons for which Mr. Charles Geoghegan was appointed architect, the paper continued as follows:—There were some misgivings as to the wisdom of attempting to remove the lower portion of eight walls, to do which it would be necessary to support upwards of 200 tons at an elevation of 46 feet above the basement story, and the author believes Mr. Geoghegan himself would have been slow to propose it had not a novel and safe means presented itself to his mind. Exclusive of the danger and unsightliness of settlements almost sure to result if it were attempted to support masses so rigid and friable as brick walls on elastic pillars of wood 40 feet long, there was the objection, that to get the shores put up the whole of the ground and first floors would have to be removed, and the walls thereby deprived of valuable lateral support, when they were likely to be unduly strained by unavoidably unequal shoring. The expense, also, of providing suitable foundations for the shores, increased by the difficulty of getting such long and heavy timber into its place, would have been very great. As three of the main beams (A, C, D, Fig. 1*) were to be on the same level, rigidly connected by means of bolts and rivets, it was very desirable, for fear of manipulation, to have them all lose in the walls at the same time. Had the system of timber shores been adopted, to attempt this would have been very hazardous, if not impossible, as the multitude of supports would have rendered the lifting and placing of the beams very intricate. To overcome these objections, Mr. Geoghegan determined to make the lower portion of the walls, which he ultimately wished to remove, serve as temporary pillars to support the upper parts he wished to retain, by interposing frames of iron or wood, through which the beams could be passed. He accordingly explained his views to the author, and intrusted him with the construction of the shoring frame, which it is thought is a new feature in the art of building. Exclusive of bolts, the frame is composed of four pieces, viz. the top and bottom, which act the part of short beams, and the two sides intended to carry the load as pillars. These may be of variable dimensions, to suit the depth of beam and thickness of walls or load to be supported; they are fitted together to make a truly rectangular frame, and held in position by means of bolts. The top and bottom are made cellular, with the outer walls thinner than the inner ones, in order to approximate, as much as possible, to the form of greatest strength, which would be a series of beams laid side by side.

* T T T T : The vertical pieces are composed of plates, stiffened by deep ribs, to obtain rigidity with lightness, and are provided with holes near the bottom, through which a rod may be passed to carry a metal roller for the beams to run on when being pushed into its place. As the frames had to be put up in inconvenient places, it was a great object to keep the several parts as light as possible, in order that three or four men might move them with ease without having recourse to tackle. There are two principal conditions under which beams may require to be placed under walls:—

1st. There may be room enough to admit the beam being launched into its place, and on.

2nd. The wall may be so situated that the beam can only be put in sideways; or there may be a combination of the two cases, when there may be room to launch the beam half way, and the other half can be got in sideways. The one case requires a different form of frame from the other, as will now be explained. Beam D (fig. 1), supporting two heavy chimney-stacks, is an illustration of the first case. There being plenty of room in the courtyard to lift the beam to its proper level, clear of all the houses, the following preparations were made:—Two holes were broken through each of the two chimney-stacks, and a good beam was placed in each at the proper level, four frames were placed in them, and one smaller one was similarly introduced into the intermediate walls. When all the frames had been carefully arranged

in line, folding wedges of good dry oak were driven between the tops of the frame and the superincumbent walls, till the weight of the latter was made to rest entirely upon the frames. The portion of the wall and chimney-stacks between the frames was then removed; and the beam, having been hoisted on tall sheareys in the courtyard to the proper level, was launched safely into its place through the frames.

Beam A (fig. 1), supporting the back wall, affords an example of the second case. The quoin of the adjoining house would not allow the beam to be hoisted sufficiently far back to pass it through frames similar to those used with beam D: it was, therefore, hoisted diagonally alongside the wall till its end entered a doorway in the bow projection, which allowed it to go far enough forward to clear the quoin, when raised to a level and placed at the proper height parallel to its permanent position, and in which it was temporarily secured. Two frames (fig. 2), made to project its own width on one side of the wall, were inserted into holes which had previously been cut in the brickwork, and bolted together so as to include the beam within themselves. The weight of the walls was transferred to the frames, and the masonry between them cut away as before, and the beam moved in, first sideways, till fairly under the wall, and then launched forward through two more frames into its permanent position.

Beam C (Fig. 1), was got into the house with great difficulty on account of its length, was laid on the first floor alongside the wall it was intended to support, and raised through to its proper height, where it was temporarily held, while four frames were put round it and secured in the walls as already described; the intermediate masonry having been cut away, the beam was moved sideways into its place under the wall. At this stage of the proceedings the three main walls, being completely cut through, were supported only on thirteen frames, in which the beams were lying loose: the latter were carefully fitted to each other, and firmly secured by means of bolts and rivets, after which the whole mass of wrought iron—weighing 154 tons—was adjusted to its exact position vertically and horizontally. Chases were now cut in the lower walls to admit the columns, which having been carefully erected, the weight of the walls on the frames was transferred to the beams by driving folding wedges between the top pieces of the former and the upper flange of the latter, to cause the beams to deflect to their full extent previous to underpinning between the frames in brick and cement. When all was ready, the wedges over the frames were cautiously slackened, and the entire weight of the building allowed to come upon the beams and columns. The frames were retained in position for a few days, during which the behaviour of the columns and foundations was carefully watched; and as no signs of yielding were detected, the frames were released, the bolts connecting their several parts were withdrawn, they themselves removed in pieces, and the gaps occupied by their upper portions made good in brick and cement. The actual cost of successfully shoring up the eight walls in the manner described was £21. The builder's estimate for the same operation, without any allowance for the great risk run, was from 1861. to 1861.—being a saving of at least 1601. in favour of frame system, not counting the gain in time, security, and convenience. The urgent necessity of completing the work as quickly as possible, induced the builder to use more frames than were absolutely necessary: had there been no occasion to shore so many walls simultaneously, the work could have been done for 421. or one-fourth the lowest estimate quoted above.

A detailed account was given of the weight, strength, deflection under test, and cost of erection of the wrought iron beams used. The columns which were of the unusual length of 26 feet, and only 12 inches diameter, were minutely described, especially as regarded the precautions adopted to ensure a uniform thickness of metal. The whole of the iron work had been designed by the author, and executed by Messrs. Courtney, Stephens, and Co. of Dublin, before leaving whose works the beams were all tested, in presence of the architect or one of his assistants. The liberality of the directors was applauded for encouraging their architect to carry out a new system of shoring, which has turned out so much to the public advantage; and great praise was given to Messrs. Crowe and Sons, the contractors for the work, to whose zeal and intelligence the success of the operations was in a great measure due. In a discussion which ensued, the members expressed their satisfaction in the simplicity and usefulness of Mr. Geoghegan's invention.

FREAKS AND ODDITIES IN BUILDINGS.

THE works of man will ever bear some mark of the weakness and the corruption of his nature. Among his productions is architecture, an art which is ranked among the fine arts, but which belongs most essentially to the exact sciences, because it is subordinate to geometric rules and calculations. It is one of the most ancient and one of the most sublime of the arts. Like other beautiful things its fate has been much abused. It has been a means of developing the conceptions, the skill, and the energy of some of the most eminent men; but, on the other hand, at revolutionary periods, when the taste of a nation has been completely vitiated, and when to the love of the impure and the distorted has been added the love of the glaring and the gaudy, the useful and the ennobling influence of architecture has been dead, the appreciative powers of the human mind have been diverted from their natural bias. The qualifications required of the architect for excelling in that which is so beautiful as an art, and so difficult as a science, are very numerous, and require a long life of labour to attain them; but they make the profession valuable to himself, to Government, and to his country, or the land in which he sojourns. They teach him the necessity of arriving at a high degree of perfection in many things; the necessity of beginning and continuing his career under a high standard of virtue and of merit; of considering it a misery and a privation to be by any cause carried away from the object of his ambition, or some beautiful design that is absorbing his faculties, and for which he is struggling to attain a great prize, or an order for its execution. He will also be cautious of receiving that praise which often raises us in presumption to an undue height above our real selves, in persuading us that we are already above others; and keeps us in a vicious mediocrity, which prevents us from arriving at perfection. Perhaps the number of faults that an architect has to avoid are greater than that of the qualities which are necessary to him. But for this reason the possession of the latter are essential to keep clear of falling into the former. The best buildings in the world are not without faults: they show, however excellent, that those who designed and reared them, are but men; and though the solidity of their constructions, their fitness to the ends for which they were planned and designed, although the loveliness and agreeableness with which they are embellished, are irreproachable; yet their beauties do not excuse the omissions or the neglect of certain parts, as equal attention should be given to each part as well as to the whole. They only palliate them. We throw a veil over the small imperfections that mar a little, but which cannot efface superior excellence and higher qualities. Such buildings are praised and imitated in spite of them. They become the type on which others are modelled: it is idle to prove they are faults when we are struck with their general beauty; for some may be very dull, and make no impression in their favour, no sentiment or sensation of pleasure, and yet be unerringly correct. Beauty sometimes appears where even order is transgressed, and is wanting in works perfectly regular. But a certain negli-

gence is one of the things that pertain to genius: it may be its weakness, but it is one of the ornaments of style, one of its modes of producing effects which seem the results of enchantment. Marmontel says, that the three distinctive qualities of beauty are force, riches, and intelligence. What has tended so much to the perversion of taste in architecture, and, consequently, the withdrawing of its influence upon the public mind, has been the folly and assumption of architects and artists substituting themselves to the public, deciding in its place and in its name, and reasoning, as if with the power of oracles and tribunals, upon the impressions that the mind of another ought to experience. The obstacle that this presented to the improvement and progress of art and the increased interest taken in everything concerning it, was happily overcome by the invention of printing,—that boon to modern times, which, perpetuated ideas of the past, the present, and the future, which scattered knowledge, and which condensed it, which made people educate themselves, which led to the formation of libraries, which popularised thought, and multiplied the means of instruction. Public criticism may be often a lever to the art, a bridle upon its departures, a lamp to light the inquiring student; but the most enlightened criticism does not exist, and never existed till a long time after good works have been produced, upon which there can be no doubt as to the estimation in which their qualities should be valued, and which, after all, guide, instruct, and inform it. It is known that it sometimes evinces no gratitude or recognition of the works to which she is indebted, and from which she has borrowed. Criticism has always been imperfect, and would remain so until some great genius or a great school of art, have shown something on which it can form and assimilate its mind and its judgment to works of art, and on what they depend for the effects they produce. Such men, themselves admirable critics, and such a school allowed to be authorities and masters, are the reformers of their age: they have only the time to imagine and to create what are the materials of taste for the judgment to exercise itself upon; and critics, out of the field and theatre of art, perhaps at first feel astonishment at the new creations which make such a sensation in the world, and with difficulty know how to admire them when they do not envy them, and certainly when they cannot rival them.

The writer of this article will yield to no one in his admiration for the real beauties and perfections of architecture, of faultless building, although it is now his intention to dwell chiefly on examples that have principally come under his observation of edifices and constructions on quite the reverse of good principles, and diametrically opposed to all the laws, the prescriptions, the maxims, and the rules of taste and of common sense.

First, of columns—those noble and useful features of architecture—those strong but simple objects which make its sublimity. The ancient and modern poets, in their episodes, omit not to describe in their lofty rhyme the grand effect of the columnar structures and their sumptuous decoration, within and without the palaces, on some lofty eminence, of the brave of the heroic age, or the proud and valiant knights of the baronial age. And whoever has beheld in the seas vast petrifications rising from its waters, formed by the hand of nature into a series of gigantic columns, grouped together with a firmness which no force can sunder, and watched the surging waves in majestic but terrible forms around its immovable base,—has been awed by the idea of the sublimity that such a pile in such a situation conveyed: not unsimilar, though in a much less degree, is the effect that is produced on the mind and on the heart by the contemplation of a vast number of beautiful columns, in symmetrical order, in a building raised by human hands, and imposing by them, and by the masses that it admits in its combinations. Look at the temples of the ancient Greeks, with the long, luminous, and shadowy perspective of their peristyles: look at those leading ornaments, with their nicely-measured lines and graceful flow of curves wrought into such elegance by them out of the glowing marble of Pentelion: look at them, singly or coupled, encircling with their rich zone the base of elevated domes, and serving as buttresses to these domes. The dome of St. Peter's, or St. Paul's, or that of the church of St. Gervaise, or of the Invalides,—look at these, and it is only to admit that architecture owes much to the right and just use of these noble ornaments. It is the wise combination of lines artistically composed, and placed so as effectively to support a superincumbent mass; it is

the graduated swell or diminution of the shaft of this member; it is the proportion and the execution which the enlightened pupils of an Ictinus, a Phidias, or a Callimachus have given to it which constitutes its beauty and its claim to our admiration. The temple which they girted and fortified was as a shrine of simplicity. See the small circular temple of Vesta at Rome, once surrounded with columns, or that of the Sibyl on a rock, at Tivoli.* How beautiful they must have been in the days the priests offered sacrifice there!—the spot near to which Horace had his farm—the valley and the country which are a paradise for poets and artists! The few examples cited, out of love for the columns that adorn them, are works of architecture that defy censure, and put criticism to silence. Yet, notwithstanding this, and that the column wants no commendation, and that to alter any part thereof which concurs to its perfection is a kind of desecration; its employment in different edifices has been sadly abused by modern architects, and to such a degree and such an extent that the spoilers might be supposed to have taken a malignant pleasure in depriving it of its superlative qualities—those qualities which, in despair, they must only copy or modify with the greatest caution and scruple. It has been despoiled of its fair proportions. Of course the ancient depended upon the column, and the office assigned to every other part for exercising upon the souls of observers that influence and that emotion which were irresistible when regarded in relation to the entire whole. The secret or the cause of the exact strength, and of its striking beauty, of the surface even which the rays of a brilliant sun magically illumined; the harmonious arrangement of the moulding and of its base, and the expression of its capital; all these have been taken away to gratify individual tastes and idiosyncrasies. It has been distorted in the hands of men who were only artists of discord, of whom it was not worthily: it has been used for secondary and for other purposes than those for which it was intended, and a great deal of art has been thrown into chaos and confusion in consequence. In architecture, as in morals, honesty is the best policy. If, as the poet Pope says,

"An honest man's the noblest work of God,"

a man should make his work possess that same noble quality to which his nature ought to aspire. It is futile in art to try to surpass a work of matchless genius. It is only to ape, to imitate servilely, or to caricature it. Perhaps the French architects are addicted as much as those of any other nation to the *hors-de-propos* treatment of the columns in their buildings. Owing to this the beautiful architecture of some of their public buildings or *hôtels* suffers. They are in the habit of intersecting and banding them by flat horizontal stones or vermiculated stones, at certain distances, or rusticiating them, as if to break the monotony of their height, or as if what was strong enough might still be made stronger; but the true expression and signification of this member, which is beautiful and perfect because it is just and founded in truth, is thereby entirely destroyed. The ancients knew, and existing ruins prove, that after nice calculations they were fully able to perform the office assigned to them, without any such addition, and especially such a one as is no improvement. The French are likewise accustomed to cable or fill up, about five feet high, from the top of the base of the column, its elegant flutes—elegant as the well-arranged or natural folds of drapery on a statue. Can any one divine their reason for doing this? Is it to gratify the avidity of the public for novelties? Is it to satisfy the love of contrasts? Is it to astonish them by extraordinary combinations? Is it to make some illusion by the assistance of decorations? or is it done for producing in a given space a little more light and shade? We think that if the party or parties in question were asked the intention and the motive of it, they would be at a loss to explain, or their pretext would be very fallacious. What is done certainly destroys the original effect, and shows that the true sublimity cannot be reached with its singularity. There should not only be in buildings a good reason for everything, but the grounds of it should be evident, and require no

* Soufflot, the architect of the church of St. Gervaise, Paris, was the first architect known who gave to the walls details and mouldings of the round temple at Tivoli, and that at Paestum. They were most carefully measured and drawn by him. Different architects, the king in 1791, and Soufflot, were to the French what Revett and the Abbé Stuart were to the English. Dumetia entered the theatre of St. Carlo at Naples, theatres at Rome, Turin, Milan, Paris, and other cities, and published all of these in a folio under the title of "Recueil de plusieurs Parties d'Architecture de différents Maîtres."

interpreter. We do not contemplate buildings with the expectation of having to solve problems. The public is satisfied only with successful results: it does not trouble itself either about intentions or the difficulties the architect has had to overcome. An architect, whose practice consisted more in the breach than in the observance of rules and precedents, once put before the entrance-door of a house in London a quarter-circle portico, with only one solitary column supporting the entablature, with tiny consoles at the two ends, abutting against the wall in lieu of pilasters. One column only conveyed the idea of weakness; and weakness of whatever nature, excites pity, and is always dangerous and treacherous. It is lamentable when common sense and ordinary observation are able to detect the vices and the falsifications in a building, and discover its frauds,—we say lamentable, because it is a proof that there is empiricism in every trade and profession, not by any means excluding architecture; and that the public are judges, and sometimes as good judges as artists themselves. They see an attempt, but not a deed: they see owing to neglect, to indifference, to *scamping*, to omission, or false economy and mean spirit, a failure, where a little more outlay, a little more consideration, a little more love and labour well bestowed on the work crude and unfinished, would have supplied the deficiency, and actuated the individual by better motives. It is as bad as "spoiling the ship for a harp'orth of tar." Chambray says, with truth: "The order Caryatides first produced in a period of decline of art, and first, perhaps, introduced upon the degeneration of the Ionic order, in which women are represented, where delicacy does not correspond to the weight of the burthen with which they are charged, gave rise to all extravagances." Any ornaments from the ridiculous ideas and associations they give rise to, and from their want of just and appropriate position, become signs of a weak mind, of passions predominating over reason, and of a degraded taste.

Whatever is not justified, whatever cannot be accounted for, and whatever is not in the nature of things, or does not serve a useful end, is not beautiful. The dome and its basement, at the Institute in Paris, are too large, and out of all proportion to the portico and rest of the building beneath; and on the roof of this old building are false chimneys, intended for ornaments, called "cassolettes," out of which no smoke is ever seen to come, but some flames in stone are substituted for the real. The small and mean towers on the top of our National Gallery, the work of Wilkins, of Cambridge, have been called "pepper-boxes," a nickname which your readers will agree is a deserved stigma, and no detractor from the character of that uninteresting edifice. In many ancient churches and cathedrals, the wood carvings of the stalls of the choir are not at all their choice in their subjects; but it is well known that in the Middle Ages, and in superstitious times, the sculptors and stone-carvers represented good and evil spirits, demons and angels, personifications of good and evil; that they ridiculed the priests, who might have been patrons of morality and virtue, and yet were discovered once or twice erring; that they caricatured some odd characters in their own craft. To the antiquary and to the historian they supply materials as to manners, costume, instruments used, and even from these in some respects objectionable carvings, we may learn something, and find that "there is some soul of goodness in things evil." They are generally out of sight, beneath the seats of the choristers, and are shown by the sacristan only to the curious eye of any one requesting to see them. There are some very remarkable ones in England's cathedrals, and particularly in Rheims cathedral. Victor Calliat says that "the stalls in the cathedral of Poitiers are the most ancient known in France: they date from the first-half of the thirteenth century; and, according to the general custom in great churches, they are disposed upon two floors—an upper and lower. Their ornament is simple and severe, contrasted with that of the greater part of the stalls of the end of the Gothic period, which ordinarily present a prodigious profusion and richness, joined to the most admirable skill.* We have remarked, in some of the churches of London, and in some village churches, esoteric and heraldic badges, and inscriptions on monuments of exaggerated or equivocal praise, which reflect more the vanity of the living than the virtues of the dead. Simple and unostentatious with a brief epitaph, as—"Peace to his ashes,"—should be the trophy raised to the memory of the dead. In St. Martin's Church,

* "Encyclopédie de l'Architecture." Paris.

by Gibbs, you see what is too glaring and what is out of its place because it is a civic emblem, the national arms glittering in burnished glory over the arch at the east end: you see what the child is taught to say, "the lion and the unicorn fighting for the crown." Now this would be very well in a hall of justice in the Mansion House or in Guildhall, but it is out of place here: it would be much better to have placed, or to replace now the unfit object with, a glory, a cross, or the head of our Saviour. It is lamentable to see the best and the most beautiful things going to ruin and changed into very different purposes from those which were witnessed in their palmy days; to see an Eltham Hall, Kent, now a barn or a granary. Many more instances might be adduced. The French have, perhaps, done more than any other nation to restore their ancient edifices—those rich legacies and heir-looms of art; and one single man (Lenoir) stands out amongst them prominent for his labours in this.* His countrymen and posterity will owe him eternal obligations for preserving so many historical monuments which, in periods of revolutions, would, but for such exertions, have been buried, mutilated, or entirely destroyed. As there often is a striking intermixture of beauties and defects in the same edifice, it is almost unavoidable the writer giving to this article a similar melody. He finds his ideas waving to and fro,

"From grave to gay, from lively to severe."—Pope.

Next, all buildings, public or private, should be fire-proof. It is a great folly to build any sort of habitation without fire-escapes, a rope-ladder rolled up, or one like that used by the firemen to-day, let down from the windows to the street: easy modes of exit in the ceiling or in the roof to the lead or slates should be provided in the event of fire. It is shocking where self-preservation has not even been cared for or studied in a dwelling. An invalid unable to bear the least noise outside his house, or with weak vision, and requiring a dim or borrowed light within, but objecting to revolving shutters or double windows, might have the exits he complains of obviated by the plan of his domicile consisting of a square within a square built of unequal proportion; the outer walls and inner partitions panelled, forming between them a passage of 4 feet width all round, the latter with glass deriving light for the rooms from the external windows; and both supporting the floor above. This design would not exclude the indulgence of architectural beauty: on the contrary, it would offer an opportunity for showing some of its happiest interior effects. Arches might at certain distances be turned from pilasters, and in their intervals niches for candelabra, models of celebrated columns, busts, and statuettes. From the centre-flower of each arch there might be suspended flower-baskets, bird-cages, or Chinese talen lanterns. On the walls at the end of the passages might be mirrors or an artificial grotto and cascade or fountain. The means adopted for such an object, and the comfort and convenience attained by it, would be a sufficient vindication of its unusual kind of construction. I am aware of the powers of the Building Act, and that though formerly it was much the custom for every householder and proprietor to be his own architect, times are changed, men are wiser, and regulations are enforced. Once the excessive height of buildings in narrow streets was not less prejudicial to the salubrity of the air, in close and peopled cities, than it was contrary to the security of the inhabitants, especially in case of fire. It is now necessary to observe a given proportion, prescribed by Government, between the width of streets and the height of houses. Notwithstanding these building laws, there are certain independent proprietors, high and low in their tastes and sentiments, doing, unrestrained, all sorts of things, and indulging their own fancies and caprices; doing what they like with their own; and even an accomplished architect, Sir J. Soane himself, annoyed his neighbours by projecting the front of his house in advance of the other houses, and in order to enlarge his private museum. We see the natural or the acquired singularity of a propensity or a will in every thing to which man puts his hands. A Jack Ketch having resigned his office as executioner from a fortune he had made by betting on the turf, left England, and built a house on some land which he bought in a foreign country. The sole ornaments which he selected for decorating it, were mouldings of rope sculptured round the doors and windows, and round his fire-place. These recalled his past life, and the memory of the fatal instrument by which he had finished the lives of the condemned. We

* In the Musée des Petits-Augustins.

have noticed the natural partiality that sailors and fishermen have for scattering or grouping curious forms, consisting of rock, shells, and sea plants. The origin of the names of streets is rather curious. Every trade formerly exhibited in its shop its particular sign. A house in Paris, corner of the Rue du Temple, opposite the Hôtel de-Ville, has the sign "*A la Coquille*," and you observe sculptured in the middle of the head of each window a scallop-shell. We may easily lay these singularities of ornament to a class who boast that every man's house is his castle, and who sometimes make it like one in some degree, putting battlements, shields, helmets, banners, and trophies of war to walls which should express nothing but peace and domestic quiet. The greatest incongruities, and discords of form and colour, that were perhaps ever perpetrated, were by settlers, who have become rich in a colony from the gold-diggings, or from farming and breeding cattle; but who, though rich and proud to build for themselves, are no judges at all of what they undertake. But we have shown that faults and freaks exciting ridicule are very often committed by architects themselves, from whom we look for better things; and indeed, in public edifices erected in the centres of civilization, we are surprised that so many are marred by a mode of treatment, against which wit and satire naturally aim their shafts. Bull's-eye windows do not look well when seen in the centre of the pediment, where sometimes a clock is put, or in the centre of arched recesses, as they occur in the river front of the *Monnaie* (Mint) and Palais Royal, and other excellent buildings, in Paris and elsewhere. A square-headed window looks still worse. Bull's-eye windows look well in spires and in domes, varying the otherwise too monotonous space. In the great external dome of St. Peter's, Rome, there are remarkable ornaments at certain heights and distances; shields surmounted with scallop-shells and lion's head, at the top round a "Three days," or bull's-eye. Here it is very appropriate. The French and other nations have had a prevailing notion that they could equal or surpass the ancients, and that they are superior to them in many things, and might be so in architecture and its decorations, for whose beauty there was no limit; that they were not disposed to be casting in other men's moulds, famous as their issues were; that if they had genius, the characteristic of which is to invent, they might ignore, at least not be tied to, the rules of art; and they were ambitious of producing works whose design and execution were a creation of their own. All this is very reasonable. But the approved ancient styles and orders withstand the rigour of the severest judgment, the most trying test. Their architecture is as a liquor which cannot change its vase: its style, original and simple, cannot represent other than its own, or be altered essentially without irreparable injury to it. Among the faults and heterogeneous fancies of the moderns, criticism will yet follow with interested eye the trace of talent.

In "the good old times" (?) the wooden bridges were covered with wooden houses,—old London Bridge, for instance, and old bridges in Bristol and other ancient cities, which remained till the end of the last century. The situation of houses on bridges is very unhealthy, on account of vapours and exhalations from the water and the impurity rising thence from the change of tides. Within a few years on the Seine, near the Pont-Neuf, there was a charitable institution, called "The Good Samaritan," which was erected on piles over the river and level with the bridge. It is now pulled down, and swimming-baths and lavatories occupy its site. Thus times change, and we change with the times. To what vile purposes have some public monuments been perverted. Within the memory of many men living it was the savage custom to put the heads of traitors and conspirators on iron spikes on the top of Temple-bar. In "the good old times" thousands of persons, but principally the poor, were the victims of the plague, of fever, or the cholera, which might not have invaded the cities or those quarters had their dwellers been blessed with the sanitary improvements and measures and remedies with which the science of the nineteenth century supplies them. To prevent and cure smoky chimneys is still a problem,—a bone for builders to pick. There is evidently, in general, not enough vent and space for the smoke: the flues are not large enough, nor the stacks carried sufficiently high. If trees are planted near the house and grow above it, or if neighbouring houses are higher than it is, its chimneys are sure to smoke. It is all very well in poetizing to speak of the mud cottage in the hamlet, embosomed in trees, with its smoke on a serene morning curling

above the thatch, which it may do in certain temperatures and when the air around is rarified; but let the temperature change, and downward blasts impinge on the roof, and the wind will certainly beat the smoke down the flue. Many of the deformities on roofs, in consequence of appending to the chimney-stacks pipes of the form of every letter in the alphabet, syphons and cowls of all shapes and sizes, make a very grotesque outline against the sky. What would Dr. Syntax think of them in his search for the picturesque? The old system of gardening by Le Notre has been peculiar to the French since the time of Louis XIV. and the gardens of the Tuilleries, of Versailles, and others are the examples of his ideas in laying out grand walks and terraces and plantations in a vast symmetrical plan: it must be allowed they are adapted to chateaux, which are vast, and regular, and noble. They remind one of the royal and stately residences half-concealed among trees,—the retreat of those pleasant groups which Watteau painted in his rural scenes. Notwithstanding we cannot resist the attraction of these spots, we must admit they are rather monotonous.

"Grove answers grove, each alley has a brother,
And half the landscape just reflects the other."

The early minstrels of France erected a church in Paris, not, we believe, now existing, but preserved in a book in which their sanctuary and singing resort was ornamented with the costumes that they wore, and all the kinds of musical instruments on which they played. The first bards received lessons from the Druids in inaccessible seminaries, built in the midst of a park, *adificio circumdata sylva*. They there passed ten or twelve years in learning to sing, in playing the harp, and in composing poems and lyrics: they were obliged besides to learn by heart a great number of verses.* Charlemagne substituted the Gregorian chant in the churches to the Ambrosian chant. Harmony was introduced into temples. The custom of part-singing was observed about the year 1022. Its excellence, which at first was turned to the profit of religion, was afterwards attended with sad results. Surprised at its means of seduction, princes blended it with their pleasures and luxuries, and music was less and less employed for the praise of the Eternal. A succession of licenses brought the art to the point at which we see it to-day. This is a great pity, for music, directed by philosophy, is one of the most beautiful and useful gifts of Heaven, one of the first aids to religion, one means of heightening the worship of the church, and one of the most excellent institutions of man.†

FREDERICK LUSH.

THE TOMB OF A CELTIC CHIEFTAIN.

A VERY interesting discovery has been recently made at the very gates of Paris, viz. the tomb of a Celtic chieftain, interred more than twenty-five centuries ago, with the remains of his wife, his horse, and his armour, in the peninsula of Saint-Maur-Jes-Fosse. The spot is now called La Varenne-Saint-Hilaire, and other discoveries lately made there seem to reveal the existence of a Celtic city of some importance in former times.

This tomb, placed at a depth of barely 30 centimetres below the surface of the vegetable soil, which extends to a depth of more than a metre in this place, consists of two very distinct portions, the *cromlech* or consecrated enclosure, and the *tumulus* or tomb, placed in the interior, and enclosing the two human bodies and that of the horse. The *cromlech* was formed of eighteen blocks of quartz rock, roughly dressed, of ordinary dimensions, but of different form, placed one beside the other, so as to form a circular inclosure of about 2 metres 30 centimetres diameter; a portion of which towards the north seems to have suffered considerably from the pressure of the surrounding earth. Near this part, and in the direction of S. E. to N. W. was found the *tumulus* enclosing two skeletons, in a very tolerable state of preservation, lying on their faces, the heads being slightly turned towards the south-east. That on the left side, the body of the warrior, was placed in a very regular position, the head resting between the two hands: the jaws were furnished with nearly all the teeth, twenty-five, of a beautiful whiteness, with the enamel preserved. Near to him was found an arrow-head of bone, also a lance formed of deer's horn; part of a handle in oak, or fragment of a shaft, which by age had lost all weight, and had the appearance of cork. At the left of the

* J. B. Leclerc, *Essai sur la Propagation de la Musique en France*. Paris. An IV. of the Republic.

† To be continued.

interior of the *cromlech*, on several stones, placed no doubt for the purpose, were found the other arms of the chieftain, comprising a hatchet or tomahawk of polished flint, with a circular sharp edge, and a hole through it for a handle; an arrow or javelin head; a broken knife, which, all of white flint, had lost their transparency owing to the effects of violent heat. Some fragments of pottery were also discovered half-burnt, and presenting all the characteristics of the earthenware of the same period which has been found in many other places. At the right of the warrior, and in contact, lay the skeleton of his wife in very much the same position, but still with some slight difference as to posture. Younger than the former, she must have been consigned to the tomb after a violent death. All these indications agree exactly with the traditions handed down to the present time, with regard to the manners of the ancient Gauls; and it seems probable that the woman was immolated on her husband's body previous to joining him in the tomb. This curious monument has been presented by M. Legay, the architect who discovered it and made the excavations, to the minister of state, to be placed in the Museum des Thermes in the Hôtel Cluny.

WORKS IN PARIS.

THE activity displayed in the great works of public utility in Paris has not slackened. In all directions ancient streets are widened out, and put in proper alignments; new boulevards break out; the restoring and embellishing of religious edifices continue; and many squares will shortly, by the verdure of the lawns and beauty of flowers, delight the inhabitants of the most populous quarters of Paris. The demolition has commenced of many houses in the Rue de la Vieille Monnaie, of which one side, now standing, will shortly "come to grief" to make room for the elegant constructions of the new Boulevard. On the left bank of the Seine, close to the Pont St. Michel, the first of the new symmetrical houses, with arcades to decorate the site, is completely terminated at the corner of the Quai des Augustins. All the massive work of the monumental fountain, which is being built into this place in the axis of the bridge, is also finished, and the ornamental part of the structure is commenced. It is to be dedicated, it is said, to St. Michael.

Workmen are now engaged in building six piers in the side-alleys of the Boulevard Mazas, three on each side, to support the skew-bridge on which the Vincennes railway will cross the boulevard.

The plans and projects for the weirs and locks to be constructed in the Upper Seine, for which a preliminary court of inquiry is open at the Hôtel de Ville of Paris, Office of Ponts and Chaussées, are the work of M. Chanoiné, engineer-in-chief of that corps. The intention is to fulfil the promises of the 31st May, 1856, when a law was passed opening a credit of seven millions for the amelioration of the Seine. Four millions and a half have already been spent.

The first pavilion of the secondary buildings of the Halles Centrales extending along the Rue des Frouvaires, advances rapidly. The underground story is just finished, and gives a very good idea of the importance of cast iron in great public works. It consists of a vast series of rows of cast-iron pillars, six metres apart, placed diagonally, which receive the girders of cast iron also, which are united by brick arches most carefully fitted together. This story communicates with the upper one, by means of stone-staircases and trapdoors, with machinery for raising or lowering merchandise. Ventilators and louvres of thick glass give necessary air and light. As in the case of the pavilions already in commercial use (except the under story), the foundations for the columns are of brick, laid on a course of brown Vosges stone. All the rest is in iron.

The interior of the *Sainte Chapelle* is completed, and is open daily to the public on application, by an order from the authorities, and to strangers on showing their passports.

The Boulevard de Sebastopol, south of the Seine, is fully opened as far as the Museum of Cluny. The Roman remains of Julian's erection are now isolated from all contiguous buildings, and a garden planted to the north. In the garden several architectural monuments are being placed: the original colossal lions, &c. from the tower of *St. Jacques la Boucherie*, are among the recent acquisitions. The arrangement of objects in the museum has been much improved.

The pretty Hôtel d'Osmond, on the Boulevard

des Capucines, has been levelled to the ground. An edifice for the Jockey Club is intended to replace it.

THE NEW HOUSES OF ASSEMBLY AND GOVERNMENT OFFICES, WELLINGTON, NEW ZEALAND.

THE new building is a two-storied one, in the Pointed style, contains thirty-three rooms, and covers an area of about 9,000 feet. There are two chambers, one of which is for the Legislative Council, and the other for the House of Representatives. The ceiling of the former is divided into eight compartments by moulded ribs, intersecting in three places a moulded circle and carved pendant centre piece, from each of which will be suspended a chandelier. The Strangers' Gallery is at one end, and that for the reporters at the other. The speaker's chair is provided with a canopied screen, finishing with an ornamental finial, which springs from the clustered moulding forming the front edge of the screen.

The principal Chamber, the House of Representatives, is 50 feet long, 25 feet wide, and 24 feet high. The design is described as a mixed one, the Gothic style predominating, the whole being made up by selections from the drawings of three of the competitors for the premium offered by the Provincial Government, twelve months ago, for the best design for Provincial Government Offices and House of Assembly. Mr. Single acted as architect, Mr. Carter was the builder. The total cost of the buildings, including the purchase of two acres, and the expense of levelling the site, was about 9,000l. Some drawings that we have seen do not impress us with a high opinion of the art shown in the design.

AMERICAN NOTES.

IN 1854 it was proposed to build a suitable new structure at Brooklyn, New York, for a state arsenal and city armory, but for a length of time, and owing to a variety of circumstances, the project remained unaccomplished. Upon the sale of the existing state arsenal in New York city in 1856, an application was made to a committee of the legislature for 4,000 dollars towards the proposed building, and it was granted. To this sum the Brooklyn common council added 12,000 dollars; but as the fund could not be united it became necessary to erect two distinct buildings, and both have been since completed. The "State Arsenal" stands on a portion of the old Wallabout ground, on a plot 175 feet towards Portland Avenue, and extending through 200 feet to Hamden-street, and is 170 feet by 65 feet, two stories high, and with two towers, erected at diagonal corners; the ground-floor being used for the storage of heavy ordnance. The "City Armory" is 100 feet by 48 feet, at the corner of Henry and Cranberry-streets, on the site of the old Apprentices' Library, the foundation-stone of which was laid by General Lafayette, in 1825, and is placed at the second landing, is four stories high, built of brick in the Romanesque style, and has stone dressings.

Extensive buildings, with handsome marble fronts, are in progress at New York, and new streets are springing up. The building trade is particularly brisk there just now.

NOTICE OF IRISH BUILDING WORKS.

THE new Town-hall at Newbridge, county Kildare, has been opened. At the same place the first stone of buildings for gas-works has been laid. Messrs. Irwin and Holloway are the contractors.

A new church is to be built for the parish of St. James, Dublin, after designs by Mr. Welland, architect to the Ecclesiastical Commissioners for Ireland.

The new church to be erected at Rathgar, county Dublin, by the trustees of Gold's charity, will cost between 8,000l. and 9,000l. and be an important edifice in the Gothic style.

Mount Argos new buildings are to be erected under the direction of Mr. J. J. McCarthy, architect. Plans for them had been prepared at Rome, and sent to Dublin, to be carried out by a local architect; but alterations being found desirable, a change, both in the design and the intended professional supervision, took place, and the result is as above stated.

The theatre of the Mechanics' Institute at Dublin is to be remodelled, and made suitable for scenic entertainments.

New gas-works are to be erected at Dunganon and Carrick-on-Shannon. We may observe that lighting by gas has been very generally adopted of late years in Ireland, and there are very few towns of any importance now without it. Gas has

been likewise very extensively introduced into country residences; and the necessary works erected by two Dublin gas-engineering firms, Messrs. Edmundson and Co. and Mr. Daniel respectively.

COMPETITIONS.

Newcastle-under-Lyme Town Hall.—The Town Council, being desirous of restoring and making additions to their town-hall, instructed their surveyor, in January last, to advertise in the *Builder*, and other papers, for designs, offering a premium of 20l. for the best design. Twenty-nine architects sent in drawings for the proposed works on the 31st of March. Those of Mr. Stevens, architect, Manchester, have been adopted. A meeting of the council will decide whether Mr. Stevens' present plans shall be carried out or a new town-hall erected.

Castle Connell.—In the late competition for a new church at Castle Connell, the final decision rests between the designs of two competitors. The committee have advertised for tenders, and both plans will be submitted to the contractors who may wish to tender, and the result, we are told, will regulate the selection.

PROVINCIAL NEWS.

Cranbrook (Kent).—The vestry-hall, recently completed in this town, has been opened. The building is situated at the south side of the churchyard. The hall is to be used for parochial purposes and public meetings. The architect was Mr. Martin Bulmer; and the builders, Messrs. Evans, Brothers, of London. The cost exceeds 1,700l.

Stafford.—The iron girder-bridge, now in course of erection at Baswich, to replace the wooden one which was destroyed by fire in October last, is approaching completion. The piers on which the down line of rails rest have been completed, and the traffic along the line has been carried on over them, up and down. Two piers only for the up-line rails remain unfinished.

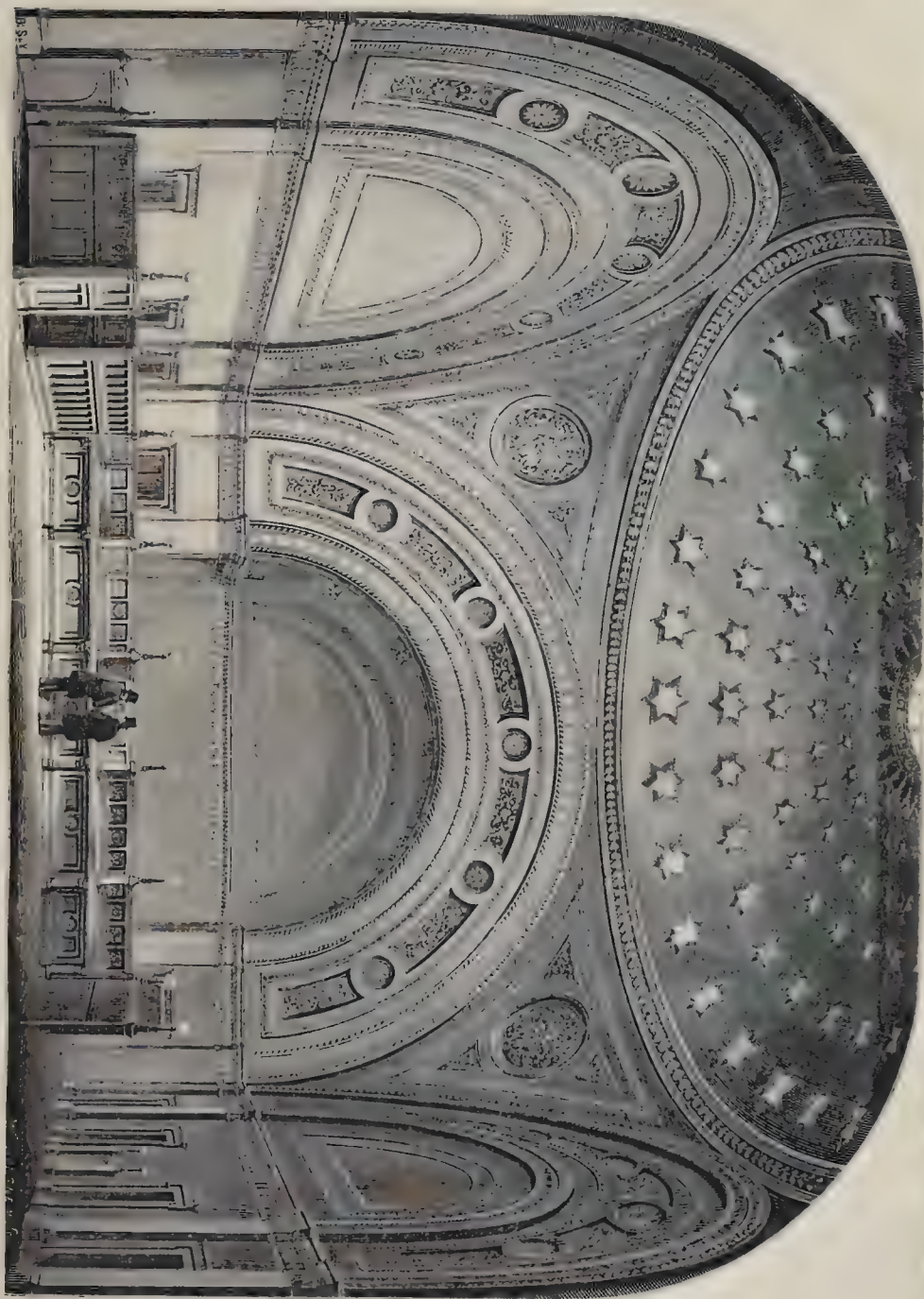
Shepton Mallet.—The waterworks to this town from Winsor's-hill are now let, and the works will commence as soon as arrangements can be made. One portion of excavating is taken by Mr. Oliver, a contractor on the East Somerset Railway, under Mr. Rowland Brotherhood, which works have been completed. The masonry of the reservoir is taken by Messrs. Emery, of this town.

Midsomer Norton.—The foundation-stone of a new market-house has been laid here. It is to be erected by the Midsomer Norton Market Company, under the Limited Liability Act.

THE ROYAL BANK, ST. ANDREW'S-SQUARE, EDINBURGH.

THE telling-room and other accommodation of the Royal Bank, St. Andrew's-square, having been found inadequate to the business requirements of the establishment, an extensive addition to the premises is now being made, from designs by Messrs. Peddie and Kinnear, of Edinburgh. The new building in course of erection is situated immediately behind the bank, and is square in figure. It consists of a sunk floor, of a story on a level with the ground floor of the bank, and in part of a floor above. This addition will contain a telling-room of large dimensions, rooms for book-safes, plate-safes, &c.; and a suite of apartments—such as officers' rooms—and a library, some 70 feet long and 23 feet wide. The whole of the sunk floor is strongly arched with brick; and the flooring of the upper story is to be laid upon corrugated iron plates, which form arches resting upon wrought-iron beams. The accompanying engraving represents the telling-room, the most prominent object in the design. It is placed directly opposite, and is on a level with, the main entrance to the bank, from which it will extend west upwards of 70 feet. The room forms a square, about 60 feet every way, with a recess nearly 80 feet wide and 13 feet deep on the east and west sides. These recesses are surmounted by semicircular arches. A dome, formed by malleable iron ribs, secured at the base by a malleable iron ring, covers the central or square part of the room. By means of this dome, according to the plans, it is proposed to light the apartment. The dome is to be filled with star-shaped lights, distributed in geometrical concentric rings, diminishing in size as they approach the centre, which consists of a large circular light. This feature gives a peculiar character to the design. The floor of the telling-room will be laid with encaustic tiles, and the tables and fittings will be of polished mahogany.

THE TELLING ROOM, ROYAL BANK OF SCOTLAND, EDINBURGH. Messrs. Pugh and Kinross, Architects.



THE TYNE DOCKS.

INSTITUTION OF CIVIL ENGINEERS.

On May 3rd (Mr. Bidder, V.P. in the chair), the paper read was "On the Tyne Docks at South Shields, and on the Mode adopted for Shipping Coals," by Mr. T. E. Harrison. He said:—These docks had been constructed on the banks of the river Tyne, at the upper end of South Shields, on a large area called Jarroo Slake, which was covered with water at spring tides to a depth of from 5 feet to 8 feet. The area so covered amounted to about 350 acres, and of this quantity 179 acres were now inclosed. The area of water in the dock, as executed, was 50 acres, the depth of water being 24 feet 6 inches at an average spring tide. The entrance basin was 9½ acres in extent, with a depth of water of 25 feet, for a width of 200 feet in the centre of the channel, gradually shoaling to the sides. One entrance had a width of 80 feet, and there was a lock 300 feet in length and 100 feet in width, with gates 60 feet in width: the cills in each case were laid 24 feet 6 inches below high-water of average spring-tides—such spring-tides having a lift of 14 feet 6 inches.

The total quantity of excavation in the docks was 1,783,452 cubic yards; and in forming the standage ground, 281,305 cubic yards. The total quantity of masonry of all descriptions was 2,900,000 cubic feet. The cost, up to the date of the opening for public traffic, was 440,476*l*. This sum included all the standage and railway approaches, the shipping jetties, the purchase of land, and all the dock-works; but it excluded parliamentary and other charges, not engineering. The works were under the immediate superintendence of Mr. Robert Hodgson, as resident engineer; and the contract for their execution was let to Mr. James Gow.

The first point of engineering interest was the nature of the foundations. A series of careful borings showed, that though there was in places a strong, stony clay, resting on the coal measures, yet that this clay was very partial, dipping suddenly away. Within a few yards of the clay-bed borings were made, to a depth, in some places, of 70 feet and upwards, through the mud, or slake deposit, without getting bottom; showing that not only the clay, but the coal measures, were gone. The original level of the ground was ascertained to be 10 feet below the lowest ebb of a spring tide at the present time, confirming the opinion that a general depression of the east coast had taken place.

The first operation in the construction of the works was to form a culvert, 5 feet in diameter, round the head of the dock area, to receive and carry off the upland waters. Dams were then formed of the materials from the excavations, consisting partly of clay and partly of slake, and after their completion, the water was run off by sluices. Shortly after the first course of masonry of the foundations was laid for the north, or 60-feet, lock, the floor was observed to rise very regularly, about 3 inches in the centre. A bore-hole was then put down, when a strong feeder of water came away. The hole, therefore, was kept open during the progress of the works, and similar holes were made in other places. The flooring of the lock went back, partially, after the hole had been open several days; and it was brought nearly to its original level, by being weighted with stone.

In building a quay wall opposite the Jarroo chemical works, it was found that the slake would not bear the weight of the bank behind it, unless at a slope of 1 to 5. As so flat a slope was inadmissible, the plan adopted for overcoming the difficulty was by weighting the top with gravel, by which the toe of the slope was forced out. It was not until 150,000 tons of gravel had been deposited that the whole came to a state of rest. The slope was at present 1½ to 1. It was pitched with stone, and rested at the bottom on a strong row of piles.

With a view of testing, practically, the sustaining power of the mud, or slake, a bed of concrete, 10 feet square, was gradually loaded with iron, to the extent of 7 cwt. per superficial foot, without any settlement taking place; but as soon as that weight was exceeded, the whole began to sink. The foundations of the timber jetties, for the shipment of coals, were therefore laid on a wide-spread base of concrete, with timber cill pieces; care being taken not to exceed a weight of 5 cwt. per superficial foot. It was satisfactory to be able to state, that there had been the slightest appearance of settlement.

Immediately below the entrance to the tidal basin there was a cunch of hard clay, running out into the river. This had been entirely removed

by dredging, and the flood and ebb tide now took their course, as nearly as possible, over the same channel, guided by the concave river wall. The latter was entirely constructed of creosoted timber, by means of one of Nasmyth's steam pile engines. A description was then given of this machine, which was so arranged that it formed its own roadway throughout; and it was remarked, that where there was a large amount of straightforward piling, or in cases of difficult driving, this machine was without an equal.

The dock gates were, generally, on the same plan as those of the Victoria (London) Docks. The only difference was that the Tyne Dock gates were curved both on plan and in section, the pivot of the heel-post being raised 3 feet 6 inches above the level of the cill. There was thus less danger of anything lodging behind the heel-post, and the invert of the lock was carried right through from the end of the pointing cill. It involved, however, some large and rather intricate masonry, and necessitated great accuracy, in fitting the doubly-curved wood cills to the doubly-curved masonry; but this had been successfully accomplished, and the cills were perfectly tight. One of the advantages in the use of wrought-iron for dock-gates was that, from their flotation, the weight on the rollers might be adjusted at pleasure. The sluices were all made to work with brass against brass. The dock-gates and sluices were arranged to be worked either by hand or by hydraulic power, the machinery for the purpose having been furnished by Sir W. G. Armstrong and Co.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary general meeting of members was held on Monday last, at 16, Grosvenor-street.

Mr. Hussey, V.P. occupied the chair.

Mr. C. C. Nelson (honorary secretary) read the minutes of the last meeting, which were confirmed, and also a list of donations, including a contribution from Mr. Wightwick, illustrative of a lecture, and containing his rough and finished sketches in Italy; and mounted photographs of Mr. Spurgeon's proposed Tabernacle, and interior of St. Luke's Church, Heywood, Lancashire, by Mr. J. Clarke.

A vote of thanks having been passed to the donors,

The Chairman read a letter from Earl De Grey, president of the Institute, returning thanks on his re-election to the office of president for the ensuing year.

The following communication from Professor Donaldson was also read:—

Bolton-gardens, 14th May, 1859.

MY DEAR SIRS,—I have to acknowledge the receipt of your letter of the 4th instant, conveying the very gratifying estimate which the Institute so indulgently take of my services as their secretary for foreign correspondence, and for which I am deeply obliged. I must ever take a cordial interest in the success of the Institute, as the character of the profession and the progress of the art in this country must be deeply affected by the wisdom and discretion with which its proceedings are conducted. I trust that its constitution will never be materially altered. An adherence to the wise principles on which it was originally founded has produced its unvarying success up to the present moment, and the exalted position it now occupies, not merely as an English, but as a European institution, known and respected throughout the world.

There is no other body in the profession of which the same can be said: not one equals it in rank, importance, and success. Experience has therefore proved the soundness of its construction after nearly a quarter of a century of existence.

The report read at the annual meeting alludes to the change of apartments, and the generous donations in connection with that circumstance from the noble president and other liberal members. I beg, therefore, humbly to imitate their example by offering a contribution of 2*5*l. towards the expense of removal, and also another 2*5*l. to be added to the "Travelling Students' Fund," the principal of which I trust the council will never allow to be touched or diminished, as the founder, Mr. Newman, myself, and other contributors have added to it under that impression; and I trust it may eventually become sufficient to assist materially our travelling students in their studies abroad.

Believe me, my dear Sirs, very faithfully yours,

THOMAS L. DONALDSON.

To Messrs. Nelson and Lewis, Honorary Secretaries.

MR. T. H. Lewis then read an interesting paper "On the Construction of Domes," illustrated by numerous diagrams and sketches.

Mr. Nash expressed his approval of Mr. Lewis's remarks, and his regret that architects in general were not more uniform in their opinion on this important subject. Domes, provided there was a solid foundation for them, were the easiest things for the architect to construct; and he believed that, in cases where cracks or other defects had been found in them, these were to be attributed to a shifting foundation, and not to any inherent defect in the dome itself. The theory with respect to ordinary arches and domes was not the same,

for the dome contained so much more material at the base than the apex, that it had comparatively little to carry, while the arch had a great deal. He would not fear to build a dome double the size of the dome at Bejapore (shown in a diagram), with three tiers of tiles, provided he could get a good foundation.

MR. LEWIS.—The dome is easy enough to construct, if you have no light at top. The difficulty is to construct it so that it will bear the weight of a heavy lantern, such as that at St. Paul's.

MR. NASH said he wished to add a word on the subject of snow. He could not believe that snow, composed as it was, could do any building harm. He had tried experiments, many years ago, to show that the fall of snow on a roof was not of the gravity generally supposed.

MR. LEWIS.—I have known it to break down a roof of galvanized iron.

MR. MATHEWS said that snow was not a very heavy material to deal with, as it descended in feathery flakes; but when it began to thaw, and then to freeze, it became a very heavy substance. He should have liked, were the hour not so late, to offer some observations on the paper of Mr. Lewis, especially as he did not agree with him, but would reserve them for a future opportunity.

MR. C. H. SMITH observed that snow was generally considered a very heavy substance, but that from experiments he had made he found that twenty inches of snow were equal to only one inch of thawed water. He had also made experiments with hail as compared with snow, and he found the former to be of much greater specific gravity and far more damaging in its effects upon a roof, as it was sometimes accompanied with lumps of ice as big as a marble. On the subject of arches, he confessed he was astonished to see the determination of architects and builders to make arches of half-brick rings. He was also surprised to find railway arches constructed of half-bricks, with no bonding between them. He found upon consulting some written descriptions, made during the erection of St. Paul's Cathedral, that Sir Christopher Wren had caused the bricks for the dome to be made two feet long, in order to go through the arch. This was not, he believed, generally known, but he mentioned it on the authority of a statement printed about the time.

With regard to tile arches he was astonished on going over "Bridgewater House" to find arches of only two tiles in thickness. He saw them put in dry and dusty, without any water to make the cement adhere, and yet their strength was amazing. He pointed this out to an architect who was with him, and he jumped upon the arch with his whole might, and said, "See, it is strong enough!" and it was strong enough, for he did not go through.

MR. PENROSE said he was glad to perceive that Mr. Lewis had left the theory of Robinson to fall upon practical conclusions. The principle of an arch should be considered with reference to the thrust of the strength line. He was surprised that in the construction of railway works the Roman construction of bricks, 20 inches deep, had not been followed in preference to the half-brick rings. Many of the Roman vaults were constructed with large bricks, and the interstices filled in. With regard to the comparative force of hail and snow, any one could test it by going into a hail-storm with an open umbrella.

The Chairman asked Mr. Smith whether in practice he had ever known a roof beaten in by hail.

MR. SMITH said he had not, nor had he made the assertion. What he contended was, that hail was far more dangerous to a roof than snow.

MR. C. FOWLER, jun. said it struck him with regard to domes, that two principles of construction had been mixed up—one that of the dome, and the other that of the vault. It appeared to him that the domes at Bejapore and St. Paul's were real domes, but he thought the latter was continuous, and was not interrupted by ribs. The principle laid down by Mr. Lewis must, in his (Mr. Fowler's) opinion, be modified before it could be applied to continuous domes. It seemed to him that the dome, unless over-weighted at top, did not require any "tie" at all, and he questioned whether that of St. Paul's required any such security. It was constructed upon the real principle of the dome. Eastern nations appeared to have made their domes without centering, and, from the model preserved at Bejapore, they were of great strength. The theory laid down by Mr. Lewis appeared to him to apply to the dome of St. Peter's, but not to that at Bejapore.

MR. SMITH inquired whether the ties of the dome of St. Peter's were of iron.

Mr. Lewis replied in the affirmative.
Mr. Smith.—Then I presume it is the same at St. Paul's.

Mr. Lewis.—It is.
Mr. Smith.—Then, in case of the dome being struck by lightning, the whole work might be destroyed.

Mr. Penrose said the contingency referred to by Mr. Smith was provided against, both in the case of St. Peter's and St. Paul's, by the introduction of lightning conductors.

A vote of thanks was then, on the motion of the chairman, passed to Mr. Lewis, and the meeting adjourned until Monday, the 30th inst.

CHIMNEYS AND FLUES.

MR. JOSEPH GLASS, of Brixton, has forwarded us some observations on the construction of flues, with a view to obtaining the avoidance of slants and horizontal positions, so as to permit the efficient working of the chimney-sweeping machine, with a view to the disuse of climbing boys. He says:—

"To render buildings safe from fire, much depends on the construction of the flues: for instance, if the flues are made perpendicular, or nearly so, and without angles or lodgments, in this case there would be little or no danger: on the contrary, when flues are made in an angular form, some parts being horizontal, and which are designated by the climbing boys 'dead slants,' in this case the building cannot be pronounced safe. It will be found that, whatever means are adopted to sweep these flues, much difficulty will arise in clearing them properly, although the parties employed may use their best endeavour to do so. In the examination of flues of this description, I have found a considerable quantity of soot collected at these angles and slants, after being swept by the climbing boys. The only effectual plan is to introduce a soot-door into the side of the slant, when the slant and angle could be properly cleaned. But this is attended with inconvenience to the parties concerned, and would not at all be required if flues were made in a proper manner; and there can be no reasonable excuse why flues should not be made so in the construction of buildings in future. A deposit of soot lodged at an angle is not unfrequently ignited by a single spark, and may smoulder for hours and days together, till the whole is ignited; and, as the heat increases in intensity, the brickwork becomes red hot, when the fire is readily communicated to the timber or flooring found in close contact: it is in this way that numerous fires have occurred, and the result has been the loss of much valuable property, and in not a few instances a sacrifice of life. From long experience, I feel assured that some better and safer plan in the construction of chimneys and flues is much wanted.

Considerable danger from fire is often occasioned from alterations, particularly in business premises, in appropriating rooms and apartments that were formerly used for domestic purposes into store-rooms: in some cases it is decided to line the walls with boards, to which shelves may be attached; and, in order that the frame-work may be secure, carpenters will drive wedges of wood into the cross joints of the brickwork, and the ends of these wedges will sometimes find their way into the flues; and should this be the case where there is a lodgment on which there is an accumulation of soot, a spark may at any time ignite it, and fire by this means be communicated to the wedge, and from thence to the lining boards, and from thence to the shelves, till the room and premises become a prey to the flames. In several cases I have been called in to examine flues, where an escape of smoke has been perceived, and I have found that it has been generally produced from wedges being driven into the brickwork in close connection with the flues, and in some cases at an angle, with the end of the wedge projecting into an accumulation of soot, when, should the soot have ignited in this case, or the chimney have taken fire, but little hope could have been entertained of the safety of the building.

In order that the community at large may be rendered safe, and their property secure, chimneys and flues in all buildings erected in future should be formed without angles, slants, or lodgments of any kind. This does not imply that chimneys should be made perfectly upright: flues may deviate a distance of 10 or 15 feet, if required; but instead of slants and angles, well-regulated curves should be adopted, allowing the machine to pass freely to the top, when the soot in this case would all be brought down into the fire-place, and masses of smouldering

soot, under these circumstances, could never again occur."

We fully agree with Mr. Glass as to the necessity for greater care in the construction of flues and chimneys than is often exhibited.

RAILWAYS IN SPAIN.

THE railway from Alcala to Guadalajara, is to be inaugurated by her Majesty, Isabella II., in person. The ceremony will take place very shortly, and preparations are being made for a magnificent display.

The plans of the line from Madrid to Saragosa have been approved of by the Spanish Government. They are going to push forward the works.

It is asserted that the administration of the Alar and Santander Railway, and M. Andrade, nephew of M. Pereire, of the Credit Mobilier, have agreed upon conditions for the transport by the new railway as far as Alar, of 150,000 tons of material for the Northern Spanish Railway; 55,000 to be carried this year, besides 15,000 tons of mineral ore, to be brought in the return trips to Santander from Torrelavega. This important movement of traffic will prove of immense advantage to all interested in the enterprise of the Alar and Santander Railway.

A company has been formed, to construct a railway from Aguilar de Campoo to Vergano, and to develop the magnificent coal-beds of the valley of that name, and of the Vecilla. Among the persons at the head of this most important scheme, are D. Fernando Penelas, proprietor; D. Joaquin Ganido, deputy for Hulva; D. Eugenio Garcia, ex-deputy; and D. José Fallos, accountant-general of the Chancellor of the Spanish Exchequer.

A concession has been granted to Don Pedro de la Pedraja, for surveys of a projected new line of railway from Caceres to Merida; and to Don Mariano Bazan, for those of a line from Palma to Ecija. At the same time was conceded to D. Juan Bantista Peyronet, an extension of time—four months—for the completion of the surveys for a canal of irrigation, to supply water for the use of the districts of Elche, Crevillente, Elda, Novelda, San Vicente, and others of the province of Alicante.

SUSSEX ARCHÆOLOGICAL SOCIETY.

THE quarterly meeting of this society was held at Uckfield and Buxted, on the 12th inst. The meeting, seventy or eighty in number, assembled at the Maiden's Head Hotel, Uckfield, at half-past twelve, when Mr. Morgan, of Uckfield, was called to the chair. After the election of several new members, the Rev. E. Turner read a paper "On the Antiquities of Uckfield." The few relics of the past which the town contains were so described as to form a very interesting paper. Mr. Lower then read a short description of an effigy, supposed to be that of Sir Edward Dalgyngruge, the founder of Bodiam Castle. Lord Chichester had offered to present it to the museum at Lewes Castle. Mr. Durrant Cooper regretted that Mr. Turner's paper had contained no allusion to the probability of Shakespeare and some of his illustrious contemporaries having been in some degree associated with Uckfield by their known intercourse with the Woodwards. He hoped that that point would be worked out by the society. The mention of Shakespeare's name reminded Mr. Lower that a member of the society, Mr. W. Gosling, of Heathfield, had lately become the fortunate possessor of a copy of the renowned "first folio." He had picked it up at a neighbouring sale, for less than waste-paper price.

The archaeologists then proceeded, under the guidance of the Rev. E. Turner, to visit a few points of interest in the town, viz. the old bakehouse at the corner of Church-street, with its architectural remains, traditionally said to be a portion of a prison,—a Medieval chimney-piece, with wainscot and painted panels in a cottage in a lane leading out of High-street,—and the library of Dr. Saunders, the founder of the Uckfield Free School. The party next visited Maresfield Church and the rectory, where the Rev. E. and Mrs. Turner had spread their tables with an interesting collection of local antiquities, and with a cold collation. The party then proceeded towards Buxted-park. The old church, with its brasses, was first inspected, and afterwards the gardens and conservatories of the mansion of Col. C. Harcourt. The next point was the "Hog House," on the outskirts of the park, celebrated as the ancient abode of Ralph Hogge, the first founder of cannon in England, and having his *rebus* of a hog on its

front wall. The tourists next visited Buxted Rectory, and the "Hermitage," at Buxted Rocks.

This little-known relic of an unknown age, consists of two principal chambers, hewn out of the solid sandstone rock: a large ante-room leads to the principal apartment, in which there is a hearth, with a perforation above for a chimney: a flight of steps leads upwards from one corner of the apartment to the *cubiculum* of the hermit, into which he must have passed on all-fours, through a small aperture. The company then retraced their way to Uckfield, where a cold collation awaited them at the Maiden's Head, and forty-two ladies and gentlemen, including most of the local gentry and the leading members of the society, sat down. Very little was done in the way of speech-making.

LITERARY AND PHILOSOPHICAL SOCIETY OF MANCHESTER.

IRON IN BUILDINGS.

THE annual meeting was held on the 19th ult. Mr. W. Fairbairn, president, in the chair; when the council's report, read by Dr. Schunck, said, that at no period of its existence had the society been in a more flourishing condition.

At the last annual meeting, the society consisted of one hundred and eighty-one ordinary members. Since then one has resigned and three have died, whilst twenty-one new members have been elected, making the number at present on the list one hundred and ninety-eight.

The statement of accounts showed a balance to the general account of 94l. 9s. 2½d. and to the library special fund of 15l. 1s. 6d.

At a meeting held on the 3rd of May, Mr. H. M. Ormerod produced two specimens of iron used in building, which had both become oxidized so as to injure the buildings which they had been used to strengthen. One was an iron cramp, taken from the north-west buttress of Manchester Parish Church, about 1 foot long and 3-8ths of an inch thick. This had become treble the thickness by rust, and had split the buttress, in the centre of which it was inserted, lifting about 12 feet of wall. It had been inserted about ninety years since. The other, a small wedge, from the steeple of St. Mary's Church, in Manchester, was about 3-8ths of an inch thick at the broad end originally, but now 7-8ths. These wedges had lifted all the stones which they were meant to keep in their places, splitting some, and allowing all the rain to penetrate. The steeple was erected about 1756, and the upper part has now become so ruinous and dangerous from the original faulty construction, and the expansion of the iron cramps and wedges, that it is being taken down, pursuant to notice from the city surveyor.*

FATAL FALL OF SCAFFOLDING AT WESTMINSTER PALACE HOTEL.

ON Friday the 13th, about half-past six in the morning, an accident, which caused the death of six men, and injured seven others, happened at the Westminster Palace Hotel, now in the course of erection by Mr. George Myers, under Messrs. Mosely, architects, at the corner of Victoria-street, Westminster. A view and plans of the building will be found in our pages. It has been carried up to a considerable height in a substantial manner. Within there is a quadrangle to light and give air to surrounding apartments, and in this stages were formed for the men to work on. The top stage, at a height of perhaps 70 feet from the ground, consisted of timbers somewhat slight laid from wall to wall at certain distances, on which were placed scaffold-boards, and on the platform thus formed materials were piled and the men worked. It is stated, that at one time there were uprights from a stage below to support the pieces of timber in the middle. By some means, yet to be learned, these had been removed, and a certain weight of bricks and Roman cement having been placed upon the platform, when the men went to work in the morning, the cross-pieces broke, and the men were precipitated to the ground with the materials, and suffered in the manner already described.

An inquest on the bodies was opened on Saturday last, when Mr. A. Ashpitel was appointed foreman. The bodies having been identified, it was adjourned for a few days, when a careful inquiry will be made.

Sir C. Russell said, as deputy chairman of the

* After grinding and polishing the iron rust, it presented a black iridescent surface of almost metallic brilliancy, and similar, in appearance, to Elba ore. It was capable of being made into a magnet of considerable power and retentiveness.—J. P. J.

directors of the Westminster Palace Hotel Company, he attended there to say that the directors were most anxious to afford every facility to the jury, in order to forward the end they had in view. The directors were exceedingly distressed at the unfortunate occurrence, and it was their intention to contribute in a liberal manner to the wants and necessities of the wives and families of the deceased; indeed, the fact was, that a subscription was now on foot amongst the shareholders, which he had no doubt would be responded to in a manner that would testify to their sympathy for the families of the sufferers generally, and those who were dependent upon them.

Very considerable excitement prevails, and blame has been loudly attributed, but we have not yet learnt on what grounds.

FALL OF SCAFFOLDING.

It is to be deplored that, with all our legislative and municipal care respecting buildings of this great metropolis, so many fatal accidents occur yearly. At one time it is the shute of a warehouse, or mansion in course of construction; again, of a cornice impending above a causeway; and then of the whole temporary texture of a scaffold!

There are many municipal rules and provisions of our Parisian neighbours which it would be well for us to imitate; and their regulations as to scaffolding are of them. It is the custom there to hire out scaffolding for the use of builders, and the strength of the poles or scantling is fitly proportioned to the height of the structure in progress: each piece is numbered and furnished with bolts or pins, so as to fix the skeleton firmly together, planks being also provided to complete the stages; and the whole fabric may suddenly be extemporized or removed at a notice of only a few hours. With such an arrangement, but little trust is reposed on lateral support, and therefore there is no pressure upon the raw brick-work, such as we find to be the case in all the lapses that take place amongst the first of our enterprising builders and contractors.

This hint is given by an anatomist observer upon edification everywhere; and it is modestly suggested to the wise concoctors of that incomprehensible production called the "Metropolitan Building Act," to take a leaf out of the Gallic digest, and by that measure to protect the lives of those who labour for our comfort.

It is lamentable to reflect that six workmen were instantaneously killed by the fall of the Victoria-street scaffold trap, and that the widows and infants of several of them are now actually thrown upon parish relief for existence. If there is a charity more imposing, more crying for pity than another, it is this, that the helpless orphans and the widows of industrious labourers, hurled to an instant eternity while toiling for their support, should, in their calamitous bereavement, be solaced by at least a modest competency. Will not the *Builder* receive contributions from the public? Many who can afford it will be delighted to assuage their sorrow. Five shillings is as much as can be afforded by

QUONDAM.

SETTING OUT CURVED TUNNELS.

IN No. 759 of the *Builder*, there is inserted a communication from a correspondent, "On tracing curved tunnels." The subject is one of considerable importance with reference to works now in progress, and knowing practically how far the commonly received methods of laying out curves will obtain in the matter of sewer building and tunnels, I am induced to send you the details of a method much more applicable to such operations, and where from the nature of the ground, it is impossible to locate the complete curve even approximately, or to set out more than one short length at a time.

The following method requires the *radius only* to be given or ascertained, dispensing with the ordinary requirements of the angle formed by the tangents produced, the degrees in the whole length of curve, and the use of offsets.

In sewer building, for instance, it is usual to construct the bottom, or invert, in certain convenient lengths, and the levels, and also the amount of curvature (if in a curve), have to be determined for each length as it occurs, perhaps before the ground for the length in advance has been got out to invert depth.

The length of bottom proposed to be constructed at one time being assumed, a line joining the extremities of the axis will be a chord of the arc, and the base of an isosceles triangle, the

sides of which are radii of the curve.* On finding the radius by scale, or by

$$\text{rad.} = \frac{\frac{1}{2} \text{ chord}^2 + \text{versin}^2}{2 \text{ versin}}$$

we obtain a triangle, the sides of which are known, and the angles of which may be found.

Half the angle at the apex—that which would be at the centre of the circle of which the curve forms a part—will be the amount of deflection necessary to be made and repeated from the tangent or starting point, for every length of chord put in. In this way a circle may be located with great rapidity and accuracy, as the whole 360° of the curve may be found, without once shifting the instrument, and in sewers or tunnels, until the side of the work obstructs the sight.

One example of this method will suffice to make its working out clear.

Let the base or given chord be called *a*, and the other sides of the triangle *b* and *c*; and the angles opposite the sides severally A B and C. It is required to find the value of the Angle A.

Without giving the intermediate steps, take the expression in terms of the sides and angles

$$\text{Cos. A} = \text{rad.} \frac{(b^2 + c^2 - a^2)}{2bc}$$

put into convenient form for calculation.

$$\text{Sin. } \frac{1}{2} A = \sqrt{\frac{\text{rad.}^2 (a+b-c)(a-b+c)}{4bc}}$$

$$\text{Log. sin. } \frac{1}{2} A = \frac{1}{2} (\text{log. rad.}^2 + \text{log. } (a+b-c) + \text{log. } (a-b+c) - \text{log. } 4 - \text{log. } b - \text{log. } c)$$

Let *a*=10 feet, and *b* and *c* (radii) each 100 feet, we have on working out—

$$\begin{aligned} \text{Log. rad.}^2 &= 2 \text{ log. rad.} = 2.00000000 \\ \text{Log. } (a+b-c) &= \text{log. } 100 = 1.00000000 \\ \text{Log. } (a-b+c) &= \text{log. } 100 = 1.00000000 \end{aligned}$$

$$22.00000000$$

From which subtract—

$$\begin{aligned} \text{Log. } 4 &= 0.6020600 \\ \text{Log. } b = \text{log. } 100 &= 2.00000000 \\ \text{Log. } c = \text{log. } 100 &= 2.00000000 \end{aligned}$$

$$4.6020600$$

$$\text{Leaving } \dots\dots\dots 17.3979400$$

$$\text{Divided by 2 } \dots\dots\dots 8.6989700$$

$$= \text{log. sin. } \frac{1}{2} A, \text{ or } 2^\circ 52'$$

The whole angle A = 2° 52' x 2 = 5° 44' = the degree of curvature for a chord of 10 feet, radius 100 feet.†

As before mentioned, the degree of deflection from the tangent or starting point, would be half the angle A or 2° 52'; but as this would involve on repetition a certain amount of careful calculation, and a very particular use of the vernier scale, it would be better in practice to take the nearest whole degree angle for A, and increase or diminish the given or assumed length of chord accordingly. In this instance, take the angle A = 6°, and find the length of base required, as follows:—

$$\begin{aligned} c \times \sin. \text{ angle A} &= 100 \times \sin. 6^\circ \\ a = \sin. \text{ angle B or C} &= \sin. 87^\circ \end{aligned}$$

$$\text{Log. } a = \text{log. } 100 + \text{log. } 6^\circ - \text{log. } 87^\circ$$

$$= 1.0198302$$

$$\therefore a = 10.467 \text{ feet, or } 10 \text{ feet } 6 \text{ inches nearly.}$$

Should it be found necessary, from the nature of the works, occasionally to put in a longer or a shorter chord, the central angle, as is evident, will have to be calculated for that particular chord, deflecting from the commencement of the chord, and proceeding as before, or with other different lengths, as the case may demand.

The application of the above method is plain. By it, it is possible to set out every additional length of the axis of the work, without reference

* In the United States of America, and in some parts of the Continent of Europe, curves are commonly located upon the principle of the radius of the base for every degree of verticle angle of the isosceles triangle. This principle can be applied in every case that can be resolved into such a triangle of which the two sides and the contained angle or one side and one angle are known.

† It is of the utmost importance to obtain the central angle correctly, as on it depends the whole operation. It would be well if the assistant obtained the value of one of the angles at the base, doubling it and deducting from 180°; if the remainder equal the result of his previous calculation for central angle, he may be sure he is right before he goes ahead. This is an important check. The value of angles B or C may be arrived at by Log. sin. $\frac{1}{2} B = \frac{1}{2} (\text{log. rad.}^2 + \text{log. } (b+a-c) + \text{log. } (b-a+c) - \text{log. } 4 - \text{log. } c - \text{log. } b) = 2.9363459 = 43^\circ 34'$. The whole angle B = 43° 34' x 2 = 87° 08'.

The angles at the base of an isosceles triangle being equal, the angle A would equal 180° (87° 8' x 2) = 3° 44', a result proving the correctness of the first operation for angle A.

to the portions in advance. The angle of deflection (half the "central" angle A) is to be set off for each equal length of base as long as the sight is unobstructed. When this occurs remove the instrument to the last forward point, the reading on the limb unaltered, reverse the telescope, and look back, *double the reading, look forward*, and commence as before, as from a new tangent-point; and repeat this operation as often as it may be necessary to change.

It would be convenient and advantageous, in many cases, to construct a mould of the curve of some half-dozen lengths of bottom or base, of wood or iron rods, so as to be able to set out forward lengths by making the remainder coincide with the work already done, and testing with the instrument as often as convenient. In this manner the instrument would not be nearly so often required in setting out, delay might be avoided, and errors, to which the best of methods is liable, would be prevented.

The above may be of use to parties engaged in works such as those I have referred to, and with that impression I respectfully submit it for insertion.

J. WALKER WILKINS.

CHURCH-BUILDING NEWS.

Peterborough.—A stained glass window, in memory of the late Mr. John Hewitt Paley, solicitor, has been inserted in the north transept of Peterborough Cathedral. It is by Hardman, of Birmingham, and contains two lights; one representing St. Peter walking on the Water; the other St. Paul preaching before Festus. There are two other windows adjoining, and it is a matter of regret, remarks the *Cambridge Chronicle*, that money cannot be raised to decorate these also, which might be done at a cost of about 100l. as a series of five stained windows would thus be obtained, two being already inserted in the morning chapel or aisle of the north transept.

Saffron Walden.—A subscription has been opened for the restoration of the interior of Saffron Walden Church. It has long been disfigured by fittings out of character with the building, and these are to make way for others upon a plan furnished by Mr. Richard C. Hussey.

Corfe Castle.—The contract for the restoration of Corfe Castle, says the *Dorset Chronicle*, is taken by Farwell and Meadus, the former a builder of Swanage, the latter of Poole. The work has been commenced.

Bristol.—St. Raphael's church, on the Cut, for the use of sailors, has been opened for Divine service. It has been erected as a memorial church by the Rev. R. Miles, at his sole expense. The building is in the style of the thirteenth century, built of blue Pennant stone, with Bath stone dressings, and contains sitting accommodation for about 350 persons. The church consists of a nave and chancel, with north and south aisles, the chancel partitioned off from the nave by an oak moulded and tracery screen. At the east and west ends are two large windows, the edifice being further lighted by means of eight small two-light windows in each of the aisles, two clerestory windows on either side of the chancel, and five clerestory windows each side of the nave, while over the east window is a small one of two lights in the gable above. The east window is of stained glass, by Hardman, of Birmingham. The subject for the upper portion of the window is taken from the 4th chapter of Revelations, and represents the four-and-twenty elders casting their crowns before the throne. In the centre of the lower part of the window is the Crucifixion, and at the sides are the four Evangelists. There is also in the chancel a south window of stained glass, by Hardman, on which various scriptural subjects are displayed, such as the stilling of the tempest, the miraculous draught of fishes, &c. The clerestory windows in the chancel are of coloured glass, by Powell and Son, of London. The windows are of moulded tracery work, glazed in various patterns with green and white glass. The roof is supported by a north and south arcade, consisting of seven arches of Bath stone, moulded, and supported by shafts of blue Pennant stone, with moulded caps and bases; the front portion of each arch, where it springs from the shafts, being carved with bunches of sea-weed, anchors, and nautical devices. The chancel arch springs from two small shafts or corbels, and is moulded. The roof timbers, which are exposed to view, are stained and varnished. The chancel is lined with Bath stone, and the floor paved with encaustic tiles, and the walls of the nave and aisles are stuccoed of a warm colour, the floor being paved with Staffordshire tiles. The seats are all open. The reredos is of Derbyshire alabaster

and red and green serpentine marble, with panels of foliage picked out with gold and colour, in the centre one being a cross, surrounded by diaper work. In the north aisle of the chancel is placed the organ, which was built by Bryceson and Son, of London. The pulpit is of Derbyshire alabaster, carved and relieved with gold, with carved angles of Caen stone, representing the prows of ships, on which the pulpit is supported. St. Raphael's college, adjoining the church, at present consists of almshouses for six seamen and a chaplain's residence. Each house contains a sitting-room, 14 feet by 10 feet, and a small bedroom and scullery on the north side. The style is Gothic, to correspond with the church, but the houses are built of ornamental brickwork, and in front there is an ambulatory or covered way of oak. The grounds in front of the church and college are to be laid out in an ornamental manner, and at the back is a terrace 400 feet long and 7 feet wide, from which an excellent view of the harbour may be obtained. The church and college have been erected from designs by Mr. H. Woodyer, of Guildford, architect. The contractors were Messrs. J. and J. Foster, of Bristol, and the work has been carried on under the superintendence of Mr. George Redfern, clerk of the works. It is estimated that the cost of the church and college will be about 10,000*l*.

Framilode.—The roof of Framilode Church has been illuminated, and the whole of the windows have been filled with stained glass by Mr. Rogers, of Worcester, at the cost of the rector of Fretherne, the Rev. Sir L. Darell, bart.

Broughton.—The new church at Broughton, which has been erected on a higher and drier site than the old, has now been consecrated by the Bishop of Lichfield. The church, according to the *Shrewsbury Chronicle*, has been erected from the designs of Mr. T. D. Barry, of Liverpool, and is a small unpretending building. The style is Early Decorated. The roof is open; and there is a bell turret, which contains the bells from the old church. The old font is also preserved.

Sutton St. Nicholas.—The Church of Sutton St. Nicholas, near Hereford, having undergone considerable repairs, has recently been formally reopened. The old pews have been reinstated, with uniform open seats of deal, stained. The blank wall, which formerly existed between nave and transept, has been removed, and a second arch substituted, by which a much larger area has been rendered available, and the interior effect improved. The aisles have been relaid with ordinary tiles and paving, intermixed: the chancel within the rails, with Godwin's encaustic tiles. The walls and stonework have been cleaned, and the windows reglazed with obscured glass. The seats have been increased from 120 to 170. The architect employed was Mr. John Clayton, and the contractor, Mr. Beavan, of Hereford.

Retford.—The church of St. Peter, at Hayton, near Retford, was reopened on the 5th inst. It has just undergone almost a complete rebuilding, so far as the nave, side aisle, porch, and chancel are concerned, to which must be added a new roof, and a new ceiling (in the same style as East Retford Church) of the nave and side aisles, as well as a new floor. There has also been supplied a new pulpit of Caen stone. Mr. Lee, of Retford, was the contractor.

Rotherham.—Maltby Church has lately undergone a restoration, and has been reopened. The style of the present building is continental, more of Italian Gothic than anything else. The old church was cumbered with the usual mighty galleries, and altogether in a state calling for urgent renovation. With the exception of the tower and spire, all has been rebuilt, consisting of nave, chancel, and transept, and the seats are entirely upon the ground-floor. The work has been carried out, under Mr. Philip Boyce, of London, the architect, by Mr. George Chadwick, of Masbro', the contractor. The east window is of stained glass, by Mr. Drury, of Sheffield, and the gift of Miss Lucy Rolleston.

Edinburgh.—The foundations for a new church for free St. Mary's congregation, in lieu of the building in Barony-street, are being prepared. The site of the new church is at the east end of Albany-street, on a vacant space which, as our authority, the *Scotsman*, observes, has long been an unsightly object in that part of the city. To twelve architects in Edinburgh, Glasgow, and elsewhere, premiums amounting in all to 100*l*. were offered for the best three designs. The plans now being carried out are those of Mr. J. T. Rochard, of Glasgow, to whom the first premium was awarded. In style and plan the new church is Mixed Perpendicular of the time of Henry VII. The site is open to view on all sides. The frontage

in Albany-street, including dwelling-house at west end, is not less than 140 feet by a breadth of 70 feet over the walls in Broughton-street. The east end, which forms a pentagonal apse, has a clerestory above. In Albany-street is the principal entrance, rising over which is a tall tower and spire. In the principal parts the side walls of the church are heightened by alternations of batties and window—the former pinnated and crocketed, and the latter filled in with tracery and mullions. Internally, the chief features consist of a nave and side aisles, with semicircular apse and Tudor arched ceiling, banded into moulded ribs, with bosses at the intersections. Iron pillars, moulded, divide the nave and aisles. The area of the church and galleries contains 1,000 sittings; and in the basement story, which enters nearly from the level of Broughton-street, there is space for classrooms, re-ironing-rooms, beadle's house, &c. The church, the building of which has been entrusted to Messrs. A. and W. Adam, of Glasgow, will, it is said, cost about 8,000*l*.

THE NINE-HOURS MOVEMENT.

MEETING OF WORKMEN.

ON Wednesday evening last a very numerously-attended meeting of the building trades was held at Exeter Hall, for the purpose of aiding the progress of the "nine hours movement." The great hall, the galleries, and the platform, were densely crowded.

The chair was taken by Mr. Osborne (plasterer), who opened the business of the evening by stating that the meeting had been called to give the aggregated trades an opportunity of showing their disapprobation of the resolutions passed by the meeting of master builders, held at the Freemasons' Tavern on the 20th of last month. At that meeting certain resolutions were passed to the effect that no sufficient reasons had been shown to warrant the employers in conceding nine hours as a day's work. The trades were advocating nine hours in order that employment might be given to thousands who were now walking the streets in search of work, in order that those who were in work might be afforded an opportunity for that ease and recreation necessary for the maintenance of health, and in order to enable them to educate their children, and thus make them useful and creditable members of society. These were a few of the reasons why the trades advocated the nine hours. The true reason why the employers refused to concede the nine hours was that they might continue to oppress, tyrannize, and trample the workpeople under their feet, and make them mere machines, and drive them at their pleasure. The wording of their resolutions at the Freemasons' Tavern showed that they placed the labour of the artisans below that of machinery, plant, or cattle. This was the reason why employers refused to concede the nine hours. Would they allow this insult to pass away? Was it not to the skill, patience, endurance, and heroism of the working-classes that England owed her present elevated position among the nations of the world? Why, then, should they not gather round the standard of the nine hours, and show their employers that they were determined to carry the movement to a successful issue? One of the speakers at the employers' meeting described the order to which he belonged as a "rope of sand," whereas they ought to be tied together by a band of iron. The working-classes were determined to adopt that recommendation, although it was not intended for them. They would unite and knit together like a band of steel, and the fire that would flash from it would show their employers the temper of the metal, and the unity and strength which formed the chain.

Mr. Gray (stone-mason) moved the first resolution, and expressed his regret that the employers also met at the Freemasons' Tavern were not sufficiently influenced by the spirit of Christianity and humanity to concede the nine hours. A deputation of the trades had waited upon them to ask permission to attend the meeting, and hear what was to be said; but they refused to allow them. He clanged a portion of the public press with being indifferent to the interests of the working man, whilst its columns were always open to the representations or misrepresentations of the employers. He called upon them, however, to persevere in the movement so happily inaugurated, remembering, in the words of the poet, that—

"Freedom's battle oft begun,
Requented from bidding sure to son,
Though baffled oft, is ever won."

In reply to the resolutions of the Freemasons' Tavern meeting, they said the hours of labour, as

now arranged, are not convenient. He wished to know whether the working-classes had ever been consulted when the present hours of labour were fixed. The amalgamated tradesmen now, however, determined to have a voice in the matter, by reducing the hours of labour from ten to nine hours. He saw no reason why the employer, or the public, should object to this. There were thousands of persons wandering about the streets seeking employment, and if the hours of labour were shortened that evil would be remedied. It had been said that what the trades wanted was increase of wages. This was not so; all they wanted was to have the day's work shortened by one hour per day. He did not see how any Christian employer, or any one who had labour to pay for, could object to a proposition which, while it tended to ameliorate the condition of the working man, would find bread to thousands who were now wanting the common necessities of life. He hoped the trade would not be such cravens as to go back from their determination in this respect. There was no going back now. That was impossible—forward! must be the cry. At Redmorton, in Yorkshire, the employers were willing to reduce the hours of labour from ten to nine hours; and an advertisement had been inserted in the local papers to the effect, that from and after the 1st of June next, one hour should be struck off the day's labour. One of their most considerate employers had objected at the builders' meeting, to concede the demands of the trade on the ground that it would be a serious disturbance to "plant, machinery, and cattle labour," thereby excluding from their category man made after the image of God. He denied that the concession would amount to 10 per cent. It was the surplus labour they were afraid of, and not the 10 per cent. the public might have to pay. Mr. Dunlop told the meeting that an hour and a half had been taken off the Saturday, while 10 per cent. had been added to wages, thereby enabling the skilled workman to earn 38*s*. per week. This was all very well, but had the masters taken off the hour and a half until driven to it by strikes? The employers had then up to the Old Bailey four times, on the ground of conspiracy; but they refused to prosecute them, and they were discharged without entering into their own recognizance again. But all the employers did not strike off the hour and a half unconditionally—George Myers did not do so. With regard to the increase of 10 per cent. to wages in 1853, allowance was made for it in the architects' estimates, so that the public paid for it, and not the employer. Moreover, there were some employers who took the benefit of it in the architects' estimate, and yet defrauded the poor workmen of it. He cordially seconded the resolution, and recommended them to take for their watchword—the nine-hours movement, and no surrender.

The resolution was in the following words:—
"That this meeting views with regret the position assumed by the master builders, and the unjust principles laid down in their resolutions. Looking at the movement in its pecuniary aspect, they affirm that the amount arranged to be paid is the most advantageous to all parties, entirely ignoring the evils of surplus labour and physical exhaustion arising from the present system, and placing us, in their consideration, below machinery, plant, and stock. The assertions of taxing the public more than 10 per cent. conceding the hour and a half on Saturday, and the 10 per cent. in 1853, are specious statements put forth to mislead the public, and place us in a false position."

Mr. Giffard (bricklayer) seconded the resolution, and referred to the circumstance that a deputation from the trades had asked to be allowed to hear the proceedings at the meeting at the Freemasons' Tavern, and they were refused. This showed that their cause was not right and just. Mr. Charles Lee moved a resolution to that effect, to the effect, that the nine-hours movement was not one which called for the sympathy of the public, and yet the public were invited to join in a movement to get a half-hour off the day's work, and others, who went to business at ten o'clock in the day and left off at four. But in point of fact, the employer got twelve hours' labour out of the workman at an hour's cost, because the poor man could not fix his residence close to his work, and nearly two hours were lost in getting to and from work each day. The master appeared to be care of about their horses, their plant, and their machinery, but with regard to the human beings, he had a future to look to, he cared nothing for it, and a man might starve before a master would do anything for him. Mr. Myers was a bit of one of the best employers, and he got the master builders, and the employers, to be so important some of the delegates, because they had gone round collecting subscriptions for the Nine-hours Movement. The next thing he did was to second the first resolution at the Freemasons' meeting. Mr. Lee had declared that the movement was, 6*d*. a day, or 3*s*. 6*d*. per week. He (Mr. Giffard) denied this, as, with the exception of a few men in shops who earned 5*s*. 6*d*. a day, the vast majority made only 25*s*. or 2*s*. a week, while some had only 18*s*. a week. The bricklayers were determined to be determined upon the weather; and it was very rarely that they earned 3*s*. per week, if it was Christmas or Christmas. One of the speakers at the Freemasons' meeting had spoken of a band of iron in favour of the Nine-hours Movement; and a band of iron would rest until they got it. He called upon the five

amalgamated trades to stick together, and go for the nine hours. Mr. Morris had told them, at the Freemasons' Tavern, that, with regard to the men, he would be harmless as a dove, but cunning as a serpent. That the masters were the latter, there could be no doubt, as they had printed and circulated a lot of lies, to show that they were as cunning as serpents. Did they know that, while Mr. Morris proclaimed at the meeting that he gave 5s. 6d. a day to his own workmen, he was only giving 5s., and that when they threatened to strike, "Don't strike, and you shall have the 5s. 6d." and they had it.

Mr. Quirk (plasterer) supported the resolution and said, that until the proceedings of the meeting at the Freemasons' Tavern were reported, the trades could not ascertain what course they ought to pursue. That uncertainty was now at an end; and the employers had declared that they would not concede the demands of the trades. They had placed the workmen below machinery and plant, and looked upon them as mere manipulating machines of bone and muscle, to toil and slave for the benefit and enjoyment of the more favoured classes. Some of the best employers of the present day had sprung from the working classes, and yet they now denied the moderate and reasonable demands of them. Suppose the masters were to strike against the workmen, would not the workmen, to get together for their common ends? When the population was redundant and in excess of labour, the well-being of the working classes was imperilled. To meet this evil the trades called for a reduction of one hour per day, with the wages to be continued. The resolution was supported, and the meeting closed with the sublime and philosophical maxim, that "God helps them who help themselves."

"Thrice is he arm'd whose cause is just;
And he but naked, though lock'd up in steel,
Whose conscience with injustice is corrupted."

The motion was then put from the chair and carried unanimously.

Mr. Ward (mason) said the great question was to lay down a straightforward policy for the future, so that the employers and the men might be brought together, and down like the Austrians and the French on the banks of the Po, afraid to attack each other. He wanted to see some definite course proposed.

Mr. George Potter (joiner) moved the second resolution, as follows:

"Seeing that the employers have refused to concede the nine hours as a day's work, giving as their reasons, first, that in all probability the men might be induced to leave the hours of labour in other trades, and establish a dangerous precedent throughout the country; secondly, that there is no sufficient reason at the present time to justify such an advance; and thirdly, that the nine hours movement, this meeting is of opinion that such allegations are not sufficient to deter us from prosecuting our claim, and we pledge ourselves to use the whole of our energies, mental and moral, in the present struggle, and if need be, use the last resource for the purpose of bringing the movement to a successful termination." All interested in the labour question, knew the object of the present movement.

The law of labour was the law of God and nature. Surely, then, they should infer that man was not born for inactivity. The body was formed for exertion, and therefore they could not afford to escape the common lot. At the same time respect should be paid to labour, and opportunity should be given for recreation and amusement.

The book which enjoined the servant to obey his master, also said honour all men—honour the sons of labour as well as the princes of the earth. They were not that night to ask for an abridgement in the hours of labour. They did not object to work—they objected to slavery, they contended there was something terribly wrong in an age when everything was to be done by the working classes. If the people were enlightened, the nation would be enriched, but how could the people be enlightened as long as they were kept in slavery by excessive hours and excessive labour? Let the nation have his place in society, and then the people would be contented and happy.

The nine-hours movement was an important step to civilization. It was at first looked upon with apathy, but now the five trades were amalgamated, and although they were determined to carry their object, they had no desire to retrench the profits of the masters, or to add to their own earnings. Their first object was to afford employment to the poor, and now they were seeking it in vain; and, secondly, to ameliorate their social condition, and enable them to elevate themselves to the position of citizens of a free country. The resolutions passed at the meeting, held at the Freemasons' Tavern, were meagre, narrow, and selfish. The object of the employers was not to see how they could give the nine hours, but to combine together to see how they could refuse them. But when the employers said they were no president for conceding the nine hours, did they not know that at Oldham, in Lancashire, the building trades worked only fifty-one and a-half hours a week? and did they not know that at Todmorden, in Yorkshire, the masters had consented to give the nine hours from and after the 1st of next month? The sooner, therefore, the London employers made a precedent for themselves the better. Another reason which demanded the concession of the nine hours, in addition to that of health and recreation. The only reason the masters possessed was his health, and it was impossible to preserve that without rest and recreation. If the present was not a convenient time for conceding the nine hours, why did not the employers say so? They said that, in consequence of existing contracts, it would be hurtful to them to give the nine hours at once, the trades would cheerfully wait until existing contracts had run out. He did not believe that the trades were disinterested by the resolutions of the master builders. Let them remember that although the masters had held themselves up as philanthropists, no newspaper in the kingdom had written a leading article approving of their course. The master builders had thrown down the gauntlet, and the trades were bound to take it up. Let them be unanimous. Subscribe a small sum—but a penny a week; call meetings in societies and shops, and devote their whole moral energies to the agencies of the cause. If the trades did not do, they had the last resource, a death-blow to the business of many of the masters, and a long train of evils to many of the men. The men knew what strikes meant; they had looked them in the face before, and were prepared to do so again. But the men did not wish to do this, if the masters would act like Christians, and consider the question at issue. If they would not, let them launch on their anarchy, and if every man did his duty the victory would be theirs.

Mr. Grant Facey (a painter) seconded the resolution, and denied that the resolutions passed at the Freemasons' Tavern contained a fair statement of the case, as the present arrangement of the hours of labour were not "the most convenient for all parties." They were not convenient to the building trades, or hence the present movement. The masters took great credit to themselves for standing between the public and the workmen, to prevent the former paying 10 per cent. more on their contracts, but although they were so very conscientious in regard to the 10 per cent. they forgot to say that when, in 1853, materials advanced 20 per cent. and subsequently went down again, they still continued to charge the public the 20 per cent. In conclusion, he denied that Mr. Abbott had vindicated himself, and that the trades were in charge of having made a false statement with reference to the Rev. Mr. Cadman having refused to give his pulpit in favour of the Nine-hours Movement, as that gentleman had emphatically denied that he had said anything of the kind.

The Chairman was about to put the resolution, when Mr. John Petty (house-painter) moved, as an addendum, "That this meeting give it as an instruction, to the conference to avoid all antagonism to the employers, and to proceed in organizing, not only society, but non-society men also in London, and to open communication with the large provincial towns."

Mr. Davis seconded the proposition.

Mr. Glazier, a carpenter, supported the amendment, as he considered it absolutely necessary that they should show the world that they were prepared to act with moderation and discretion. With the prospect of being dragged into a European war, he thought it would be foolish to attempt to play the bully, and put themselves in an attitude of hostility with the employers.

Mr. Potter said that an address to the trades in the country was ready for the printer, and that as far as organization was concerned, repeated meetings had been held for that purpose, and that as many non-society men had joined this movement as society men.

The amendment was then put, but not a single hand was held up in its favour.

The original motion was next submitted and carried amid immense cheers. A vote of thanks to the chairman, and three cheers for the nine-hours movement, concluded the proceedings, which were of a very orderly description.

LYNN SAVINGS BANK.

THIS building, now just completed, consists of entrance lobby, waiting-room, and bank (which communicate with each other), and retiring-room and lavatory on the ground-floor. A staircase near the entrance leads to the committee-room, which is situated over the waiting-room.

Externally, the front is composed of red brick-work, with dressings of Casterton stone. The style adopted is English Domestic Gothic of the fifteenth century. The area in front of the bank is inclosed with wrought-iron railings and gates. The interior is carried out in the style of the period. All the timbers in the ceilings show, and are moulded; and the chimneys are of Caen stone, elaborately carved.

The contractor for the whole of the building was Mr. Bennett, of Lynn. The stonework was executed by Mr. Bone, and the ironwork by Mr. Pacey, both of the same town. The architects were Messrs. Medland and Maberly, of London and Gloucester.

DRINKING-FOUNTAIN MOVEMENT.

A FOUNTAIN, named the Victoria, has been opened at Brompton, Kent, by Lady Smith, the wife of Sir Frederick. It is in the shape of a bronze pillar, with two galvanized ladies to drink from, and a small place at the bottom for dogs, &c. The water is supplied free, from the mains of the Brompton and Gillingham Water-works Company. The water issues from a lion's mouth when a small copper ball on the top of the fountain is slightly pressed.—The borough of Warwick has been presented with two fountains—one by Mr. E. Greaves, M.P. and one by Mr. R. Greaves. One will be erected near the East and the other near the West Gate Chapel.

At Coventry the Temperance Society is soliciting subscriptions for a fountain to be erected in front of Bablake Church. It is to be 16 feet in height, and the plan has been approved of by the local board of health. Mr. T. Pratt is the architect. The town council have attached ladies to the public pumps.—At Barnstable Sir William Fraser, M.P. has contributed 50*l.* for the erection of a white marble fountain, in any part of the town which the corporation may consider most suitable.—The Sheffield council have confirmed the minutes of a committee of their body to the effect that drinking-fountains in various parts of the town would be very useful and convenient to the working classes, and prove eminently conducive to health, comfort, and temperance. A sub-committee was appointed to consider what would be suitable sites, the most proper description of fountains, with the cost of erection and of maintenance, with the best means of defraying the cost; also to solicit co-operation and assistance. A vote of thanks was passed to the following persons, who have agreed to erect fountains at their own expense:—Messrs. Edwin Smith, Thomas Youdan, Jos. Barstow, J. H. Sales,

and the teachers and scholars of the Red-hill school.—Mr. Howard, of Greystoke, has offered to erect a drinking-fountain in Penrith, if the health committee will supply the water. The offer has been accepted.—A drinking-fountain, the gift of the Rechabite Society, is about to be opened at Whitehaven.—A drinking-fountain is about being erected in the centre of Golden-lane, London, from a fund raised by the inhabitants, under the auspices of the Rev. W. Rogers and the Rev. B. Holmes, the clergy of the district of St. Thomas Charterhouse, from the design of Mr. Thomas J. Hill, architect.

HARBOURS OF REFUGE.—SEA-WALLS.

IN page 649 of your fifteenth volume, I alluded to the accumulation of mud at the mouth of the Thames and off the Essex coast, and suggested the conversion of these banks into land. Your description of Dover Harbour of Refuge and the remarks of a correspondent appearing in the same number (845, May 7), have induced me to revert to this subject.

The shoals off the coast of southern Essex, called "Maplin Sands," extend many miles into the sea: beyond them is a broad channel or strait called "East Swin," and then an insular sand-bank known as the "Flat of the Barrows;" besides these are smaller banks divided by shallow straits, the whole compassing an extent of sea-bed equal in size to the county of Middlesex.

This, of course, must render navigation difficult and dangerous, and the formation of harbours of refuge desirable; and, at this part of the coast, as above described, the soil taken from between the banks to afford sufficient depth to form the harbours could be thrown into enclosures of sea-wall constructed upon the higher levels, so as to form additional land on the coast and artificial islands off the coast.

W. SCARGILL.

A QUERY AS TO FOUNDATIONS AND ASPHALTE.

SIR,—Will some of your correspondents inform me whether asphalt is largely used in England for foundations in place of large stones, and, if it is, with what success? It might be interesting and instructive if any of your readers would give, through your columns, their experience of its efficiency, and any experiments of its power of resistance to a crushing force, as well as to a cross strain, they may have made.

In a case that came lately under my observation, where the soil was treacherous, a trench of about 4 feet in width, and 3 feet 6 inches in depth, was dug: into this trench was rammed 2 feet of concrete: upon the concrete pounded slag was laid to a depth of 6 inches, and bitumen was run over it: two more layers of the same thickness, but of a less width, were laid in the same manner; and upon this foundation the stone and brick walls were erected.

It seems to me that an asphalt foundation, properly made and protected by a covering of soil from the weather, has two advantages: there being no break or bond, the weight of the structure is spread over a large space, and also damp is prevented from coming up the walls.

I should like to know, however, something as to its durability and power of resisting a crushing force.

C. E.

EAST SUFFOLK HOSPITAL.

SIR,—Will you be kind enough to lend your powerful aid to assist me, who am powerless alone, to do a necessary work in a sanitary point of view? You have said and done much respecting the unsanitary state of our barracks and public hospitals. We have one in Ipswich, called the East Suffolk Hospital, built and supported by voluntary contributions. Myself feeling that such a thing was needed, I was among the first that placed my name on the subscription list as an annual subscriber ere it was built. Feeling still an interest in the establishment of such a boon for suffering humanity, no acrimonious word of feeling will I express, or a selfish wish, to gain my own ends, but solely to benefit patients, who, ignorant of the cause of their sufferings after they have been cured of the one malady for which they entered the sick ward, leave the hospital worse than when they entered, the one disease excepted. I know one patient who went in to be cured of a lameness. He was full fleshed, and otherwise strong: his disease was called chronic rheumatism, of which he was cured, and dismissed, but he was so weak that he could scarcely walk home a mile's distance. After resting himself several times, he gained his

home at last, completely exhausted, went to bed, and kept it for three weeks after. It is evident that there must have been some cause for his emaciated state, and he, as well as myself, attributes it to the unsanitary state of the ward, there being no proper ventilation. The ventilation is, like that of a pair of barn doors, thrown open every morning before the matron, doctor, or visitors are admitted; so to them nothing noxious assailed their olfactory nerves. Thus they are, or were, perfectly ignorant (willfully ignorant are they now that I have enlightened the understanding of the president, a director, and a doctor,—the medical M.D. under whose care the patient in question was placed). Another counteracting influence upon the medicine given was the "overdoing" the bread with "alum." Of this I have informed the gentlemen before mentioned. The nurse in the same ward—a young, strong, hale person—is, to her own knowledge, injured, and suffers much from the same cause, although she has the opportunity to leave the scene of her labour. Not so the patients. They know no change till they leave altogether. The bed of the patient I have more especially alluded to was directly opposite the principal entrance to the ward. The door and windows thrown open, there was a continual stream of cold air, amounting at times almost to a hurricane, pouring past him from a long passage and staircase; and he was continually receiving fresh cold, which cold became a settled influenza, which continued for months after he left, and reduced him all but to a skeleton, and extreme weakness in consequence. Others are affected more or less in the same way. Now, as the proper officers are informed of the real state of the case and take no heed, it becomes the cause of the public, or the patrons' and subscribers' business, to see to it, that it be attended to. I must inform you that in the erection of the building there was no architect employed. With the knowledge of ventilation as now applied to public buildings by those who study the sanitary question, however, it would cost but little to make it comparatively sanitary. "A prophet is not without honour, save in his own country." A voice from a distance will, per chance, arouse them to action. It is the public's and subscribers' work to urge the officers to action in the right direction for the benefit of poor suffering humanity. AMICUS.

THE SMOKE NUISANCE. ECONOMY OF FUEL.

In a country where there is much good sense, and no want of motives of frugality, it is astonishing to find, considering the obvious utility of patent fuel, in the form of coal-balls or cakes, that there should be no attempt made to adopt them, as they are well suited to augment the comfort of the humblest hearth.

I submit a few formulae: "for furnaces or other large fires, the quantity of sea coal is to be increased:"—

1. Two-thirds of soft mellow clay, free from stones, and one-third coal-dust; or a ton weight of such clay worked into three or four bushels of small sea coal, previously sifted, and formed into cakes or balls about 4 inches in diameter, then thoroughly dried.

2. Equal parts of coal, charcoal, and clay, with finely-broken coke; the coal and charcoal being reduced to a fine powder, well mixed and kneaded together, with the clay moistened in water; then formed into small balls, the size of an egg, and dried. (A certain quantity of straw, cut very small, or of chaff, or even cocoa-nut and almond-shells, or sawdust, may be advantageously incorporated.)

3. Where clay cannot be procured, cow or horse dung, road or street mud, sawdust, turf, straw, and particularly tanners' waste; to which may be added broken pulverized glass, pitch, tar, oil-cakes, or other combustible matter.

J. B. NEIL.

ACTION FOR DAMAGE THROUGH INSUFFICIENT SHORING.

Wish v. Browne and Another.—In the Court of Common Pleas, on Tuesday last, the plaintiff claimed damages upon the ground that a public house, called the Golden Fleece, in Little Knightries-street, of which he was the occupier, had been injured in the course of pulling down an adjoining house. The defendants, who were builders and contractors, had been employed to do the work.

Mr. Serjeant Tozer and Mr. Prentice appeared for the plaintiff, and Mr. Hawkins and Mr. Barnard for the defendants.

The plaintiff took the Golden Fleece, which was then a shut-up house, in March, 1858, and paid altogether 120*l.* of which 50*l.* was for good-will. About the beginning of July his receipts amounted to 30*l.* or 35*l.* a week; but, shortly after that time, the defendants began to pull down the adjoining house—the Old Parr's head. The

plaintiff's case was that in doing this they had not sufficiently shored up his house, in consequence of which it had sunk, and leaned over in the front 44 inches, and at the back 19 inches, and it became dangerous. On the 13th of August there were a dozen gentlemen dining on the first floor, but just as the cheese was served the house sunk again, and a quantity of rubbish fell down, which so alarmed them that most of them ran away, and several never went into the house afterwards. In the course of pulling down the Old Parr's Head, Mr. Smith, the district surveyor, and Mr. Hersey, his assistant, saw the premises, and they thought that the plaintiff's house was not sufficiently shored up. At their request the defendants put up additional shoring.

For the defendants a great many of their workmen were called, and they were all of opinion that the shoring had been done in a careful and skillful manner. Before any right timbers were put on all the floors of the Golden Fleece from bottom to top: there were also some horizontal shores back and front; and raking shores were put up the side as soon as possible. The truth was that the Golden Fleece was a very old house; there was a crack of ancient date running down the front at its junction with the next house, and all the main timbers were rotten.

Mr. Hudson, the defendants' surveyor, expressed his opinion that the shoring had been properly done at first, and that the additional shoring advised by the City surveyor was not at all necessary.

Mr. Justice Byles left it to the jury to say whether the defendants had used due, reasonable, and proper care in pulling down the party-wall and propping up the plaintiff's house, and if the defendants had not used due, reasonable, and proper care, then what consequent damage the plaintiff had sustained.

The jury found a verdict for the plaintiff—damages 50*l.*

Books Received.

Designs for Villas, Personages, and other Houses. By S. HEMMING, Architect, Leamington. London: Thompson and Co. 111, Strand.

If we could have given this book any higher praise than that of presenting clearly, with specifications, a certain number of ordinary types, we should have mentioned it long ago. It consists of forty plates; nine of them printed in colours by the chromo-lithographic process, selected, the author says, from designs made for many houses built during a practice of more than twenty years. "Being a series of designs not intended for publication, but prepared for buildings which have been erected; and having, therefore, been adapted to the wants and means of the parties building, they are more likely to meet the requirements of the public in general, than any collection of mere designs, however carefully prepared." The author says,—

"To the architect, it is hoped the work may be useful as a book of reference, from which he may see at a glance about what accommodation may be afforded for a given amount; and may thereby sometimes be spared the necessity of preparing a second series of drawings, in order to meet a fixed sum; thus saving his client a charge which is seldom paid willingly or received with pleasure. To the builder, it will offer a greater choice for selection than may at first sight appear; as it is (and especially to non-professional persons) much easier to alter and adapt plans and elevations than to make an original design. To the general public, who may contemplate building, it will form a safe guide as to accommodation and cost, and may thereby enable those who do not choose to adopt any one of the designs, to make up their minds as to what they can obtain for a fixed sum, and to give more definite instructions to their architect than they otherwise would be able to do, an advantage those will best appreciate whom experience has taught how frequently cost is incurred wastefully from indefinite instructions, to the disappointment of the employer and vexation of the employed."

The designs range as to cost from design No. 1, which consists of plans and elevations for two small houses, containing two sitting-rooms, three chambers, one attic, kitchen, cellars, closets, &c. &c. and costing each 200*l.* to design No. 12,—plans and perspective view of a large house in the Gothic style, built with brick and stone dressing and enrichments, and containing large dining-hall, 15 feet by 20 feet; breakfast-room, 31 feet by 20 feet; entrance and vestibule, library, study, strong closet, two drawing-rooms, each 30 feet by 20 feet, &c. &c. and costing 5,500*l.*

On the Construction of Breakwaters for Harbours, similarly situated as the one at Dover Harbour. By Charles Burn, C.E. London: Weale, 59, High Holborn. 1859.

The method proposed by Mr. Burn is one by which, as he maintains, a breakwater for such a site as that of the Dover Harbour of Refuge could be made in one-seventh of the time, and at less than one-half the cost of that now in progress.

"We propose," he remarks, "to construct the breakwater by a series of isolated circular towers, 50 feet in diameter and 70 feet high, constructed entirely of brickwork, concrete, and masonry; the towers to be built at intervals varying from 5 to 15 feet, connected on the top only by an iron gangway and parapet."

As a means for practically carrying out such a principle of breakwater, we propose to adopt Bentham and Ashton's system of construction.

The foundation of each tower, or that portion from the

bottom up to five feet above low-water mark, is a casing, constructed of brickwork in cement with a granite ashlar facing, forming a circular wall five feet in thickness. This hollow casing or cylinder is built upon a timber platform, calked water-tight, and made sufficiently strong to withstand the pressure of water when the casing is sunk to its floating level.

The hollow foundations may be towed to their position in the line of breakwater, and when in position, a valve in the timber platform can be opened, the water let in, and they will sink in position and become fixed.

The centre portion can then be filled in with concrete. Having thus made the foundation to a height of five feet above low-water, the superstructure above that point can be constructed in the ordinary manner, with concrete blocks for hearing and granite blocks for facing. The top to be paved with granite blocks or Portland stone.

These towers may then be connected together by cast-iron gangways and parapet."

Such is a brief outline of the plan. The breakwater, instead of being a continuous structure as at present, would be composed of a series of disconnected towers, averaging 10 feet apart. This reduces the quantity of material, it is said, nearly one-fourth, though equally strong and durable as if solid; and will break the force of the waves, and cause still water in the harbour as efficiently as a continuous breakwater.

No coffer-dams, of course, will be necessary in constructing such foundations as those described.

A Guide to Typographic, Literary and Practical; or, the Printer's Handbook and the Author's Tale-Mecum. By Henry Beadnell, Printer. London: F. Bowring, 211, Blackfriars-road. [Nos. 1 to 7 inclusive.]

In the outset of this serial treatise we expressed our opinion of the ability and experience of the author, and our conviction that the whole work would prove worthy of the public patronage, as well as of the author himself. It is now more than half completed; and it is but doing bare justice to the book to say that it fully justifies all we wrote, and shows its author to be a thorough master in the "noble art" and science of typography, in its most comprehensive sense. There has hitherto been a decided want of some criterion in modern printing, to which all persons, printers especially, as well as authors, might be willing, from its adequacy, to refer all differences or disputes, such as militate so much against the general harmony, consistency, and unity of our typographical products; and we much mistake the merits and the destiny of Mr. Beadnell's valuable and scholarly treatise, if it do not prove eventually to be the so much required criterion. Such a result would itself repay him for all the labour of love so evidently expended on it.

Theory of Compound Interest and Annuities with Logarithmic Tables. By FEDOR THOMAN. London: Weale, Holborn. 1859.

In questions of compound interest and annuities which require accurate solution, the great value of logarithmic computation is clearly shown. Where the questions are intricate, numerical tables are of little use. Mr. Thoman has had large experience in advising a foreign financial company, and has acquired peculiar skill in laborious computations. The tables which are appended to his treatise show:—

1. The amount of *it*, at the end of any number of years.
2. The reverse, viz. the present value of *it*, due at a given time.
3. The annuity which purchases *it*.
4. The reverse, viz. the present value of *it*, per annum.
- Both columns combined give directly:—
5. The amount of an annuity in arrear.
6. The reverse, viz. the annuity in arrear which amounts to *it*—the amortization.
7. The amount of annual investments.
8. The reverse.
9. The present value of a deferred annuity.
10. The reverse.

The second and third Tables are complementary; the second for fractional years, and the third for such rates as are not included in Table 1.

Table IV, shows the logarithms of annuities when the interest and annuity are not paid within the same intervals of time.

It is a valuable work for the advanced student.

The Timber Merchant's and Builder's Companion. By WILLIAM DOWLING, Hull. London: Simpkin and Marshall. 1858.

THIS is a very useful set of tables for contractors, carpenters, and all who deal in timber. In table 2, the reduced weight or Petersburg standard measure, is calculated and given of all sizes of deals and battens, from 1 to 1,000. For example—sixty deals, 21 feet long, 3 inches thick, and 11 inches wide, is precisely 1*c.* 3*q.* Odd. as shown in the table; thus at once glance it can easily be ascertained what is the precise weight or measurement of any quantity, size, or description of foreign deals, &c.

Table 3, gives the exact price per Petersburg

Standard Hundred of all widths and thicknesses of boards, deals, and battens at any given figure per lineal foot, varying from a farthing to ninepence. We have checked some of the calculations, and found them correct. There are many who will find the book valuable.

Hardwicke's Shilling Handy-Book of London, for 1859. By Fred. W. Moore. Hardwicke, 192, Piccadilly.

This is a decidedly useful little guide-book to the metropolis, its public buildings, exhibitions, amusements, &c. No space is wasted in fine writing. Strict utility is never lost sight of; even the omnibus routes and fares, whether "all the way," or not all the way, and prices of admission to theatres, exhibitions, and concert-rooms, with days and hours of opening, &c. are faithfully given. The whole is comprised in the compass of a little book which might almost be concealed in the palm of the hand.

The Two Paths: being Lectures on Art, and its Application to Decoration and Manufacture, delivered in 1858-59. By John Ruskin, M.A. London: Smith, Elder, and Co. 1859.

UNDER this title the indefatigable Mr. Ruskin has issued five lectures, namely, those delivered at the Architectural Museum, January, 1858; Manchester, in March last; Bradford, in the same month; the Architectural Association, in 1857; and Tuusbridge Wells in 1858. Some of these were reported at considerable length in this journal at the time of delivery. "The law," says the author, "which it has been my effort chiefly to illustrate, is the dependence of all noble design, in any kind, on the sculpture or painting of organic form." We shall have occasion to return to the book.

VARIORUM.

"Tables for Qualitative Analysis, to accompany Conington's Hand-Book of Analysis," have now been issued by the publishers, Messrs. Longman and Co. We have already noticed the work to which these tables belong.—A shilling "Handy-book on the Law of Banking," by W. J. Lawson, author of a "History of Banking," has been published by Effingham Wilson, of the Royal Exchange, London. This appears to be a useful treatise, comprising an exposition of the principles, customs, and practice of banking in England, Scotland, and Ireland.—Clarke's "Railway Excursion Guide" shows concisely, for expense, the principal towns and villages accessible by rail, with brief notices of the cathedrals, churches, and scenery,—with the distance from London, fare, and time of journey.—The "Universal Review" (Allen and Co. Leadenhall-street) has reached the third number, in which several subjects are treated in an able manner. An article on "French dramatists and English clappers," properly condemns the present course pursued by our so-called dramatic authors.

Miscellaneous.

ARCHITECTURAL PUBLICATION SOCIETY.—The annual meeting of this Society will be held at 16, Grosvenor-street, on Friday evening, the 27th inst., at eight o'clock.

CHELTENHAM AND GLOUCESTER SCHOOLS OF ART.—At the recent examination of the Cheltenham School of Art, 15 medals and 102 prizes were awarded, whilst two additional drawings, by Art pupil-teachers, were chosen to compete for national medallions. At the Gloucester School, under the same master, Mr. James P. Knight, fifty-five awards were made, although, at the time of the inspector's visit, the classes had been on scarcely two months. The total number of successes was 214.

IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.—Last evening, the sixteenth anniversary dinner of this useful charity, established in 1843, for the pensioning and relief of those engaged in the hardware and metal trades, was held at the London Tavern, the Right Hon. Lord Carncliffe in the chair. The chairman, in proposing the toast of the evening, congratulated the subscribers on the continued prosperity of the Society. The number of pensioners at present on funds amounted to twenty-nine men and twenty-two women, and there had been paid to pensioners during the last year, 1,366*l*. There were twenty-two candidates now applying for pensions. It was gratifying to find that there had been an increase in the funds. For the year ending 1858, they amounted to 1,800*l*; for the year ending 1859, they had amounted to 1,980*l*.

ELECTRO-TELEGRAPHIC.—Is it not time we were considering how our telegraphic communication with India is to be carried on in the event of the Continental routes being cut off in the midst of the warlike disturbances which are already begun? All we have to do is to lay down a cable between England and Alexandria, *via* Gibraltar and Malta;—a very considerable undertaking, certainly, but quite within British means, and most essential to the welfare of our Indian empire, if otherwise prevented from communicating with it by telegraph. The connection on the Indian side we presume is in progress. For deep-sea telegraphs it would appear that India-rubber is likely to supersede gutta-percha. Some years since a method of dissolving silk and using it as a false facing to cotton goods was said to have been discovered. Could not some better use than this be made of such a discovery by applying it to telegraphic insulation, at least as an internal coating?

BOULEVARDS FOR LIVERPOOL.—The Liverpool council have at present under consideration the subject of public improvements, especially of thoroughfares, and amongst other projects are two for the formation of a boulevard; one sweeping round the outskirts where there are as yet but few buildings, and another in a smaller curve, nearer the central thoroughfares. The former appears to meet with most favour. The cost of either would be between 140,000*l*. and 150,000*l*. There is also a project for connecting thoroughfares at a cost of 95,000*l*. and a still more costly one for improved streets, the rough estimate for which is 1,152,000*l*. The boulevard, however, appears to be that taken most interest in. The council, after hearing the report of the borough engineer, presented by a committee on the whole subject, has referred the subject back to the committee, with further instructions to consider the whole, and report their opinion as to which of the projected improvements ought to be first carried out.

THE ROYAL SOCIETY.—Sir B. Brodie, as president of the Royal Society, received a numerous scientific and literary party on Saturday evening, the 14th inst. at Burlington House. All the official rooms were thrown open, and a great variety of highly interesting objects exhibited. Among the most important of these were Professor Wheatstone's recently invented domestic and automatic telegraphs, which were explained by the professor; Mr. Hattersley's type-composing machine; M. Gallard's water-gas apparatus; Mr. Johnson's marine pressure gauge and volutor; Messrs. Murray and Heath's electro-magnetic motive-engine and carriage propelled by electro-magnetism; Professor Hughes's printing telegraph; a variety of extremely beautiful vases and cut gems from the Imperial establishment of Ekaterinburg, in Siberia, exhibited by Mr. Atkinson; two fine living specimens of the rare and curious electrical fish, *Malapterurus Electricus*, exhibited by Dr. Bence Jones, and an interesting toy, the anorthoscope, developing curiously certain optical laws.

THE WROXETER EXCAVATIONS.—We hear that in the part of the buildings lying towards what has no doubt been the street (the Watling-street-road), three very small chambers have been uncovered with the walls, of excellent masonry, and adjoining each other, but without any traces of doorways or entrances of any kind, so that at present it is quite impossible to say what purpose they have served. Among the first objects met with on the renewal of the explorations on the old spot was a very handsome and well-sculptured capital of a column, 3 feet high by 2½ feet wide, formed of two blocks of stone. This would seem to show that the excavators are approaching parts of the building which were distinguished by more elaborate architectural ornamentation.

"**TWO MITCH FOR HIS WHISTLE.**"—An individual of the name of J. Buser, from Zungar (Bale Campagne), having, on the 13th of March last, taken a ticket for the railway from Liestal to Bâle, was comfortably seated in the train. So anxious was he for its departure from the platform, that he resolved to start the engine. Among sundry other accomplishments that our friend possessed, one was that of imitating the guard's whistle, which he did so successfully that the engine-driver started off with the train, while hundreds of passengers of all classes were in the act of getting into the carriages. The disorder that ensued may be imagined, and if nobody was killed it is not Mr. Buser's fault. Providentially no person was injured. It was but the affair of the flash of a bull's-eye lamp to arrest Mr. Buser, to take him before a magistrate, and to send him to prison for four weeks; and on being set at liberty to make him pay 50 francs fine, and all costs of court.

THE HORTICULTURAL SOCIETY.—The grand spring show of this society took place in St. James's Hall, Regent-street, on the 12th and 13th inst.; and the grand summer show will be held in the same place on June 29th and 30th. The public are admitted to the horticultural shows at a charge of 2s. 6d. on the first days, and in the evening and on the second day for 1s.

LONDON DISTRICT TELEGRAPHS.—Workmen have been erecting poles and wires on the house-tops along the Kennington-road, between the Elephant and Castle and the Horns, Kennington, forming a portion of the works contemplated by the London District Telegraph Company.

THE TRUCK SYSTEM.—A threepenny pamphlet by Mr. David Bailey, exposing the evils of this detestable system, has just been published by Pitman, of Paternoster-row. The futile change of the law, which obliges masters to pay wages in money, and which is evaded by the present system of paying out with the one hand and receiving back with the other, in those cases where workmen are obliged to deal with the tally-shops of the master on pain of dismissal if they refuse to do so, only, as Mr. Bailey justly remarks, gives the truck-master additional advantages in carrying on his unmerciful practices under the guise of an appearance of acting according to law and right; and hence the system has only risen in respectability and prosperous practice. Profitable as truck dealings with workmen may be, however, in themselves, there are drawbacks which it would be well for even the truck-masters to seriously weigh and consider. "The good feeling which ought to exist between master and workmen is not likely to be brought about and nourished by the truck system: the workmen may be so far deceived as to think it is their duty to patronize their master by dealing with him, but they are not blind to the fact that they are being imposed upon with excessive charges, and the consideration of this cannot but operate perniciously on their minds in reference to the oppressor." Their wrongs are brooded over, and this is calculated to give rise to unfriendly feeling, and they will not work so heartily or so profitably for the master as they would if they were dealt by fairly.

THE STONE TRADE OF CASTLETOWN, CAITHNESS.—At Castletown, says a correspondent of the *John O' Groat Journal*, the only article of commerce is the Caithness flags. The stone trade in this district, until a few months ago, was entirely carried on by Mr. James McBeath, of Castle-hill; and his connection extends to Thurso, where he carries on a large stone trade at the Government quarries in Scrabster. Mr. James Smith has now opened a quarry at Quarryside, thus making that name literally true. The operations necessary to prepare the stones for the southern markets were, until lately, carried on entirely by manual labour. The work necessary in quarrying is very tedious, tiresome, and severe, as also the barrowing them out of the quarry, sometimes from a depth of upwards of 60 feet, often upon narrow planks, a fall from which would be certain death. After quarrying, the stones are carted to the place where they are sawn. This portion of the work was, not only here but throughout the whole of Caithness, until lately, carried on by manual labour. This was indeed the first place in Caithness where humanity was relieved from this most tiresome and unvaried occupation. A water machine was erected a few years ago to work eight saws and some polishers, since which time it has been kept steadily a-going. But the greater part of the sawing is done by men; and, altogether, Mr. McBeath employs 300 men in this county, connected with the stone trade. His trade induced him, about a year ago, to erect a steam machine, of large dimensions, for sawing and polishing purposes. There are only three others of this kind in the county, one at Thurso, one at Fors, and another at Mey. At Castle-hill harbour, the stones are exported for the larger towns south.

COATING IRON WITH BRASS.—TYTHERLEIGH'S PATENT.—As it is applied to the iron in a molten state, says the *Birmingham Journal*, it insinuates itself into the pores of the iron, and is thus incorporated with it. We have seen tacks, nails, hinges, and screws so coated, and we have no hesitation in saying their protection is perfect. We have also examined iron wire and sheets of iron coated with brass; the former after being drawn, and the latter after being rolled, present quite the appearance of solid brass. The invention, however, is but in its infancy; and should any enterprising and spirited manufacturer take it up in connection with the practical skill of the inventor, we feel assured he would reap a profitable harvest.

FRENCH PLAYS: ST. JAMES'S THEATRE.—A very respectable company of French actors, under the management of M. Jules Samson, are now performing at the St. James's Theatre, and deserve support. In the "Courrier de Lyon; ou, l'attaque de la Malle-poste," of which we had two versions in London a few seasons ago, M. Clement just plays the two principal parts with much discrimination and cleverness, and is well supported by M. Daubray, Mlle. Anna Devin, and M. Houdin. Other pieces, of which English versions have been played, are about to be produced; and, by showing how entirely, for the most part, the pieces as we know them belong to the original authors, will assist in making it discreditable for an English dramatist, save the mark! to put his name to what does not belong to him. As we have done on a former occasion, we recommend those who would familiarize the ear to the language to go to the French Plays.

MUSIC AS A BRANCH OF THE FINE ARTS.—An able and interesting paper on this subject, by Mr. H. F. Chorley, was read at the Society of Arts, on the 11th instant. One chief object of the paper was to draw attention to the state of music in this country, both as regards the decided talent and love for it, and the no less decided want of proper means for its cultivation. The Royal Academy of Music in London, it was remarked, had not for twenty years produced anything like a first-rate artist in music. The official and general recognition of music as a branch of the fine arts was urged; as also the necessity of adopting some means of promoting such a recognition, as by Parliamentary inquiry or otherwise. The paper was followed by a discussion, in the course of which Mr. Costa expressed his opinion that it was useless to think of amending the Royal Academy of Music: they must have a new and popular one.

THE TICINO.—The Ticino, crossed the other day by the Austrian troops, takes its rise in the Swiss Alps, at the foot of Mount St. Gothard, flows southward, crosses Lago Maggiore, separates the Sardinian States from Venetian Lombardy, and falls into the river Po near Padua. It is navigable for a length of 279 kilom. On its banks Hannibal gained his first victories in Italy. Here, in the year 218 B.C. he defeated P. Scipio. On the 31st of May, 1805, nearly fifty-four years ago exactly, the French and Austrians fought a battle on this river.

VERNET'S "DEATH PURIFYING THE SOUL."—In an article headed, "What is an Artist?" in last week's *Builder*, notice is taken of a picture by Horace Vernet, which I beg to explain. The daughter of Horace Vernet married Paul Delaroche, and died prematurely. The picture represents Madame Delaroche, typifying the soul, escaping from the death-bed into the heavenly regions, and is a portrait [Delaroche has also introduced the portrait of his wife in the famous hennicycle at the Palais des Beaux-Arts, as the representative of Greek art]. The male figure in the agony of grief in the picture of the escape of the soul is intended for the husband of the female form ascending, and portrays the eminent artist, Paul Delaroche. I believe the picture was painted by Horace Vernet as a parental tribute to assuage his grief.—H. MOFFORD.

ST. MARY'S, WHITLESSEA.—May I announce to your readers, through your columns, that the beautiful church of St. Mary, Whittlessea, requires restoration. The cost of doing it will be about 3,000*l.* and it will be effected under the superintendence of Mr. Scott. The parish is, though large, a very poor one, and will be unable to defray this expense, part of which is absolutely necessary as the roof of the church is positively unsafe. The lord of the manor has headed the subscription with 100*l.* A rate has been refused by one or two vehement Dissenters, so that recourse must be had to voluntary contribution, or the church will soon fall to ruin. Subscriptions will be thankfully received by the Rev. W. Waller, the vicar.—F. FRIBBINGTON.

IMPROVEMENTS IN HYDE-PARK.—By direction of the Commissioners of Works and Public Buildings, Messrs. Eversfield and Co. have put up to auction the buildings near the turnpike-gate, Kensington, known as the barracks for light cavalry regiments. It is intended to clear away the materials for the purpose of effecting improvements in the approaches to Kensington-gardens. A large building has been erected close by the High-street, Kensington, for a battalion of the Foot Guards, as also for the light cavalry. The barracks for foot soldiers, near the cauteen, will also be removed, and some Royal stables erected on the site.

BEQUEST FOR AN HOSPITAL.—The late Mr. Tunnicliffe, of Macclesfield, has left 30,000*l.* for the endowment of an hospital to cost in erection not less than 5,000*l.*

NORWICH SCHOOL OF ART.—Mr. Nursey, the head master of this school, has resigned his office, which he will give up at Christmas next.

MUSEUM OF PATENTS, BROMPTON.—This museum was visited in the week ending May 7th, in the mornings by 1,307 persons, and evenings, 1,036; total, 2,343. Since the opening of the museum free daily (May 12, 1855), it has had 95,617 visitors.

THE TOWER OF LONDON.—The hoarding which has for so long concealed Traitor's-gate from the sight of visitors has been removed, and few strangers now pass without looking curiously at it, associated as it is with so many historical incidents.

BIRMINGHAM ARCHITECTURAL SOCIETY.—At the annual meeting of the Birmingham Architectural Society, held on Monday se'night, the following officers were appointed:—President, Mr. John R. Botham; Vice-president, Mr. J. G. Bland; Treasurer, Mr. Charles Edge; Honorary Secretary, Professor Chamberlain.

RAILWAYS IN INDIA.—The directors of the Great Indian Peninsula railway have let the construction of the Nagpore branch, 263 miles, to Messrs. Lee, Alton, and Watson, at present on the staff of Mr. Joseph Bray. This extensive undertaking is to be commenced in September next.

INSTITUTION OF MECHANICAL ENGINEERS.—The general meeting of the members of this Institution was held on 11th instant, at Birmingham, Mr. H. Mandslay, vice-president, in the chair, when the following papers were read:—"A Description of the Pumping-Engine at the Newcastle Water-Works," by Mr. Robert Morrison, of Newcastle-upon-Tyne; "On the Construction of Hot-Blast Ovens for Iron Furnaces," by Mr. H. Marten, of Wolverhampton; and "On Jensen's Marine-Engine Governor," by Mr. Henry Maudslay, of London. The meeting then terminated.

MONUMENT TO THE LATE GEORGE STEPHENSON.—At a meeting of the subscribers to the proposed monument, just held in Newcastle-upon-Tyne, Sir George Grey, M.P. in the chair, general feeling was in favour of a statue by Mr. Lough, a Newcastle man, and it was resolved that a model of a statue and pedestal should be executed by him for the consideration of a committee of subscribers, and that, with the consent of the corporation, the monument should be erected at the junction of Westgate and Neville-street, and nearly opposite the central station, Newcastle-upon-Tyne. The 5,000*l.* required have been subscribed.

THE ROYAL SCOTISH ACADEMY'S EXHIBITION.—The number of visitors to this exhibition was greater than on any previous occasion, in 1855. This season the receipts are not much less than in that exceptional year, and the number of season tickets exceeds those sold in 1855, by 556 day, and 206 evening, tickets. The total number of visitors who this season paid for admission during the day was about 21,000, while upwards of 24,000 were admitted at a reduced rate in the evening; and there were upwards of 3,300 day, and 1,350 evening, season-ticket holders, exclusive of those to whom free tickets were presented, who repeatedly visited the exhibition. The sales of works of art are said to have exceeded 6,000*l.*

AMALGAMATED SOCIETY OF ENGINEERS.—According to the report, just published, of the "Amalgamated Society of Engineers," the money aid afforded to its members during the year, on the score of sickness, burials, superannuation, and temporary want of work, amounted to 47,368*l.* out of a fund contributed by 14,745 members, and entailed a loss to the society of 17,593*l.* beyond the expenditure of previous years. This extraordinary increase is attributable to depression of trade. The report states that "when trade is bad, sickness, and even death is more general," and that in the year 1857, donations to members out of employment, averaged 19*l.* 9*l.* per member, whereas it amounted last year to 2*l.* 6*l.* 7*l.* Consumption is the great cause of mortality among the workmen.

TENDERS.

For building three houses in Kent-road, for Mr. B. Smith. Mr. W. C. Stow, architect. Quantities supplied by Messrs. Arding and Bond —

Mills and Son	2,200 0 0
Taylor	2,200 0 0
Mortar	2,067 0 0
Tarrant	1,009 0 0
Thompson	1,000 0 0
Colls and Co.	1,944 0 0

For taking down and rebuilding the parish church of Little Caxthorpe, near Louth. Quantities supplied by Mr. C. Folsand. Mr. R. Jewell Withers, architect:—

	Church complete.	Deduct for old Materials.	Allow for Carriage.
Booth	845 12 2	40 0 0	23 0 0
Evans, Brothers	825 0 0	40 0 0	23 0 0
Young	790 0 0	35 0 0	23 0 0
Leatt	720 0 0	20 0 0	23 0 0
White	640 0 0	20 0 0	20 0 0
Punchbeck	560 0 0	20 0 0	20 0 0
Clarke (accepted)	590 0 0	40 0 0	25 0 0

For erecting two houses at Hackney, for Mr. Powell. Mr. W. Lee, architect:—

Hocking	2,150 0 0
Leach	1,136 0 0
Mears	1,131 0 0
Newman and Mann	1,125 0 0
McLennan and Bird	1,622 0 0
Reale	948 0 0

For warming Meopham Church, Kent, with hot water with ornamental gratings, including furnace work. Mr. Francis Lee, architect:—

A. M. Perkins, London	2,130 0 0
Shewin, Sevenoaks	138 0 0
Smith, Moorfields	127 0 0
Sampson, Grave-end (accepted)	120 0 0

For sandy repairs at Blair House, Dalwhell. Mr. M. J. Stanley, architect:—

Hayward	415 0 0
Adams	317 0 0
Colls and Co.	214 0 0

For the erecting of a detached cottage, Buckhurst-hill, Essex. Mr. J. H. Rowley, architect:—

Willson	220 0 0
Burrows	209 14 0
Childs	199 0 0
Carter (accepted)	190 0 0

For building a villa close to Witney Station. Mr. A. C. Hook, architect. Quantities supplied:—

Joshua Wilson	2,050 0 0
Moon and Son	1,947 14 0
Bowler	1,700 0 0
Duke	1,682 0 0
Bridge	1,527 0 0

For a warehouse, at Limehouse, for Messrs. Scrutton and Campbell. Mr. John Morris and Son, architects. Quantities supplied:—

Dunk	2,354 0 0
Asby and Son	8,995 0 0
Asby and Homer	2,090 0 0
Johnson	2,885 0 0
J. Munday	2,900 0 0
Jeffrey	2,880 0 0
Emm	2,810 0 0
Salt	2,297 0 0
Brown	2,740 0 0
Altner	2,097 0 0
Hack and Son	2,671 0 0
Watts	2,671 0 0
Paper and Son	2,653 0 0

For Baptist Chapel, Rotherhithe, by public tender. Messrs. Morris and Son, architects. Quantities supplied:—

Noland	2,129 10 0
Chinnock	1,576 0 0
Johnson	1,481 0 0
Rice and Stanger	1,470 0 0
Wells	1,450 0 0
Messenger and Porter	1,445 0 0
Hollins	1,423 0 0
Winder, Junior	1,381 12 0
Colls and Co.	1,470 0 0
Stevens	1,350 0 0
Tarrant	1,347 8 0
Hawkins	1,314 0 0
Stevenson	1,314 0 0
Lawrence	1,313 0 0

For erecting two warehouses, in Broad street, Chancery-lane, for Messrs. Puzey, Pallett, and Co. Messrs. Talbot and Chamberlain, architects. Quantities supplied:—

Anley	3,067 0 0
Wood and Son	3,679 0 0
Asby and Son	3,586 0 0
Nicholson and Son	3,560 0 0
Piper and Son	3,452 0 0
Myers	3,415 0 0
Brown and Co.	3,415 0 0
Jay	3,398 0 0
Lawrence and Sons	3,340 0 0
Brass (accepted)	3,192 0 0

For proposed Wesleyan chapel, Ebbw Vale, Monmouthshire. Messrs. Cook and Hacon, architects. Messrs. Talbot and Chamberlain, architects. Quantities supplied. The site to be provided by trustees:—

Mason	21,659 0 0
Robbins, Newport	1,100 10 0
King, Bristol	802 0 0
Moore, Newport	792 11 0
Corporation	747 10 0
Robbins, Newport	825 11 0
Guppy, Ebbw Vale	860 0 0
Morris, Bristol	781 0 0
Griffiths, Ebbw Vale	741 0 0
Moore, Newport	741 0 0

Plasterer and Slater:—

Robbins, Newport	305 3 4
M. re, Newport	252 0 0
Quantities	245 15 0

Painter and Glazier:—

Robbins, Newport	282 0 0
Walsbrough, Newport	195 0 0
Price, Bristol	180 0 0
Moore, Newport	180 0 0

* Accepted provisionally.

The Builder.

VOL. XVII.—No. 851.

A Sketch of the History of Scene Painting.



It is to be regretted that we have no comprehensive history of scene-painting, or record of the improvements and changes in it that have been made. Whatever may have been done in the antique times (we suspect it was but little), and leaving out of view the properties and arrangements for the "mysteries" of the Middle Ages, — "Item, thereto 'longeth Heyn, made of tymb' and steyned clothes. Item, Hell made of tymb' and yron-work, with Derells the numb' of xij."* — it appears that to Balthazar Peruzzi, the architect of the Massimi Palace in Rome, who died in 1536, must be ascribed the merit of almost originating for modern times the art of scene-painting.

Brunelleschi, at an earlier date, the beginning of the fifteenth century, had been employed in the construction of mechanical illustrations of pious representations in Florence. Vasari describes his device of Paradise, where a great effect was produced by a multitude of lights which were alternately shrouded and uncovered with great rapidity. Peruzzi, however, brought skill in painting and an intimate knowledge of perspective to bear on the subject, and produced a perfect art. The theatrical decorations he executed, says Vasari, although the first, became the models and regulators of those painted afterwards. It is difficult to conceive, he continues, with what skill our decorator, in so confined a space found the means of representing so many buildings, palaces, porticos, and profiles as he did; and all so truthful that the objects seemed real, and the spectator, before a painted cloth, believed himself actually transported into the midst of the place represented, so far was the illusion carried. Warm as the enlogium is, there are decorations remaining from the hand of Peruzzi, although his scenery has long since passed away, which show that it was not beyond the truth. Vasari tells how that Titian, viewing with him one day some of these architectural decorations at the Farnesina Palace, was so far deceived by the apparent relief of the ornaments and mouldings, as to insist on having a ladder, that he might disabuse the sense of sight by the sense of touch.

It appears certain that Shakespeare, our great master of picturesque situations, was but little aided by the artistic ability of his age. Sir Philip Sidney says, speaking of tragedies and comedies as exhibited at the public theatres, "Now you shall have three ladies walk to gather flowers, and then we must believe the stage to be a garden. By and by we hear news of shipwreck in the same place; then we are to blame if we accept it not for a rock. Upon the back of that comes out a hideous monster with fire and smoke; and then the miserable beholders are bound to take it for a cave."

There seems to have been almost as great a scarcity of supernumerary actors as of scenery, for he adds: "While in the mean time two armies fly in, represented with four swords and bucklers; and then what hard heart will not receive it for a pitched battle-field." A writer in the *Somerset House Miscellany*, published some thirty years ago, remarks that the Scotch used painted scenes, for the royal stage at least, before they appeared in our theatrical

representations, — for some dramatic pieces performed at Holyrood House by order of King James before his accession to the throne of England, designed, it is said, by Mytens, and painted by some foreign artists.

In the dialogue between *Lovewit* and *Trueman*, the latter says, "What if there were five theatres then [before the civil wars], the town would maintain them, the prices being small, there being no scenes....." "It is an argument of the worth of the plays and the actors of the last age, and easily inferred, that they were much beyond ours in this — to consider that they could support themselves from their own merit, the weight of the matter, and goodness of the action, without scenes and machinery; whereas the plays, with all these, can hardly draw an audience, unless there be the additional invitation of a Signor Fideli, a Monsieur l'Abbé, or some such foreign regate expressed in the bottom of the bill."

The introduction of stage scenery in England was much advanced by King Charles I. when he and his Queen Henrietta Maria themselves played in the masques at the palace of Whitehall. On those occasions, as is well known, Inigo Jones was machinist for their stage. Inigo had studied as a landscape-painter in Italy; it may therefore be reasonably supposed, that, with his knowledge of the picturesque united with his skill in architecture, the scenery and machinery were worthy of the masques of Ben Jonson and the music of Laniere. We first hear of Inigo Jones in England in 1604-5, when the queen had ordered a masque to be prepared at Whitehall on Twelfth-night. Ben Jonson was the poet, and "the bodily part," as Jonson tells us, "was of Master Inigo Jones's design and art."

The poet's description of Inigo's portion of the work, beginning, "First for the scene was drawn a *landscap* consisting of small woods, and here and there a void place filled with huntings," contains the earliest notice we possess of the use of scenery in stage entertainments.*

In the autumn of the same year Jones prepared the scenery and devices for three plays presented before the king in the hall of Christ Church, Oxford, and "had for his pains," says a contemporary, "as I have constantly heard, 50*l*." The stage, it appears, was built close to the upper end of the hall, "as it seemed at first sight; but indeed it was but a false wall, faire painted, and adorned with stately pillars, which pillars would turn about, by reason whereof, with the help of other painted cloths, their stage did vary three times in the acting of one tragedy."

For the Masque of Hymen, 1605-6, Inigo seems, from a short description given by Ben Jonson, to have attempted what was then new. He says: "Here the upper part of the scene, which was all of clouds, and made artificially to swell, and ride like the rack, began to open; and the air clearing, in the top thereof was discovered Juno sitting on a throne supported by two beautiful peacocks; above her, the region of fire, with a continual motion, was seen to whirl circularly, and Jupiter standing on the top (figuring the Heaven), brandishing his thunder." The description would almost serve for what was done in one of Mr. Charles Kean's revivals, hereafter referred to.

When on a future occasion, 1610, Inigo Jones was connected with Samuel Daniel in the production of a masque, the latter wrote: "But in these things, wherein the only life consists in shew, the art and invention of the architect gives the greatest grace, and is of most importance; ours the least part, and of least note in the time of the performance thereof, and therefore have I intersected the description of the artificial part which only speaks of M. Inigo Jones."

Again, the "Memorable Maske of the Two Honorable Houses or Inns of Court, the Middle Temple and Lincoln's Inne," is described as, "Invented and fashioned, with the ground and speciall structure of the whole worke, by our Kingdome's most artfull and ingenious architect Inigo Jones." Many of Jones's sketches for scenery remain.

* The description is quoted at length in the volume on "Inigo Jones," printed for the Shakespeare Society.

Milton's "Masque of Comus" was exhibited with all the aid of painted scenery, dresses, and machinery which was at that time available, to render the spectacle as illusive as the art could make it. Henry Lawes, the musician, composed the music for the masque, and played the shepherd. The children of the Earl of Bridgewater also performed in the piece; and it was represented before his lordship and friends at Ludlow Castle in 1634.

The improvements which were designed for the public theatres, under the auspices of the king, were suspended at the time of the troubles, and subsequent governments did not much aid the theatres. However, just before the Restoration, Sir William D'Avenant obtained the management of the Duke's Theatre in Blackfriars. This enlightened manager (who produced, in 1656, the "Siege of Rhodes," "made into a representation by the art of perspective in scenes"), procured artistic assistance from Italy and France, where at that time these matters were better cared for. His scene-painters were Italians, but our countryman, Streater, the landscape-painter, assisted. It is said that some of the spectacles exhibited on the stage were very imposing, and received by the public with great applause.

It was, however, at Rich's theatre in Lincoln's-inn-fields, that the introduction of pantomimes led to such scenic effects as delighted both the old and young of all ranks. This manager engaged a foreign scene-painter, Signor Servandoni. Another foreigner, Monsieur de Voto, was an occasional assistant, so was also the celebrated Jack La Guerre; but the principal strength of Rich rested in the talents of that choice spirit, George Lambert, who was long his chief scene-painter. When Rich removed to his new and more splendid theatre at Covent-garden, this worthy was provided by the manager with a spacious room for carrying out his scenic operations. In this place was established the famous Beefsteak Club, still in existence. Frank Hayman, the first librarian of the Royal Academy, was scene-painter at Drury-lane. When the fame of the Italian opera was in its zenith, Signors Popora and Farinelli came to England to join that renowned musical corps, and Signor Amiconi, the painter, was of the party. This artist painted the scenes for the great theatre in the Haymarket. He also assisted occasionally in the scene-room of Covent-garden, and in conjunction with old Oram painted the ceiling and proscenium of that theatre.

Amongst our earliest scene-painters, quoting the miscellany to which we have already referred, was Robert Aggas or Angus. He was a good landscape-painter, both in oil and distemper (and was skilled in architecture): he painted several scenes for the theatre in Dorset-gardens. A landscape by this artist was presented by him to the company of Painter Stainers for their hall in Trinity-lane. Aggas died in 1679.

Thomas Dall, a native of Denmark, painted some scenes for Covent-garden Theatre, which were much admired. Hogarth painted a camp scene for the private theatre of Dr. Hoadley, Dean of Winchester. Richards, the original secretary of the Royal Academy, was for many years principal scene-painter to Covent-garden Theatre; his coadjutors were Messrs. Bowles and Carver. Two of Richards's scenes for the "Maid of the Mill" were engraved in line, by Rooker. This has been done in but very few cases. A series of scenes painted for the theatre known as La Scala, at Milan, by Sanquirico, were, however, engraved and published.

Michael Angelo Rooker, son of Rooker the engraver, was principal scene-painter to Colman's theatre in the Haymarket. Walmsey, French, and the younger Catton were also scene-painters. Hodges, the pupil of Wilson, was scene-painter at the Italian Opera-house, held at the Pantheon after the fire of the King's Theatre in the Haymarket.

Signor Novosielsky, the architect who rebuilt this theatre, was also scene-painter to the new and splendid stage formed there: some of his excellent architectural sketches for scenes are at this moment before us; and De Louthembourg, though last in this list, yet perhaps

* MS. in the church of St. Mary Redcliffe, Bristol.

the greatest, was scene-painter to Drury-lane Theatre during the management of Garrick.

For "The Winter's Tale," Louthborough introduced a number of new effects by means of transparencies; but it was left for others, of the present time, to give to the scenery of this play the proper character. Louthborough's *Eidophusikon*, which was the delight of thousands in his day, probably had considerable effect on stage scenery, and demands a detailed notice.

De Louthborough, who had studied the varied effects of nature amid the Pyrenes, the Alps, and his own native mountains in Alsatia, conceived the notion that the scenery of England was well worthy of an artist's study, and prepared a means of exhibiting views of English scenery under different aspects. The stage was little more than 6 feet wide, and about 8 feet in depth; yet such was the painter's skill and his wizardry of effect, that the landscape seemed to recede for miles, said his contemporaries.

The opening subject of the *Eidophusikon* represented the river from the summit of One-tree-hill, Greenwich Park, looking up the Thames to the metropolis; on one side, conspicuous upon its picturesque eminence, stood Flamstead House; and below, on the right, Greenwich Hospital, with its cupola, cut out of pasteboard, and painted with architectural exactness. The large group of trees formed another division, behind which were the towns of Greenwich and Deptford. The foreground was constructed of cork, broken into the rugged and picturesque forms of a sand-pit, covered with minute mosses and lichens, and producing an effect amounting to reality.

This scene, on the rising of the curtain, was enveloped in the dim light of early morning; so true to nature, it is said, that the imagination of the spectators sniffed the sweet breath of morn: a faint light appeared along the horizon, the scene assumed a vapourish tint of grey, presently a gleam of saffron, changing to the pure varieties that tinge the fleecy clouds that pass away in the morning mists: the picture brightened by degrees; the sun appeared, gilding the tops of the trees and the projections of the lofty buildings, and burnishing the waves on the cupolas, when the whole scene burst upon the eye in the gorgeous splendour of a beauteous day.

The clouds in every scene had a natural motion, and they were painted in semi-transparent colours, so that they not only received light in front, but by a greater intensity of the Air, and lamps were susceptible of being lighted from behind. The linen on which they were painted was stretched on frames twice the surface of the stage, and rose diagonally by a winding machine.

The lamps used by De Louthborough were above the proscenium, and before them he used slips of glass of various colours to throw a tint upon the scenery, compatible with the time of day which he represented.

The effects of a storm at sea, with the loss of an East-Indiaman, are described as being astonishing: all the characteristic horrors of wind, hail, thunder, lightning, and the roaring of the waves were given with amazing reality.

Gainsborough was so enthralled and delighted with the *Eidophusikon*, that for a time he thought of nothing else. The waves were carved in soft wood, from models made in clay; were coloured with great skill, and, being highly varnished, reflected the lightning. Each turned on its own axis towards the other, in a contrary direction, throwing up the foam on times in one spot and sometimes in another; and, diminishing in altitude as they receded in the distance, were subdued by corresponding tints.

For rain and hail, a long four-sided tube was charged with small seed, which, according to the degree of its motion,—from a horizontal to a vertical position,—ran in a pattering stream to the bottom, when it was turned to repeat the operation. The hail was expressed by a similar tube, on a large scale, with pasteboard shelves projecting on inclined planes, and charged with little beads, which sliding from shelf to shelf, fell fast or slow as the tube was suddenly or gently raised.

Amongst other scene-painters of this time we have William Tapon, who had studied under Nevoiselski, and painted some excellent old English street scenery for John Kemble; some of his sketches still exist. Then there were Robert Dighton and Charles Dildin.

These will bring us down nearly to the time when Mr. John Grieve, father of the present veteran artist, Mr. Thomas Grieve, with Messrs. Pugh, Phillips, and Whitmore, were the painters at Covent-garden, while Messrs. Greenwood and Marinari were painting at Drury-lane; whereto, for a time, came also Nasmyth, the landscape painter, from the North.

John Grieve changed the mode of painting very considerably, using a glaze as in water-colour painting, whereas before only solid colours were used. It was called by rivals the "Scotch wash," in contempt; but the mode is now universally pursued, and permits of the production of landscapes with an excellence before unattainable. Succeeding Greenwood at Drury-lane, came Mr. Clarkson Stanfield and Mr. David Roberts, now both Royal Academicians, and holding justly the highest places in the roll of landscape-painters. The scenery of "Acis and Galatea," under the management of Mr. Macready, is usually mentioned as that in which Mr. Stanfield more particularly produced some beautiful pictures.

Mr. Stanfield's engagement at Drury-lane, where he first achieved any reputation as a scene painter, was in 1822, under the management of Robert William Elliston; and here, in conjunction with Marinari and David Roberts, and with a host of assistants, including Andrews, Franklin, Adams, and others, he pursued a long and successful career. Mr. Stanfield finally left the theatre in 1835, with the exception of painting for his friend Mr. Macready, on two occasions, during his management of Covent-garden, and of Drury-lane, for whom he produced the scenery for "Acis and Galatea," to which reference has been made. The drop-scene at the New Adelphi Theatre, a charming Greek landscape, was, we believe, painted from a drawing by Mr. Stanfield, by Mr. Tellin.

Mr. Roberts commenced at Drury-lane with Mr. Stanfield; but, large as this national establishment was, it would seem that it was not quite sufficiently so for two such aspiring geniuses; at any rate, Mr. Roberts left, and accepted office at the rival house, Covent-garden, where he painted the entire scenery of several pieces, particularly for the opera, by Cramer, called "The Seraglio," for which he executed twenty scenes. In the meantime circumstances led to a resolve on his part to quit England; and, acting on the advice of Wilkie, he went to Spain. This broke off his connection with the theatre, fortunately for himself, and we may add, for the lovers of art, as he has since devoted himself to the production of works which can and will be preserved. In 1838 and 1839 he made his journey to Egypt and Syria, was afterwards elected a member of the Royal Academy, and has since then been constantly before the public, much to their advantage and gratification.

Mr. Thomas Grieve was in his father's painting-room, before the old Covent-garden Theatre was burnt down, in 1808, so that he has served a long apprenticeship to the art,—an apprenticeship of half a century. When he was at Covent-garden Theatre, the late Welby Pugin, amongst others, at times co-operated with him. Mr. Grieve has produced, partly in conjunction with Mr. Tellin, another notable painter, and assisted by Mr. F. Lloyds, Mr. W. Gorton, Mr. Utthbert, Mr. Morris, Mr. Doyes, and others, the excellent scenery for the remarkable series of Shaksperian revivals, produced by Mr. Charles Kean at the Princess's Theatre—revivals which constitute an era in the history of the stage, and should influence all that is done upon it hereafter; revivals which have justly obtained for Mr. Kean a world-wide reputation, and entitle him to the thanks of all who would see the Stage an instructor.

We may be excused, in giving a general view of the subject, if we connect with the architectural portions of the scenery of these revivals, the name of Mr. Godwin. In several instances Mr. George Scharf and others co-operated to the same end.

Mr. William Beverley, at the Royal Italian Opera House, and at Drury-lane; Mr. Callcott, at the Haymarket; and Mr. Feuton, at Sadler's Wells, are artists of skill and taste. Mr. Beverley must be regarded as the originator of a scene involving a large amount of machinery and modelling, now universally imitated, and has produced, in effects of surpassing beauty. Mr. Beverley began early, painting when quite a boy, for his father's theatre in Sunderland, scenes for a pantomime which excited a sensation. His first work in London was done for the Victoria Theatre seventeen years ago. He afterwards went to the Princess's during Mr. Madox's management for a three years' engagement, where he produced some of his modelled scenes. Then followed his engagement at the Lyceum, and illustration, during eight years, of the series of extravaganzas by Mr. Planché, under Madame Vestris's management. Beautiful indeed were some of the scenes he there produced, but probably for drawing and modelling, elaborate device, and excellence of effect, the transformation scene of the last pantomime but one at Drury-lane (that for Christmas, 1857), may be pointed to as his chief work of this kind. The cost of such scenes is of course very great: the expenditure on the scene we have named is said to have been not much less than 1,000*l*. At Mr. Gye's new theatre, Covent-garden, he has now the finest painting-room in the world.

Apart from these mechanical scenes, so to call them, there is something to be done in the way of scenery in England yet. Much of what is produced is of a common and unworthy character: even the best might be better; and we may one day find an opportunity, in continuation of this outline, to submit our views on the subject.

BYZANTIUM, AND ITS ARCHITECTURE.

There is a period in the history of the world's revolutions so momentous in its operation upon the fate of nations; so connected, as far as finite perception can calculate, with the present position of a portion of the world's civilization; that the reader who peruses the eventful tale, pauses again and again, at each succeeding incident in a nation's downfall, to ponder in his own mind the strange vicissitudes of fortune that could consign to the degradation of a barbarian rule the descendant of the two greatest races of the ancient world; crossed, it is true, with Asiatic blood, and sullied by Asiatic tendencies, yet still presenting the record of its illustrious parentage in the language of the one and the affected sovereignty of the other;—could condemn her, from being the model for mankind's imitation in her prosperity, to become in her adversity the focus for its pity,—at once its moral and its lesson.

There is a period in the history of the world's religion, so favourable to the cause of light and Christianity, so fatal to the reign of darkness and paganism, that the establishment of a large portion of that world's faith in a heavenly Redeemer, as far as human agency is concerned, may date its permanence from that period and the events that made it remarkable, and which contributed more than any other to its full development.

Again, there is a period in the history of architecture, which, in addition to other changes, civil, political, and moral, exercised so great an influence upon the form, arrangement, and design, of ecclesiastical edifices throughout the Christian world, and evoked therewith a style of such singular beauty, variety, and dissimilarity to anything that had preceded it, that the gratitude of mankind seems justly due to a revolution productive of so great a result; and which, but for it, might possibly have remained unattained to this day.

To the scholar, the churchman, and the architect, this period, so productive of great events, must ever present features of peculiar interest, as forming the connecting link between two distinct periods; at once the last act of the great classic drama of the world, and the first of a drama whose end yet lies undeveloped amongst the secrets of the future.

Although the deposition of the last of the Roman emperors, Augustulus,—a name of ominous import,—and the commencement of the Gothic dynasty in Italy, mark the period of the extinction of the Roman empire in the West; yet the conversion to Christianity of Constantine, and the removal of the seat of empire from Rome to Byzantium, are to the architect events of still

greater moment, as forming the turning-point in his art's history, —

"A time
Whence he may date, henceforward and for ever."

"The public establishment of Christianity," says Gibbon, "may be considered as one of those important and domestic revolutions which excite the most lively curiosity, and afford the most valuable instruction. The victories and the civil policy of Constantine no longer influence the state of Europe; but a considerable portion of the globe still retains the impression which it received from the conversion of that monarch; and the ecclesiastical institutions of his reign are still connected by an indissoluble chain, with the opinions, the passions, and the interests of the present generation."

It is but of small moment to the architect at what precise period Constantine renounced his faith in the gods of Rome; whether owing to the miraculous sign in the heavens whilst preparing for the Italian expedition, or subsequent to the death of Priscus, — Priscus, as Eusebius terms him, *Θεοφιλέτατος καὶ κατὰ πάντα τοῦ καὶ παρὸς ὁσιώτατος*. That political motives caused him long to temporize between the two faiths cannot be doubted; but the discussion is a long one, and we are fain to substitute for the luminous but more lengthy judgment of Gibbon the shorter but almost as comprehensive one supplied by Niebuhr: "Among those who have written upon the history of Constantine, some are fanatic panegyrist and others are fanatic detractors, and there are but very few who treat him with fairness. The exaggerated praise of Oriental writers is quite unbearable, and almost inclines one to side with the opposite party. Many judge of him by too severe a standard, because they look upon him as a Christian; but I cannot regard him in that light. The man who inscribed on his coins '*Sol invictus*,' who worshipped Pagan divinities, consulted the *haruspices*, indulged in a number of Pagan superstitions, and, on the other hand, built churches, shut up Pagan temples, and interfered with the Council of Nicea, must have been a repulsive phenomenon, but was certainly not a Christian." Eleven centuries had elapsed since the great founder of the Roman name had planted the seat of his dominion upon the Palatine hill: the kingdom had given place to the republic, the republic to the empire; and though the course of Rome's greatness had long since reached its climax, and symptoms of her progressive decline had unequivocally declared themselves, yet the vigorous arm and master-mind of the great Constantine had rescued from a host of competitors, and centred in his own rule, an empire still vast and vigorous beyond precedent, when the adoption of a novel resolution, bold in conception, grand in execution, but disastrous in result, laid the foundation for those changes in the political, social, and religious condition of the empire which hastened the consummation of a catastrophe that might otherwise have been indefinitely postponed.

How a new Rome and a new religion affected the language and literature of the empire we will presently inquire. That the mighty currents of Gothic and Byzantine architecture, however influenced they might be by the minor streams that have contributed to swell the broad bosom of their impetuous tides, may be traced through the extended countries that they have fertilized to the Roman fountain whence they derived their source, all have agreed. It is a question of amount only, and future explorers may throw more light upon a subject which but a few years since was wrapped in comparative darkness.

It was the architecture of Byzantium, formed from the combination of two great principles, each principle thereof further reducible to the primary elements and distinct nationalities that, age after age, and nation after nation, had, consecutively, contributed towards its formation; and which, when united in indissoluble bonds upon the shores of the Bosphorus, typified by its antagonistic features that discordant union of Eastern and Western blood that paid the penalty of imprudence in disaster and downfall: it was the architecture of Byzantium, of hybrid beauty, but of surpassing interest, whose development, in different modes, was destined to influence, more or less, all those varied styles of architecture that have succeeded it.

The first offshoot from the Byzantine stock was one that in its after development exhibited a luxuriance of invention of ornamental detail, doubtless derived from the natural genius of its producers for mathematical science, that has never been equalled. Strange was the course of events that, from the descendants of the pastoral and wandering tribes who found a subsist-

ence for their flocks in the scanty pasture and sandy waste of Arabia, should produce a race of warriors that might vie with Rome herself in conquest: stranger still the course of events that, from the descendants of these rude dwellers in tents, could elicit an artistic skill equal to the creation of the marvellous beauties of the Alhambra.

It is to the success of the unexampled religious imposture of Mahomet, who, by the twofold persuasion of the sword and the Koran, established that powerful monarchy of the caliphate, which, in an incredibly short space of time, extended its conquests over Persia, Syria, Egypt, Africa, and Spain; subdued Crete and Sicily; invaded France and Italy; assaulted Rome herself, and shook the Byzantine empire to its centre; that we owe that wondrous style of Arabesques and Moslems, that came and vanished like a dream; germinated, reached its apogee, and departed, whilst yet its sister of the Gothic school was struggling in the undeveloped stages of its long transition from the Classic.

"The genius of the Arabian prophet," says Gibbon, "the manners of his nation, and the spirit of his religion, involve the causes of the decline and fall of the Eastern empire; and our eyes are curiously intent on one of the most memorable revolutions, which have impressed a new and lasting character on the nations of the globe."

It was, however, from the enthusiasm of the conquered and converted nations in the new faith that the aggressive power was given to the Saracen domination, which the scanty population of Arabia could never have supplied. The speedy resumption of their own individual sovereignties, by Persia, Syria, Egypt, Africa, and Spain, proved that their acknowledgment of Saracenic supremacy was due alone to the religious claims of its caliph, as successor of the prophet. Arabia had no architecture of its own, and the Caaba of Mecca is the only existing exponent of their ancient idolatrous worship. The architectural remains of the Mahomedans, in the various countries that adopted their religion or owned their rule, all exhibit such features of that which was pre-existent in those countries as go far to prove that the Moslem style was not indigenous, but an adaptation of former ones to new wants and circumstances. Nevertheless, a style was at last elaborated, as Ferguson says, "tolerably homogeneous, though never losing entirely those local peculiarities which it received from the earlier styles out of which it rose, and which still continue to mark most distinctly the various nationalities which made up the great empire of Islam."

Deeply influenced by the Saracenic element is the architecture of Venice of the Gothic period, which, derived from the Lombard—its modification or variety of the Byzantine—followed the instincts of its birth in combining rather with the Saracenic of the south than the Gothic of the north, and in this combination produced a Gothic of Eastern character—the Gothic of Venice—a city which, in its history, is more associated with the Eastern than the Western empire. But we shall, for this occasion, content ourselves with a few words from the historian of its stones. "The work of the Lombard was to give hardness and system to the enervated body and enfeebled mind of Christendom; that of the Arab was to punish idolatry, and to proclaim the spirituality of worship. The Lombard covered every church which he built with the sculptured representations of bodily exercises—hunting and war. The Arab banished all imagination of creature from his temples, and proclaimed from their minarets, 'There is no god but God.' Opposite in their character and mission, alike in their magnificence of energy, they came from the North and from the South, the glacier torrent and the lava stream: they met and contended over the wreck of the Roman empire; and the very centre of the struggle, the point of pause of both, the dead water of the opposite eddies, charged with embayed fragments of the Roman wreck, is Venice." But of Saracenic and Venetian architecture we shall have occasion to speak more fully anon.

Nor will we here stop to consider the still more interesting subject of the various phases of the Gothic styles which subsequently grew out of that Christian Romanesque, an architecture which has been well described as having lost the refinement of Pagan art in the decline and fall of the empire, but which was "elevated by Christianity to higher aims, and by the fancy of the Greek workmen endowed with brighter forms."

Although the conversion of Constantine may be considered, in the abstract, as the great transi-

tional event that fixed an eternal boundary between Pagan and Christian architecture, yet a change from idolatry to Christianity had been gradually progressing during the two previous centuries; the old mythology had long found trust only among the crafty and the foolish—for the wise knew better; the sun of the classic was setting, to be succeeded by a long night of transitional darkness, to break again into glorious light in the perfected architecture of the Middle Ages. The architecture of Rome being of itself exotic, that of Christendom may claim a pedigree of still higher antiquity in the remoter land where the parent plant was indigenous; but the element that furnished form and substance to the new style, and which, through the long ages of a gradual transition, preserved, almost intact, the great distinctive features that first called it into being, was essentially of Roman origin, and presents no trace of the templar form that constituted the very essence of the architecture of ancient Greece.

The legalization of the "pure and humble religion" that for three centuries had endured the rage of persecution, and hidden the visible testimony of its increasing growth from the eyes of its virulent assailants in the obscurity of the cave and the catacomb, had now obtained for it a recognition of its claims, "a local habitation and a name." The form of the future basilican church had found its type in the existing secular buildings which conferred their name upon their ecclesiastical imitations, and which, from the Porcian, the first basilica recorded by Livy, to that of Maxentius, the model and type for mediæval vaulting in an after age, had presented throughout the same leading characteristics. But it was not until the reign of Theodosius that the Christian was ordained to be the national faith, for the apostasy of Julian and the irresolution of Valentinian had restored the worship of the heathen gods, and the difficulties or the doubts of Constantine himself had prompted him to erect his churches in the outskirts only of the still Pagan city.

But the architecture of Rome,—which had culminated under the munificent patronage of Augustus; had languished under the vices of Caligula; had received a fitful lustre from the prodigality of Nero; had reached the colossal under Vespasian and Titus; had enjoyed a vigorous beauty under Trajan and the Antonines; and had reached the climax of vitiation under Diocletian;—the architecture of Rome was now but the shadow of its former self, and retained but the memory of its high descent under the significant title of "Romanesque." But while the art of decoration had been gradually deteriorating, that of construction had been in the same ratio progressing, and as the simple hemispherical dome, springing from a circular or polygonal tambour, presents relatively its chief examples in the Pantheon and the ruins of the so-called Minerva Medica, so does the groined roof, formed by the intersection of semi-cylindrical vaults, covering vast areas, like those of the Thermæ of Diocletian and Caracalla, reach its climax in the gigantic remains of the Basilica of Maxentius.

It is unfortunate that the slight construction of the original Pagan basilicas at Rome, added to the free use of their materials in the erection of their Christian prototypes, should have left us such scant records of a class of building, which, as shown by the mutilated Capitoline plan, must have been numerous; however, the remains of those we do possess—the Ulpian and Maxentian—illustrate respectively not only the plan, but the wooden and vaulted method of roofing such buildings.

The Romanesque or Romane, in its full development, was the first completed step in the transitional process; a preliminary state of the art, which, at an early period, assumed in the East the features known as Byzantine, but in the West, prevailed in Rome itself and other parts of Italy during the whole period of the Middle Ages. Much confusion has been occasioned by the indiscriminate use of these terms, though the foreign elements that distinguish the latter are sufficiently pronounced to render such confusion unnecessary, and the terms Byzantine and Lombard have been equally applied to all round arched styles in Italy, Germany, and France; but a clearer insight into the different features of several styles has found a more convenient nomenclature in Byzantine, Lombard, Italian, Norman, &c.

It was the fashion of our ancestors to deal with results rather than causes; to be content to accept styles as they found them, rather than to inquire how they came to be so; but the more enlightened views of modern architects prompt them to investigate before they adopt; to reduce each style to its elements before employing in a

late century what was only suitable to an early one. It is this spirit of investigation which has enabled modern energy to rouse from its long slumber the genius of that mighty style, which, finding its germ in the effete forms of old Rome, expanded to a perfection of symmetry in the Middle Ages, which contrasted the more strangely with the general low state of the arts and literature around. The revival of the Pointed style is a distinguishing feature of the age we live in, and so adequate is modern ability to accommodate it to modern wants, that there would seem to be but one qualification wanting to make our productions equal to the models we derive them from the spirit. But there is the difficulty: "*L'abito non fa il monaco*;" the monk's hood is no warrant for the monk's sanctity; and the spirit of one age cannot be infused into another.

This want, so easy to perceive, so difficult to supply, is like the necessary consequence of our position at the present day as compared with that of our ancestors. The ancients were driven by necessity to invent: the moderns are necessitated by repletion to copy. The former concentrated their energies in producing a style that should stamp a country and a period: the latter expend theirs in adopting such a variety of styles as shall convey no true picture of either. Fortunately, the scantiness of records that made style and construction the only evidence of the date of many of the buildings of antiquity is an evil that need be scarcely dreaded in these days of literary affluence, or the skill of the future antiquary would have sometimes a task of no small difficulty in distinguishing between real age and assumed. But it is in this display of a just veneration for the past, combined with a necessary originality for the present, that the great difficulty of modern design consists, our antiquarian predilections being too apt to fetter our inventive faculties. The antiquarian spirit that succeeded the introduction of the arts of Greece to this country, when the labours of Stuart had at last convinced the world of the difference of Greek and Roman proportions, and which showed itself for years in a series of servile reproductions of classic forms, and palsied the spirit of invention by a blind submission to an absurd canon of architectural faith,—that any thing old must of necessity be good, and anything original of equal necessity bad,—has, since the revival of the Pointed style, given way to more enlightened notions upon the relative value of the respect due to antiquity and the duty owed to ourselves. Architects and antiquaries are or ought to be animated by a totally different spirit, for, whilst the one is ever looking back with regret upon the past, the other is or should be equally intent on looking forward with hope to the future. The motto of the one is "Stand still," that of the other, "Go on;" yet their love of art is, perhaps, equal, though differently expressed. The real antiquary in art reads in his ruins the volume of the past, but confines his reading to that volume, and would regard the altering or adapting a building of antiquity to a purpose foreign to its original intent with much the same horror as the antiquary in literature would view the tampering with a mutilated manuscript, the fancy restoration of an effaced palimpsest. The one will permit the addition of only just so much modern masonry as may preserve the tottering fabric from immediate fall: the other will sanction such interpolations only in the blank *lacune* as the context may afford unquestionable warrant for: to both conjecture is idle, emendation is sacrilege. The true architect has equal love for the volume of the past, but sees in it only an introduction to that of the future; a continuous tale, in which he has himself a part to play; a story of indefinite length, whose sequel shall only be revealed when time shall qualify posterity for its dispassionate perusal. As Quintilian justly remarks:—"*Attingit presens de rebus humanis perducta in summum artes miserentur, et quod optinnum ideam ultimum fruset.*" "The advancement of the arts to the highest possible excellence would be but of poor service to mankind, if what was best at any particular moment was to be the last." By this he means to say that, as it is impossible to know when art has arrived at its zenith, so is it the artists' duty never to relax in his efforts to advance it more and more.

That the usual course of progression—infancy, culmination, and decline—which characterizes the history of all past nations, and, indeed, all human institutions, should illustrate the history of the Roman nation as well as others, is what need occasion no surprise; but that so short a period as elapsed from the reign of Augustus to that of Constantine, should produce so great a revulsion in the preconceived architectural notions of the

most enlightened nation of the time, would be sufficiently astonishing, did not the greatness of the chief cause account for results so startling and unprecedented.

As Niebuhr observes, "There are people who charge the Christian religion with having destroyed ancient art; but the charge is utterly groundless; for ancient art had ceased before Christianity was introduced." That the very spirit of early Christianity was adverse and destructive to art, none can deny. The attributes of the gods of Greece, palpable and intelligible, might be portrayed in the trembling marble; but those of the God of the Christians, impalpable, infinite, abstract from matter, could not be so expressed without evident degradation. The antipathy to idolatry which constituted the very essence of early Christianity, engendered a hatred to the fine arts that had been stained by such pollution. From antipathy sprang bigotry and fanaticism, and degradation or destruction was the fate of the noblest monuments of antiquity. Indeed, from the first uproar amongst the artists of Ephesus upon St. Paul's denunciation of the worship of the goddess Diana, to the long and fiercely-contested struggle between the iconoclasts and their opponents in the eighth century, the sculptor's occupation was virtually gone, and his art lost. The impunity granted to the monuments of pagan art, by the delays and toleration of Constantine and Valentinian, was amply repaid by the orthodox zeal of Theodosius; and an edict by that monarch at the close of the fourth century, procured an indiscriminate destruction of the temples and sculpture of Rome and the provinces. Exceptions there were, however, in the work of devastation; and in token of such good providence, the Pantheon still rears its dome in its pristine majesty. Fanaticism of the same kind is charged against Pope Gregory the First. His writings reveal his implacable hatred to the classic monuments of pagan art, and he is reported to have ordered that any remaining vestige of it should be consigned to the Tiber. But fanaticism never differs from itself, and the same bigotry has not been found wanting in our own country, and at a much later period. Great, however, has been the expiation since offered by civilized Europe generally, and Italy in particular, for the barbaric deeds of their ancestors, by the revival of the arts and encouragement of their professors, and in the veneration since displayed for every fragment of the master-pieces of antiquity, which time and fanaticism have spared us. Greater still has been the compensation made to the world, for any architectural damage it may have sustained, in the first instance, by the introduction of Christianity,—albeit the decline of the old Classic forms of Greek type was a matter quite independent of that event,—in the creation of a style as superior to the debased source from which it sprang, as the butterfly is to the chrysalis, or sunlight to obscurity.*

CLOTHWORKERS' HALL, MINCING-LANE

In recent notices of architecture in the city of London we spoke of Clothworkers' Hall, of which we had given a view some time previously, in fact before the front was completed; and we expressed the intention of supplying some particulars of the arrangements and decorative details of the interior. We are now able to redeem this pledge. The building is very nearly finished, unless we except certain work in decorative painting, necessarily deferred; and it is already in great part appropriated for the business and festivals of the company. The narrow front in Mincing-lane gives a limited notion of the extent of the present building, and of its importance architecturally. The ground extending back, or eastward, to the church-yard of Allhallows Barking, widens considerably in that part (being bounded for the greater portion of the depth by Dunster-court), and there it comprised formerly a large quadrangle, which the principal buildings and offices surrounded. The area of the original quadrangle is now appropriated, together with that of the buildings and a fore-court—save that a small yard and entrance-way from Dunster-court, south, are left on that side. By this explanation it will be understood that the plan is divisible into two distinct groups of building. Of these, the group on the western area, next Mincing-lane, now comprises rooms to be let as offices, the offices of the clerk of the company, and a residence for the beadle. A central corridor, lighted from above, leads up to the main building, and separates the clerk's offices, which are at the north, from the

residence and yard at the south. The lower rooms are partly lighted by borrowed lights from the corridor, and partly through space got for skylights or cove-lights, by setting the walls of the upper stories wider apart than the width of the corridor. The corridor has adequate architectural character,—the side-lights forming a series of arch-headed openings with French casements glazed with diaphanous ground glass, and the ceiling-light being arched for the portion of the length skirting the offices and the residence and court-yard. The corridor terminates in what may be considered a porch to the entrance-hall of the main building. This small feature of the design, the porch, is simple, but very effective. It is covered by a hemispherical vault, which pierced for light, is capped with a single piece of glass, perhaps 4 feet 9 inches diameter, ground, and ornamented at the margin. Some of the dressing-rooms are lighted by small lanterns, covered in a similar manner. There is no matter of detail which shows the improved resources of architecture, at this date, as compared with the date of most of the City halls, better than the glazing of skylights. Bars in a circular light, or small panes in lanterns of any kind, are difficult to manage decoratively; and they accumulate dirt so much, that a disagreeable appearance results in many of the halls; and this is particularly remarkable at the India-House. The domical ceiling of the porch we have mentioned, is carried by four arches, and Roman-Doric coupled columns. From it, across the hall, is seen the ascent of the grand staircase.

The main building, filling the larger division of the area of ground, includes a grand hall, or banquetting-room, and a staircase-hall, to both of which there is nothing equal in effect in other City halls, and perhaps little in London. We will describe them after we have completed general particulars of the plan. On the ground-floor there are to the right on entering, the "Pensioners' room," lighted by windows in a bow, and a waiting-room, or serving-room, with lift placed between it and the kitchen; and there are to the left the "Binding-room," a "strong-room," and numerous elaborately fitted dressing-rooms and conveniences; whilst at the back of the staircase-hall, is the Court Dining-room, with large bow at the end; the Court-room being to the left of it, and the kitchen, scullery, and waiters' staircase to the right. The staircase is carried up as a distinct structure in the middle of the hall. Two centre flights (broken by a wide landing), in a direct line, but the upper one diminished in the width between the balusters, ascend to a wide "half-pace" landing, whence the ascent turns in the reverse direction, dividing into two narrower flights (the plan will be readily understood if we say, there is a handrail each side of each flight and each landing), leading to balcony galleries or landings completely surrounding the hall on the first-floor level. The landings last named are carried by iron cantilever bearers, concealed; the upper flights of the staircase, springing from the half-pace landing, are carried by raking girders, and by column or stanchion, which is concealed in decoration of *carton-pierre*, in such manner that there are formed two novel features of effect in the ascent.

The lowest flight of the first ascent of the stairs is flanked by coupled columns, as support of the wall above. The supports just alluded to, to the upper flights of the stairs, are in line with the columns on the first landing, and they are designed with rich capitals of rams' heads, basket-like bells, and bracket lateral projections; whilst their shafts, triangular on plan, diminish downwards to a circular boldly-moulded base. Over this lower landing, the gallery of the first floor curves forward. The staircase-hall, square on plan, is covered by an octagon dome, yet to be described.

At the back of the staircase-hall is an ante-hall to the Court Dining-room; and here the wall above is apparently carried by three arches, springing from slender columns. The shafts of these are of dove-coloured marble; and the capitals of veined marble. The actual support to the wall above, is a wrought-and-riveted iron girder. The effect might have been somewhat more satisfactory, had the columns been more massive. Dove-coloured, black, Purbeck, and other marbles, and polished red and Haytor granite, are freely used throughout the principal parts of the building. Sculpturesque embellishment in *carton-pierre*, of superior character, figures and ornament, we may add, also prevail. The hand-rail of the staircase is of dove-coloured marble, and the balusters are of *carton-pierre* on core of metal.

The rooms on the first floor are the Livery Drawing-room, extending over both the entrance-hall and the pensioners' room, the Court Draw-

* To be continued.

ing-room to the north, the Great Hall at the back, and serving-rooms to the south.

The angle of the building, bounded by the court-yard, and by part of Dunster-court, is faced with Portland stone; and the two fronts here display much decorative detail and carved ornament, though not so much as the front to Mincing-lane. There are two stories of arch-headed windows, with architraves and cornice mouldings; over the windows are introduced various ornaments from the arms and badges of the company; and the coirns, and the piers of the projecting bow, have pilasters with elaborate capitals and ornament in panels. There is great feeling and taste in the design, and great skill in the execution, of the details, both in the Mincing-lane and the Dunster-court parts of the exterior. Mr. Kelsey was the carver. Possibly the impression derived would have been even better had there not been in some respects an appearance of *imitation* of the style, the Renaissance, which has been worked upon. Defects and weaknesses in some cases certainly are copied, both needlessly, and to the lessening of the character of the original art-work which elsewhere there is.

The entrance-hall has a marginal pavement of Minton's tiles, but is generally plain in effect, by comparison with some other portions of the building—the full effect of the staircase-hall scarcely appearing, except from the first landing of the stairs. Sculptured enrichment will probably be added. The Court-room is lighted by very large windows, with sashes glazed with diaphanous glass. The fireplaces are under the windows, and have massive dove-marble slabs and jambs, in good taste. The Court Dining-room has five lights in the bow, divided by columns having polished red granite shafts, enriched capitals in *carton-pierre*, to be painted, and Purbeck marble bases. These columns are on pedestals, which have dove-coloured marble cornices and bases, black marble plinths, and polished Haytor granite dados. A similar system we may now say is adopted, on a more extensive scale, in the similar features of the great hall, where there is a podium; and a distinct species of marble—a Devonshire warm-toned variety—is used in the bays, between the pedestals which support the columns. The doors of the Court Dining-room have circular panels over them, under archivolts, with rilievs. The chimney-piece is of black marble and bronze, by Potts. The doors and jambs throughout the building are of polished wainscot. The architrave mouldings and cornices are of painted wood, with enrichments in *carton-pierre*.

On the first floor the Livery Drawing-room has a segmental ceiling, with oblong and hexagon-formed panels, with enrichments, and a band of rich festoons at the springing of the curve. The cornices and friezes of the doors, the friezes pulvinated and fluted, are well treated. In the Court Drawing-room there is less decoration at present, but the friezes of the doors are here enriched with rilievs of animals and ornament. The Great Hall, though it has some slight resemblance in its general form to a Parisian work which we have illustrated,—the Gallery of the Hôtel de Ville,* is a thing of which the company and their architect may be proud. Decoratively, indeed, it may be inferior to the Gallery at Paris, where the columns are disengaged, not three-quarter columns. It is 80 feet by 10 feet, length and breadth, and 40 feet in height in the centre,—or, as to length, half that of the Gallery, the other dimensions being about the same.

An order of Corinthian three-quarter columns, with the polished red granite shafts, and the pedestals and podium of coloured marbles and granite, surround the walls, the intercolumns being filled in with windows on one side, and arch-headed recesses, chiefly for mirrors, on the other, the archivolts springing from richly ornamented pilasters. Two recesses at the principal end of the hall contain statues of honoured members of the company; and the centre recess behind the president's chair, having greater depth, will probably enclose a *buffet* to exhibit the cup of Samuel Pepys, and other plate. At the opposite end of the hall, behind the columns, is a gallery for musicians, appearing as three separate balconies, in the intercolumns, supported by ornamented shafts which form a framework to mirrors. The mirrors can be raised sufficiently, to pass in what is required from the serving-rooms. Above the entablature of the order, the frieze of which will be enriched with ornamented panels for names of eminent members of the company, there is a series of lunettes filled with stained glass; and the arches over these, groin into a deep cove to the ceiling, which last is formed in one deep panel, divided into coffers ornamented with rosettes. The whole

of the upper part of the hall is profusely enriched. The spandril spaces of the cove have alto-rilievs personifying the principal cities of Great Britain and Ireland: on the soffits of the arches, over the lunettes in which the stained glass displays the arms of the "twelve companies," are the names in each case of a founder of the company in gilt letters in an ornamental panel; and the cove is separated from the cornice, or mouldings, of the plafond or oblong panel of the ceiling, by a roll moulding enriched with fruit and flowers. The chandeliers will hang from the points of the groining at the summit of the cove. Ornament also is introduced in spandrils to the arches in the intercolumns. The whole of the *carton-pierre* work in the building has been executed by Jackson and Son, and we have seen nothing surpassing it. The stained glass is too heavy and dark.

The decorative features of the upper part of the staircase are clustered Ionic pilasters, and archivolts with enriched mouldings, and the architraves and cornices of the doors, which open on to the landings. The angles of the square plan, pendentives, or spandrils, joining the square with the octagon, are ornamented with shields and branches of foliage. The octagon dome, 27 feet in span, starts from a bold cornice with trusses; it is divided into variously-formed compartments by enriched bands, all the principal compartments being glazed with ground glass, with a pattern in light blue thereon. At the top is a small open lantern. The effect of the dome, with the method of lighting, is novel and good. As a piece of construction also, this dome is interesting. It is framed in timber, with a curb or continuous shoe of iron, forming a ring at the foot to prevent whatever there might be of thrust, the corresponding curb at the base of the lantern being in short lengths of timber. Thicknesses of timber, or board, bolted together, appear to have been preferred to the use of whole timber of large scantling. The external covering, including rolls, labels, cornices, trusses to the lantern, and whatever else, is wholly of 8 lbs. lead—the same as is used in the gutters. The "dressing" has been deftly executed, and is a very praiseworthy specimen of plumbers' work. Mr. Taylor, of Clement's-lane, was the sub-contractor employed.

The general contractor for the works was Mr. John Jay. The amount of contract was 36,000*l.*; but this may be raised by extras and fittings, to 40,000*l.* Mr. John Brodie is the clerk of the works. The kitchen-apparatus was supplied by Bailey and Sons, of Gracechurch-street, who also supplied the ornamental metal-work. Of the front in Mincing-lane, we need only say that many of its details are beautiful in design and execution, especially those of the entrance doorway and windows of the lower story. Much of the carving of the upper part of the building, as the chimera on the pedestals of the balustrade would probably deserve better inspection than can be given in so narrow a street. Mr. Samuel Angell, our readers know, is the architect.

ON THE APPLICATION OF DEFINITE PROPORTIONS AND THE CONIC SECTIONS TO ARCHITECTURE, ILLUSTRATED CHIEFLY BY THE OBELISK.*

ALTHOUGH the clothing of the column with the entasis has now become so received a practice with us that no common workman hardly would think of putting up one with perfectly straight sides, few architects have as yet accepted into their practice the same principle of entasis in the long transverse lines of their buildings, although I fully feel with Vitruvius that, in order to gift them with complete sufficiency, these also require a slight compensatory treatment. One quotation from Vitruvius, to bear out that this treatment was also carried into the upper part of the structure. "The capitals, being completed, are to be set on the tops of the shafts,—not, however, level throughout the range of columns, but so arranged with a gauge as to follow the inclination which the small elevations in the stylobata produce." Thus a slightly curved line of upward entasis is produced in the range of the capitals or tops of the columns as well as at their bases. So far Vitruvius, and now we turn for a short space to some results of the investigations which have been made of late years at Athens with respect to the lines of her ancient architecture, in which we shall find that the strange omission of entasis by Stuart has been amply supplied and rectified by examinations made on the spot by Mr. Pennethorne, Mr.

Cockerell, Mr. Donaldson, and Mr. Penrose; and the elaborate work by the latter gentleman has now become the text-book on the subject. * * *

I will not go further into the adjustments of smaller details, having only space for broad features. I am now about to compare the elevation of the obelisk with that of the front of a Greek temple. Although of very different proportions, the two general features possess similar elements: these are the lower and upper transverse lines, the sides, and the roof lines. The shaft of the obelisk answers to the colonnade and entablature, and the pysmedia to the tympanum. In this way we may accept as a general postulate that the front of the temple is a very wide, short, obelisk, and the obelisk a very tall temple. We have seen that the sides of the columns of the Parthenon taper and slope inwards: so do the sides of the obelisk; and we have also seen that these columns do so not with straight sides, but with sides of very delicate entasis. I conceive that an obelisk should have a lateral entasis. The lines of the upper step and entablature of the Parthenon have a slight upward entasis; so also in effect should be the case with the analogous lines of the obelisk. I am still doubtful, however, as to the inclined or roof lines of the pyramidion whether to follow the Parthenon or the Theseum. I have tried both, but I think I prefer the straight lines of the Parthenon. I do not wish to push this similitude of the two subjects of art too far, but I think you will allow that they possess in degree the same general elements. I desire, however, now to say a few words on a different and perhaps somewhat novel mode of obtaining a somewhat similar effect of rise in the centre of transverse lines by a different method from that of the Athenians,—that is by a convex entasis on plan instead of in elevation. I have adopted this mode of entasis on plan in the treatment of the obelisk, and hence I naturally came to think of it more generally as applied to other subjects. I conceive that all perfectly plane surfaces, especially when bounded by angles, look somewhat concave. I conceived that the flat surfaces of my obelisk in its first stage did so, and yearned for this correction. I supplied this at first by a convex entasis, or coming out on plan derived from a segment of a circle, for which, however, eventually, I substituted one derived from the flat side of an ellipse. All the faces of this obelisk have thus, in addition to the lateral entasis, an elliptical entasis on plan of very delicate sagitta all the way up. As, therefore, this treatment runs from the base of the shaft to the apex, it adds a slight upward arch to the base of the pyramidion, and to all transverse lines which might be put in the way of inscription on the shaft. This entasis on plan has been acknowledged, and I think I may say is recognized, as an improvement to the obelisk. And the question naturally occurs, might not this treatment have its advantages in subjects of more extension? as it not only gives a certain fulness and fluency to the surfaces, but gifts all transverse lines above the eye with the compensation of delicate entasis, even while the beds of structure remain actually flat. It is chiefly when transverse lines are long, and subtend a large angle to the eye, that they most appear to droop in the centre. When, therefore, the front of a portico is far off, these transverse lines do not require so much compensation as when near.

A SLIGHT HISTORIC SKETCH OF OBELISKS.

Having now occupied some time in these remarks on the curvilinear treatment of surfaces, I will, if you please, before I begin to illustrate my own views as to their application to the obelisk, vary my paper by some account of the ancient history and existing examples of that remarkable unit of architecture.

In the primitive state of the world nothing was more ready as a record of an event than to set up a stone in the place in which it occurred. Thus, as the Bible informs us, did Jacob set up in Bethel the stone which had been his pillow, in record of his dream and the promise made to him, and the vision on that spot. "And Jacob rose up early in the morning, and took the stone that had been his pillow and set it up for a pillar." Subsequently, it is supposed from this type, these consecrated stones were not unfrequently called *baïtolo*, or *beitile*, from Bethel. There is also another word which occurs in the Hebrew of the Bible, "Matsebad," which is in some instances translated "pillar," and at others "image," when it is apt to be thought to indicate a human figure. It appears, however, rather to have been used to indicate a high stone or obelisk. Selden, in his "De Jure Gentium," says, "nor while the word 'Matsebad' is translated 'statue' does it signify

* See vol. xiv. 1856, page 487.

* Read by Mr. John Bell, at the Society of Arts, on Wednesday, May 25th.

what statue ordinarily does, *i.e.* the human figure." Spencer also agrees that it indicated a column or a huge stone, rather than a human figure. Sanchoniathon states that the Phenicians, and afterwards the Egyptians, consecrated columns to those who benefited mankind, and to the elements. Clement, of Alexandria, quoting an old author, says that the Delphic Apollo was originally a column; and on the old coins of Apollonia that deity is recognized by the representation of an obelisk little different from those of Egypt. The reverence for the sun, indeed, one of the purest forms of early profane worship, seems to have been often connected with the erection of the obelisk, which, from its being pointed at the top and increasing at the base, bears the general form of a ray of light (coming towards us), of which, according to some old authors, the obelisk was intended to be expressly a representation. Mr. Bonomi considers the image of gold set up by Nebuchadnezzar, on the plain of Dura, to have been by no means the statue of a man, but a gilt obelisk. It is at the commencement of the 3rd chapter of Daniel that the words occur, "Nebuchadnezzar the king made an image of gold. The height of it was three score cubits, and the breadth thereof six cubits. He set it up in the plain of Dura, in the province of Babylon." Thus, as regards the proportions of this image, the height was ten times that of the breadth, which it is evident is wholly inconsistent with any proportions of the human frame. On the other hand, it agrees closely with those of the more graceful Egyptian obelisks, of which the whole height is usually about ten times that of the side of the base. Mr. Bonomi, therefore, appears to be well borne out in his view, that this image of gold, set up by Nebuchadnezzar, was not a statue of a man, but, in fact, an obelisk, gilt. It may also suggest itself, that the worshipping commanded by the king was in some sort connected with the worship of the sun, of which fire was the worshipped type, as it was also a "fiery furnace," to which those were condemned who would not fall down and worship before this great "ray of light." This, of course, was the abuse of a fine feature of architecture,—no unusual occurrence, as even the most beautiful temples of the ancients were raised not unfrequently to deities of the most atrocious character.

The obelisk of the most extraordinary proportions of which ancient writings give any record, was that of Queen Semiramis, which is thus described by Diodorus Siculus:—"Semiramis likewise caused a great stone to be cut out of the mountains of Armenia, 125 feet in length and five feet in breadth and thickness" (so that it was twenty-five times as long as it was broad and thick). "This," Diodorus continues, "she had conveyed to the river by the help of many yokes of oxen and asses, and there put it on board ship, and brought it safe by water to Babylon, and set it up in the most remarkable highway of that city, as a wonderful spectacle to all beholders. From its slope it is called an obelisk (*obelos* in Greek, signifying a spit), and it is accounted one of the seven wonders of the world." If this account of its proportions be correct, I cannot conceive it could have been beautiful, although it certainly was a wonder. It must have been secured in its erect position, I suppose, by being sunk in a socket, which treatment is applied to the Egyptian obelisks, but solely to the degree of preventing their shifting on their bases. Obelisks appear to have been as wide-spread as they are a simple feature in architecture. Indeed, they seem a form which is the common heritage of man, closely suggested also by nature; as, for instance, by the Needles in the Isle of Wight. As the pyramid is a kind of scarped mountain, so is an obelisk a splinter of rock fashioned on four sides, and, from its monolithic nature, more lasting than even the pyramid itself. In Maurice's "Indian Antiquities," a sacred stone of this character is described by Captain Hamilton as existing in the Temple of Juggernaut. In the British Museum there is an Assyrian example, truncated, from Nimroud, in black marble, used, by means of reliefs, as a record of events. As a feature of art, the growth of the obelisk is evidently after this fashion. It first appears as a rude solitary stone, set up on end, of a long form, like the pillar of Jacob at Bethel. Then, gradually, as the arts advanced, these features were fashioned and inscribed so as to become what Strabo emphatically calls them, "Books of History," the legitimate use of the obelisk surface being for inscription. Their use as such enduring and dignified records appears by no means, however, to have been confined to Egypt, as Sanchoniathon expressly tells us they were erected in Phœnicia prior to their adoption in Egypt. Yet

it appears that it was in the latter country that they were most developed, the granite on the banks of the Nile lending itself so aptly to this purpose. Having thus indicated the extreme antiquity of these features of art as symbols, and as records of great historic events, we will proceed to some consideration of the best examples of those which remain to us, and will turn first to those of Egypt, which were transported to Rome by the Cæsars, and which still, after the lapse of so many centuries, and under its total change of dynasty and religion, still exist among the most striking decorations of that great city.

THE EGYPTIAN OBELISKS IN EUROPE.

I will preface, however, what I have to say of the Egyptian obelisks in Rome, by a list of those which, according to some old authors, the obelisk was intended to be expressly a representation. Mr. Bonomi considers the image of gold set up by Nebuchadnezzar, on the plain of Dura, to have been by no means the statue of a man, but a gilt obelisk. It is at the commencement of the 3rd chapter of Daniel that the words occur, "Nebuchadnezzar the king made an image of gold. The height of it was three score cubits, and the breadth thereof six cubits. He set it up in the plain of Dura, in the province of Babylon." Thus, as regards the proportions of this image, the height was ten times that of the breadth, which it is evident is wholly inconsistent with any proportions of the human frame. On the other hand, it agrees closely with those of the more graceful Egyptian obelisks, of which the whole height is usually about ten times that of the side of the base. Mr. Bonomi, therefore, appears to be well borne out in his view, that this image of gold, set up by Nebuchadnezzar, was not a statue of a man, but, in fact, an obelisk, gilt. It may also suggest itself, that the worshipping commanded by the king was in some sort connected with the worship of the sun, of which fire was the worshipped type, as it was also a "fiery furnace," to which those were condemned who would not fall down and worship before this great "ray of light." This, of course, was the abuse of a fine feature of architecture,—no unusual occurrence, as even the most beautiful temples of the ancients were raised not unfrequently to deities of the most atrocious character.

The largest obelisk now existing in the world is that called the "Lateran," from its situation in front of the Lateran Basilica in Rome. This splendid obelisk, originally, as it appears, 106 feet high, in one block, was, in the first instance, erected at Thebes, in Upper Egypt, in the propleum of the Temple of Ammon Ra. Pliny says, this took place during the reign of Rhameses, king of Egypt, during the Trojan war, *i.e.* nearly 1200 B.C. But obelisk readers discover on it also the name of Thothmes III. or IV. the fifth king of the eighteenth dynasty, who is the same as the Morris of the Greeks, so celebrated for the formation of the great lake which took his name. Ungarelli assigns to it an antiquity of 1740 years B.C.; and it now stands in the Lateran at Rome, a sufficient proof of the lasting nature of these records, having lived, as Mr. Burgess remarks, through the ruin both of ancient Egypt and of ancient Rome. Pliny, who tells the tale of its being first set up in Thebes by the King of Egypt, thus narrates:—"When it was on the point of being elevated, the king, being apprehensive that the machinery employed might not prove strong enough for the weight, with the view of increasing the peril that might be entailed by due want of precaution on the part of the workmen, had his own son fastened to the summit, in order that the safety of the prince might, at the same time, ensure that of the mass of stone." This, probably, is not an old tale, yet it points to the value and importance which was attached to these monolithic monuments in old times, and the degree to which they were cherished. The same author further narrates, that "it was in admiration of this work that, when King Cambyzes took the city by storm, and the conflagration had already reached the very foot of the obelisk, that he ordered the fire to be extinguished; he entertaining a respect for this stupendous work which he had not entertained for the city itself. After remaining for more than 2,000 years on its original site it was floated down the Nile by Constantine to Alexandria, that emperor intending it to embellish his new city on the Bosphorus. His death, however, occurring before this was accomplished, his son, Constantine, preferred to have it conveyed to Rome. In a vessel provided with 300 oars he caused it to be brought to Ostia, and thence up the Tiber to the Vicus Alexandri, a small landing-place about three miles below Rome. From this place it was dragged slowly, on low-wheeled waggons, to the Circus Maximus, on the spina of which it was set up A.D. 357. Of the time when it fell from its base we have no record. In 1588 it was discovered lying interred to a depth of nearly 20 feet, and broken into three pieces. It was re-erected in its present site, near the Lateran Basilica, by the celebrated architect, Fontana, at the orders of the energetic Pope Sixtus V."

The next example of the Egyptian obelisk in Rome, in point of size, is that which now stands in the centre of the Piazza San Pietro, in front of St. Peter's. This is, according to

Mr. Bonomi, 83 feet 2 inches in height. It was brought from Heliopolis, in Egypt, to ornament the circus afterwards called that of Nero. "The main interest, however, attached to this obelisk," Mr. Burgess says, "arises from its being the subject of the first experiments of setting up a fallen obelisk in modern time, and on its being in one unbroken mass, weighing 331 tons." * * *

THE OBELISK OF DEFINITE PROPORTIONS AND ENTASIS.

Up to this, with the exception of the suggestion of entasis on plan, what I have put before you has been greatly composed of the words of others, chiefly of those of the late Mr. Legrew, the Rev. Richard Burgess, and Mr. Bonomi. I now, however, come to a portion of my theme in which I am unavoidably obliged to recount my own doings in regard to the addition of definite proportions and entasis to the obelisk. I do not set this forth as an isolated example, but merely as an illustration of a principle, as I have already shown. However, I shall not attempt on the present occasion to apply this to any further feature of architecture, but will confine myself to an account of how my obelisk came to be associated with definite proportions, and the curves of the conic sections; and this merely as an abstract question: also I am obliged to go into some narrative details.

My attention was called to the subject of obelisks some years ago, by my having selected this feature as the principal one in a design I made, at that time wholly privately for myself, for a memorial of the Great Exhibition of 1851. In sequence of this, and in looking at two or three other obelisks, especially those models of Egyptian obelisks presented to the British Museum by Mr. Bonomi, it appeared to me that what I described at the outset of the paper strongly attached to them, viz. that there was an apparent weakness and insufficiency in their form, and that their sides looked concave. I at first attempted to remedy this defect, by contracting the shaft at the top, by sloping the sides more, still, however, keeping those sides straight. But this did not answer. The proportions of the obelisk were marred thereby, and the apparent concavity was but little if at all obviated. On this I determined to put in practice an idea which had been floating in my mind for some time; that was to add entasis to the sides, analogous to what the Greeks did to their columns. For this purpose I had a cast of my little obelisk split down the centre of the four sides, and opened out at the top somewhat more than the due proportion, so as to allow for rounding the sides upwardly a little. The divisions being filled up level with plaster. I then rounded the sides with a gradual but almost imperceptible entasis upwardly, until I had done away with the look of concavity. I did this with rasp and sand-paper until I had satisfied my eye, and I confess the result pleased me. This was the first step. When, however, I had done this, I conceived the surfaces to look somewhat concave horizontally on plan; and that, I might obviate this, I determined to make these slightly convex horizontally, by a segment of a circle bowing outward. For this line, however, eventually I substituted a segment of the flat side of an ellipse, as more suitable for an obelisk, and for the purposes of inscription. I then carved the top transverse lines and surfaces of the pyramid and so on, until not a straight line was left on obelisk or base. These were all, however, of very delicate entasis, only compensatory, and in execution from the scale and material of my model necessarily incomplete. About this time I had taken the opportunity of setting forth somewhat prominently a proposal that the principal features of the memorial of the Exhibition of 1851 should be a polished monolith obelisk, of British granite, with all the names of the countries that contributed inscribed on it, combined with a public drinking-fountain, to be placed in the centre of the site of the Exhibition in Hyde-park, suggesting in this case the introduction on the obelisk of entasis. In consequence of this, I was invited by the Royal Institute of British Architects to lay my views before them of the principle of the entasis applied to the obelisk. This I had the honour of doing in May last, now just a year ago. At the commencement of that evening a most interesting paper was read by the Rev. Mr. Burgess, "On the Egyptian Obelisks in Rome, and Monoliths as Ornaments in Great Cities," in which he recommended their adoption here. This introduced my paper, from which, if you please, I will read two or three extracts. * * *

EVOLUTION OF DEFINITE PROPORTIONS IN THE OBELISK.

As regards my own attempt at a solution of

this problem of applying curvilinear treatment to the obelisk, I have now brought you up to my progress in May last, when, as I informed the Institute of British Architects, I had only made a little sketch on the principles I spoke of without going into the refinements of detail for which the scale of this was not adapted. Circumstances, however, have since called on me to make a larger model, some 20 feet high, which has afforded me the opportunity of carrying the problem considerably beyond the point at which it then rested.

In my first little model I had adjusted its proportions and lines solely by my eye, and executed them actually by what in homely phrase is called the "rule of thumb." Now, however, that I have enlarged and completed one executed by workmen, I had, of course, to furnish them with definite proportions to work by. I thus, for the first time, began to measure my little model, when the following coincidences came out, one after another, quite unexpectedly, between what I had done merely by the eye and a consistent code of definite geometric proportions. In the first place I found, with my compasses, that the diagonal of the base of the pyramidion was exactly equal to the side of the base of the obelisk. This was the first step, that the diagonal of the base of the pyramidion was equal to the side of the base of the obelisk. In searching further I found also that this gave the exact vertical height of the pyramidion itself. So here was a treble coincidence, of the most simple and definite nature, that the diagonal of the base of the pyramidion, the side of the base of the obelisk, and the vertical height of the pyramidion, should be all one and the same measure. Encouraged by this, I hoped that on applying this fortunate unit of measurement to the whole height of the obelisk, that I might be so favoured again as to find that it formed some aliquot part of this. But, no, it would not fit in any way, either to the lateral or vertical measurement of shaft or whole obelisk. The measurement broke down altogether, and I was at fault. Having, however, found already that the diagonal of the pyramidion gave the side of the base of the obelisk, it soon occurred to me to try the diagonal of that base (that of the obelisk itself), which though growing out of the other, was a new measurement; and, having taken this, I began with my compasses walking up the vertical height of my obelisk, 1, 2, 3, 4, 5, 6, 7, when, to my surprise, and, perhaps you will smile when I add, to my great satisfaction, I found that I had landed with the seventh stride of the diagonal of the base exactly on the apex. Thus, seven times the diagonal of the base of the obelisk was the exact measurement of the vertical height of the obelisk. So here were all the general proportions of my obelisk exactly defined by one simple code of exact geometric proportions, of which the pyramidion was the key and pivot, and this arose quite unexpectedly out of a little obelisk which had been adjusted solely by the eye. More than one of those who assist me in my studio are here to-night, who witnessed the progress of my obelisk. They know I have not, in the least, "cooked" my account. I dare say no one will suspect me of not being quite open, but it is pleasant to have proof at hand if required. The original little model also is in my studio at Kensington, and I shall be most happy to show it there to anyone who may take an interest in the problem. As regards the number 7, as it is an element of so many things of great import, and characterized, as it is, as "the perfect number," I own it was a satisfaction that it should be that one which came in of itself to complete the code of definite proportions. In the Parthenon the proportions have been stated by Mr. Penrose to all bear relation one to another, and to be mostly composed of mutual aliquot parts, and Mr. Jopling has carried this still further. He has published a measure which he calls the pivot, and which is the difference between the diameters of the top and base of the shaft of one of the columns of the Parthenon, and which is also derived geometrically from the inscribed square of the top of the shaft. Seventy-two of these measurements give the breadth of the Parthenon, and 162 its length, and 10 of the same measurements the space between centre and centre of the columns. In like manner all the proportions of my obelisk possess a direct geometric relation. Taking a base of a cone of which the vertical height is equal to its diameter, the inscribed square is the base of the pyramidion, and the circumscribed square the base of the obelisk, and so on. An agreeable presentation arises from this, for you have only to strip a cone of this proportion (viz. one of which the vertical height is equal to the diameter), from the apex down to the

inscribed square at the base, when you discover a pyramidion of the exact proportions of that of the obelisk, which is in turn the key to all the other proportions of the obelisk.

APPLICATION OF THE CONIC SECTIONS, AS ENTASES, TO THE OBELISK.

This application of the cone to the pyramidion will serve to introduce the second portion of my treatment of the obelisk, that of applying the conic sections to clothe it with its various entases. You know the simple conic sections are of five different characters. Firstly, there is the sectilinear one through the apex, of which a side of the pyramidion is an example. Secondly, the circular, cutting the cone in a plane at right angles with the axis. Thirdly, the ellipse, cutting the cone across, but not at a right angle, but slanting as it were. Fourthly, the parabola, which is a section parallel to the side of the cone, and which would never cut the cone, however much produced. And fifthly, the hyperbola, which, from its direction further approaching that of the axis still wider, avoids cutting the cone across. Lines derived from each and all of these qualities of section come in to complete the obelisk and huse, and to endue with a compensatory fulness what the definite proportions, by themselves, only left a kind of rigid skeleton cone. I will not go now into the details of the mode of obtaining the hyperbolic line, which I adopted to give the lateral entasis of my obelisk, as it would occupy too much time. I would only say that my assistant on this occasion considered it should be struck from a point on a level with the base of the obelisk. I thought this would give too much entasis, as it proved eventually, and I therefore desired him to strike the entasis from a point on a level with two diagonals of the base below the base, as in the case of the columns of the Parthenon, when another very curious and unexpected coincidence came out, viz., that I had, without knowing it, and only to please my eye, made the base on which I had placed my obelisk exactly these two diagonals in depth. So that the entasis was struck from the ground line of the basement, as is the case with that of the Parthenon columns. There appears a principle in this and the entasis thus obtained, for the obelisk (by Vignola's method with a minute correction) came out quite satisfactory, being just compensatory and no more. The sagitta of this curve is little more than an inch on the elevation in an obelisk of 77 feet 9 inches in height, being, however, of course more on the angle. This entasis is less than the entasis on the columns of the Parthenon, but somewhat more than that on those of the Erechtheum. The elliptical entasis on plan, which I adopted for the surfaces of the obelisk, has a sagitta of one-third of this. This entasis on the horizontal plane runs over the top of the shaft, and only vanishes at the apex. Thus all the eight surfaces are curved with lines derived from conic sections. The same treatment, in conjunction with lines derived from the parabola, is also applied to the bases which support the obelisk; and lastly, the circle, as the base of the cone in the lower compartment of these, in conjunction with the square, forms in its one circumference the four basins of the drinking-fountain. Thus the solution of this problem has been guided throughout by the conjoined working of all the five simple conic sections, together with the perfect number seven and a code of definite geometric proportions, of which each bears a direct relation to every other.

CONCLUSION.

I will not go further into the minor details of this obelisk, although there are several other results of the same characters which have evolved themselves naturally from its code. I would desire, however, to say that I should be very sorry to be thought to presume that the code I have adopted for my obelisk is the sole one to be applied to that feature of art. I am very far from thinking this, although, perhaps, I may conceive that some general points of value may be indicated by the mode of my solution. Even, also, in regard to the conic sections, although I may myself think that these marvellous curves, which regulate the paths of the heavenly bodies, are also those which chiefly form the curves of the loaf, the petals of the flower, and the graceful contours of the female form, yet I am delighted to acknowledge the charm of other natural curves, as the conchoid, the cardioid, and the catenary, &c. as applicable to art. The view, indeed, which I take of the obelisk is that it is a feature of art yet undeveloped, and one which, as far as I can discover, is in the same state in which it was left by the Pharaohs. Also, that it is a feature highly suited

to monumental record; and, therefore, from these two causes, offering a fine fresh field for invention, both in regard to general proportion and in minor details. My own I have introduced as a humble illustration of the working together of the eye in accordance with geometric proportions. The illustration may be inadequate, but the general principle, few in these days, I conceive, will be found to ignore, viz. that science and art should work together. The Greeks have amply proved their adherence to this maxim, which I offer as the moral of my remarks to-night. I wish, however, to be understood that I by no means fancy that a work of art is to be built up by the rule of three. To hold that, would, in my idea, be pedantry. We have been endowed with direct perceptions of beauty, which we should be absurd to lay aside, to take up, instead, logarithms or algebra, but as in some sort geometry is the essence of reason, so, rightly applied, it comes in, I believe, to give definition and satisfaction to all forms of art. "Nature" has been said "to work by geometry," and the more art can do so without crippling her more direct and intuitive methods, the better, I fancy, will be the result. In the achievement of forms of beauty, therefore, I hold that the concurrence of definite geometrical proportions may be of the greatest practical use in aiding the eye when once you are so fortunate as to discover that ratio of their code which is in harmony with the subject in hand. Then, also, you have something explicit for your assistants to transfer and work by, and science and art advance hand-in-hand to the result. In undertakings of this kind, the square and circle, mutually inscribed and circumscribed, appear to afford a code of great value, not only as applied to the Parthenon, as shown by Mr. Jopling, and to the obelisk, but also to the proportions of the human frame, as I hope, at some future time, to have the honour of laying before you.

In the progress of the special problem of the obelisk, which I have had the honour to-night of submitting to you as an illustration, I have only now the pleasant duty remaining of returning my best acknowledgments to many who have taken an interest in it. Especially, I desire to acknowledge the liberality of feeling extended to me by the architectural profession. Being a sculptor, and not an architect, and this especially an architectural question, not only have I had no check on that account, but I have received, on the contrary, nothing but assistance and encouragement from that profession. Mr. Angell, Mr. Bellamy, Mr. Bonomi, Mr. Tite and others, have given me especial encouragement, and I have had much assistance from the labours of Mr. Penrose, at Athens. I have, however, especially to acknowledge the direct assistance of Mr. Jopling, a gentleman who is well known as having made definite proportions and scientific curves his special study. Although certainly the idea and scheme of my obelisk is my own, yet in evolving it the knowledge and suggestions of Mr. Jopling have been of the most direct practical assistance. Perhaps also, in conclusion, the best excuse that I, as a sculptor, can offer for my having taken up this subject at all is to be found in a remark made by that gentleman (himself an architect) one day in my studio, when he said to me, "You sculptors have your minds and eyes so constantly directed to form that your training is especially adapted to educate your perception of proportions and curves."

FROM SPAIN.

It is definitely settled that the new cathedral of Madrid is to be placed beyond the Buen Retiro, on that spot which is at present occupied by the general quarters of the flying artillery, and the gardens of the Palace of San Juan. The cathedral will front the "Salon del Prado," and be approached by a magnificent flight of steps.

By a royal order published on the 26th April, the concession of the railway from Alcaza de San Juan to Ciudad-Real, was adjudged to D. Antonio de Lara Marquess of Villacastana, with a subvention of 15,899,213 real vellon* for all the line, or 141,369 reals 32 cents per kilometre, besides the works finished in a portion of the line, let on contract some time ago, from Da Venta De Herrera to Ciudad-Real.

Locomotives circulate freely over the Seville and Cordova line; but, as the inauguration day is not yet fixed, we cannot say when it is to be open for public traffic.

* 96 reals vellon are equal to 1*l.* sterling at the present exchange.



INDEPENDENT CHAPEL, BRIDPORT.—35. Poulton and Woodcut, Architects.

NEW INDEPENDENT CHAPEL,
BRIDPORT.

On the 2nd of May last, the foundation-stone of the above chapel was laid by Samuel Morley, esq. of London, in the presence of a numerous assembly. The site of the new building is in the High-street, on a commanding and central spot. The style adapted is Geometrical or Early Decorated. The exterior is faced with Powerstock rubble-stone, alternated with finely tooled bands of the same stone. The dressings are of Bath stone. The plan is rectangular, with a single span hammer-beam, open roof, an apse in the rear, and galleries at the sides and front. The total accommodation is for about 1,000 persons. The contract has been taken by Messrs. Ward and son (of Bridport) at 2,151*l.* 15*s.* 3*d.* including school and class rooms in the rear. Messrs. Poulton and Woodman, of Reading, are the architects who designed, and are professionally supervising the structure.

FOREIGN RAILWAY WORKS.

THE Lyons Railway Company have executed during the year 1858 important works on the left bank of the Rhone, as well as on the principal line from Paris to Lyons and Marseilles. The object of the former was to finish off the second line of rails on the Nîmes and Alais section, and to extend and complete the Certe, Montpellier, Lunel, and other stations. On the main line a large central "halle" for wines, and a goods-shed for the Customs, have been erected at Bercy, near Paris; and on several points new depôts, workshops, coal and coke stores, have been completed, as also a branch line to the maritime railway station of the Joliette. It appears that the construction of the original group of the Lyons Railway has cost, up to 31st December, 1858, more than 528,000,000 francs. The sum to be expended in 1859 on the ancient group will not exceed

20,000,000 francs. As to the progress of the new group, the whole line from Moret to Nevers, also the six kilometres which separate Nevers from Fourchambault, will be open to the public in the beginning of 1860. In 1858 the outlay upon the new groups was 13,665,400 francs, and the total expense up to the 31st December last was 330,000,000 francs.

On the Lyons and Geneva line, that portion between Geneva and Versoix has been open for some time for traffic with one line of rails only. The works for the establishment of the second line are nearly all terminated: there only remain to be finished, in 1859, the stations and goods sheds. The buildings necessary to be erected at Coloz for the joint services of this and the Victor-Emmanuel lines, and for the double custom-house staff, will be finished next August; and the French and Sardinian customs officers can be there installed on the 1st of November next.

The total outlay on the 31st December last amounted to 110,592,520 francs. There remain to be expended 11,761,000 francs, furnished by the Paris, Lyons, and Mediterranean company, enough to complete the works for the whole line. The total cost will, therefore, be 122,500,000 francs in round numbers. From this we must subtract 7,500,000 francs, representing the value of the Versoix portion ceded to the Friburg company; also a small portion of the junction with the Lyons line, which was not taken into account in the general fusion, and which will easily be paid for by its profits; then we have the cost of the Geneva line as 111,000,000 francs. The Swiss and French subventions (17,000,000 francs) being subtracted, we have 94,000,000 francs, the real cost to the Lyons and Geneva company.

The first section of the Madrid and Saragossa railway, viz. Madrid to Guadalajara, has been just completed, and is to be inaugurated on the 13th instant. The length is 56,720 metres, and through-

out the works are solidly constructed. One can form some idea of the magnitude of the works on considering that more than 2,000,000 cubic metres of earthworks have been made. The structures, not counting the stations, guard-houses, and other buildings, cost 36 per cent. of the estimated outlay for the first section. They are in number fifty-four. Three bridges of importance have been built, that of Jarama being the most considerable. This bridge has a total length of 165m. 84c. and a height of 15m. 77c. from the plinth to the superstructure. The arches and piers are of brick, with cut-stone dressings, cut-waters, quoins, and arch-stones. There are six arches of 20 metres opening. The foundations were laid on a shifting ground of sand and gravel, 5 to 7 metres thick. Piles were driven and cofferdams made, from the interior of which the gravel and sand were removed to a depth of 4 or 5 metres, and the excavation filled with hydraulic cement. Nine hundred piles were driven, and the quantity of water met with was so great as to require the constant use of fourteen or fifteen of Letestu's double-acting pumps.

The second section (Guadalajara to Jadraque), in length 16,553 metres, has been in progress since last September, and, if no unforeseen accident occurs, it will be completed in the course of this year.

On Tuesday, the 18th April, after five months of hard work the lower heading of the tunnel in construction on the Hainault and Flanders line, on the section of Renaix to Nukerke, was driven through from out to out, at ten o'clock at night. The Belgian papers give great praise to the Government engineers and to the operative miners, for the precision with which the lines were given and carried out.

The expenses incurred up to the present for the tunnel under the Alps at the Col de Fejeux, amount to five millions francs, for a length of 613 metres which have been pierced, 358 on the Piedmontese side, and 255 on that of Savoy. The cost of the tunnel-heading (full width and height of course) has been up to the present time, 3,156 francs the lineal metre; say, 120*l.* a yard—an enormous sum.

The Western Railway Company of France has decided that the great embankment of the Valley of Endes, between Pont l'Évêque and Honfleur, shall be replaced by a viaduct, 120 metres in length, formed of three equal arches. The viaduct will be fifty-two metres above the soil. Workmen are already engaged in boring to a depth of sixty metres for the foundations, which will consist of iron tubes filled with concrete.

The Netherlands Government has granted concessions to two lines. The first, from Rotterdam, by Dordrecht (with a fixed bridge on the Holland-diep), Moerdijk, Bréda, Tilbourg, Bois-le-Duc, Helmont, Venlo, and Rusemonde, to Maestricht, with a branch from Venlo and Rusemonde to the Prussian frontiers, is to be finished, and open for circulation, in six years after the ratification by law, which is to be given immediately. The second, from Flessing, by Middlebourg, Goca, Bergen-up-Zoom, and Rosendale, to Bréda, will not be commenced till after the opening of the first for public traffic, and is to be finished in four years at farthest. These concessions are to last ninety-nine years. The State allots a subvention sufficient to cover all the great structures, and grants during fifty years a guarantee of 4½ per cent. on the capital of construction.

PAINTED-GLASS MANUFACTORY, ENDELL-
STREET, LONG-ACRE.

LONDON STREET ARCHITECTURE.

This manufactory is being erected by Mr Trehearne, builder, of Drury-lane, for Messrs Lavers and Barrand, the painted-glass manufacturers of Southampton-street, Strand. The building is of red brick with black bands and yellow patterns, forming diapers and strings. The windows of the ground and one-pair floors have Bath stone sills and heads, with relieving arches in different-coloured bricks. The heads of the windows to the second and third-pair floors are formed of brickwork in patterns. The large south windows and tracery to the centre gable in Endell-street, as well as all the sills, are of Bath stone. The gables are stepped and coped with stone. Internally the whole area is kept as large and simple as possible, the floors being merely united by staircase and lifts, the great object being the employment of a large number of men under careful supervision. Economy in space and materials, and cheapness in execution, have guided the design throughout. This building fills up a long vacant piece of ground, and completes the line of frontage in Endell-street. The architect is Mr. Withers, of Doughty-street.



STREET ARCHITECTURE: PAINTED-GLASS WORKS, ENDELL-STREET, LONDON. — MR. WITHERS, ARCHITECT.

WHAT PASSES ON LONDON BRIDGE.

Mr. D. W. HARVEY, the City Commissioner of Police, has published a table showing the traffic over London-bridge in twenty-four hours, from six p.m. on March 16th until six p.m. on the 17th. This paper gives such a striking idea of the immense traffic of the London streets, that we will put a few of the figures in a familiar form before our readers.

The total number of passengers in carriages and on foot amounted, in the twenty-four hours, to 167,910, or at the average rate of about 6,996 per hour, night and day. At the hour from ten to eleven o'clock in the morning the stream of people passed the bridge at the rate of 13,433, or about 221 every minute. This was the largest number of persons who passed during an hour. Between six and seven in the evening was the next greatest throng. During this time the passengers amounted to 13,361; between seven and eight, to 11,931; between eight and nine, to 10,526. The numbers then rapidly declined until between two and three in the morning (when all the world is supposed to be asleep), and even then 200 persons passed over London-bridge. During the next hour the number decreased to 111, viz. 42 in vehicles and 69 on foot. It thus seems that it is between three and four o'clock in the morning that the London streets are the most quiet, and from between ten in the morning until from three to four in the afternoon the numbers decrease until during the above hour the number is 8,337, and then an increase takes place until between seven and eight in the evening.

If we take the above 167,910 as an average of the number of passengers who cross London-bridge during the working days and only half that number on the Sundays, the wayfarers over this great thoroughfare will amount in the year to fifty-six millions. This is nearly as many as twice the population of the United Kingdom. No wonder, then, that the granite should be worn smooth and the ways obstructed. At times, during the throng of business, there are 2,000 persons on London-bridge.

During the twenty-four hours the number of carriages amounted to 20,498, or an average of about 854 an hour. The 20,500 carriages consist of 1,483 cabs, 1,286 omnibuses, 9,215 wagons, carts, &c.; other vehicles, 2,430. Horses led or ridden, 54. The greatest number of carriages in the forenoon, when 1,764 carriages passed over the bridge.

BLIND WORKERS IN LONDON.

ALL will hear with pleasure of the increasing success of the "Association for promoting the general Welfare of the Blind," and that the Queen has bestowed her patronage upon it. When it is considered that there are in the United Kingdom not less than 30,000 persons of both sexes who are deprived of the precious gift of sight, many of whom are so circumstanced, that they are reduced either to beggary or the workhouse, its importance will be seen. The experience of an old-established institution in the metropolis shows how wonderfully, in spite of blindness, both males and females, of various ages, can be instructed in the means of earning a livelihood, under certain circumstances. In the establishment referred to the blind are accommodated for a time, until they have acquired a certain amount of skill; and the benefit conferred has been great, for those who have a home and relations are enabled by this means to earn what might not be sufficient to support them if obliged to live separately, but which is a useful addition to the income of a family.

In many cases, however, where the blind are not thus fortunately situated, they endeavour to establish themselves in a neighbourhood where they are known, in order to obtain employment in the trades they have learned. There are, however, many chances against success. The very circumstance of their darkness prevents them from obtaining articles of food so readily and at such a cheap rate as others; they also require help from others, and are not so well fitted to search after business as those who have sight. It therefore often happens that work for a time is scarce, and they are obliged to dispose of their tools and little stock for the purpose of obtaining food and lodging; and thus it happens that many of the blind, even when they have learned a trade, are reduced to poverty.

The changes in the state of society during the last twenty or thirty years have made the condition of the poor blind more hard; for at the time mentioned many of them, like the "Wandering

Willy" of Sir Walter Scott, were privileged visitors to the houses of the rich and poor; and in most districts the blind of both sexes were kindly cared for. The large growth of towns, the introduction of a new system of police, and alterations in other ways, have changed the position which the blind formerly held, and left little but the workhouse for those who are poor.

Aware of these difficulties, Miss Gilbert, daughter of the Bishop of Chichester, who is herself blind, commenced, in the Euston-road, St. Pancras, a humble institution, in the hope that she would be able to assist in some measure those who are unfortunately deprived of sight. For some time this estimable lady pursued the experiment without assistance. At length attention was directed to this good idea, and the result is that now 61 blind men and women, 33 of whom were begging in the streets, dependent on private alms, and the rest reduced to great distress for want of instruction and employment, are either supplied with or taught to work. There are, however, 90 blind persons anxiously waiting for admission. Out of the 64 blind men and women, 32 are supplied with work at their own homes, at sums varying from 12s. to 1s. 6d. a week; 24 are instructed and employed by the association, and 8 are engaged in selling the goods of the association. The amount of work supplied to different persons is varied by circumstances; but it is often that those who receive 6s. or so a week from the association are able to increase this sum by working for others: this sum, however, serves as a staff of dependence.

A boarding-house has been opened for pupils and workmen whose homes may be too far from the institution: each man is lodged and boarded for 9s. per week, and each woman for 7s.

It is remarked that this association has been established in no spirit of emulation or rivalry. Miss Gilbert perceived that there was something wanted to make effective the efforts of other associations, by enabling the blind to maintain themselves,—and that was a market for their labour, with the certainty of being able to sell that which the industry of their hands had provided.

It is therefore arranged that at this association the workers shall receive the actual retail price of the goods. This throws upon the association the expenses of the management of the business, rent, and some advances which it is necessary to make to sick or unfortunate workers. In order to meet this, it is necessary to provide an endowment fund, to which Miss Gilbert has contributed 2,000*l.*, and other considerable sums have been subscribed. The necessity for help in modifying the condition of the blind is evident, when we consider that it is entirely for want of funds and sufficient accommodation, that ninety persons are unable to obtain admission; and that if we take the number of blind in the United Kingdom at 30,000, there must be about 10,000 blind persons in the metropolis. The goods made here are of an excellent description, and sold at the same price as at the shops; and it would be a service if those who need such articles were to order them from this depot. By addressing a note, the blind travellers, who seem to know their way by a sort of instinct to all parts of the metropolis, will call monthly for orders, if desired.

In a recent address the Bishop of London remarked, the whole world are indebted to the blind, to whom God has often poured out an abundance of talent and inward light which compensated for the absence of that outward light of which they were deprived. All blind persons are not gifted with great powers, nor do they belong to the higher classes of society. "There is a vast number of our fellowmen and women shut out from the light of day, who, in consequence of this privation, are exposed to the greatest evils. We know how many in our workhouses are condemned all their life long to a perpetual blank—education never having opened up to their minds those stores which might make some compensation for the trials which God has sent them,—living in a perpetual darkness, both intellectual and outward." The great object of this association is to rescue that class, not merely to find them a home in which they may live, but to restore them to their separate homes, and give them the means of living useful and happy lives.

Unassuming as is the appearance of this institution, there are few places in the metropolis which offer a more interesting sight. The attendants in the warehouse move about with as much celerity as other shopkeepers who can see: they can lay their hands upon the various goods, tell you the price, praise the quality, receive the money, enter sales in the day-book, and, in fact, thoroughly manage the business in such a manner

that we can scarcely fancy they are in darkness. In the other parts of the institution are brush-makers, basket-makers (some of the baskets are beautifully made: it is singular to see the blind working with edged tools at box-making, &c.): working in embossed leather, bead-working, mat-making, are all carried on by the blind; and it is not the least striking feature of this industrial scene to notice the singularly happy expression of the countenances of these workers, and the affectionate bearing of one to another.

Providence in its wisdom has given to the blind increased powers in other ways, which, among the members of this association, have been improved by moral and religious instruction. Here is a library of embossed books on various subjects, and a simple apparatus for enabling the blind to write. There is also a museum of natural history, &c. in course of formation, which, by means of touch, will enable those without sight to obtain a knowledge of the nature of objects of which they may have read. The wings of the butterfly are not too delicate for the touch of some of the blind: one intelligent man, in less poetical language, realized the wish of Milton, when he mentioned how brightly the light within was increased by the darkness without. Wisdom "at one entrance" being quite shut out, says Milton,—

"So much the rather thou celestial light,
Shine inward, and the mind through all her powers
Iradiate."

It was a pleasant sight to see the hand-shaking and greeting of the outworkers who had brought their manufactures from their various homes. It strikes us that we have, so far as outward appearance goes, seldom seen a more happy company: it was remarkable, too, to notice how well-informed they were of the current events of the day, the names of popular periodicals, and other matters. Our feelings would lead us to say much more on this subject than we can at present find space for. It is a work so ably managed, and so purely good in its intentions, that we strongly recommend our readers to pay a visit to the association.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

REPORT OF THE COUNCIL.

THE report of the council, read at the annual meeting on May 2nd, commenced with the intimation that the extensive alterations required to adapt the premises in Conduit-street for the purposes of the Institute and other art-institutions have rendered occupation unadvisable till so late in the current session, that it is thought best to bring the usual series of meetings to a close in the present rooms. A committee, consisting of Messrs. Ferrey, Mair, Scoles, and the honorary secretaries, is actively employed in determining the manner in which the seats and fittings, together with the bookcases and furniture, should be placed in the new apartments.

That during the last twelve months the Institute has received an accession of eight Fellows and ten Associates, about the average annual increase of late years: of the Fellows, three were previously Associates. During the same time the Institute has lost, by death, one honorary member, Archdeacon Froude; two honorary and corresponding members, the Chevalier Montferand, of St. Petersburg, and the Cavaliere Poccianti, of Florence; two Associates, Messrs. F. T. Digweed and T. C. Tarring; and one contributing visitor, Mr. John Webb. Two Associates, Messrs. W. C. Birch and R. Willey, have withdrawn their names; and one Associate, the late librarian, has been expelled for conduct derogatory to professional character.*

The award of the medals (already mentioned by us) was recited. Concerning the Institute medal it said:—

"Mr. George Wightwick's essay 'On the Architecture and Genius of Sir C. Wren' bore too evident proofs of a master's hand to render his success any way doubtful in competing for the Institute Medal, which, it is to be regretted, ill health prevented him receiving in person. It is highly gratifying to the council that a veteran whose active life and labours had already earned him a well-merited reputation, should now in his retirement from the active duties of his profession prove not unmindful of those premiums which the Institute offers to the emulation rather than to the cupidity of the world of architects."

The munificent example set by our noble president in presenting twenty shares in the Architectural Union Company to the Institute, has been followed by our respected Fellow, Mr. Tite, M.P. who has given ten shares, and Mr. St. Aubyn, Fellow, who has just presented five shares, in the same company. Should the donations be increased

* The Institute now consists of 154 fellows, 139 associates, 113 honorary fellows, 17 honorary members, 80 honorary and corresponding members, and 19 contributing visitors.

† At the next meeting, to be held on the 30th, Mr. Wightwick's paper will be read.

by other friends and members, the prospect of the Institute becoming, in a great measure, its own landlord, would be far from Utopian. To those who may not think fit to present shares, it may perhaps be permitted to suggest the establishment of an auxiliary fund, on the present occasion of removing, to new apartments, in order to meet the heavy demands on the stock of the Institute, by which the annual income will be lessened, while an increase will take place in the rent."

"To the Architectural Exhibition committee, its zealous secretaries, and treasurer, too much praise cannot be given for the spirited manner in which, in face of so many difficulties, they originated the Architectural Union Company, which has carried to a most satisfactory conclusion the intention of providing, in spacious, well-lighted, and well-arranged galleries, that amount of accommodation for the architectural world in London which the Royal Academy denied within its walls; and afforded, moreover, constant means for the display of objects of utility, as well as of artistic merit, connected with building operations, never attempted before the establishment of the Architectural Exhibition.

The council feel that they are expressing the feelings of the Institute, when they record their best wishes for the permanent success of the Architectural Union Company, which has united under one roof 'The Architectural Societies of London.'"

Rehearsing the subjects of the papers read, and the petition as to the elective franchise, the report proceeds:—

"The same unanimity prevailed respecting the necessity for supporting the prayer of a petition on the subject of artistic copyright, before a committee of the House of Lords, about to consider the subject; and a committee of the Institute, consisting of Messrs. Donaldson, Golwin, Hayward, Kerr, Norton, and Papworth, has been named by the council which had been duly empowered (by the meeting), to press the purport of that petition before the Lords. Mr. Cockerell, Fellow, R.A., the council regret, is prevented by ill-health from affording his valuable assistance as a member of the committee."

A discussion in the House of Lords respecting the removal of the Royal Academy from Trafalgar-square, in order to devote the entire present building to the national collection, having called attention to the probable result, justment, if not of the constitution, at least of the working system, of the Royal Academy, a memorial to embody the views of the Institute on the subject was submitted to a special general meeting, and further considered at a second. At a third meeting a modified memorial to the council of the Royal Academy was agreed to in the following terms. [This we have already given.]

The council, in common, it is believed, with all well-wishers to the maintenance in an honourable position of the architectural profession, have felt and continue to feel profound anxiety with respect to the establishment of a more systematic course of education for the student in architecture than has hitherto prevailed. Looking naturally to the Royal Academy as the legitimate source of instruction, the council will seriously discuss and endeavour to originate some movement in this matter, in the event of the Royal Academy failing to provide a more active curriculum than it has heretofore considered necessary. The subject is, however, obviously one of such extent and gravity, that any useful action can be only set on foot by the very hearty concurrence, not of the council of the Institute alone, but of the whole body of architects practising in the United Kingdom.

In their last report the council entered at some length upon the subject of competitions, especially referring to those for barrack and Government buildings, the last of which had recently taken place. Since then a committee of the House of Commons, presided over by our Honorary Fellow, Mr. Beresford Hope, has investigated the various opinions entertained by competent persons, respecting the several designs submitted for the proposed Government offices by the previous tribunal, which consisted mainly of non-professional judges. The Government has apparently adopted the views of the parliamentary committee, and availed itself of the power reserved in the printed conditions, to select for execution, from among the designs premiated by the first appointed tribunal, any particular one, without regard to the relative position assigned to it. The council regret the issue of this competition, as in invalidating false reliance upon good faith in similar Government lotteries. Their regret does not extend so far as to include any condemnation of the design selected for execution by the Chief Commissioner of Works and Buildings, but comprehends only the circumstance that he was placed in a position which empowered him to exercise a right of selection, superseding the decision of the first tribunal, by whom the merits of the respective designs furnished in competition had been adjudicated upon with great gravity, zeal, and apparently honourable impartiality.

The attention of the council has been recently invited by Mr. E. Barry, Associate, to another subject connected with competition, namely, the practice which has lately arisen of requiring competitors to undertake the task of deciding upon the designs submitted. The remarks of Mr. Barry are so pertinent that the council feel they cannot do better than record them, as embodying a logical and reasonable statement of the case; impressed with the necessity which exists that competitors (if competitions cannot be avoided) should be conducted in the best possible manner.—"In the absence of any expressed opinion on the part of the profession, it is not unlikely that this mode of determining competitions may become popular with those who conduct such matters, as at first sight it undoubtedly presents an impartial and captivating appearance. Isolated competitors can never hope to oppose with success regulations determined without their knowledge, nor can resistance be made effectual, if each case arises. It is obvious that judgment of any kind, which seeks to command respect, should proceed from a person or tribunal of known fitness for the task, and it may be doubted whether, in a competition conducted anonymously, and in which the majority is likely to be composed of those who have their reputation to make, this essential condition can be adequately secured. Another point, requiring much consideration, is the duty of preventing collusion, fictitious voting, and other irregular acts, when strong personal feelings and private interests come into play, and when the corrective influence of public opinion can hardly be brought to bear. Instances may readily be imagined, when one competitor, who has sent in more than one design, may concentrate his several votes on one of the number; or when he might obtain votes from another competitor, who might feel his own

chance hopeless, and who might be actuated by personal friendship or less creditable motives. There are besides many difficulties, such as the compulsory revelation of the names of the competitors, who, having been unsuccessful, may not be desirous of publishing the fact, and also the equality of the authority of the votes, though the relative qualifications of the voters have not been in any way ascertained. This, however, is not the opportunity for entering at length upon the consideration of these difficulties, which may or may not be inherent to the nature of the case."

The so-called nine-hours movement, among the men employed in the various branches of trade connected with building, must be known to all members of the profession. Though the council did not feel themselves authorized to take a direct part in the controversy between the employers and the employed, when requested to receive a deputation from the latter, they still are willing, as they then stated, to give full consideration to any documents connected with the matter; and while carefully avoiding interference with any social or political bearings, they are free to avow their desire that such an equitable adjustment may be brought about, as may ensure to the men a fair reward for their labour, without over-taxing their physical powers, and to the master tradesmen a just return for the large amount of capital they have invested in building operations. Nor should it, in candour, be entirely forgotten, that the interests of our profession, and of our clients, the public, are very closely connected with a permanent settlement of the points in dispute, which materially affect the cost of buildings of every description.

The urgent call now existing for improving the main library as connected through this rapidly increasing metropolis has been fully considered, as already stated, at several evening meetings of the Institute. The attention of the Legislature would seem to be directed to the subject, and the communication is apparently on the eve of further development, by the completion of the circuit round the metropolis, and by its continuation into the western centre at Charing-cross.

Nor should a word of satisfaction on the intended concentration of numerous architectural societies in a new building on the site of Burlington House be omitted; although this society has in vain, again and again, asked to be considered in the appropriation—a request which now, thanks to their own exertions, the members need no longer prefer."

Allusion is then made to the change in the honorary officers, and it is stated that the following resolution was forwarded to Mr. Donaldson:—

"The council of the Royal Institute of British Architects hereby place on record their sense of the invaluable services which have been rendered to this institution by T. L. Donaldson, Esq., whose resignation of the office of honorary secretary for foreign correspondence they have this day to at once accept with deep regret. For twenty years that office has been held by Mr. Donaldson, with honour to himself and benefit to the profession, both at home and abroad, and for several years previously to his acceptance of that office, he has even more numerous duties of joint honorary secretary had been no less sedulously and creditably performed by the same gentleman. No resolution, however powerfully it may be worded, can convey a just impression of the council's estimation of such services given for so long a period—so freely, zealously, and with an enlightened jealousy for the conservation, at all times and under all circumstances, of the best interests of the art and its devotees. They desire, nevertheless, to place upon their minutes this inadequate record of the feelings of gratitude which they will ever entertain towards Mr. Donaldson, for his untiring labours to uphold this institution, and all that is most worthy of admiration in the cultivation and practice of the fine arts."

"Our fellow, Mr. Francis Cramer Penrose, whose scientific researches into the refinements of Athenian architecture have procured for him a widely extended reputation, has kindly acquiesced in the request of the council, and allowed himself to be put in nomination as Mr. Donaldson's successor."

Of the eleven applicants for examination, who have presented themselves during the last twelve months, three have received certificates on the recommendation of the board of examiners, of competency to discharge the duties of district surveyors within the limits of the Metropolitan Building Act. The nature and number of the examinations made may suggest the necessity which the board feel to exist, that certificates should only be granted to those who can show themselves practically as well as theoretically conversant with all the divisions of building operations, matters constantly involving the risk of life and limb to the inmates, as well as the prevention of risk from fire, being now entrusted to the skill and discretion of the district surveyor.

Should any modification of the existing Building Act be introduced into Parliament, it has been intimated to the council that the Board of Examiners would desire to press on the attention of the committee on the bill the justice of the board being constituted on the footing authorized by the Building Act immediately antecedent to the present. * * *

In conclusion, the council must again express their sincere wish that the removal now shortly about to take place to more commodious and becoming rooms, and the fair run of success for full a quarter of a century in confessedly inadequate apartments, may prove the commencement of a new era, marked by still further development in the career of the Royal Institute of British Architects.

Every succeeding year presses more and more strongly upon the conviction of the council, that the members of the maintenance either of the Institute, or of some society almost identical with it, that high tone of study and practice which it is and ever has been its great object to sustain and support, would rapidly degenerate. The healthy and beneficent action of the Institute can alone be ensured by its thriving and vigorous condition, and that thriving and vigorous condition is absolutely contingent on the life and energy of its living members. With the prospect, therefore, of receding to more commodious premises, in which a healthy expansion can be developed, which it would have been materially impossible to carry into effect in Grosvenor-street, the council deem it imperative to call upon the whole body of the Institute to exhibit in succeeding sessions that unity of purpose and strenuous action by which alone, whether in the fine arts or in any field for the progress of human intelligence, great results are to be attained."

THE CHURCH OF ALL SAINTS, MARGARET-STREET.

SIR,—The completion of a church is always an interesting period. One more has been added to the shrines before which the loving and believing heart loves to bow: from one more place will the glad tidings of great joy be proclaimed: a new source of good, spiritual and temporal, has been opened, from which will go forth ennobling, and holy, and purifying influences. It is still more interesting when the temple thus finished has admitted into its precincts the wealth of material, and costliness of decoration, and glow of colour, which for many a dreary year have been denied to God's house by poverty or prejudice. Until lately it has been considered as wrong, highly wrong, to admit any but the coldest, most chilling combinations into the attempts at decoration made in our churches. All colour, all precious materials, all evidence of delight or pleasure in the service of God, were considered as a going back into mediæval dimness and Romish superstition. Such a state of things could not go on for ever: an awakening among churchmen and artists gave the first impulse to a movement ever since increasing. Ardent minds, who had studied the productions of great and religious men in the domain of art, came forth, and asked "Why a purer faith than these old painters had share in, a faith that professed to give more liberty, more expansion to all the faculties of the human mind, than that of the Romanist;—why this more embracing faith should forbid their embodying, in bright form and lovely imagery, their highest, their noblest conceptions; conceptions of scenes crowded with interest to all the human race; not an interest fleeting and changeable, but immutable,—to last, ever fresh in the minds, and be enshrined in the hearts of Christians both now and ever, both on this and on the other side of the grave?" They were right in asking this question: a religious system which shuts out the service of one gift of mind, which denies scope to the employment of one of the talents given of God, is, and must be, faulty somewhere: it is, or should be, the glory of Protestantism that it accepts all kinds of work, of all kinds of talent, all degrees of ability, and offers them to her God. Everything holy, pure, and true in feeling should find acceptance and recognition by her. If a young artist feel his Saviour's life to be lovely, the scenes of it sanctifying, hallowing, and purifying, may he not give us his ideas respecting them? may he not show us Christ's infancy, His life, His death? may he not on these texts preach to us in his own most speaking language, and prove himself a priest, though of a different order, in Christ's church? Surely it cannot be right to say to him, "You are a materialist: we care not for your visions of Christ's life, for your clearer seeing of His divine countenance as He blessed the young children, or mourned over His lost city. We will not have these thoughts of yours in our places of worship. You may place them amid the distracting glare of chandeliers: you may get glimpses of them between the blazing of jewellery and the flashing of bright dress; but we will not place them where they shall be seen and felt!" Was not this virtually what was said to the young artist? Can we say how many were chilled into insensibility or driven to impure sources for subjects, more congenial, or at least what appeared (from the reception given them) less offensive than those which had their first love and their most brilliant imaginings?

I feel convinced that it is not the way to extend our purer faith, to deny any place to those who would have been cherished by the Roman church. A young artist who feels a strong desire to paint sacred subjects should be treated as an ally of the preacher, not as his enemy. If Protestantism suffers, it will be because she refuses to recognize one of God's gifts as *His*, and to cast away and render useless souls who would have served their God with their art, as fully as ever preacher did with his eloquence. If Protestantism despise either, she will suffer, and will deserve to suffer, because she wishes men to serve God in her way instead of His.

The building which has originated the foregoing remarks I need hardly say is Mr. Butterfield's new church of All Saints, in Margaret-street. Here is a church in which (thanks to munificent patrons) nothing which could add solemnity or dignity has been denied to the architect. Against our long-established parsimony and frigidity of decoration it stands as a magnificent protest. As such, and as a remarkable product of the rising school of Revived Gothic, it is worthy

of attentive examination. I propose, in all diffidence, to embody, in a few remarks, the impressions made by this building on the mind of an amateur, who takes deep interest in the present revival, and who has given the little time remaining after a daily occupation to the subject of art.

The appearance of the church on being approached from Portland-place is very striking: its lofty and graceful spire is particularly pleasing, and, by no means, common-place in treatment. For myself, I could have wished for a deeper cornice at its junction with the tower, as I think it has now a somewhat bald appearance. The colour of the brick chosen strikes one as a little too dull: had it been brighter, it might certainly have looked a little starting for a short time, but the action of the weather, and, above all, of London smoke, would soon have mellowed the tone, while the present wall, I think, get only dead and sombre in colour by exposure to these influences.

In plan, the limited space at the disposal of the architect necessarily compelled somewhat crowded appearance in the structure; but it appears to me very well arranged; the quadrangle and screen adding much dignity to the central object of interest. The screen, in itself, is a graceful part of the design. I should have liked, however, a little more projection in the cornices and gables of the building; as the want of it brings them under the same censure as that I have ventured to bring against the tower.

The sculpture of "The Annunciation," on the buttress facing the entrance, is graceful, but shows a little of the archaism, which is somewhat of a blemish in some portions of the interior.

Passing through a well-proportioned doorway, having jamb shafts of serpentine, we enter the church. The glow of colour and richness of decoration at first somewhat surprise the eye unaccustomed to elaborate ornament, and there is to the last a want of repose, which, however, I doubt not the mellowing influence of time will not fail to produce. The church consists of nave and aisles, a transept and chancel. The nave is of three bays, divided from the aisles by clustered shafts, with bases of serpentine, and capitals of alabaster. The sculpture of these last it is almost impossible too highly to praise. There is a masculine breadth of treatment and vigour not often found in modern works. Seen from the distance across the nave, every stroke of the chisel tells. The mouldings of the arches are bold and grand. Above these (the nave arches) is a very beautiful clerestory, the arrangement of the spaces occupied by the windows being artistic and thoughtful: the whole of this, as well as the roof, is very impressive, the corbelling out of the shafts of the clerestory producing a remarkably striking effect.

The chancel arch, of alabaster, is grand and noble, an excellent and very bold impression being produced by the pilaster-like projection, supported on brackets, and bearing the capital (also excellent in design) and arch mouldings. The screen of alabaster between the nave and chancel is boldly and well treated, and has been most wisely kept low, as have also the stalls of the choir, in order to hide as little of the beautiful and precious work of the chancel as possible.

The design of the tracery dividing the chancel from the transept is beautiful;—to my mind the best designed tracery in the building; pure, simple, and most graceful. The eye is satisfied, and returns to this part of the work again and again. The capitals supporting this tracery are also excellent and powerful in treatment. The sides of the chancel between the transept and the eastern wall are lined with two tiers of alabaster gabled arcades, of elegant and beautiful design, the triangular space remaining between these and the vaulting being occupied by a window of corresponding shape, with tracery of three foliated circles. The bands of ornament which fill these niches I cannot say are to me pleasing, the zig-zag contradicting the lines of the shafts, and confusing the eye. The east wall is divided into three portions, by string-courses of very beautifully designed and well-arranged foliage; the upper one of triangular form, being the space between the vaulting and its springing; the other two comprehending the rest of the wall, and corresponding in height with the arcades on the side-walls. In the upper or triangular space, is the fresco by Mr. Dyce, representing the Saviour in Glory, seated on a cloud, and surrounded by a gilded and rayed vesica: below are saints and angels, in adoration, accompanied by the emblems of the Evangelists. The head of the Saviour is grand, and the colouring pure and beautiful. The spaces below are divided into fourteen niches, the central one of each tier being larger than the rest. In the upper central niche is the Crucifixion a composition of the three

figures only, and the most unsatisfactory, as you have said, of Mr. Dyce's works, the arms of the Saviour being in an unpleasantly angular and unnatural position. In the niche below is the Virgin with the Infant Saviour, very simple and dignified, while on either side, each in his separate niche, stand the twelve Apostles—dignified and noble figures—many of the heads being finely conceived.

The vaulting of the roof is covered with elaborate surface ornament. This has been carried too far, however, I think, when the architect so far forgot himself as to gild the alabaster ribs. I cannot help thinking this a barbarism, the loss of the beautiful flushing of the gradated and rich brown of the stone itself being but poorly compensated for by the mere increase of glitter of flat gold-leaf. I have no doubt there is plenty of authority on Mr. Butterfield's side, but this I cannot help; I still think it a barbarism. Over the chancel arch is an elaborate cross, with surrounding ornament, and the first and final letter of the Greek alphabet. While calling to mind the crosses introduced here and elsewhere in the building, I cannot help regretting that they should all have been so elaborately ornamented: it appears to me that the simple well-proportioned cross is the most proper, and in the end, the most telling form of the sacred symbol. There is something lowering to its dignity if it be formed of twisted lines like that over the chancel arch, or much elaborated as that forming the support for the font cover.

The grilles dividing the chancel from the transept are light and graceful, though the curves of the scroll work are somewhat common-place. The stalls are very unobtrusive and neat, not interfering (and very wisely so), with the prospect into the chancel. The organ partakes of the same unpretending character. The holy table is of various precious woods. At the south-west angle, and under the tower, is the baptistery: it opens on the east side to the aisle, by a single arch, but is divided from the nave on the north by the wall of the tower; pierced, however, by an arcade of well-designed cusped arches, which admit of entrance through them. The ceiling contains a picture of the emblematical pelican. And here I must again differ from the architect. I cannot help thinking the bird too conventional. There is no occasion for this, and the effect is quite otherwise than pleasing.

I am sorry to be obliged to say that both with pulpit and font I am disappointed. In the pulpit there is great richness of material, but there is want of repose. No colour is sufficiently prominent to give the necessary rest for the eye: all is confused and unsatisfying. The same remark applies, though in a less degree, to the font, the angels on which are, however, very inferior. One cannot help feeling surprised, almost hurt, after admiring, as it well deserves, the beautiful carving of the capitals and other ornaments of the nave and chancel, to come upon faces so flat and unmeaning as these I now refer to. It is my earnest wish to judge correctly, and to give honour where honour is due; but I cannot help regretting the inferiority of the sculpture of the font, and the absence of it, as far as the human form is concerned, in the pulpit. I do not forget by any means the beautiful capitals supporting the latter, but I could wish that the panels had been filled with appropriate subjects, instead of the present unmeaning and somewhat distracting geometrical patterns. I fear I shall be considered very presumptuous when I find fault with the tracery of the windows, which are to me far from satisfactory, that of the west window especially, the central lancet looking crushed by the arches of the lateral lights. The painted glass is not pleasing to my mind, there being too little brilliancy and depth of tone, caused by the over-evenness of modern glass, while the faces of the Archangel Michael, and the two other figures, in the first window, east of the door, are far from angelic.

I have now, at greater length than I at first intended, but still leaving many things unsaid which I should wish to say, offered my mite of criticism on this remarkable work. I most sincerely trust I shall not be thought ill-natured or presumptuous in my remarks. The church is a cheering proof of the strides the Gothic school has made and is still making. I look especially to the sculpture, and I find a most wonderful advance even upon recently erected works. The designs of many of the capitals and other ornamental portions are worthy of comparison with those of the great Gothic period, and give promise of still greater excellence. I hope, and feel almost certain, of much future honour, pleasure, and instruction to be gained and given by our work-

men, studying and working, as they must have done, to produce the carvings both in this church of All Saints and in the still more interesting building of the Oxford Museum.

I take leave of this beautiful church with many thanks to its architect, and to the patrons who enabled him to carry out his intention so completely, and to raise such a noble protest against the narrow-heartedness which would shut out of God's house the results of the devotion of His special gifts to His immediate service.

F. A. M.

EXAMINATION OF CANDIDATES FOR DISTRICT SURVEYORSHIPS.

THE examiners appointed by the Royal Institute of British Architects, under section 33 of the Metropolitan Building Act, are the Vice-Presidents, Messrs. H. Ashton, G. Godwin, and R. C. Hussey; the Honorary Secretaries, Messrs. C. C. Nelson and T. H. Lewis; and Messrs. Cole, Fowler, Gibson, Jennings, Hesketh, Pennethorne, Penrose, Scoles, S. Smirke, and Whichcord, Fellows.

After an examination held at the rooms of the Architects, on the 10th, a certificate of competency to perform the duties of district-surveyor was granted to Mr. E. L. Paraire, Mr. A. Cates, and Mr. F. Todd.

COMPETITION.

Colne.—The first premium in the competition for Colne Cemetery has been awarded to Mr. Pritchett, of Darlington, of the firm of Pritchett and Sons.

OPENING OF THE CHURCH OF ENGLAND PAROCHIAL SCHOOLS AT EARL'S SHILTON, LEICESTERSHIRE.

THE public opening of the above-mentioned school premises in the village of Earl's Shilton, Leicestershire, took place on Saturday last, May 21st. The want of schools has long been felt, and through the energy of the Rev. E. Tower, the incumbent, not only was the church rebuilt about four years since at a cost of 3,400*l.* but the school and a parsonage-house have been erected within the last nine months; a lofty, substantial, school-buildings now adorn the summit of the hill upon which the village stands. The first stone of the new schools was laid by the Earl of Denbigh, on Sept. 21st, 1858. They are in the Decorated style of architecture, and consist of two school-rooms, about 50 feet by 18 feet each, one for boys and the other for girls and infants, with a class-room formed by sliding shutters. The basement of the walls is constructed of the native granite in irregular courses, alternately banded with blue and red to the height of about 4 feet, where the stonework is terminated by a moulded brick plinth, and the upper wall or wall proper, which is also of brick, commences. The windows, which are cusped, are of Ancaster-stone. A bell-cot or turret, covered with oak-shingles and surmounted by a metallic cross, rises from the roof of the boys' school near the northern extremity. Although no great pretension is shown internally, a satisfactory effect is produced by the bare, red brick, neatly-jointed walls, and by the arches, windows, jambs, and doorways being finished in moulded brickwork. By the erection of these schools provision is made for the education of from 250 to 300 children, under the superintendence of a master and mistress.

The schools and parsonage have been erected by Mr. Law, builder, of Lutterworth, from designs by Mr. William Slater, of London.

THE DRINKING-FOUNTAIN MOVEMENT.

A PUBLIC fountain has been erected in Oxford-road, Manchester, under the arch of the South Junction Railway. The fountain, which is a combination of red Aberdeen granite and bronze, is fixed in the stone work of the pier of the arch; and the overflow will be gathered into a small basin for dogs to drink at, after which it will be carried by a waste pipe into a drain. The Brighton Council have given permission to the Rev. S. R. Drummond to erect at his own expense a drinking-fountain in the open space south of St. Peter's Church; to Mr. G. Cheesman, jun. to erect one of polished granite; and to Mr. W. Blaber, to erect one of polished red Aberdeen granite, against the Riding School in Church Street. The subject of drinking-fountains has reached the lecture-rooms in this district of the country. A lecture "On the Origin, Progress, and Utility of Public

The Coroner.—Yes; but was not that to search for a body?

Witness.—Certainly not. All the bodies had been taken out and taken to the hospital long before that.

Mr. Sergeant Ballantyne.—Will you swear that the bodies had all been removed?

Witness.—I would swear positively they had all been taken out. It remained upon the ruins till eight that morning, and no more bodies were found. There were a good deal more than 500 bricks fell with the men. A great many had been taken away since then by Mr. Myers's orders.

John Connor, a labourer at the building, was at work on the morning of the accident till the break-down occurred. He filled the narrow ways with bricks and sent them up to the stage, and he was at work in that manner for an hour overtime on the night previous to the accident. Each barrow held 60 bricks, and a horse-load was about 500 bricks. He was sure he sent up in the stage three loads of 500 bricks on the night before it broke down. It was three loads at the least. He was not at work at sending them in the morning. He was asked to work overtime the night before the accident by Mr. Coleman, the foreman, and Mr. Myers, jun., and it was then the bricks he mentioned were sent up. Did not personally hear Mr. Myers order the stage to be loaded. Had no doubt the accident was caused by getting too much "stuff" up overnight.

Other evidence to the same effect was given, and the inquiry was adjourned till Thursday, the 26th. On that day, at two o'clock, the inquiry was resumed, and evidence being heard till about half-past six o'clock, was again adjourned to Thursday next.

BUILDERS' BENEVOLENT INSTITUTION.

YESTERDAY the friends and subscribers to the above institution assembled at the London Tavern, Bishopsgate-street, for the purpose of electing one male and one female from fourteen candidates, to become recipients of the benevolence of the institution. Mr. Thomas Piper (President) occupied the chair.

The present is the fourteenth election of pensioners.

The Chairman, in opening the proceedings, called the attention of the meeting to the object of their presence on this occasion, viz. the election of one male and one female from a list of fourteen candidates, whose hard fate had pressed them upon the charity of others. He regretted that they had been able only to elect one-seventh from the list who had sought their aid, but he hoped that the time would soon arrive when three-fourths instead of one-seventh would be provided for. Short, however, as had been the time, they had been enabled to provide for the old age of many, up to their dying day. Their institution, different from others of similar character, had been supported by their own class, which was evidenced by his position before them on the present occasion. They received no support from the great and noble, to whom, however, they had made no appeal. The Chairman concluded by hoping that in November next they should have another election, when they might be able, possibly, to elect a greater number, their utmost wish being to afford support to the aged and afflicted; and, as life was short, it behoved them to do all the good they could.

The election was then proceeded with; at the termination of which, and on the return of the scrutineers, the numbers of votes received by each candidate were announced, together with the names of the successful parties.

The Chairman said he was sorry to find that the full number of votes had not on this occasion been made available; but he hoped that if all went well, they should have another election in November, when some of the present unsuccessful candidates would be able to congratulate themselves on their election.

Votes of thanks were then accorded to the chairman and the scrutineers, which being duly responded to, with an expression of their willingness to assist in the cause of charity, the proceedings terminated.

Miscellaneous.

MUSEUM OF PATENTS, SOUTH KENSINGTON.—Number of visitors for the week ending May 21st:—Mornings, 976; evenings, 935—total, 1,911. Since the opening of the Museum free daily, (May 12, 1858), 98,845.

THE LATE MR. DONTORN, ARCHITECT.—We observe with regret the death of Mr. W. J. Dontorn, late of Hanover-street, one well known to many of our readers. He was a pupil, if we mistake not, of the late Sir J. Wyattville, and executed many large works, including a building for the late Lord Stuart de Rothsay, at Bourne-mouth. Mr. Dontorn was one of the committee to present a memorial to Sir John Soane in 1835, and was successful in several competitions. He will be remembered as a tolerably constant attendant at the earlier congresses of the Archaeological Institute.

CHelsea NEW BRIDGE.—A movement has been set on foot in Clapham and its vicinity, for the purpose of procuring the construction of a south-west approach to Chelsea New Bridge, the want of which is causing some public inconvenience. The Battersea-park Commissioners state that they have neither power to execute it, nor funds for the purpose,—a desirable one, they think, both as regards the interest of the public generally and that of the owners and occupiers of land in the neighbourhood. An Act of Parliament will be requisite.

GOthic INTERCOLUMNATIONS.—Here are a few more examples of Gothic intercolumniations, proportioned on the principle alluded to by me in page 420 of the *Builder*, for 1858. Ringstead, North Hants, 9ft. 7in. between centres of piers, 9ft. 9in. high, two orders of shafts. Anstreyp, Warwick, 14ft. between centres, height 15ft. 3in., two orders, with small moulding between shafts. Winchelsea, 16ft. 5in. between centres, 17ft. 11in. high, two orders and moulding as above. In the Perpendicular School the height of the column frequently bears towards the intercolumniation a proportion similar to that between the depth and width of the column as measured on plan.—W. S.

PROGRESS OF RUSSIA.—It has been very evident since the close of the last Russian war, that this country has turned much attention to the means for improving its manufactures, agriculture, commerce, and its railways, which has given rise to an enormous demand for building materials, and bricks in particular. Mr. Henry Clayton, of the Atlas Works, London, the maker of brick machinery, obtained some time since special privileges from the Russian Government, for the introduction of his machinery, and his system of brick manufacture throughout. For the establishment of very extensive brick manufactories in St. Petersburg and Moscow, Mr. Clayton has, during this month, sent out a staff of men to superintend the erection of the buildings and machinery requisite for those works, one of which is to be capable of producing at least ten millions of bricks per annum.

ELECTRO-TELEGRAPHIC PROGRESS.—The submarine telegraph cable has been successfully laid down from Westerick, in Sweden, to Wisby, in Gotland, by the screw steamer Berwick, under the direction of Mr. Canning, their chief engineer.—Some very interesting and satisfactory experiments it is said, have again been made at the India-rubber manufactory of Messrs. W. and S. Silver and Co. North Woolwich. The experiments were made by Professor Wheatstone and Mr. W. N. J. Holmes, the electrician, upon the insulation of India-rubber covered wire for submarine telegraphic purposes, under the new patent recently obtained by the Messrs. Silver. India-rubber, besides being elastic, is not affected by changes of temperature, and under the improved process of manufacture adopted and patented by Messrs. Silver, assumes, it is said, a solid, homogeneous, and effective insulating form, impervious, as at present ascertained, to water, even under enormous pressure. The length of wire—some miles—experimented upon, had been submerged for more than a month, and was found under every condition of battery power, to indicate perfect insulation.

WANT OF EDUCATION IN ENGLAND.—First, we want in all the large towns a series of free schools for the lowest strata of society, to occupy thoroughly the whole ground that is now very inadequately taken by the ragged school. Next to this come those schools which are at present being so largely established through the country, in which both the nature of the instruction and the entrance-fee are adapted to the wants and resources of the working-classes. Thirdly, we should require a series of town schools, adapted more particularly for the mercantile classes, including, in addition to all that is taught in the primary school, the departments of mathematics, science, and modern languages. Fourthly, we should need a proper number of grammar schools, answering to the gymnasia of Germany and the royal or municipal colleges in France, and united to those who intend to embrace a professional life. If such a plan were carried out, every father of a family upon whom a portion of the rates fell would, whatever his sphere in life, get a return far more than equivalent to what he is required to pay. Lastly, with regard to the teachers themselves, if we expect to keep up an efficient staff, two conditions are necessary.—1st. That they may be adequately remunerated; and, 2nd. That their position be made sufficiently independent.—From the *Encyclopædia Britannica*,—New Edition.

Kew GARDENS.—The Botanic Gardens, containing the palm-house, the museums, aquarium, and the royal palace pleasure-grounds, are now open for the season, every week-day from one o'clock till dusk, and on Sundays from two o'clock till six.

MACLISE'S "CONQUEST."—The remarkable series of forty-two drawings, telling the story of the Norman Conquest, by Mr. MacLise, R.A. which were exhibited at the Royal Academy two or three seasons ago, are now at the French Gallery, in Pall-mall, and serve greatly to increase the interest of that exhibition. Here also are Mr. David Cox's drawings and paintings.

THE MANUFACTURE OF ARMS.—The manufacture of arms at Liege will shortly take a wide field, several considerable orders having been given to the principal armourers. At present the establishment of P. J. Malherb and Co. has been ordered by the Saxon Government to complete 20,000 rifles, for which all hands are to be put to work at once. On the other hand, the British Government has issued orders for 400,000 rifles and carbines; half to be made at Liege, and half at Birmingham. These 200,000 for Liege are to be given to public competition among the armourers, whose tenders were received up to the 20th inst.

HINGES.—Mr. Edes, of the Royal Engineer department, Colchester, has contrived a butt hinge, to improve the appearance in the joint of a door and its architrave. The present butt hinge cuts half into the bead of architrave, and half into the door, and breaks the line of architrave. The new hinge allows the knuckle to cut all into the bead, and the half hinge into the door, which keeps the line of architrave unbroken. In instances where the door is not required to open straight back, the knuckle of hinge can be fixed flush with the bead. The cost of hinge is not increased.

"THE BOYS' HOME."—Sir: On behalf of my colleagues of the committee of the Boys' Home, I beg to thank you for your very kindly notice of this institution in the last number of the *Builder*. The establishment of this Boys' Home has been a work of some trouble and labour; and it is both gratifying and encouraging to us to find that our exertions are appreciated by visitors so well able to understand the difficulties and troubles with which we have had to contend. Certainly we have much to be thankful for. We little expected fifteen months ago to have had sixty boys pass through the Home in that period, only three of whom are known to be still "doing badly." We intend to persevere; and we trust that twelve months hence we may deserve another encouraging word.—GEORGE BELL, Hon. Sec.

BURFORD'S PANORAMA.—Mr. Burford's new panorama, in the execution of which Mr. Henry C. Selous has co-operated as usual, represents Benares, the most holy city of Hindostan, situated on the left bank of the Ganges, and comprising numerous temples and pagodas. The description is scarcely special enough; thus we have "a palace," "a ghaut," "a pagoda," "a dead body," and so on throughout. The view, however, gives a capital general notion of the city, and is charmingly painted. The water and the craft that float upon it,—pauchoys, cotton boats, and badgerows,—are particularly effective. A visit to the panorama of Canton, the city of pigsties, still exhibiting here, affords a contrast to Benares in respect of art and taste not at all flattering to the "Celestials," who have so long mystified and humbugged the civilized world.

STRIKES.—The masons at Chester are on strike for half-an-hour's time in the afternoon, either for tea, or at the close of the day's work, at half-past five instead of six. Various building works are therefore at a stand.—The Newcastle-upon-Tyne masons employed at the quay-side have also been on strike for half-an-hour's time and 3s. addition to their wages of 24s. a-week. The strike continued for about seven weeks, 200 men being idle during that time; but the masters have at length acceded to their terms.—At Kelson some of the master-masons have announced a reduction of wages—from 5d. to 4½d. an hour. The men have struck work.—One of Alderman Copeland's Parian figure-makers has been sentenced to one month's hard labour for breach of agreement, having struck work and induced others to strike, while he was under an engagement for twelve months, at minimum wages of 47s. 6d., the amount often reaching 54s. Others on strike agreed to return to work and pay the expense of bringing them into court, on this sentence being pronounced. The magistrates, however, refused to accede to the complainants' request to be freed from the agreement with the first-mentioned workman.

EDINBURGH.—Operations have been commenced in connection with the new buildings proposed to be placed on the site of the high tenement at the head of the Mound, which was destroyed by fire in August, 1857. The structure, which has been designed by Mr. Cousin, city architect, will include a new office for the Savings Bank. Accommodation will also be provided for the offices of the Free Church.

EARTHENWARE COFFINS.—The most ancient of all coffins are those found in thousands in the "Cities of the dead," on the sites of ancient Chaldea and Babylonia. They are made of terra cotta, and are of slipper shape. An article of a somewhat similar kind, so far as regards material, namely, an earthenware coffin, is now being manufactured at Mr. Thornley's Tile and Pot Works, Heaton-Mersey, near Manchester. The shape is said to be quite equal to that of oak and elm coffins of the best makers. The lid falls within a ledge, and is fastened down with Roman cement before being consigned to the grave. The ancients knew better than this, however: they did not want them to explode, and left free egress to the gases of decomposition.

NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.—The members of this society were invited to join the Lincoln and York Architectural Societies at Grimsby, on May 25 and 26. They were to visit Clea, Holton, Waithe, Grainsby, Ravendale, Ashby, Brigsby, Waltham and Scartho on Wednesday, and a special train to start for Thornton Abbey, &c. on Thursday. Papers were to be read by the Rev. E. Trollope, Rev. G. Atkinson, and Professor Latham. The great docks at Grimsby are themselves a sight worth the journey, and the neighbourhood abounds with points of interest. The proposed meeting of architectural societies at Stamford will not take place probably till September.

A SELF-SUPPORTING BRACKET.—Everyone knows how the principle of atmospheric pressure is illustrated by a toy called a sucker, which boys make with a bit of wet leather and a string passed through its centre: the principle has just been applied in an analogous manner as the means of fixing a piece of metal in a moment to a wall, a ceiling, or the glass of a window. "Lavater's patent pneumatic bracket" is a short brass tube, having at one end sockets in which may be inserted any sort of light frame, branches, or hooks, and terminating at the other extremity in a trumpet-like expansion, which is covered with a disc of india-rubber. To the centre of this disc is attached a smaller one of metal, which can be drawn within the tube by a screw proceeding from a cap that fits over the smaller end of the tube. When the screw is relaxed the india-rubber disc is flat. Apply it then to the wall after moistening it with the breath, turn the screw, and the metallic disc, receding from the surface of the wall and carrying the central portion of the india-rubber with it, will create a vacuum capable of sustaining a weight proportioned to the superficial area of the trumpet-like expansion. The bracket may be detached in a moment, and will leave no mark, it is said, where it has been. By means of a similar contrivance any number of brass rods may be attached to the glass in a shop window without breakage.

PROPOSED CONSERVATORY OF ART AND SCIENCE FOR MASSACHUSETTS.—A project for a cruciform building of iron and glass, to constitute a museum of art, science, and historical relics, has been started at Boston, U. S. where a "Conservatory Journal" is being published, mainly with the view of realizing it. An estimate having been called for from Mr. James Renwick, the architect of the Smithsonian Institute at New York, and of the new cathedral to be erected in New York at a cost of a million of dollars, we shall best give some idea of the conservatory project by quoting from the architect's reply:—"I am of opinion that such a structure can be erected of granite, iron, and glass, for a sum not exceeding 450,000 dollars. The plan, that of a Greek cross, with a central dome 100 feet in diameter, four galleries or arms each 200 feet in length by 50 feet in breadth, and four arms forming a Greek cross, is in my opinion the most perfect that can be adapted, as it will produce a magnificent effect from the exterior, and its internal arrangement will be at the same time compact, and afford a perfect separation for the different departments of art and science which it is intended to contain. It may not be uninteresting to you for me to state here that the original plan of the great Michaelangelo for the Basilica of St. Peter's, at Rome, was a Greek cross with a grand central dome; so that you have the best authority for your architectural arrangement."

THE FREEMASONS OF BRISTOL AND THE CHURCH OF ST. MARY REDCLIFF.—We understand that several of the Masonic lodges of this province have determined upon undertaking the restoration of a certain small portion of St. Mary Redcliff Church, for which purpose they are already making a subscription.

COATING IRON WITH BRASS: TYTHERLEIGH'S PATENT.—Sir: The extract from the *Birmingham Journal* respecting this process is calculated to mislead the public. We have given the invention every trial during the last twelve months, and find that the coating does not prevent iron from rusting.—TUPPER and CO.

MELBOURNE, VICTORIA.—The members of the Mechanics' Institute have determined upon erecting a new hall at an expense of 7,500l, and the sum of 3,000l. has been voted by the Corporation for this year's quota towards the erection of public baths and fountains. Melbourne is a public-spirited city.

FRETHERNE CHURCH.—With reference to notice of the restorations at Frotherne church, under Mr. Huggall, the architect (from the *Gloucester Chronicle*), p. 335, where mention is made of a bracketed bust of Caen stone, as a memorial of the late Sir Edward Tierney, bart. and the names of several of those employed are given, we are asked to mention that the portrait bust was executed by Mr. E. Richardson.

ARCHITECTURAL ASSOCIATION.—Class of Design, Conduit-street, May 20, 1859. The president (Mr. Randall Bruce) in the chair, the minutes of the last meeting were read and approved of. Sketches were contributed for a pigeon-house, which were criticised by the chairman and class. A conversation then took place on the importance to architects of studying flowers and foliage from nature, which it was considered would give an increased originality of ideas in designing details. The subject of the half-hour's sketch was "A Monumental Cross," which produced designs from all the members present, after the criticism of which the meeting adjourned. The subject of the sketch for the next meeting of the class, on June 3rd, will be "A Cemetery Chapel."

THE NORTH-WEST LONDON REFORMATORY.—Captain John Grant, R.A. is the inventor of the economic cooking apparatus at the North-West London Preventive and Reformatory Institution, and not Captain Shaw, as mentioned in the excellent leading article in the last number of the *Builder*. Captain Grant has also erected, adjoining this institution, a model bakery, which he has patented. By his patent ovens, baking can be carried on at far less expense than by the ordinary plan; and as two ovens are heated by the same fire, great facilities are afforded for continuous working, as one baking is not chilled when the other is drawn, as is the case in single ovens. With regard to the ventilation of our institution, I am convinced that colds are not caught in an airy, well-ventilated dormitory, provided there are no draughts; but on the contrary, fresh air admitted into a bed-room, as elsewhere, is always most necessary for health.—ARTHUR J. BAKER, Architect to the Institution.

FIELD-LANE RUGGED SCHOOL AND NIGHT REFUGE.—The seventeenth annual meeting of this praiseworthy institution was held in the Freemasons' Tavern, Great Queen-street, Lincoln's Inn-fields, on the 2nd inst. Lord Shaftesbury in the chair, when the report was read, according to which it appears that upwards of 10,000 persons annually participate in the advantages offered by the institution, that 1,222 last year were rescued from the temptations of the streets, and placed in positions of usefulness, and that all the work of the institution is accomplished at a cost of less than 3s. 6d. per head per annum. The finance report showed a balance at the banker's in favour of the society to the amount of 1,426l. How much cheaper and better it is to prevent than to punish and reform, may be considered from the fact that the cost to the country of the imprisonment, in the Old Bailey, near Field-lane, of about the same number of persons as those permanently benefited yearly in the Field-lane Refuge and School Association, namely, 1,220, is no less than 50l. a head; although, on the one hand, the young persons rescued by the Refuge Association from the temptations of the streets, and placed in positions of usefulness, are thereby in general made honest members of society, while the costly prisoners are only cast out into the streets again to go through the very same costly process as before, without permanent benefit either to themselves or to the public. The Field-lane Association deserve extensive support; and, indeed, this even becomes a Government question of the utmost importance.

MANCHESTER SCHOOL OF ART.—PRESENTATION TO MR. HAMMERSELEY.—At a meeting of the students of the Manchester School of Art, held at the Royal Institution, Mr. Hammersley, for the last ten years the able head master of the school, was presented with a testimonial, expressive of the respect entertained towards him by his pupils. There was a very large attendance. The chair was taken by Professor Scott, who, in a very able address, referred to Mr. Hammersley's merits as a distinguished member of the school of British landscape painters. At the conclusion of the address, the audience adjourned from the theatre to the ante-rooms of the institution, which were adorned with art treasures.

BIRMINGHAM AND MIDLAND COUNTIES ARCHÆOLOGICAL SOCIETY.—The first anniversary meeting of the members of this society was held on Friday 13th, in the Lecture-hall of the Midland Institute, the Rev. J. G. Cumming in the chair. The report, which detailed the proceedings of the past year, having been read and adopted, Mr. C. H. Bracebridge was elected president for the ensuing year. Professor Chamberlayne and Mr. G. Jabet were appointed honorary secretaries. During the proceedings it was suggested that the next excursion should be to Wroxeter, to inspect the Roman remains lately discovered there.

TENDERS.

For new church, Garden-street, Westminster. Mr. G. E. Street, architect:—

Messrs. Lucas	£2,462 0 0
Kelk	7,425 0 0
Holland	7,397 0 0
G. Smith	7,347 0 0
Trollope	7,203 0 0
Bowley	6,730 0 0
Higgs	6,666 0 0
Browne and Robinson	6,650 0 0
Piper	6,497 0 0
Jackson and Shaw	5,898 0 0
Myers	5,634 0 0

For rebuilding house, No. 39, King-street, Covent-garden. Mr. Charles G. Searle, architect:—

Holland and Hannay	£1,104 0 0
Ryder	3,060 0 0
Macey	2,995 0 0
Axford and Co.	2,893 0 0
Emor	2,647 0 0
Howard (accepted)	2,580 0 0

For erecting a warehouse, drying-stores, dwelling-house, &c. at 145, Goswell-street, for Mr. W. Reynolds. Mr. Thomas J. Hill, architect:—

Sewell	£2,339 0 0
Outwater	2,329 0 0
Piper and Son	3,150 0 0
Anley	3,096 0 0
Browne and Robinson	3,082 0 0
Brass	2,993 0 0
Ramsay	2,982 0 0
Jay	2,961 0 0
Laurence and Sons	2,942 0 0
Watson	2,500 0 0

For farm-house and farm-buildings, to be erected at Eaton-green, in the parish of Luton. Mr. William Watson, architect:—

Williams (Luton)	£4,000 0 0
Dunham	4,110 0 0
King	4,237 0 0
Lane	4,730 0 0
Orchard	4,969 0 0

For Andover National Schools. Mr. William White, architect. Quantities supplied by Mr. Samuel Field:—

C. Young	£2,350 0 0
Fletcher	2,300 0 0
Hardy	2,237 0 0
Gue	2,637 0 0
Ball	2,645 0 0
Spachman	1,952 0 0

For finishing five houses at Wandsworth. Mr. Padmore, architect:—

Morris	£1,476 0 0
Hopper and Escott	1,449 0 0
Sykes and Co.	1,290 0 0
Daveys	1,289 0 0
Joel Parry	1,254 0 0
Smith	1,223 0 0
Coop	1,106 0 0
Wint	1,143 0 0
Love and Watts	1,132 0 0
Branson	1,100 0 0
G. and H. Williams	995 0 0
J. G. Stokes	893 0 0

For farm buildings and cottages about to be erected at Wakerley, Northamptonshire, on the estate of the Most Honourable the Marquis of Exeter, K.G. Mr. Edward Browning, architect, Stamford:—

FARM BUILDINGS.	
Broadbent, Leicester	£1,967 0 0
Lindley and Fern, ditto	1,835 0 0
Cave, Oakham	1,719 15 0
Jeffs and Roberts, Stamford ..	1,694 12 9½
Richardson and Son, ditto	1,630 0 0
Bradshaw, ditto	1,600 0 0
Elliott, Duddington	1,367 0 0

COTTAGES.	
Richardson and Son, Stamford ..	423 0 0
Jeffs and Roberts, ditto	418 0 0
Bradshaw, ditto	409 0 0
Elliott, Duddington	340 0 0

The Builder.

VOL. XVII.—No. 852.

*The Soane Museum, and
what is to come of it?*



HE remarkable Architectural Museum, Collections, and Library left to the nation by the late Sir John Soane should be made of greater service to the nation than it has yet been. "Prudently have you considered [says Landor] how to preserve all valuable au-

thors? The cedar doors of a royal library fly open to receive them: ay, there they will be safe,—and untouched." In other words, there they will be safe,—and useless. Nor, it would seem, is this result confined to Royal Libraries. When Sir John Soane stipulated, in the Act of Parliament obtained for settling his museum and works of art for the benefit of the public, that free access should be given to the house on two days in every week throughout the months of April, May, and June, and at such other times as the trustees should direct, and invested 30,000*l.* for its maintenance, he probably did not think that the trustees would add nothing to his minimum but Tuesdays, from the first in February to the last in August, for the accommodation of foreigners and some others, "to whom it may be considered proper that such favour should be conceded." His desire was to benefit the public to the utmost; and until architects and the public have the utmost possible benefit from his noble endowment, his desire will not be fulfilled. Soane had a full appreciation of the value of such collections, and saw that the public were to be benefited in many ways by his deed. In the "Description" which was privately printed, he states that one of the objects he had in view was to show partly by graphic illustrations the union and close connection between Painting, Sculpture, and Architecture,—Music and Poetry; and expresses his hopes that the architect will become sensible from examination, "that every work of art which awakens his ideas stimulates his industry, purifies his taste, or gives solidity to his judgment, is to him a valuable instructor." He was anxious that visitors should examine the union of the arts he had prepared with much ingenuity, that they should study the costly books he had purchased, and turn over the drawings and prints he had collected. Can the trustees and the curator, all eminent and excellent gentlemen, venture to say that this is being done, or, under the present arrangements, is likely to be done? No: the Museum, as we have before now said, is visited but by hundreds instead of thousands,—the books and drawings are "safe,—and untouched,"—carefully locked up,—and useless. There is a locked-up air, indeed, about the whole house; visitors, when they have obtained a card and gained admittance, feel that they are there on sufferance, and would no more think of asking for a case or a drawer to be opened, than they would in any private house to which they had gained access, by the courtesy of the proprietor, to glance at the pictures. How many of our

readers, for example, have seen the volume of original designs by Sir William Chambers, "presented to me," as Soane says, "by my great master the late George Dance, R.A.?" or the fifty-three volumes of original designs and drawings by the late Robert Adam; or the book of Soane's designs, called, "Some Dreams in the Evening of Life, and Architectural Visions of Early Fancy;" or the magnificent MS. Commentary on the Epistle of St. Paul, illustrated by Giulio Clovio, who died in 1578?

When the wonderful finish of these illuminations, by the way, is observed, it does not seem strange to find Vasari saying that Clovio spent nine years in executing twenty-six miniatures in a breviary of the Virgin (now in the Royal Library at Naples) for the Cardinal Alessandro Farnese. Clovio was decidedly the king of illuminators.

There are many rare things in the oddly but cleverly-arranged house, "up-stairs and down-stairs, and in my lady's chamber:" many ingenious studies, some of Hogarth's best pictures, the best Canaletti in England; Belzoni's alabaster sarcophagus, and a hundred other things of price. Every one knows the curious front on the north side of Lincoln's-inn-fields, with Mediaeval corbels and terra-cotta canephora, copied from the Temple of Pandrosus, at Athens.

Passing through the entrance-hall and recess, where the ceiling of the former is connected with the walls by a small cove, and is enriched with rosettes in plaster after the antique, and several reliefs, we come to the dining-room and library—a room of some 40 feet long by 21 feet broad. The ceiling of this room is decorated with elaborate moulding, gilt and coloured. In panels are paintings by the late Henry Howard, R.A. for which it is said about 2,000*l.* were paid. The same skill applied in another position would have produced a better result. These paintings by Howard represent Phœbus in his car, preceded by Aurora and the Morning Star, led on by the Hours:—

"—jocund to run
His longitude through Heaven's high road."

In the oblong compartment near the door are represented the Seasons (which were anciently supposed to be only three) diffusing their various productions, and in the corresponding compartment Night is advancing with the Pleiades in his train. The other compartments are of a similar character. The walls of this room are painted in bright vermilion. The soffits of the arches and the ornaments are also of a bright vermilion. Mirrors are fitted here and there with a view to adding to the effect, and deserve study. Here, over the chimney-pieces, is a portrait of Sir John Soane, by Sir Thomas Lawrence, painted in 1829—almost the last picture painted by this artist. There are also bronzes, fictile vases, a model of a monument erected over the family vault in the burial-ground of St. Giles-in-the-fields, in St. Pancras, in the year 1815, to the memory of Sir John Soane's wife, Elizabeth. In this tomb the remains of Sir John and his eldest son were also buried.

In this same room there is a fine picture, by Sir Joshua Reynolds, called "The Snake in the Grass," formerly the property of the Marquis of Thomond, to whom it was bequeathed by Sir Joshua, and at the sale of whose effects it was purchased by Sir John Soane, for 510 guineas. It is rather difficult to pass over the table of walnut-wood with a slab curiously inlaid—the China jars—astronomical clock—and other matters here. But in an architectural point of view, the chief feature in this apartment is a collection of twenty highly finished models in plaster of Paris, restorations of ancient Greek and Roman buildings, by the late M. Fouquet, of Paris. These are really, although small, exquisite works, which are most valuable, not only to ordinary visitors, but also to students in architecture. The architectural drawings by Kent for a new Parliament-house made about 1740; drawings by Sir William Chambers for Somerset-place; the appropriate busts on the top of the book-cases; and some of the furniture, are well worthy of examination.

We must pass rapidly through the little Study, and the Dressing-room and recess,—in the

latter of which, amongst similar vestiges of old London, are fragments of the ancient palace of Westminster, and other relics. In the corridor are various pieces of ancient sculpture, and amongst them a very beautiful model of a sleeping girl, by Thomas Banks, being the original study, made in 1793, for a monument to Miss Boothby, daughter of Sir Brooke Boothby, in the church of Ashbourne, in Derbyshire; besides grotesque heads and foliage, and many other good casts.

In the Students' Room, in addition to numerous antique ornaments, there is a large collection of models in wood of modern buildings, designed by Sir John Soane.

The Picture Room is admirably lighted from the top: the ceiling is enriched with plaster ornaments in compartments. In this room, which is only 12 feet 4 inches in breadth, and 19 feet 6 inches in height, are moveable planes, that open like doors, and give room for as many pictures as could be arranged "in a gallery of the same height 45 feet long and 20 feet broad." Amongst the valuable contents of this apartment, the most noticeable is, "A View on the Great Canal at Venice," by Canaletti, which is of marvellous power and brilliancy. There are few works by Canaletti which can be compared with this fine picture for glow of sunlight and transparent depth of shadow. It gives the lie to much of the rubbish attributed to the artist. The four pictures by Hogarth called "The Entertainment," "The Canvassing for Votes," "The Polling," "The Chairing the Members," which are here placed, may be ranked amongst the choice treasures of English art. "The Entertainment," in particular, is worthy of notice and study. In the criticisms on the works of this great artist, while praise has been given to him for the originality and mental qualities of his numerous works, his manipulative skill has been too much overlooked. This picture is a rare example of rich and harmonious colouring; the details are admirably finished; the breadth of light and shadow and skill shown in the composition, independently of other considerations, entitle this picture to a distinguished place amongst the works of the best painters. These pictures, executed between the years 1753 and 1758, and purchased of Hogarth by David Garrick, under rather peculiar circumstances, for 200*l.* were obtained by Sir John Soane at the sale of Mrs. Garrick's effects in 1823 for 1,650 guineas.

Here are also pictures by Callcott, Jackson, Howard and Danby; and fifteen original drawings in Indian-ink by Piranesi,—these are views of the Temples of Pæstum. Seen from a little distance, the drawings have the effect of the most elaborate finish. It is worth while to look closely to the slight means by which this effect is produced. On the moveable plane on the south side are numerous drawings from the designs of Sir John Soane. Before leaving this apartment we must glance at some paintings by Sir F. Bourgeois, Sir James Thornhill, Fuseli, Bird, and others; and may suggest that moveable planes such as are here used might be fixed with advantage in many apartments, particularly in some which are hung with water-colour drawings, which are liable to lose strength when kept continually exposed to the light.

Passing down to the "Monk's Parlour," you find the walls covered with fragments and casts in plaster of Ecclesiastical and other Middle-age buildings, and here there is a good specimen of ancient Flemish carving in ivory. In the lower part of the Museum the most noticeable matters are—a bust of the first Napoleon; a mask of Mary, Queen of Scots; a bust of General Paoli; bas-reliefs and other models by Flaxman; a bust of J. P. Kemble, by Gibson; and a bas-relief by J. Banks, of the Angel opening the Door of St. Peter's Prison.

Amongst the casts is one of part of the monument to the celebrated Bernard Gilpin, in the church of Houghton-le-Spring, Durham, of which parish he was rector, and who died in 1583. It displays a tree and boar. Gilpin attained a great reputation by the fearlessness with which he pursued his ministry, whether amongst the lawless inhabitants of the ruler parts of Northumberland, or in face of the

* In 1856, 1,412 persons saw it; in 1857, 1,676.

threats of Queen Mary. Himself a bachelor, and with ample means, his hospitality was unbounded: every fortnight, it is said, forty bushels of corn, twenty bushels of malt, and a whole ox, were consumed in his house, besides provisions of many other kinds. This bit of plaster hanging against the wall there, does good service in preserving the memory of a brave heart. And so with scores of the busts, medals, casts, and drawings that surround us.

In the Sepulchral Chamber is the famous sarcophagus discovered by Belzoni, in 1817, in a royal tomb in the valley of Beban el Malook, near Gournou, Thebes, and which was purchased by Sir John Soane of Mr. Salt, in the year 1824, for the sum of 2,000*l*. The models of ancient tombs in the crypt, which can be opened to allow an examination to be made of their contents, are very interesting. What a boon to the modern world the tombs of the ancient have been! Calculators have shown that the whole surface of the globe has been dug over 128 times to bury its dead—that 1,283 human beings have been buried in each square foot of it, or about five persons to each square foot! Affixed to the wall is a marble tablet to the memory of the wife of Sir John Soane; and there is another below to the memory of John Soane, jun., who died in his 37th year. On the south side is a model of a colossal statue of Britannia, 230 feet high, submitted by Sir John, then Mr. Soane, in the year 1799, to the committee for raising a naval pillar or monument on Greenwich-hill.

Passing through several apartments, and up the staircase, crowded with architectural and other casts, we come to the South Drawing-room, where, on a screen, is the series of eight paintings by Hogarth, known as "The Rake's Progress,"—works which rivet the attention. Few can pass by unmoved that terrible scene in a prison of the olden time. Amongst the drawings is one by Rubens, of a design for an emblematic frame for the royal portrait of King Charles I.; with some by Stothard, Clerissau, Pannini, and busts of James Wyatt, Thornton, the Marquis of Buckingham, and others. We must pass over the models, richly carved ivory tables and chairs, which are said to have once belonged to Tippoo Saib (is there any museum without something that once belonged to Tippoo Saib?); antique bronzes, and fine gems. In the North Drawing-room, amongst other objects is a painting by J. M. W. Turner, of Van Tromp's Barge entering the Texel in 1645. An early painting by Eastlake; others by Hilton, and an interesting case of gems: while on the table lies Sir Christopher Wren's watch; his rod and walking-stick are below. On the staircase is a very fine water-colour drawing,—a view in the Vale of the Chamouni,—by Turner; and we might further mention Chantrey's model of a sleeping child; bas-reliefs, by Flaxman; a bust of George Dance, the architect, by Rossi; painted glass; a sketch of a dog by Rubens; and scores of other items; but we have already said enough for those who do not know the collection, perhaps too much for those who do. We would see it made more useful than it is, and without the least spice of captiousness or ill-feeling, we ask the trustees and curator to inquire at once if the time has not arrived for re-considering the arrangements, and letting the public more fully enjoy its own.

THE NEW WESTMINSTER-BRIDGE.

IN the two months elapsed since our last account was published of the works of the new Westminster-bridge,* great progress has been made with the superstructure. Nearly the whole of the cast-iron work of the three arches next the Surrey side, of the southern division of the bridge to be first opened, is fixed, with the horizontal and the diagonal cross-bracing connecting the ribs together: the longitudinal and transverse girders, and the buckled plates to carry the roadway over these portions, are also far advanced; the centre arch, and the fifth arch, are commenced; and in some cases the wrought and riveted ribs, forming the crowns of the arches, have been lowered into their places. If the castings of the western portion are ready, there will be no difficulty in opening the southern

division of the bridge at the end of the present year. The Bill to empower the Government to obtain possession of those houses which have to be removed for the approaches, was read a second time on the 15th April, but was not further proceeded with. Doubtless, every exertion will be made by Lord John Manners to get a Bill quickly passed when the new Parliament gets to work. The removal of the houses on the south side of Bridge-street, will be greatly advantageous to the effect of the Houses of Parliament—though whether Sir Charles Barry's proposed range of buildings connected with the Palace, in line with the clock-tower, or some other building on the ground at present part of New Palace-yard, will ultimately form a southern boundary to Bridge-street, cannot be speculated upon. The 316,000*l*. estimated expenditure upon the bridge does not include the cost of the approaches. Of the 316,000*l*. there still remain to be voted by Parliament 96,000*l*. On the other hand, a considerable proportion of the Westminster Bridge property had not been sold, last April, and was anticipated to realize a large sum.

Our last notice entered so much into particulars of dimensions and construction, that we need not recapitulate, further than by reminding our readers that each arch will be formed of fifteen ribs, besides the ornamental facing, and that six of these ribs in each arch, belonging to the division of the bridge to be first opened, are now in progress; that each of the ribs is formed of six castings, including the skew-back castings, and the filling-in, or wrought-and-riveted iron segment, the latter 52 feet 9 inches long, out of the centre arch of 120 feet span. The skew-back portion is bedded level on a cradling of cast-iron, which is fixed in grooves in the granite masonry of the pier, as well as by bolts; the cradling and the skew-back casting further being locked together by dovetailing and iron wedges. Spandril castings, separate, or part in casting with a segment, carry the longitudinal girders. The diagonal strutting is used where the skew-back castings are, or over the piers; and strutting of straight girders is placed between the remaining portion of the ribs. All these members, in the portion of the work which we have described as fixed, are now permanently bolted together, unless we except the wrought-and-riveted segments, which now rest on wooden wedges at the joint, each end.

The ribs are fixed without any centering or other scaffolding than that of the ordinary "traveller." From this, two skew-back castings are first let down to their bed on the cradling: they are bolted to it and one another; upright castings are fixed on to them to carry the longitudinal girders of the roadway; then the first segments each side are fixed and bolted, and the spandril castings are placed upon them; and thus the two arches springing from a pier are carried forward, by working each way from the pier, until the third casting is fixed and bolted, and the whole made ready for the completion of the longitudinal and transverse girders, and fixing of the buckled plates, and the filling-in of the wrought-and-riveted iron segment.

We cannot suppose that Mr. Page will lessen the very great credit which is due to him for the design and construction of this bridge, and for his having shown, as we have believed, the way to improvements in "Metropolitan Bridge-communications," by carrying into effect wholly the decorative details of the character we lately spoke of. The lamp-brackets and standard, of which there is a model now on the works, at least, cannot be intended to be adopted. We are not surprised that the details which we alluded to, have been the subject of some correspondence between the architect of the Houses of Parliament and the Government. Had we worse opinion than we have of Mr. Page's design, decoratively as well as structurally, we might feel more indifferent to its complete realization through points of detail.

The removal of the cutwaters, placed some years ago for the then intended widening of the old bridge, is a very laborious operation. But, so much progress has been made with the piers of the second or northern half of the bridge, that we do not anticipate there will be a long interval ere the old bridge will be removed, and a new bridge communication established across the river greatly exceeding in its width of roadway any of the present bridges over the Thames. The honourable member who took the general subject of metropolitan bridge-communications in hand in the last Parliament, gave several notices of motion subsequent to the date of our article on that subject.*

The dissolution, however, put an end to these efforts; but we hope the subject will not be allowed to rest by Sir John Shelley, who also has paid attention to it, or some other member. People, generally, are little aware of the evils which are involved in the delay. We are not referring to such facts as that very nearly 20,500 vehicles and 167,910 passengers have to get over London-bridge in the twenty-four hours.

CELLAR DWELLINGS AND THE METROPOLITAN DISTRICT SURVEYORS.

THE Metropolitan Board of Works have called upon the district surveyors, acting under the Metropolitan Building Act, to report all cases in which rooms or cellars in the metropolis are occupied contrary to the provisions of the 103rd section of the Metropolis Local Management Act; and they point out that the statute defines the "occupation as a dwelling" to be "a room or cellar in which any person passes the night." The Act does it in rather better English, but that we will not dwell upon. The section under which this direction is given says that every district surveyor "shall, without any fee or reward, report periodically, and otherwise as the said Metropolitan Board may order, to such board all cases in which rooms or cellars are occupied contrary to this enactment in the district of such surveyor." In a statement on the subject made by the district surveyors in 1856, the district surveyors showed that the subject forms itself into two divisions:—1st. The ascertaining the fact of the occupancy; and 2ndly, the ascertaining the structural condition of the room or cellar; and they justly said:—

"With regard to the first division, they submit that the ascertaining the fact of the occupancy belongs properly to the police or local inspectors, who are the likely parties, by reason of their daily and nightly protection of localities to obtain the reasonable grounds which are rendered necessary for justifying the right of entry to inspect and examine the room or cellar."

A district surveyor may incidentally obtain information of such occupancy, but in the poor localities the occupancy would only be between a late hour in the evening and an early hour in the morning, so that it is not likely that a district surveyor would, in the ordinary performance of his duty, obtain such information.

If a discovery be made of a supposed infringement (and it may be observed, that if there shall be no occupancy no survey is justifiable), and a district surveyor is called upon to survey, he has the various structural points to investigate as pointed out in the 103rd section as applicable to the particular cases;—a duty which, of itself, will be onerous, and which the Act declares he shall perform without fee or reward.

They submit that, if they were to go about seeking for the reasonable grounds of belief, they would be prevented attending efficiently to their important duties under the Building Act.

They pointed out, supposing the duty of discovery really belonged to the district surveyors, how hard it would fall upon the central metropolitan districts which have the greater portion of under-ground dwellings;—the annual receipts of the district surveyors of these localities for their ordinary structural duties being very small.

The statement made by the district surveyors led to the postponement of a requirement on the part of the Board till lately; when, feeling, probably, that it was absolutely necessary they should take some steps on the subject, the Board issued the instructions to which we are referring. No one will suspect us of a desire to aid the district surveyors in shirking a duty which they ought to perform, when we say not merely that they ought not to be called upon to discover what rooms improperly constructed are occupied, but that it is not in their power to do it. To report whenever a room not in accordance with the Act has been slept in for a night, supposes a continuous inquiry, which, of course, is out of the question, consistently with a due discharge of their duties under the Building Act.

If they are called on to report whether or not certain rooms, in which, as *others have discovered*, persons have passed the night, are or are not in accordance with the Act, this they can of course do, and must do, though this will be a hardship, no fee being allowed for the service. But it cannot be intended that they should become policemen, and devote their time to discovering whether or not a room has been slept in. They can examine a room which has been slept in, and report if it be not in accordance with the Act, but they cannot possibly report how many rooms have been slept in. The 104th section seems to show that the Act contemplated only the structural inquiry on their part. It says,—"*For the purpose of enforcing the enactment lastly hereinbefore contained, it shall be lawful for any such district surveyor, or for any other person, having reasonable grounds for believing that any room or cellar is occupied contrary to such enactment, to demand*

* See page 213, ante.

* See page 165, ante.

admission to inspect the same at any time between nine o'clock in the morning and six o'clock in the evening," &c.,—certainly not the hours when it could be discovered that the room was slept in, though quite fitting for the inquiry whether or not the room was structurally in accordance with the Act.

We have adopted the definition quoted by the Board; but the first part of the 103rd section, showing what underground rooms may be used, refers to rooms "occupied separately as a dwelling;" and it is a question how magistrates will view this as qualifying the definition to which we have referred. We feel most strongly that the requirements of the Act respecting underground rooms should be carried out; and we would suggest to the Metropolitan Board of Works, that they should arrange for the sanitary inspectors of the various Local Boards to make the necessary inquiries and examinations as to their occupancy, and refer such as are found to be occupied to the respective district surveyors, to report whether or not these rooms possess the requisites pointed out in the Act.

Briefly, the district surveyors cannot refuse, great as the hardship may be, to report "all cases in which rooms or cellars, occupied, are contrary to this enactment;" but it is not in their power to report "all cases in which rooms or cellars are occupied contrary to this enactment."

THE METROPOLITAN MAIN-DRAINAGE.

ACCOUNT OF THE WORKS TO BE UNDERTAKEN IN CONSTRUCTION OF THE SOUTHERN HIGH-LEVEL SEWER.

In the words of Horace Walpole, "The summer has set in with its usual severity." In the previous weeks sacrificed by the wisdom of our rulers, the atmosphere on Thames' side was not unfavourable to legislation. Contemporaneously with the opening of Parliament, the temperature rises; and therewith—and this time, considerable rain-fall notwithstanding—comes the familiar odour of the river. If the noisome stench continue as it has been during the last few days, the new Parliament will separate early; little having been done to remedy the national inconvenience which has accrued, or to arrest the sad course of events abroad; by some deemed to have been not uninfluenced by the dissolution.

Since the pestiferous state of the Thames has now, annual recurrence; people more closely tied than our legislators to London, will be inclined to watch every step towards accomplishment of the great scheme of Metropolitan Main-drainage, and will devoutly hope with us, that any apprehensions such as we have expressed, touching the substitution of one evil for another, may be proved to have been without foundation. Not only London, however, but the whole country should be interested in the practical details of the costly experiment that has been commenced. We therefore from time to time lay before our readers as matter of interest to them, particulars regarding plan and construction, which we can derive from minute inspection of the drawings and specifications for the several divisions of the sewerage, or from examination of the works themselves. The structural provisions and the forms of the contracts are the result of experience, and, we believe, that forethought as regards everything conducive to proximate success and future durability, which should attach to what is intended to last for many years; and such details cannot but be valuable as precedents, or suggestively, for many works besides those of sewer-construction.

With these ideas, we published in our last volume* an account of the works then to be undertaken, and since commenced, in construction of the Northern High-level Sewer; intended to discharge for a short period into the Lea, and eventually to be continued, with the Middle-level Sewer, across the branches of the stream, to a point where the Main-outfall Sewer would commence, and where the pumping station, in connection with the Low-level Sewer would be situated. To what is in course of execution, we shall no doubt have to revert. Meanwhile we may refer our readers to the particulars of the works for the temporary outfall, and permanent outlet for storm-waters at the same point, as applicable in great measure to a similar site, and a portion of the southern system of sewerage; that is to say, at Deptford Creek.

In our first number of this year† we gave an account, to which reference also should be made, of the whole scheme of Metropolitan Main-drain-

age, on both sides of the river. In our last number appeared the amounts of tenders which had been received for the "High-level Sewer" on the south side; and we now proceed to supply the detailed particulars of the work tendered for, which seem to be interesting. When we say that, whilst the contract and specification fill forty-five printed pages, the drawings now before us, though called twenty in number, are made to cover fifty-nine large sheets, it may be supposed that particulars are not collected without some labour.

It may be well here, in order to prevent misconception, to repeat what was explained in the former article, that, whilst on the north side, up to the Lea, the main sewers are called three in number,—High-level, Middle-level, and Low-level; and on the south side, up to Deptford Creek, two in number,—High-level and Low-level, there are marked on the plan several other lines—either branches of considerable extent, or really main sewers additional to those named. One of these was described in the account of the High-level Sewer on the north side; and thus on the south side, there is a Bermondsey Branch shown on the map as joining the Low-level Sewer in High-street, Deptford. In our general account we mentioned another "branch," so called, of the High-level Sewer, for the sewage of Dulwich, and which was then to join the main High-level Sewer at Peckham. The intention now is to substitute a line from Dulwich, called the Effra Branch, in a north-westerly direction, to a point much nearer to Deptford on the plan, from which point the two channels are continued side by side on plan, but at very different inclinations, to the Broadway, whence they continue to Deptford Creek, still in separate channels, but in all other respects as one work of construction. The Main Low-level Sewer and Main High-level Sewer will be in no case very far distant from one another; since the former will pass through Deptford, along a portion of the Old Kent-road, and south of Walworth and Kennington to Battersea; and the latter will pass through Deptford, as mentioned, and New-cross, Hatcham, Peckham, Camberwell, and Stockwell, to Clapham.

The main line High-level, and so called Effra Branch, with works which are immediately under consideration, together amount to about 9 miles 2,940 feet in length, exclusive of iron piping, as well as of all works in junction of sewers,—810 feet in Church-street and the Broadway, Deptford, being the double line of the nature before referred to. Deptford Creek, in the upper part of its course, is divided by an osier-bed into two arms, tending westerly: the southern one is joined by the Ravensbourne. Intermediate, at the extreme west, is Kingsford's flour-mill. At the extremity of the northern arm of the creek, that is, between the mill and buildings, one of which is the theatre, is a wharf in Church-street. At this spot will be the outfall, at least temporarily, of the High-level and "Effra Branch" sewers, and a storm-overflow in future. Traced upwards, the double sewer takes a quadrant sweep, and passes south-westerly along and under Church-street; thence westerly by the Broadway to a point opposite Clarence-place, receiving the Ravensbourne and Sydenham sewage in the course. Opposite Clarence-place the main line and the Effra Branch continue parallel on the plan for about a mile, to the cart-road which is not far from the boundary of the parishes of St. Paul, Deptford, and St. Giles, Camberwell. There the lines separate. Tracing the main line from the Broadway, it passes by way of the New Cross-road, under the North Kent railway, to a point a little to the east of the New-cross railway station; thence through private ground (crossing the railway to the south of the station), but nearly in the same direction, to cross the Cemetery-road; past the north side of St. Mary's Church, St. Mary's-road, through private land to Rye-lane; along Hanover-street and Hanover-road; through private land between Sydenham-road and Camberwell-green, across Camberwell-grove, along De Crespigny-park, through private land and houses between Denmark-hill and Holland-road, crossing Cold Harbour-lane, Denmark-street, Lilford-street, and Lilford-road, along part of Holland-road, Loughborough-road, crossing the Brixton-road at the "White Horse" public-house, along Robert-street, Park-street, and part of Love-lane, by Stockwell-green, Stockwell private road, the Clapham-road, and High-street, to the "Plough" public-house, Clapham. The total length from the outlet, Deptford Creek, will be 5 miles, 1,850 feet, exclusive of the short projection for iron piping. The Effra sewer passing, as explained, parallel with the other for a distance of about a mile, but

with greater inclination, after diverging south-westerly, passes along the Cemetery-road, through Nunhead-green, along Nunhead-lane, and by Rye-crescent, Peckham Rye, along East Dulwich, and through private property near Goose-green to Lordship-lane; southward along this lane for a short distance, and thence south-westerly again through private property to Dulwich; thence southward through Dulwich and along Back-lane; lastly turning west, and terminating at the Effra Sewer and Norwood branch. The length from the Broadway, Deptford, will be 4 miles 1,090 feet.

As regards the details of the work,—at the outlet at Deptford Creek, first there will be constructed on the bed of the Creek, a wide channel or pavement, extending about 45 feet outwards, with granite cubes on a concrete foundation 5 feet in depth. In this concrete, will be encased four lines of iron piping, 3 feet 3 inches in diameter, in continuation of lines which pass from the penstock-chamber, to a total length of 95 feet from that point. In the upper part of their course, comprised in the quadrant sweep, the iron piping is placed—two lines under each channel of the double brick-constructed sewer; that is to say, the outfall of the latter is not continued in the bed of the creek, but ends with a river-wall, at Church-street, between the angle of gulph at the head of the creek; and, across what may be called the neck, a coffer-dam is to be constructed, part of which, in front of and below the level of the paved channel, is to be left, to become a portion of a permanent dam to secure the paved channel. Towards this object, a row of walings, 12 inches by 6 inches, is to be bolted to the piles below the level of the pitching, and left in with the permanent dam, when the upper portions to be removed, of the piles, have been sawn off—after the work, up to the penstocks, has been completed. The construction of the dam has been carefully considered and specified. The retaining-wall to Church-street, through which the brick-constructed channels will discharge, a length of 52 feet, and 19 feet 3 inches in height, with footings, will vary in thickness from 3 feet 9 inches to 1 foot 6 inches, and will be built of picked stocks in Portland cement, and will have counterforts, and on the face a batter of 1 in 8. There will be a flight of steps to the bed of the creek. At the other end of the quadrant sweep are the chambers for tide-flaps and pen-stocks. Thence the double line continues in Church-street, a street varying in width from 20 to 30 feet. Each channel being 10 feet 6 inches in width, and the houses being in many cases without cellars, there will be very considerable work in underpinning, and sometimes entire reconstruction of houses. The line of the crown of the sewer will be in great part of the distance, somewhat above the present street-level; so that the roadway will be altered, and some of the ground-floors will fall rather below the footway.

Of the chambers above named, that which is nearest to the outfall, is on plan 25 feet 3 inches by 9 feet, and has a counter-weight chamber and a side entrance at one end, or side. It intersects the course of both sewers; its space being provided for the working of the tide-flaps, and perhaps in a slight measure, for relief of one emissary by the other. The floor of the chamber is to be of Yorkshire landings, closely set, in cement, with rubbed joints, and laid on the concrete in which are imbedded the iron pipes. Quoins and cutwaters are to be of Bramley Fall stone. The ceiling of the chamber will be formed of landings carried on iron girders, close under the street pavement. The flaps will be constructed of iron, in two pairs, namely, an upper and a lower flap, to each of the two collateral culverts, to be suspended one above the other against corresponding cast-iron frames, or face-plates, bedded in and secured to the sewer. Each upper flap will be segmental in shape, 2 feet 9 inches by 9 feet 3 inches, extreme measurement; and the lower flap will be of the form and dimensions required to close the remaining area of the end of the sewer, which is in all 10 feet 6 inches from the crown of the arch to the invert. The lower flaps, or the lower and upper together, will be brought into use as required from the circumstances of the tide. The lower flaps are intended to be worked as penstocks from the street, "for which purpose they are each to be provided with four wedge blocks, two on either side;" and "they are to be closed by means of wrought-iron rods, one on either side, moving vertically in wrought-iron girders, or bridle pieces bolted to the frame, and to the masonry of the sewer, and to be furnished with strong-wedged hooks, which are to

* Vol. xvi. 1858, page 789.

† Page 2.

pass over the wedged blocks cast on the flaps, and bring the planed faces of the flaps and frames into close contact." The upper end of each rod being provided with a rack, in gear with a 4-inch pinion at each end of a horizontal spindle or shaft, and the latter carrying midway a mitre-wheel gearing, with a similar wheel on a vertical spindle,—the whole may be worked from above-ground by a key and lever similar to those used by turncocks. A counterweight is to be connected by a chain to the flap, and the pulley or chain-wheel next the counterweight is to be so contrived, that the strain can be "taken off the flap on to the chain-wheel or pulley,"—whereby the weight of the flap could assist in keeping it closed. Of course, the arrangement (which we have further to describe) involves at least temporarily, all the evils of tide-locked sewage, and concentrated at Deptford instead of distributed at various points. We are, however, informed that the outfall sewer to Crossness Point in Halfway Reach, is likely to be decided upon this week, when the engineer will proceed with the drawings, so that at an early date, the Church-street double sewer, and the outfall into the Creek, will be required for storm-waters only. It will not be forgotten, however, that as explained in our former article, storage and pumping are required at Crossness Point, that is to say, for the whole sewage and ordinary rainfall of the southern side of the river.

At a distance of 10 feet from the chamber and side-flaps last described (still tracing the course up-stream), there will be another arrangement for pen-stocks to the iron pipes, which terminate at that point,—the invert of each sewer, close to the position of the pen-stocks, and on the up-stream side of them, being formed as iron gratings, through which the water will descend and pass by the iron pipes, instead of the brick-constructed sewer, when the pen-stocks are raised, as they may be at the time of low-water in the river. The pen-stocks close the pipes—the tide-flaps close the upper sewers. Each penstock is to form a closure to two of the cast-iron pipes, and is to be worked from the street, similarly to the lifting-flaps described. The dip or bay from the invert gratings of the double sewers, to the pipes, is to be formed chiefly in granite.

The double line of sewer in Church-street and the Broadway, or to the 810 feet from the Creek, is to be formed each sewer 10 feet 6 inches in width, and 10 feet 6 inches in height from invert to crown of arch, as may have been already understood. The inverts and crowns will be 18 inches in thickness; the partition wall will be chiefly 18 inches thick, and the outer walls 1 foot 10½ inches, in the thinnest parts above the footings; added to which, however, there will be numerous counterforts of brickwork, and filling-in of concrete to the intermediate spaces. The brick-work is to be all in Portland cement, hoop-iron being laid in every fifth course—four widths to 18-inch work. The inner rings of the inverts are to be of Staffordshire blue bricks, or glazed stone-ware blocks. Concrete is to be filled in over the spandrels and under the inverts.

The existing Ravensbourne and Sydenham sewers, for the length of about 500 feet, will have to be broken up; and at the Broadway it will be connected with the new sewer. Church-street will be drained independently by iron piping.

From opposite Clarence-place, the main line and the Elia Branch, we have said, are to be traced as separate sewers. We shall pursue their course, and give further particulars of materials and construction in our next.

THE EXCAVATIONS AT WROXETER. BRITISH ARCHEOLOGICAL ASSOCIATION.

At a meeting of the British Archaeological Association, held on Wednesday, the 25th ult.,—Mr. Godwin, V.P. in the chair,—Mr. James Heywood, F.R.S. Mr. Pettigrew, Mr. Planché, and a good muster of members present; Mr. Thomas Wright gave a full account of the excavations now in progress on the site of *Uriconium*, or more properly, perhaps, *Viroconium*. Our readers have heard something of the progress which has been made here in uncovering an Anglo-Roman town, one evidently of much importance.

Wroxeter is about five miles and a half from Shrewsbury, close upon the banks of the river Severn, and about two miles from the famous Wrekin. A mound which is somewhat more than three miles in circuit, covers the wall of inclosure and defence of an ancient city. Quantities of Roman antiquities have been pried up at all times when people were digging a little deeper than usual; remains of buildings underground have been accidentally discovered at different spots within

the inclosure of the walls; and on the highest part of the ground stands above ground a massive piece of wall, with its long thin bonding-courses of red tiles or bricks, which we recognize at once as Roman. This wall has been the starting point in the present attempt to lay bare the town, determined on at the general annual meeting of the Shropshire and North Wales Natural History and Antiquarian Society, held at Shrewsbury, on the 11th of November, 1858. The excavations were commenced on the 3rd of February of the present year.

To follow Mr. Wright's statement as nearly as may be, Wroxeter presents the site of an ancient city under circumstances unusually favourable to the researches of the antiquary. Little has been disturbed by modern buildings, while the position and nature of the ground have rendered it unnecessary to have recourse to the process of deep draining, which would have broken up the ruins below. The building which has been opened up forms a parallelogram, divided in its length by two walls into three compartments, of which the middle one is exactly 226 feet long by 30 feet wide, and has been paved with small red bricks 3 inches long by 1 wide, set herring-bone fashion. Of the two long passages or aisles to the north and south of this inner parallelogram, the one to the south was uniformly about 14 feet wide, and that to the north was 13 feet 9 inches wide at the western, and 16 feet at the eastern end. Neither appears to have been uniformly paved: a fine tessellated pavement was found at the eastern end of the one to the north, and a fragment of similar mosaic was met with about half way along the other. The two walls which separated the sides from the central area are each 4 feet thick. Several fragments of large columns and plinths of stone, and one capital, which lay in a reversed position by the side of the old wall, show that this building, whatever may have been its purpose, was not devoid of architectural ornamentation. Close to this building they fell in with the semicircular end of a room with a hypocaust. This proved, when it was cleared, to have been a handsome room, 37 feet long, including the semicircular end, and 25 feet in breadth. The floor had disappeared, with the exception of a mass of the concrete of which it was formed, and which remains in the north-eastern corner. It was supported by above 120 pillars, formed of the flat square Roman tiles, just 3 feet high, and in a very perfect condition when first uncovered. A passage through the eastern wall of this hypocaust led into another hypocaust, the entrance to which was by an archway turned with Roman tiles. This entrance was approached on the outside by a staircase of three steps, each formed of a single stone, the workmanship of which is extremely sharp and fresh. To the east of this staircase was found a small room, 8 feet square, with a herring-bone pavement, like that in the great area to the north. Eastward runs a passage between two walls, in which is a square pit, occupying the whole breadth of it, and across the bottom of which runs a well-made drain, in a direction at right angles to the old wall. The floor of this drain is formed of the well-known large Roman roof tiles, the flanged edges turned upwards. To the southward of this passage the excavators have just entered upon another hypocaust, which is not yet opened.

The walls of the houses were covered with a thick layer of mortar, which was painted in fresco, and which, where it remains, either on the lower part of the walls or in pieces scattered about, has preserved its colours remarkably fresh. The ornamentation in those yet found is very simple. One piece of cement from the wall contained three or four large letters of an inscription. In the interior of one of the rooms the wall, instead of being painted, was tessellated. The outside of the houses appear, in some cases at least, to have been likewise painted, in fresco. Thus the exterior of the semicircular end of the hypocaust of one was plastered over and painted red, with stripes of yellow. A few roof-tiles were found scattered about; but the houses appear to have been more generally roofed with rather thick slabs of micaceous slate, which appears to have been brought from Wales. The most remarkable article connected with the structure of the houses was the window-glass, which was found in considerable quantity, and appears to have been of good quality, though its transparency is now destroyed by the iridescence: its uniform thickness exceeds the eighth of an inch.

A great quantity of iron has been found in the progress of the excavations at Wroxeter, and in general it is better preserved than usual. It consisted, in a great measure, of clamps, large nails, rivets, and other articles, which appear to have been used in fixing the wood-work, &c. of the

buildings; and there were also large quantities of lead, an unusual circumstance in Roman sites, but probably to be explained by the proximity of Uriconium to the extensive lead mines on the Welsh borders. Many human bones were found; and when the smallest of the hypocausts was cleared, three skeletons were found in it, one of which appeared to have been seated or crouching in a corner, and the other two lying extended by the side of the wall. It appeared from the skull and jaw of the skeleton in the corner that it had belonged to a very old man; while at least one of the other two, if not both, seemed, from similar evidence, to have been females. At a very short distance from the skeleton of the old man lay, in a little heap, a hundred and thirty-two small copper coins, most of them of the different types of the emperors of the Constantine family, and among them small iron nails and remains of decayed wood, which showed that they must have been included in a small wooden coffer. We may thus conclude that these three individuals, in the midst of the massacre of the inhabitants of Uriconium, had sought concealment by creeping into the hypocaust, a place where they were not likely to be followed, and there the old man had tried to secure the money which was within his reach. Perhaps they had been suffocated in their place of refuge, or the burning buildings may have fallen in and blocked up their passage out. It places in a lively manner before our imagination the sufferings of the inhabitants of the doomed city when it fell before the barbarians; and it is the first instance which has occurred in which we have the opportunity of ascertaining what were the coins which a man carried about him as the current money in this island at this obscure period of history.

The surface of the painted plaster of the face of one of the walls was, when first discovered, covered with a straggling inscription, traced into the mortar with some sharp-pointed instrument, like similar inscriptions found on the walls of houses at Pompeii; but, unfortunately, before this inscription could be properly examined, some meddling people broke away part of it in trying the strength of the mortar; and the tenant having immediately afterwards, in a fit of opposition to the excavations, shut up the place against the excavation committee, the weather, and other causes, have so much deteriorated the rest, that it is not now possible to ascertain its original character.

The chairman, at the conclusion of the communication, urged the importance of prosecuting vigorously these investigations in a district so evidently a most important portion of Roman England. He pointed out some of the refinements and excellencies to be observed in the works of the Romans found in England, and condemned the little aid given by our rulers, as rulers, in any undertakings of the sort now on hand in Shrewsbury. He mentioned that by royal order of the 6th of May the thanks of the Spanish Government had been presented to the individuals forming a committee lately named to make excavations in the neighbourhood of Guardamar, in Toledo, where the Visi-Gothic crowns were found which are now in the Museum of Cluny.

A BRIEF MEMOIR OF THE CHEVALIER MONTFERRAND, ARCHITECT.*

MONSIEUR DE MONTFERRAND is among the remarkable architects of the present century—remarkable for the position he occupied in one of the leading European capitals, for the important monuments he erected, and for his great personal success. He was a Frenchman by birth, having been born at Chaillot on the 24th January, 1786, and was a scholar in the fertile classes of Percier and Fontaine, at Paris, from which proceeded so many men eminent in the art; and whose taste, as teachers, had so great an influence upon the monuments of Continental Europe of the first quarter of the present century. It is difficult to state precisely the causes which led to the predominance which Percier and Fontaine exercised upon the rising youth of the French school of architecture. Much arose from their releasing students from the thralldom of the vicious taste of the Louis XV. period; and much was due to the personal qualities of the former of these distinguished men, whose mastery of the pencil and enlarged views of classic art no doubt gave him great weight. But the rigid laws of the classic canons had to yield after his decease to those ideas of individual freedom of thought, which have since enlarged the sphere in which the imagi-

* Drawn up by Mr. Donaldson, and prefixed to the Report of the Council of the Institute.

nation of the rising generation had allowed itself to wander. De Montferrand appears to have been engaged upon the works of the edifice which subsequently became the Eglise de la Madeline, and which from the time of Louis XV. had undergone various transformations in its conception and decoration. In the German wars, which concluded the career of Napoleon I. we find him in the army, which he quitted at the restoration. For such a spirit Bourbon France offered no chance of success, and after studying in Rome for a short time, where Dupaty, Milhomme, Calamar, Granet, Chauvin, Nepveu and others were his comrades, he sought in Russia a field of enterprise for his talents, where, from the paucity of able architects, he soon found employment, and constructed the palace of the Prince Labanoff. In 1817 his design was successful in a competition for the new church of S. Isaac, which was intended to supersede the older fabric, and to vie, as the cathedral of the Russian empire, with the others of Christian Europe; and which was not completed till forty years afterwards. With unlimited funds at his disposal, the choice of materials left to his discretion, and with no restrictions in any respect, the church of St. Isaac, though gigantic in its proportions and profuse in its decoration, falls short of its object, and does not fill the eye nor satisfy the taste. In 1829 he was charged by the Emperor Nicholas to erect a column, commemorative of his brother Alexander, without any reserve as to cost. De Montferrand wisely determined that this project should bear comparison with the monuments of ancient art in the choice of the material and the colossal scale of its monolith. The shaft consists of a single block of Finnish granite from Pytterlaxen, 11 feet 6 inches diameter and 84 feet high, and is of Roman Doric proportions, with appropriate pedestal, base, and capital, surmounted by a pedestal and a bronze statue of Religion. It is necessary to read his volume on this work, which shows the difficulties he had to overcome, and the rude workmen he had to educate in order to carry out his noble idea. This colossal columnar memorial is one of the most striking features of the northern metropolis of Russia. His last public work was the pedestal for the equestrian statue of the late Emperor Nicholas, consisting of enormous blocks of porphyry and bronze sculptures, surmounted by the colossal figure of the emperor on his war-charger, and which was intended to excel in scale and execution that of Frederick the Great at Berlin. But here was wanting the genius of a Rauch to give the impress of that elevation of sentiment and originality of conception and treatment, which rendered the monument of the Prussian King the finest example of modern monumental sculpture. This was his favourite, as well as the last work of his artistic career, for which Montferrand closed a practice of above forty years in St. Petersburg.

He died in June, 1858. The chevalier had a great love for art, and collected a museum, which, with patriotic zeal, he wished to see placed in one of the towns of his native country, like the Vicar collection at Lille. This is a noble instance of the public spirit of an artist, anxious to endow the soil of his birth with a memento that should serve to promote the love and study of a pursuit in which he had himself been distinguished. He published two noble volumes, illustrating the Cathedral of S. Isaac and the Alexandrine Column. His widow survives him, but it does not appear that he has left any children. This Institute has watched with interest the career of this remarkable man; and descriptions of the cathedral of S. Isaac and of the Alexandrine column have from time to time been brought under the notice of the members at the ordinary meetings.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary general meeting of members was held on Monday evening last, at 16, Grosvenor-street, Mr. Hussey, V.P. in the chair.

Prior to the usual business a discussion took place with reference to the removal to the Architectural Union Company's premises, in Conduit-street; and, after some explanations had been given by the chairman and honorary secretaries, power was given to authorize the council to sell so much stock belonging to the Institute as would realize 500*l.*, required to be paid to the Architectural Union Company, in conformity with the terms of the lease of the new premises. The council were also authorized to realize, if necessary, from the capital stock of the Institute, a further sum of 300*l.* to defray the expenses of

removing from the old and fitting up the new premises.

With reference to Mr. Donaldson's donation to the Removal Fund, intimation was given that it was much to be desired that the sum required for fittings, 300*l.*, should be raised by subscription, and Mr. Mayhew, Mr. Mair, and others, announced their willingness to subscribe.

In reply to a question, Mr. C. C. Nelson stated that the new premises in Conduit-street were now ready, and that the council hoped to be able to take possession shortly after the next general meeting.

The minutes of the last meeting having been read and confirmed, Mr. T. Hayter Lewis (one of the honorary secretaries) read an interesting paper (prize essay, 1859) "On the Architecture and Genius of Sir Christopher Wren," by Mr. G. Wightwick. At the conclusion, the chairman observed that the subject of Mr. Wightwick's paper was of especial interest to architects, and expressed a hope that some discussion would follow.

Mr. Papworth, referring to the paper read at the last meeting, the subject of which ("Domicular Construction") had direct reference to the principal work of Sir Christopher Wren, suggested that it would be desirable that a day should be set apart in the ensuing session for its discussion, as it would be impossible to dispose of so important a subject in the short time that remained for debate between the conclusion of a paper and the adjournment of a meeting. With regard to the paper just read there was one point which had not been touched upon by the author, and that was that Sir Christopher Wren did not appear to have paid any attention whatever to the details of his works. The custom of his time appeared to be that the architect should make the general design, provide for contingencies, and look after the pecuniary part of the undertaking. The details seemed to have been left to the master tradesman to carry out in the best manner he could.

Mr. Mayhew agreed with Mr. Papworth as to the desirability of future discussion on the important subject of domicular construction, and said that he had had the honour of acting in connection with a work of Sir Christopher Wren's, namely, the ceiling of the church of St. James, Piccadilly. Some twenty years ago, when he (Mr. Mayhew) held the office of surveyor to the parish of St. James, the ceiling was supposed to be in a dangerous state, and it devolved upon him to ascertain whether it was secure. Upon examination he found that the timbers of the roof, having nothing to bind them, had expanded and become dangerous. Not wishing to act solely upon his own judgment, he obtained leave to call in Sir Robert Smirke, who agreed with him in the course he proposed; and a more magnificent ceiling did not at that moment exist in London. It was different from that of St. Stephen's, Walbrook, as it was an elongated semicircle; but the enrichments were extremely grand and effective. He shared in the opinion of Mr. Papworth, that Sir Christopher Wren had not made it a practice to superintend such details, but that, after the general design was determined upon, the details had been left to the tradesman to carry out in his own way. He hoped that, as so much had been said on the subject of Sir Christopher Wren's work, another evening would be set aside for their discussion.

Mr. Mair inquired whether Mr. Mayhew had restored the ceiling as it formerly stood.

Mr. Mayhew replied that he had endeavoured to do so. There was one band which he had bound together with iron; but the others were so bad, that it was impossible to retain them. Some of the flowers over the organ-loft were the original ones, and the design of the enrichments were followed as closely as possible. In reply to questions, he said he found the roof covered with slates, and that the circular timbers of the old roof were dependent on the roof itself, but that now they were wholly independent of it. The first ceiling failed because the walls were inadequate to prevent the timber from expanding. The foundations of the church were, in fact, bad, and the tower leaned towards the west, dragging the roof with it.

Mr. Mair inquired whether any gentleman present had recently been at St. Paul's Cathedral, and had seen the condition in which Sir Christopher Wren's tomb was left. He wished to call attention to this circumstance, because two months ago he repaired with a friend to the cathedral, with the view of showing the latter the tomb of the great architect. They found it with some difficulty, but in so neglected and dilapidated a condition, that it quite pained him to see it. It

had been allowed to remain for many years without any repairs whatever. He mentioned the circumstance to Mr. Penrose (the architect to the cathedral), who expressed his surprise, but promised that the matter should be attended to. It was very discreditible that the tomb should be left in such a state; and its condition appeared the more dilapidated when compared with the tombs of the Duke of Wellington and Lord Nelson, which were all that could be desired.

Mr. Kerr inquired whether Mr. Papworth meant that Sir Christopher Wren had been in the habit of leaving details of design or construction to tradesmen.

Mr. Papworth said he meant details of construction, not design.

Mr. C. H. Smith observed that it was more than half a century since he first went over St. Paul's Cathedral, and that a week or two ago he had inquired of Mr. Penrose whether there were still in the church such things as he remembered to have seen many years ago, namely, full-sized models of cornices, mouldings, and other portions of the enrichments. He (Mr. Smith) remembered distinctly having, when a boy, seen a great many of them in the room where the model of the first design was shown. Mr. Penrose said he would make inquiry; but he feared they had been disposed of with other "rubbish." To show that the same thing occurred in modern times,—there were in some of the upper chambers of Westminster Abbey a great number of models used at the time of the restoration of Henry the Seventh's chapel, some forty years ago; also when the new Royal Exchange was completed,—he had himself some waggon-loads of models which were no longer of any use to him, but which, he believed, were put away in a room of the building, although what had now become of them he did not know. But returning to the works of Sir Christopher Wren, to the contemplation of which their attention had been devoted that evening, he wished to state, that he met, a day or two ago, a gentleman whose firm had lately become the purchasers of the Old College of Physicians in Warwick-lane, Newgate-street. This building contained a large room, built by Sir Christopher Wren, for the physicians to meet in. He requested the gentleman to whom he referred (Mr. Tylor) to allow him to show the room to a friend, and he replied that he would do so with pleasure, but that he must come soon, as the building must soon be taken down. He mentioned this so that if any gentlemen who took an interest in the works of Sir Christopher Wren wished to visit the room they had better apply at once to Messrs. Tylor for permission, and he was sure, from what he knew of the courtesy of these gentlemen, they would readily comply with any request made to them for the purpose.

Mr. T. H. Lewis observed that, with reference to the Church of St. Martin, the plaster ornaments on the ceiling, &c., were not cast, but moulded on the spot. He wished to know whether Mr. Mayhew found this to be the case with reference to St. James's, Piccadilly.

Mr. Mayhew replied, that the enrichments were not cast, but either impressed or fashioned by the hand: no two leaves were precisely alike.

Mr. Smith observed that the plaster ornaments of St. Martin's Church were carried out by Italians brought over for the purpose, and that so jealous were they not to allow any English workmen to see their art and mystery, that they boarded themselves up in a sort of box at the top of the scaffolding, and refused to admit any one to witness the process.

Mr. Christie next described a new machine (an American invention) for making bricks, now at work at Messrs. Platt's, Oldham, Lancashire. The bricks constructed by the machine, worked with a steam-engine of 20-horse power, were produced at the rate of sixty a minute, and no water was used in the manufacture, the brick being fashioned ready for the fire without the agency of water, hand-moulds, or any of the usual apparatus. The cost of production was stated to be about 10*s.* 3*d.* per thousand, and the bricks were sold in the neighbourhood at from 15*s.* to 20*s.* per 1,000.

Some of the bricks were shown in a finished and unfinished state; and Mr. Christie explained that the clay was pitched from the waggon into the receiver, where the stones were extracted, and the clay submitted to a pressure of fifty tons per brick. Such machines would, he considered, be of immense service in manufacturing bricks for the new drainage scheme of London.

A gentleman inquired whether the bricks to

which Mr. Christie referred were the same as those exhibited at the Birmingham Mechanics' Institute, as in that case they had not stood the test of pressure in a satisfactory manner.

Mr. Christie replied, that the bricks to which the gentleman referred were made at Messrs. Platt's works; but that the reason they had not stood the pressure test was, that they were not sufficiently baked.

Mr. Mair said that he had taken indifferently one of the bricks brought under the notice of the Institute by Mr. Christie, and had submitted it to an hydraulic pressure of many tons, which it had borne in the most satisfactory manner (the brick was produced).

Mr. Christie said that if the bricks made by Messrs. Platt's machine were baked for four days, they would bear almost any weight.

Mr. Smith directed attention to the importance of surface-sand in the manufacture of bricks, without which mortar would never properly adhere. The material of all brick-earth contained a certain quantity of alkali, which formed a vitreous glaze when the brick was put into the fire. If sand were placed on the outside of the brick it joined with the alkali in the mortar, and operated so as to bind the whole structure.*

After some further conversation the proceedings terminated.

The next and concluding meeting of the session will take place on Monday week, the 13th inst.

WORKS IN PARIS.

THE Abbé Lamazon has just published an account of the new spire of the Paris cathedral of Notre Dame, a short notice of which appeared in the *Builder*, page 312. He says, "The spire, built of wood, and covered with lead, dates from the commencement of the thirteenth century, as is proved positively by the remains of the central rafter, and of a capital which belonged evidently to that period. It was unfortunately demolished in 1797." The general restoring of the cathedral was projected, and the plans approved of, for the first time, in 1845, by the Superior Administration, then brought forward and reconsidered under the present Government in 1853: both of the projects included the rebuilding of the spire, interesting in a twofold point of view—one of architectural tradition, the other on account of its proportions. The rebuilding was postponed till the present time, when further postponement would be impossible, as will be seen at once. The height being 45 metres from the ridge of the roof, which is 91 metres from the pavement, it could not be raised without properly repairing and securing the arches; or, in other words, reconstructing the base of the spire. During the alterations in the cathedral now in progress, the architect can avail himself of the opportunity of taking possession of as much of the interior as he wishes for the necessary dispositions as regards the stability of this structure. The timber-work was commenced last August: the first pieces were laid on the 14th February, and at present all the wood is up in its place, from which an idea can be formed of the outline when finished. This steeple, instead of rising abruptly from the roof, as is the case with those of the Amiens and Orleans cathedrals, will be united to the angles formed by the four ridges by means of a system of counterforts of an ornamental character, which not only will afford much additional strength but will serve also as supports for decoration. These four counterforts, or flying buttresses, with arched apertures, are surmounted by statues of the twelve Apostles, and figures of the Evangelists. Above this series of statues commences the spire, composed of two stories of open work, and the pyramid which crowns the whole. This latter is in the form of an eight-pointed star, on the plan of the base; the sides being covered with large scales of lead and the edges of leafed crockets. The iron cross on the summit is not less than 8 metres in height, and a cock alone serves as a weathercock. The two open-work stories are decorated with gables, pinnacles, arched openings, and an elaborately-carved balustrade. The framing of timber is to be entirely covered with a weight of 120,000 kilogrammes of lead. This great work will be definitively terminated in the first months of next year.

In the Place du Chatelet, under the shade of the plantation of the chestnut trees of last year, round the fountain of the Palmier, seats of a handsome design have been furnished to the Paris loungers, adapted also for the Boulevards and other promenades of the capital. They are of wood, double-seated, with a back, and supported on two feet of cast-iron, ornamented with the arms of Paris. Twenty-eight similar seats—but with supports covered with copper by the galvanoplastic process, instead of being of cast-iron—are to be placed at the road points of the Barrière de l'Etoile, where the works of transformation are advancing marvellously.

The improvements of the "Place du Louvre" are now drawing towards completion. The "Mairie" of the fourth arrondissement, built so as to imitate the massive porch, the ornamental gable, and grouping of the rear-buildings of the St. Germain de l'Auxerrois Church, is finished, as are also the Presbytery and the Accident Hospital (maison de secours), annexed to it in the direction of the Rue de l'Arbre Sec. As to the steeple in the course of erection, to fill up the space between the two buildings, it is very far advanced. The design is intended to give to the religious monument an effect of grandeur by counterbalancing the overwhelming effect of the high houses at the angles of the "Place," which tend to diminish the original importance of the Church.

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BUILDINGS AND MONUMENTS IN IRELAND.

AT Belfast our correspondent reports all to be bustle and activity in the building line. In the neighbourhood of Holywood at one side, and the Queen's College at the other, domestic structures are springing up, and green fields become studded with red-brick villas, cottages, lodges, &c. In the latter locality especially material improvements take place, and a handsome terrace, in Elizabethan style, is being finished, immediately opposite the college front. Mr. Jackson is the architect, Mr. Connor the builder. Stone dressings and tall terra-cotta chimney shafts, by Wilks, of Leeds, have been introduced. What a pity the college is so near the road; 50 feet farther back would have been a desideratum.

In Eglinton and Lonsdale streets, &c. houses are being built with rapidity. Additions are being made to the terminus of the Belfast and County Down Railway, a structure of bold Roman character, and a feature of interest in the town, nearly facing the custom-house, at opposite sides of the quay.

The new Ulster Bank in Waring-street, Mr. Hamilton, architect (already described), progresses, the level of main entablature being nearly reached; and the new house for the Bank of Ireland, in Donegal-place, Mr. Symes, architect, a less elaborate and expensive structure than the Ulster, is built to level of first-floor, and portion of front cut stonework set.

The church at Ballymacarrett, over the Queen's-bridge, is to be enlarged. The Calder fountain is completed in Queen-square; it forms partly a drinking-fountain. Belfast has taken the initiative in this regard, and a trough for animals.

A noble mansion in the suburbs for Mr. Batt, has been designed by Messrs. Lanyon and Lynn, and various works are being commenced, which will contribute additional importance to the town. We wish that with the raising of palaces, the razing of filthy courts and alleys, whence pestiferous exhalations emanate, spreading disease around, were simultaneous. There is much need of sanitary improvement in this town, and a more

liberal supply of gas, at night, would be a desideratum. The two bas-reliefs for the panels of the Wellington testimonial, Phoenix-park, Dublin, in progress for some time, respectively at the studios of Messrs. Joseph Kilk, R.H.A., and Mr. Farrell, are ready for casting, which operation is to be performed at Woolwich. They are both 35 feet in length by 8 feet in height, figures life size; the one representing the Siege of Seringapatam, and the other the Termination of the Battle of Waterloo, when the Marquis of Anglesey's leg was shattered by the last cannon-shot. Both works fully sustain the reputation of these gentlemen.

At lower Gardiner-street, at rear of National Model Schools in said city, a new building, with red brick front and Scotch stone dressings, and intended for practising schools, has been erected under the direction of the architect to the Board of Works; Mr. John Nolan the builder. Cost about 6,000l.

A new bridewell and court-house, to be built at Newport, county Tipperary, are proposed by the Board of Superintendence of Nenagh gaol; and tenders are invited.

The committee of the proposed Protestant Hall and Sunday School Institute, at Waterford, have obtained plans and specifications for the building.

The directors of the Dungarvan Gas Company will declare the contractor for their new works on the 10th inst.

Extensive alterations and additions are to be made to the County-court House at Langford.

SOCIETY OF ARTS CONVERSAZIONE.

THE second conversazione held by the Society of Arts during the present session took place on Saturday evening, at the South Kensington Museum. The entire range of buildings was thrown open, including the Educational Department, the Sheepshanks' Gallery, and the Ornamental Art Museum, as well as the new rooms recently constructed for the reception of the Vernon and Turner collections, and about 3,000 persons filled it.

The Museum of Patented Inventions was also open to visitors, by permission of the Commissioners of Patents. The band of the 1st Coldstream Guards enlivened the meeting.

Mr. Wentworth Dilke, as chairman of the committee, received every visitor, by name, during the evening, and Mr. Le Neve Foster, the secretary, took all the means in his power to add to the pleasures of the visitors. Mr. Harry Chester, and other leading members of the Society, also assisted in obtaining "a success."

PROVINCIAL NEWS.

Scarborough.—New baths were opened here for public use on 23rd April. The buildings are in the Saracenic style of architecture, and have a Moorish water-tower and dome, besides a minaretted chimney-shaft. The sea front has a succession of Moorish arches, in red and white bricks, and stone pilasters and dressings, inlaid with encaustic tiles. The whole of the building is covered with glass. The entrance is through a porch opening from the Sands and Bland's Cliff. The principal area of the building is occupied by a room, 40 feet high, 56 feet long by 50 feet wide, and containing a tidal swimming-bath of tepid sea-water, and fitted with dressing-boxes for fifty bathers. There is also a ladies' plunge-bath, and a hot, cold, shower, and slipper baths, both of sea and fresh water, with arrangements for vapour and other medicated baths. The baths are lighted entirely from the top. The company's engineer is Mr. J. F. Fairbank, of Scarborough, from whose designs the buildings were erected.

Lincoln.—The committee appointed by the city council to consider the question of establishing public baths in Lincoln, have unanimously resolved to recommend the corporation to undertake the establishment of public baths under the provisions of the Act passed for that purpose; and that, to defray the cost, a rate be levied according to the lighting and paving assessment. The expense of erecting the baths, it is said, could be defrayed by a rate of 6d. in the pound.

Lowestoft.—The first stone of a new townhall has been laid here. The contractors are Messrs. John Newson, Thomas Swatman, and Daniel Turner.

Birmingham.—The statue of the late Mr. Thomas Attwood, erected at the top of Stephenson-place, will be formally inaugurated on the 7th of June, the anniversary of the day on which the Reform Bill of 1832 received the Royal assent.

Dudley.—The chief stone of the New Connection Methodist Schools at Rose-hill, Dudley, has been

* Mr. Smith has since addressed the following letter to the hon. secretary:—

"What I said last evening about bricks and their manufacture, being rather of a scientific or chemical tendency, I am fearful may be misinterpreted, or not correctly stated; therefore the following is something like my meaning. A general practice with the hand-brick-maker is to sprinkle dry sand in the mould every time previously to filling it with moist clay. No doubt this plan prevents the inconvenience of the clay adhering to the mould; if dry were its only use, any other dry fine-grained powder might answer the same purpose; but I have good reason to believe that the sand, being quartz or silicious grains, performs a more important part in the manufacture of good bricks."

1st. In the process of burning, the flinty sand forms a chemical union with the potash or soda of the clay; for all clay contains more or less of alkaline matter in its natural state. This vitreous connection fixes the sand firmly to the surface of the brick.

2nd. In a building, the lime attaches itself securely to the sand, which is already fastened to the brick in the same manner that good, sharp, silicious sand, mixed with a certain quantity of quicklime, after a lengthened period, will become hard solid mortar.

As far as the material alone is concerned, there is but little difference between tiles and bricks: the former are not generally manufactured with a sprinkling of sand externally, and it is well known that a panted roof cannot be permanently pointed with mortar: after two or three years the pointing falls out, separating completely from the tiles, leaving them almost as free from mortar as if the process of pointing had never been performed. On this principle, verified by numerous experiments, I do not consider that any machine can make really good bricks, unless it has some means of proper method of putting a sufficient quantity of good hard sand on the surface of the article while the clay is in a plastic state."

laid by the member for the borough, H. B. Sheridan, esq. When erected, the building will furnish the largest room in the town, capable of accommodating public assemblies, being 26 feet longer than the Lancasterian school-room, and nearly the same breadth, and will possess several places of ingress and egress. Mr. Wigginton is the architect, and Mr. Millward the builder. The new building would be 54 feet by 32 feet, 16 feet from the floor to the spring of the roof; and capable of accommodating, in the large school-room, 600 children; in addition to which there will be other side-rooms and vestries, capable of accommodating 200 children more. The site cost 540l., and the building contract was 1,030l.; which, with gas-fittings and furniture, amounts to about 1,700l.

Dorchester.—The inhabitants, says the local *Chronicle*, are gratified at the great success that has attended the boring for water here. The present yield of the well is no less than 320,000 gallons daily, or more than three times as much as the population can consume. The pumps throw from 10,000 to 13,000 gallons per hour.

Swansea.—The old town of Swansea of late years has been completely metamorphosed, says the *Cambrian*. An inhabitant of the place seven years since would scarcely recognize it now, with its many additional public buildings, its handsome private dwellings in the neighbourhood, and its wonderfully-increased area. The Institution for the Deaf and Dumb, the Sailors' Chapel, Post-office, Custom-house, and Grammar-school, are enumerated as among the list of public institutions which have sprung into existence during the past few years. And we have every reason, it continues, to expect that the next seven years will be equally progressive as the past: other public institutions and buildings will be added, and the whole town be still greatly improved in appearance. The first public building to which we would refer is the new Harbour Offices, proposed to be erected by the Harbour Trustees. Some time since a premium of 25l. was offered for the best design. Several architects sent in plans, and ultimately that of Mr. Gribble, of London, was pronounced by the committee the best. Then we are to have a new bank in Swansea, to be erected by the Glamorganshire Banking Company, in Temple-street, upon the old site of the Bank of England. A premium of 25l. has also been offered for the best plans in this instance. In Goat-street a new Jewish synagogue is being erected. Then again the poor paupers will no longer be cooped up in their present badly-arranged, ill-ventilated, and dilapidated house. A new building has, after much opposition and many difficulties, just been sanctioned, and will now be speedily commenced. And let us hope that the next seven years will not pass away without seeing a commodious public hall erected. This is emphatically the want of the town at present. It has been repeatedly urged through our columns. There is also a movement lately set on foot for the erection of commodious baths and washhouses. In private shops and dwellings, it is almost impossible to go through a single street without witnessing either the erection of new houses or improvements in the present shops. Scores, nay hundreds, of new houses have lately sprung up in the outlying districts; and villas and mansions of private gentlemen have been recently erected in the neighbourhood of Fynone, the Clifton of Swansea.

Salisbury.—The new market-house for Salisbury has been opened. Its site is at the west end of the market-place, fronting east, and extending back to the Avon. The front is of stone, and the remainder of white and red brick. It is entered by three arched gateways. The building consists of a clear floor lighted with direct day-lights through a roof chiefly composed of glass. The sides have stores over their entire length, capable of holding 2,500 quarters of grain, and these stores or galleries are also lighted from the roof. The internal dimensions are front 73 feet, sides 168 feet. The front central position, to be used as a corn exchange, is in extent 80 feet by 37 feet wide, or about 3,000 feet, and this space is calculated to accommodate 600 sample scales. One of the main recommendations of the project was that a railway should be made from the Great Western and South-Western Lines in Fisherton, to run completely into the Market-house. This has been done as far as regards the last-named line, and a narrow and broad gauge line of rails laid down, so that cattle or merchandise sent by either of the four railways which run into the city can be brought into the centre of the town by railway. The capital authorised by the Company's Act, to be raised in shares of 25l. each, for carrying out the undertaking, was 12,000l.

Southampton.—The alterations for the purpose of enlarging and deepening the inner dock at the port of Southampton are now completed, at an estimated cost of 50,000l. This dock now occupies an area of 10 acres, and the depth of water is 30 feet. It is capable of giving quays berths to 16 of the largest screw steam ships afloat. Ranged around are extensive warehouses and vaults; deal yards; grain floors; accommodation for emigrants; and other arrangements to meet the increase of trade at this port. Cranes are fitted all around; and a tramway traverses both the inner and tidal dock, having communication with nearly all parts of England without break of gauge. The arrangements have been completed under the superintendence of Mr. Giles, engineer to the Dock Company.

Blandford.—The municipal authorities of Blandford have erected a Corn Exchange for the transaction of business at the weekly markets, and for public assemblies. The site is at the rear of the Town Hall, where formerly stood the butchers' stalls, which have now been removed to the space underneath the Hall fronting the principal street. There are two entrances to the Exchange, one from the Market Place, and the other from Salisbury Street. The principal approach is under the Town Hall, through two large folding doors filled with roll plate glass. Entered through these is an apartment, 75 feet long, by 36 feet wide, and 30 feet high to the centre of the ceiling. The roof is of elliptical form, and is divided into six bays by carved and mounted ribs. The centre part of the ceiling from end to end to the width of 12 feet is filled with roll plate glass. Facilities for ventilation are also introduced in the ceiling. The place, it is said, is not well suited for public oratory. The Town Hall itself has been renovated, and is now reached by an open staircase close to the entrance of the Corn Exchange. The whole of the works and fittings have been designed by Mr. J. B. Green, and carried out under his superintendence. Mr. A. H. Green was the builder.

Halifax.—The plans for the new Town Hall for Halifax have been under inspection in the New Assembly Rooms. They have been prepared by Mr. Stevenson, the borough engineer. The style of the proposed building is Roman. The plans show the edifice with and without a tower and dome, which would reach to a height of 120 feet from the level of the street. The site of the building is being excavated. The plans will shortly be submitted to the Town Council.

THE ROYAL HIBERNIAN ACADEMY.

The annual exhibition of this institution is now open at Dublin, and contains several works of the Belgian school as well as many by English and Irish artists of considerable merit. The chief feature of attraction is a large picture, "The Nativity," by P. Von Schendell, valued at 1,200l., wherein a striking effect of torchlight is produced. It is, however, much to be regretted that the architectural display at these exhibitions is so meagre, and for the sake of art it might be desirable that there were even fewer subjects. The present, with only one or possibly two exceptions, does not reflect credit either on the Dublin architects or their draughtsmen, though their capabilities are well known. We question if there may not be some lack of encouragement and of good understanding between the profession and the Academy. On the whole, however, the exhibition is attractive.

IMPROVEMENT OF DUBLIN.

We are told by the *Belfast Daily Mercury* that "the respected firm of Messrs. Sheils and Scott (for upwards of thirty-five years known in Dublin), with a view of meeting their increasing trade, are removing to a more extensive concern in the centre of the metropolis; and from the last number of the *Dublin Builder* it appears their establishment in Westmoreland-street is being attractively fitted up from designs and plans by Mr. J. J. Lyons, architect."

We may add that there are few cities of equal importance and commercial status in the British empire making greater progress—at least externally—in the application of architectural features to business-houses than is Dublin. In the street above mentioned, as also in Grafton-street, College-green, Dame-street, Henry and Mary-streets, &c. several new and handsome fronts have been introduced, and others are being commenced. A new bank, for the Provincial Banking Company, will soon occupy the place of the Irish Institution and adjoining houses in College-street; and the long-

talked-of improvement to the College boundary seems now likely to resolve itself into a tangible shape, for we hear that possibly there may be a short cut to Nassau-street from Great Brunswick-street effected across the Park; and the segmental area in front removed *in toto*. Should this be in a judicious position, and the proposed bridge at the Custom House be thrown across the Liffey, it would bring the inhabitants of a portion of the north side, and the southern thoroughfares, within a closer approach by at least a quarter of an hour. At Rathmines and Rathgar a new town, with all the business requisites, is rapidly springing up.

CANCER HOSPITAL, BROMPTON.

The foundation-stone of the proposed hospital for cancer, at Brompton, nearly opposite the Consumption Hospital, was laid on Monday afternoon by Miss Burdett Coutts, in the presence of a numerous company.

This charity was commenced in a small house in Cannon-row, Westminster, in the year 1851, and has been growing ever since. We learn from the daily papers that the building is to consist of a central compartment capable of holding sixty patients, with wings; but it is the central portion only that will for the present be proceeded with. "The building, when complete, will present a frontage of 130 feet to the Fulham-road, and a depth of 50 feet, surrounded by an area of 10 feet, securing to the building the means of convenient external communication and ventilation. The building will be constructed of plain white Suffolk bricks, with a sparing use of stone dressings. There will be also bands of red bricks with key-stone and cornices. The lower story will be 10 feet high, and contain the usual domestic offices; whilst the principal or ground floor will be 14 feet in height. This will be approached by a flight of steps, and contain the hall and staircase, with the clerks' and secretary's offices, apartments for the medical officers, and a ward for patients, 41 feet by 20 feet. On the first story there are to be three wards, 41 feet by 20 feet, with rooms for the matron, nurses, &c. These will communicate with staircases and corridors, the whole of which, throughout the building, will be of stone. An additional story, in the central portion of the building, will also afford further accommodation for patients." Messrs. Lawrence are the builders, at a cost of about 7,000l.

THE DRINKING-FOUNTAIN MOVEMENT.

LORD HADDO has erected a drinking-fountain near Chesterfield's-walk, Blackheath. The Commissioners of the Royal Hospital should erect another in Greenwich-park, near their well-known reservoir.

A stone fountain, the gift of Mr. John Dinham, merchant, Exeter, has been opened to the public of that city. The donor expresses his intention of presenting several others, of iron, similar in appearance to the pillar letter-boxes, and like them to be placed at the corners of the streets.

Newark is to have a drinking-fountain, which is to be placed in a central place in the town.

A drinking-fountain has been erected at Whitehaven by the Rechabites, or temperance society, of that town.

At Nottingham, a double drinking-fountain forming the base of the clock-tower in connection with the police lodge, is now being erected upon the recreation-ground of this town. The basins are composed of aquatic plants and shells. It was designed by Mr. C. H. Edwards, architect; and is being executed by Messrs. Ransome and Co. the Sillicious Stone Company.

Sir: I saw in your valuable paper this morning the spirit shown in London for public fountains, and went to the fountain on Aberdeen-quay, invented by Mr. Fidler, for man and beast. I hope you will not forget the horse. I saw this morning twenty-seven horses drinking in ten minutes. It is on a new plan: it has no spill-water, although it runs constantly. The people on the quay informed me, that on the Queen's birthday there were two silver taps, without chains, at the fountains, uninjured, although 10,000 people drank out of them on that day. There are galvanized ladles, with chains, at present.—G. S.

THE WORKSOP SURVEYORSHIP.—Mr. W. Mc Landsborough, of Otley, says the *Leeds Intelligencer*, was elected surveyor to the Worksop Local Board of Health, on the 16th, and an Associate of the Institute of Civil Engineers on the 24th May.



TWELFTH-CENTURY SCULPTURE: ARCHITECTURAL MUSEUM, BROMPTON.

SCULPTURE IN THE ARCHITECTURAL MUSEUM.

THE annexed sketches represent two casts of conventionalized sculpture of the twelfth century in the Architectural Museum at Brompton, to which I would direct your readers' attention.

ARTIST.

CONVERSAZIONE OF THE INSTITUTION OF CIVIL ENGINEERS.

MR. LOCKE, as president of the Institution, received the members and a large number of guests distinguished in science, art, and literature, on Tuesday evening last.

Among the things exhibited were Wheatstone's domestic telegraph, worked by the new patent wire of the Messrs. Silver; and a number of photographs of the Egyptian railway, the carriages, and engines. There were specimens of cast steel and puddle of Bessemer's and other Liverpool processes; Colt's, Dean's, and Lancaster's revolvers; the model of a breakwater; one of Bishop-Rock Lighthouse, Scilly Islands; and other works, besides some excellent paintings and marble busts.

To describe one of these re-unions, however, is to describe all. "It is ten years," said a friend we ran against on the staircase, fresh from Italy, "since I was at a conversazione here; but there, on the very same spot, stood the president and the secretary, to bow to me when I went in; there are the same old faces about, and, I was going to say, the same old coats,—at any rate, no difference is perceptible; there is the same click-click, chop-chop, and chatter going on in the theatre, amongst the machinery; and I am now going down to take exactly the fellow sandwich and glass of sherry of those I took ten years ago under precisely the same circumstances." Our moralizing friend was right. We are a wonderfully persistent people.

OPENING OF GALLERIES OF ART IN THE EVENING. — We regret to learn that the National Gallery trustees decline to allow the pictures about to be temporarily deposited at the Brompton Museum to be exhibited to the public in the evening. The intimation given to the Council of the Society of Arts was that these pictures "will necessarily continue subject to the arrangements which have hitherto been invariably observed at the National Gallery."

ALL SAINTS' CHURCH, MARGARET-STREET, REGENT-STREET.

THE church of All Saints in Margaret-street, the corner-stone of which was laid so long ago as 1850, was consecrated by the Bishop of London on Saturday, the 28th of May. Our readers are already tolerably well informed as to the building. A plan of it, and view of the exterior, with some descriptive particulars, were given in our volume for 1853.* The west window by M. Gerente, the frescoes by Mr. Dyce, and other portions of the work, have been described and commented on at various times, and last week we printed some general observations by a correspondent on the whole. In our present number we give a view of the interior, looking eastward from the north side. The general contractor was Mr. Kelk; the carving was undertaken by Mr. Myers; Messrs. O'Connor executed the stained glass in the clerestory windows, and Mr. Potter, of South Molton-street, the handsome grills in the chancel, and the rest of the metal-work. Mr. R. H. Norris, by whom some of the woodwork was carved, was clerk of the works in the first instance, under the architect, Mr. Butterfield.

The most munificent contributor towards the erection of the church appears to have been Mr. Henry Tritton, the banker, who gave, it is said, as much as 30,000*l*. The whole control of the expenditure, and the direction of the works, however, have devolved on Mr. Alexander J. Beresford Hope, who has also contributed a very large sum of money. The cost of the baptistery was paid by the Marquis of Sligo, and a portion of the stained glass in the south aisle was furnished by the Ladies Howard, daughters of the Earl of Wicklow, and by the Rev. W. Upton Richards, the incumbent.

SIR,—Your readers ought to be obliged to "F. A. M." for calling their attention to this magnificent work. It is a building to which in every way artists will owe so much in times to come, that we ought to be very hearty and ungrudging in our thanks to Mr. Butterfield for what he has accomplished. For myself, I must say that, though I have a rather large acquaintance with English and foreign works executed since the revival of Pointed art, I cannot hesitate for an instant in allowing that this church is not

only the most beautiful, but the most vigorous, thoughtful, and original among them all; and this, not only because it is a work on which great expense has been lavished, but because everywhere, even to the smallest detail, the hand of the artist is conspicuous. Nothing has been neglected, nothing left to chance, or to the accidental skill or taste of an assistant. And this leads me to the point in "F. A. M.'s" letter which has induced me to write to you. He finds fault with the painting on the groining, the gilding of the ribs, and the stained glass; and, agreeing as I do with him on these points, I am surprised that he should not have felt it to be impossible that they could be the work of Mr. Butterfield. The truth is, that these portions of the work have been executed without the architect's control, and, I believe I may say, in opposition to his views; and it is most deeply to be regretted that where so much noble liberality has been shown by the founders in their attempt to produce as perfect a building as possible, there should also have been shown a want of that true discrimination which leads most men who know much about art, when they have found an able artist, to leave him unfettered, and to do nothing at his rate in opposition to his views and advice. The gilding of the groining ribs and the yellow glass which has been put in the clerestory of the chancel are such serious blemishes to the general effect of the building, that I think we may take it for granted that, in a very short space of time, the guardians of the church will alter at least these features in compliance with Mr. Butterfield's views.

On one point on which "F. A. M." is silent let me say a few words. If, as I suppose, we all agree, *all* the arts ought to go hand-in-hand; then the great care bestowed on the musical services at All Saints is a matter for especial commendation. As every architect feels distressed when he finds the building he has reared with much care for the service of Almighty God condemned to be served by those who do not appreciate the equal loveliness of sounds and forms, so I think we may well congratulate one who has just finished so noble a work in handing it over to those who evidently know so well how best to use it, filling its walls with noble melodies and music of the most carefully executed kind, whilst they have the satisfaction of using a building whose acoustic qualities seem to be at least as good as its artistic.

GEORGE EDMUND STREET.

* Vol. XI. p. 56.



THE CHURCH OF ALL SAINTS, MARGARET STREET, REGENT STREET.

MR. BUTTERFIELD, ARCHT.

COMPETITION.

Blackburn Workhouse.—At a meeting of the Building Committee, held on Saturday last, in the Board-room, Mr. Thomas Clough in the chair, the report of Mr. John Withers, C.E. was received. He had been appointed by the Board of Guardians to examine the plans submitted for competition (nine in number), and to report the three best and suitable plans for the proposed building. Mr. Withers selected the following:—First best, "Utilis;" second best, "Candour;" third best, "Charlton good; Blackburn better." The report was ordered to be printed, and each guardian, both elected and *ex officio*, supplied with a copy, prior to the decision of the board. Mr. William Stones, builder, was instructed to take the three approved plans, and furnish the committee with the estimated cost of the erection of each design.

ARCHITECTURAL PUBLICATION SOCIETY.

THE annual meeting of this society was held on Friday evening, May 27th, at the Rooms of the Royal Institute of British Architects, which had been as usual kindly placed by the council at the disposal of the committee. Mr. W. G. Habershon took the chair; and, after the usual preliminary proceedings, the report of the committee was read by the Hon. Secretary, Mr. H. R. Newton. After noticing the publication of the twenty-four plates of illustrations for the year 1857-8; that six plates were ready for the 1858-9 just expired, and that six more were in hand, it stated that the letter D of the text of the Dictionary, for the same year, was far advanced towards completion,—

"Which will enable the subscribers, with the letter C and the illustrations to C and D, to complete the second volume of the Dictionary, for which a title-page and a list of contents will be published with the ensuing part. It is hoped that the entire publications for the year ending April, 1859, will be completed by the end of June.

The committee, in accordance with the statement in last report, are making arrangements with the Architectural Union Company, for renting an office, &c. at No. 9, Conduit-street, Hanover-square, to receive the floating stock of the society, which has become sufficiently valuable to render it expedient to effect an insurance upon it.

The committee have the pleasure of announcing that Mr. T. Bellamy, one of the earliest members, has marked his satisfaction of the manner in which the last illustrations were executed, by a donation of two guineas to the Illustrative Fund.

The committee have to announce also, that the hon. secretary for correspondence for the past year regrets that he will be unable further to perform the duties of his office.

After due acknowledgment of his service, they have the pleasure of recommending Mr. A. Cates to this important office.

In consequence of certain inconveniences arising in the use of a double year in each balance-sheet, that is, making each year run half-way into the next, the committee have come to a determination to recommend for adoption this evening, that the current year, or twelfth of the society, be made to conclude on December 31, 1859; the subscription for the year ending on the 31st of March, 1860, being just the same as if the year had ended on April 30, 1860. Should this resolution be adopted, the current or twelfth year of the society will have commenced on the 1st May inst. and will terminate on the 31st December.

The Report concluded by referring to the influential and strenuous support of the architectural press in urging the public and the profession to assist in the objects of the Society, by acknowledging the obligations of the Society for the ready and valuable assistance afforded by those who are in any way applied to for information for the purposes of the publications; and urging an increased support towards effecting the early completion of the Dictionary.

The balance-sheet for the year 1857-8 showed a balance in hand of 88*l.* owing to the payment of the arrears; and the accounts for 1858-9, after a payment of 58*l.* for the works in hand, show a balance of about 260*l.* for the liabilities. As this sum is not sufficient to meet the expenses incurred, the members are requested to forward their subscriptions in arrear immediately.

The chairman, before putting the question of the adoption of the report, commented upon the great value of the works in hand, and urged that all who were interested in the profession should exert their influence to obtain more liberal support; and that during the ensuing year he should himself endeavour to add many names to the list, to assist in bringing the Dictionary to an early completion, and hoped each member would do the same. After a few remarks made by the members present, votes of thanks were passed to the committee and the officers, and Mr. A. Cates was requested to undertake the duties of honorary secretary for correspondence.

At the end of the evening the chairman handed two guineas to the secretary as a donation to the

Society, expressing his hope that the funds would be largely contributed to during the year—a hope in which we fully concur.

CHURCH-BUILDING NEWS.

Wisbech.—A new Baptist chapel has been erected here. The material is stone. The edifice was built by Mr. John Batterham, from designs by Mr. R. B. Dawbarn. The cost is about 4,000*l.*

Cambridge.—Since our last notice of the restoration at St. Edward's Church, says the *Cambridge Chronicle*, the paint and whitewash have been entirely scraped off from the piers and arches, and those portions which had been so recklessly cut away in erecting the pews and galleries have been carefully restored. Yet what has been discarded in the interior has been perpetuated on the exterior, and while considerable expense has been very judiciously incurred in removing paint and whitewash abominations from pier and arch, the wretched compo which covers the tower has been "furbished up," and made more conspicuous than ever. The floor of the church has been levelled throughout, and dryness and stability secured by a good layer of concrete. The whole of this improved area has been refitted with open sittings of solid oak: they are plain even to baldness, but the state of the funds is said not to have allowed any money to be spent in superfluous ornamentation. The seats are disproportionately wide. A window, in the style of the middle of the fourteenth century, has just been inserted in the east end of the south aisle, and offers a very eligible opportunity to any wealthy parishioner to display his taste and munificence, by filling it with stained glass, as a monument to a departed friend, or a thank-offering for worldly prosperity. This new window contrasts in a very marked manner with the four recently inserted in the nave aisles, and the tower have been approved of, and these additions will soon be carried out. The east end is still untouched, the numerous engagements of the architect, Mr. G. G. Scott, having hitherto prevented him giving his attention to it. It is proposed to fill the great east window with characteristic tracery, to open the lower portion which has been blocked up, and to relieve the blank space of wall behind the altar with carved tabernacle work.

Lemsford (Hatfield).—A new church at Lemsford Mills has been consecrated. The church stands close to the entrance to Brocket Park, and 2*1*/₂ miles from Hatfield, upon the land of Earl Cowper. It was erected by the Countess Cowper and her children, in memory of the late earl, and in fulfilment of a desire often expressed by him to erect a church for the inhabitants of the northern portion of the parish of Hatfield. The church consists of a nave, tower, chancel, and vestry. The nave and tower are in the Early English style of architecture, and the chancel in the Decorated style. The upper stage of the tower is filled in with arches which support a perforated parapet; and at the north-east angle of the tower a stair-turret rises above the whole. The tower has been constructed to bear a spire, which it is proposed to add at some future period. The east wall of the chancel is occupied by a five-light window in the Decorated style. The church is built of Ancaster hammer-dressed stone, which is of a lighter and cleaner colour than the Kentish ragstone ordinarily used, with dress stones for the piers, windows, and doors. Internally the church is almost destitute of ornament. The wall of the chancel is so entirely filled with windows, that there is no place for the inscriptions which frequently occupy this position in churches; but the tables of the ten commandments are displayed on the sides of the chancel arch. The roof is open timbered, and like the seats and general fittings, is of deal, stained. The nave and chancel are paved with tiles. The church is heated by Messrs. Haden and Company's apparatus, of Trowbridge. The chimney of the heating apparatus has been designed so as to be ornamental. The church will accommodate 240 or 250 persons, including children. All the sittings are free. The church is to be called "the Church of St. John, the Evangelist." A parsonage-house has been erected close to the church. The architect is Mr. Brandon, of London. The plans have been carried out by Mr. C. N. Foster, of London.

Tunbridge.—The foundation-stone of the Grammar School Chapel, Tunbridge, has just been laid. The chapel is being erected on a portion of the school premises, close to the High-street. The architects are Messrs. Wadmore and Baker, the former of whom is an "old boy" of

the school. The builder is Mr. G. Punnet, of Tunbridge. The style is Early English. A Flamboyant wheel window will ornament the front, and there will be a bell turret. Accommodation will be provided for 250 persons. The estimated cost of the building is about 2,000*l.* One of the niches will have a statue of Sir Andrew Judde, the founder of the school.

Worplesdon.—Burgham Church, Worplesdon, has been consecrated. The site is not far from the London-road, and about two miles from Guildford. The chapel is a modernized Gothic structure, erected from designs of Mr. H. Woodyer, of Bramley, by Mr. Swayne, of Guildford, at an estimate of 898*l.* and the total expense incurred in connection with it is 1,200*l.* of which about 200*l.* is still required. The exterior is of Bargate stone, faced with Bath stone, and it is surmounted by a tiled turret. The interior walls are of chalk stone, and the aisle of the nave is paved with tiles, the floor of the communion consisting of a tessellated pavement of tiles. The side windows of the chancel are ornamented with pillars, and in the east is a Gothic window: at the opposite end is an octagonal wheel window. The pulpit is of chalk stone, and the roof and benches of brown stained timber. The nave measures 75 feet by 25 feet, and the chancel 26 feet by 16 feet, and there is accommodation for a congregation of 152 persons.

Gloicester.—The foundation-stone of St. Peter's Roman Catholic Church, Gloucester, has been laid. The architect is Mr. G. R. Blount, of London, and Messrs. Wingate, of Gloucester, are the builders. The new church will be in the Decorated Gothic style, and will accommodate about 700 persons. The church will front Northgate-street, and, when completed, will consist of a tower and spire, nave, aisles, and chancel, chapel, sacristy, &c.

Clevedon.—On the 25th ult. the foundation-stone of East Clevedon Church was laid by Lady Elton. The new church will be of the Decorated style of architecture, of a cruciform plan, with a tower and spire over the choir, and a porch at the west end. "A friend" has promised a stained-glass window for the chancel. The stone employed is the native Pennant sandstone, with the magnesian limestone of the locality and Bath stone, for quoins and dressings. Mr. Giles, of Taunton, is the architect. Messrs. Palmer and Green, masons, of Clevedon, and Mr. W. Bennett, builder, of Portishead, are the contractors. The church will seat between 300 and 400 persons. It is built at the cost of Lady Elton, whilst Sir Arthur H. Elton gives the site, and provides the endowment and repairing funds.

Swansea.—Kilvey Church has been enlarged and re-opened. The work was contracted for and carried out by Mr. William Rayner, builder, Swansea, from the designs and under the superintendence of Mr. R. Kyrke Penon, architect. The additions and alterations have been carried out in the Gothic style of the thirteenth and fourteenth centuries. They consist principally of a new south aisle, a porch projecting from same forming the principal entrance, an enlargement of the projection at the east end forming the chancel, with the introduction of new Bath stone arch. A new vestry has also been added, and a new bell-gable erected. The whole cost of the works will be about 900*l.* Several new windows in stained glass and imitation painted glass are to be substituted for the present plain windows in various parts of the church by Mr. Grenfell and his family.

Callington.—The church here has been restored, at a cost of about 900*l.* The plans were prepared by, and the work carried on under the superintendence of, Mr. J. Piers St. Aubyn. The pewing, together with the north and west galleries, have been removed, and open seats of plain Memel deal substituted. A gain in the number of sittings has been the result of this re-arrangement, the total number now being 247.

Wolverhampton.—The Collegiate Church in this town has for a considerable time been under restoration and repair. The dilapidations were serious. Several of the arches, says the local *Chronicle*, had been blocked up with brickwork, and the whole of the interior, including the pillars and the carved stone pulpit, tastefully covered with plaster and whitewash, which, by repetitions, had become between 1 and 2 inches thick. Some of the windows also were closed, and the capitals of some columns attached to the arches that support the tower had been cut into in order that large beams might be introduced for some purpose not at present perceptible. A flat plaster ceiling constructed about 8 or 10 feet lower than the original carved wooden roof, is now removed. The large gallery at the west-end has been reduced in its dimensions, and two windows, hitherto closed, now light a part of the church that formerly was

dark. Two new lancet windows beneath the gallery are fitted with stained-glass figures, representing St. Peter and St. Paul, while the large stained-glass window above them is the "Memorial Window" to the Duke of Wellington. The whole of the plaster and whitewash have been cleared away, and the mouldings of the pulpit, arches, the corbels, and the carving of the organ are now, as nearly as possible, in their original condition. Yet, the restoration producing the greatest effect, has been the removal of the old organ which filled up the upper part of the west arch of the tower. A new organ, built by Willis, of London, has superseded the old one: its position is above the western arch of the tower.

CONDITION OF THE THAMES. METROPOLITAN BOARD OF WORKS.

At a meeting of the board held on the 27th inst. it was resolved, on the motion of Mr. Tite, seconded by Mr. Leslie, "That Dr. Hofmann and Dr. Frankland be requested to undertake the duty of advising the board as to the various schemes of deodorisation, and the several systems of dealing with sewage matter which have been submitted to the board, and as to the best agent to be employed for deodorising and neutralising the noxious properties of sewage, at an expense not exceeding 100l. each; that Dr. Miller be requested to make a series of observations during the months of June, July, August, and September, upon the temperature and state of the water in the Thames and the docks, and to report thereon to the board at weekly or at shorter intervals, and to advise the board generally as to the most efficacious measures for guarding against nuisance or injury to the public health resulting therefrom."

Mr. Tite said it was most important that this proposition, for which they were indebted to their chairman, should be carried out forthwith, seeing that if, in addition to the nuisance of last summer, any epidemic might by possibility supervene, the consequences would be most disastrous; and he believed that the mischievous influence of the sewage water in the Thames, owing to the increased heat of the weather, was already beginning to be felt.

Mr. Wright supported the motion, and it was carried unanimously.

ASPHALTE FOR FOUNDATION-WALLS.

SIR.—In reply to your correspondent, "C. E.," respecting the application of asphalt for foundation-walls, and the resisting power it has to weight, I beg to inform him that, from an experiment lately made by me upon Messrs. Armani and Co.'s patent asphaltic lava, with an "hydraulic pressure" on four bricks laid two upon two, with the joint reversed, one half jointed with the patent asphaltic lava, and the other half jointed with Roman cement, I obtained the following result:—At 19 tons 2 cwt. one of the bricks cracked; at 36 tons to 38 tons the bricks, jointed with asphaltic lava, crumbled on the edges, and the cement joints cracked; at 48 tons the asphaltic lava joints held good and perfect when taken out.

Further, asphalt when properly made, and well applied on foundation-walls, will prevent the rising of damp; and its durability is known to withstand different temperatures.

A BUILDER.

THE BOYS' INDUSTRIAL HOME.

SIR.—I have read with intense interest the appeal on behalf of the Boys' Industrial School, founded by Mr. Bell, and grieve indeed to learn that it is likely to fail for want of funds. How shameful and lamentable a proof of deficiency in the religious and moral feeling of our so-called Christian nation! and of those especially who have themselves been gratuitously educated at Christ Church, the much-perverted Royal charity-school of the first Protestant king of England; his most pious, last gift to the destitute boyhood of London. His protest from the dying bed on which he dictated his wishes to Cranmer should surely be heard against this perversion. Cruel to his memory, cruel, above all, to the objects of his royal sympathy! Was this sympathy confined to the boys of his own generation, or those immediately succeeding? Certainly not. And if it would have been a proof of presumptuous cupidity to have applied the revenues of the estates directed by royal bounty for the poor to the education of the middle and upper classes, the next week, or year, after their consecration to the wants of the utterly necessitous, it

cannot have less of this debasing spirit in such application now. Until, however, restitution can be accomplished, let every gentleman who has been educated at Christ Church contribute one guinea per annum to the Boys' Industrial Home, and every lady who has a son under tuition there, collect from each of her friends but 2s. per annum in aid of the Boys' Industrial School, a large and certain revenue would thus be realized at an unselfish sacrifice, in some measure repaying what has been so flagitiously, though, perhaps, inconsiderately, withheld from the proper recipients of the royally endowed charity-school. As I never had a son educated there, I promise to endeavor to collect 1s. per annum each from twenty friends.

S. E. M.

THE WASTE LANDS OF DARTMOOR. CONVICT LABOUR.

I READ with much interest the letter of your correspondent Mr. Biden (p. 340), on the possibility of employing convicts to advantage on waste lands. I ask leave, through your columns, to refer him for an example to the convict establishment at Dartmoor, where it has been in practice for some few years. As to the return in point of money, I cannot say, as it has not been tested in that respect, it having been used principally for the reception of invalids, &c.; but the produce of agricultural matters, such as grass, turnips, cabbages, &c. has been truly astonishing. I have heard of hay being made three times in one year, and last year ten or twelve bullocks were fattened off the grass, and sold by the prison authorities in the neighbouring markets. There are 80,000 acres of land that might be turned to the most profitable account as far as the nation is concerned, and convict labour might be most profitably applied to it.

A COUNTRYMAN.

N.B. The South Devon and Tavistock Railway, I believe, is to be opened on the 15th instant, which will place Dartmoor in communication with the Great Western system of railways between London and the Land's End.

ARCHITECTS REJECTING BAD MATERIALS: THE TRADESMAN CANNOT RECOVER FOR SAME OF THE BUILDER. BROMPTON COUNTY COURT.

LOOKER v. TODD. The plaintiff in this action, before Mr. Moody, deputy judge, is a tile-maker, of Kingston, and the defendant is a builder of King's-road, Chelsea. Mr. W. B. Davies, the solicitor, appeared for the defendant, and the plaintiff conducted his own case.

Mr. Looker said he claimed the sum of 8l. 8s. for 6,000 plain tiles supplied to defendant's order. By Mr. Davies.—Mr. Todd, when he gave the order, stated that the tiles were not wanted all at once, but a fortnight after he called again and wanted the whole, and witness put on extra men to complete the order. There was no particular agreement as to the sort of tile required. Mr. Todd saw the tiles, and it was possible that witness showed the defendant a sample of one tile perhaps. The tiles in court, now produced, are certainly not even. One crooked tile would, however, throw the others out, and the tiles now shown are picked out. Witness firm supplied the defendant with 6,000, and did their best to complete the order for 70,000. Received a letter from the defendant to the purpose, that the architect would not assent to the tiles. It was Mr. Todd's clerk who fetched the tiles, and he threw aside all that appeared defective.

The plaintiff's foreman swore that the tiles supplied were sound and good, and that Mr. Todd's men refused what they had.

Mr. Davies said his client had a contract to build some large premises in the country, and the architect to the building exercised the power invested in him in regard to the quality of the materials, by not passing the tiles supplied by the plaintiff. The tiles were, however, so bad, that Mr. Todd, for his own credit's sake, would not have used them, and without the architect's sanction, his client dared not put the tiles on the roof. Under these features he contended that the defendant as a builder was entitled to a verdict.

Mr. Todd said some portion of the tiles had been used and others given away to mend the roofs. The architect refused the tiles for fault in their construction. Witness really did not know what had been done with the whole of the tiles. Believed a thousand had been used on the building—certainly not the greater part of the six thousand.

Mr. Charles Luck said he was an architect, and acted under the architect to the building in question. Witness superintended the erection of the schools, and told the defendant's foreman he should object to the tiles.

Mr. Thompson, foreman to the defendant, stated that after the architect had condemned the tiles he informed Mr. Todd, and the defendant said they were not to be used. Heard the defendant tell the plaintiff that the tiles were of an inferior quality, and must be removed.

By the plaintiff.—Had used about 1,000 or 1,500 of the straight tiles on the outbuildings and back offices, but none on the school.

The plaintiff here said that he had heard that the greatest part of the tiles had been used on the building; but had no witnesses present to prove it; that he had made an epitaph offer to Mr. Todd, which he had taken no notice of.

The learned judge said the plaintiff must have known that the architect was the sole judge of the quality of the tiles, and as he had rejected them, the defendant had no alternative but to return the tiles.

The plaintiff contended that the architect's decision

applied only to builders, and not to tradesmen supplying materials.

The judge said the plaintiff's opinion was contrary to common sense. Directly the manufacturer received notice that an architect had rejected his goods, it was his place to remove the materials complained of. If an architect unjustly decided, the tradesman had his remedy in law. Here the tiles were manifestly uneven. The greatest difficulty in the present case was to determine how many tiles had been used. As 1,500 had been admitted, he thought two-thirds of the bill should be paid. His judgment would be for 2l. 16s. with costs.

The plaintiff warmly asked for an adjournment, to produce witnesses to prove that the whole of the tiles had been used, and were of a good quality.

Mr. Davies said his client had no objection on condition of the plaintiff paying the defendant the costs of the day.

The judge recommended the plaintiff to let well alone, which advice was taken with some reluctance.

WEST CENTRAL DAY INDUSTRIAL SCHOOL.

WE are glad to hear that it is proposed to institute a Day Industrial School to co-operate with the numerous evening schools in the west central postal district, which are in connection with the Ragged School Union. As is the case with that in Old Pye-street, and with the Shoe-black Society, no child will be admitted unless he or she bring a formal recommendation from the Ragged Schoolmaster, who may withdraw him or her at his pleasure. The child will be given food, and industrially trained during the day time, and every evening will be sent to his or her home and evening ragged school. On Sundays the child will be entirely under the control of his or her parents and Ragged Schoolmaster.

The committee for carrying out this project consists of men who are for the most part well experienced in similar institutions, viz. Mr. M. W. Ware, hon. sec. Shoe-black Society, and one of the directors of the Britannia-court Reformatory; Mr. C. Ware, chairman of St. Giles's Refugees Committee; the Rev. S. H. Parkes, of the same committee, and manager of Little Corn-street School; and Mr. B. A. Heywood, one of the same committee, and also of the Shoe-black Society, besides representatives from most of the Ragged Schools in this district. The Bishop of Ripon is patron.

We sincerely wish the founders success in their good work. Such a plan is no novelty. It has been tried in numerous instances, both in London and in other large towns, and invariably found to be a blessing to the neighbourhood. For example, we might mention the Industrial School in Old Pye-street, Westminster, and those in Aberdeen, which latter were the first institutions of the kind, and have so improved the low localities of the city, that scarcely a vagrant child is to be found there.

Mr. Heywood, 1, Bloomsbury-square, who is one of the hon. secretaries, would receive any subscriptions that might be sent.

Correspondence.

THE NINE-HOURS MOVEMENT.

SIR.—I am instructed, on behalf of the Nine-hours Movement, to solicit the favour from you of inserting the enclosed address in your next impression—I am, Sir, on behalf of the United Trades, yours respectfully,

GEORGE POTTER.

To the Builder: Operatives of the United Kingdom.

Fellow-workmen.—It is a deplorable truth that, amid the rapid progress of science, the vast development of our national resources and greatness, and the wonderful accumulation of wealth by the upper and middle classes, the condition of the mechanic, in all that relates to his physical comfort and the social independence which should result from the employment of his mechanical energies, is retrograding to a state of miserable dependence and social slavery.

The causes of this are many, but, foremost and principal, stand rapacious competition and machinery. Machinery, by its rapid growth and wonderful development, has almost superseded the necessity of manual labour in many trades, and seriously interfered with that necessity in all things to which human labour is generally applied. The middle and upper classes, alone, through the influence of their capital, have reaped the advantages which should be conferred by machinery on the whole human race. To us it has proved a powerful competitor for our daily bread, and we have gained extra toil when actually employed, and increased periods of unwilling idleness, privation, and physical and mental misery.

Those who suffer the effect of a vicious system, should by experience be best acquainted with its causes, and therefore likely to know the most advisable remedies. We, the building operatives of London, as sufferers by the competition of machinery, and unrestricted speculation in human labour, have given serious and deliberate consideration, and concluded that the only remedy likely to be serviceable to our class, in checking the depression which machinery places on us, will be a reduction in the hours of labour.

By reducing the hours of labour, we shall be admitted to some participation of the benefits of machinery—we shall be enabled to escape some of the physical exhaustion which human labour presents, and shall afford those of our trades, who are now unwillingly idle, opportunities

* It must not be supposed that we agree in these views.

spot where the accident happened. Some of them were taken out of the building altogether, while others were stacked near the spot. I was engaged to remove the bricks, and Mr. Myers, jun. told me to take them away and place them in one of the vaults. Mr. Myers then told

me to remove some scaffold planks which were broken, so as to reverse the splintered ends, to prevent their being seen. Mr. George Myers suggested to me to remove the broken transoms that lay in the basement to the ground-floor. On coming back to take away more bricks, I found a policeman there, and Mr. Myers told me not to remove any more. Mr. Myers told me to take the splintered parts of the planks away, so that they could not be seen.

Cross-examined by Mr. Sergeant Ballantine.—Mr. George Myers told me to remove the bricks and transoms, so that they could not be seen. He told me to hide them. There were two other men with me at the time, and they are now at work on the building. It was ten minutes to seven o'clock when I began to clear away the bricks. I went to the solicitor's clerk, who now attends, last Wednesday week. I was also here last Thursday, but was not examined.

To the Foreman.—The bricks were removed into the vault, but I cannot say whether the bricks which the jury saw were the same as those which I helped to remove. I removed eight or nine baskets of bricks, with ten or twelve bricks in each. There were about seven other men assisting.

To a Jurymen.—I was not told to get out the bricks because some bodies had not been got out. Thomas Darcy, 11, Noah's-ark-place, labourer.—I was at work in a corridor of the building, about six or eight yards from where the stage came down. I hastened to the place where the men fell; they were lying under the ruins. Mr. Myers was not there then, but he came before seven o'clock. Mr. Myers gave me and others orders to remove the stuff that was lying on the ground. I heard him tell the men at the time removing the stuff, and I said, "If any more bodies are lying about, they must be here." Mr. Myers said, "That is not what I want; I want it shifted away, so that it may not go on to the building again. He did not tell me where to take the stuff; but I heard him tell others to take it out of the place altogether. I did not hear of any bodies being found afterwards."

Cross-examined by Mr. Sturgeon.—Mr. Coleman, the foreman, asked me whether I was summoned, and what I had to say. I told him I hardly knew what I had to say—that I did not know what I had to say until I was sworn. I was discharged on Monday evening with several others who have given evidence in this case.

To a Juror.—I inquired of Mr. Coleman whether I had committed any fault that I should be discharged, and he said, "No fault at all. But I do not want you further." Mr. Puddell, the time-keeper, discharged me by Mr. Coleman's order. O'Neil is still kept on, but the sack was flung in his face, and he was told he need not stay against his will. I was never suspended for any offence.

A Juror.—What was the height of the rubbish when it fell?

Witness.—About a yard.

Edmund Buckley, 17 B, sergeant of Metropolitan Police.—I was on duty in Peter-street on the morning of the accident, and when I heard of it proceeded to the building. I saw six or seven men filling bricks into baskets. Mr. Myers was on the top of the building, but Mr. Coleman was with the men. I told Coleman not to move any more away and he said "Very well, but we may as well take those away as they are filled in the baskets." There was a rumour at the time outside the building that a body was still missing, and then I went to Mr. Coleman, and told him that anything I had said about not removing the bricks was not to prevent search being made, and he said nobody was missing. Mr. Myers said Mr. Coleman would do anything the police told him, and Mr. Coleman told me that one piece of timber must be removed as it might be wanted at the inquest.

James Myatt, labourer, of St. Martin's-lane said.—I was employed on the building at the time of the accident, and saw the stage the night before. There were then seven or eight tons of bricks and mortar upon it. The weight was principally on the middle. I was not in the gang with O'Neil. I was the mouthpiece between the foreman and the men in the iron-work, and had 3s. 1½d. a day.

Cross-examined by Mr. Sergeant Ballantine.—My duty was to look after the other men getting in the iron joists. My business brought me up and down the stage. The stage that fell was nearest to the stairs, and was frequently used by the men in going to their work.

William Warren, 27, York-road, Lambeth, bricklayer, said.—I was in the charge of Mr. Myers for eight or nine months, but was discharged last Friday, but for what reason I do not know. The timekeeper brought me a ticket, and told me to go and get what was due to me. I fell with the block scaffold on to the stage. I did not remark the quantity of stuff on the stage before it fell. I observed that the stage was very weak, and more complained besides me. I said to one of the labourers who was wheeling bricks on,—"What are you wheeling bricks on for? There is plenty on already. You see it is bending up and down." The workman's name was Hayes. He only laughed at me. I had had conversation with a man named Taverer, who said he was afraid the stage would come down; and he said he would let anything it would come down. Woodley, the foreman of the bricklayers, came on the stage the day before the accident, when Taverer (my mate) and I were talking about the stage. Taverer said to Woodley, "The stage is sure to come down." Woodley said, "What can I do with it?" or, "What have I to do with it?" I can't say which. He then walked away.

Mr. Sturgeon said he had now called all his witnesses, and it occurred to him that Mr. Coleman, the foreman, and Mr. Woodley, the foreman of the bricklayers, were important witnesses, and he wished to know whether Mr. Sergeant Ballantine meant to call them.

Mr. Sergeant Ballantine.—I shall not say anything on the subject until I know that my learned friend's case is closed.

Mr. Sturgeon.—Then my case is closed.

Mr. Sergeant Ballantine.—Then the other case is closed.

Mr. Sturgeon said he would have been glad to have called Woodley, but that his evidence was denied.

Mr. Sergeant Ballantine said he had always great reluctance in calling any witnesses who might by possibility criminate themselves.

Mr. Sturgeon.—Then I will take upon myself to call Mr. Coleman.

A desultory conversation ensued as to whether it might be desirable to adjourn the inquiry and ultimately the inquiry was ordered to be adjourned until Thursday next at two o'clock.

Mr. Sergeant Ballantine said the contractors were most anxious to get on with the works, and he presumed there would be no objection on the part of the jury that they should do so.

The Foreman (Mr. Asphitel) said the jury had already made all the examination necessary to guide them in their conclusion.

The inquiry was then adjourned.

Books Received.

Text-book of Modern Carpentry, comprising a Treatise on Building-Timber. By THOMAS W. SILLIMAN, Architect of the New Capitol at Montpelier, Vermont. London: Sampson Low, and Son.

In this well-printed and neat little volume, Mr. Silliman has brought together the pith of the information given by Rondelet, Tredgold, and others, and so has placed it within the reach of those who are unable to obtain the more comprehensive and costly books of the authors we have named. It is, moreover, illustrated with twenty engraved plates. A glossary of twenty-two pages concludes the volume.

The author gives the following as established corollaries in relation to the strength of timber:—
"1. A piece of timber should not be subjected to a permanent strain of more than a fourth of the power that would break it."

"2. A piece of perfect timber, while in a level position and properly supported, is supposed to be of equal tensile strength throughout; and, whether the piece be long or short, it is liable to part in one place nearly as quick as in another."

"3. A piece of perfect timber, in a vertical position, is in tensile strength proportionate to its length; a short piece being stronger, since a long one must, in addition to the power applied to the lower end, sustain its own weight; and hence, when it breaks, will part near the top."
"4. In calculating the strength of any piece of timber, only so much of the wood should be measured as is continuous throughout the entire stick. For instance, a tie-beam measuring 8 by 10 inches, having a 1½-inch rod passing through it, should be considered as measuring but 6½ inches thick; and if the ends of struts, or anything of the kind, be cut down, into and across the top of the beam 2 inches, it would then measure but 8 inches deep."

"5. A rectangular beam supported at both ends, with its diagonal placed vertically, will thereby be reduced, in cross-strength, one-tenth."

"6. The touch and hard woods, as oak and chestnut, are about an eighth, and the soft ones, as spruce, maple, and hemlock, from a sixteenth to a twentieth, as strong, when the power is applied at right angles to the fibres, as when applied to their length. This power is that which a pin exerts on the wood of a post through which it has been driven, when the tenon, which is pined in, tends to drag it out, and thereby split the wood."

The Story of the Life of George Stephenson, Railway Engineer; abridged from the larger Work. By SAMUEL SMILES. London: Murray, 1859.

A WISH having been very generally expressed that the interesting biography by Mr. Smiles should be published in a more accessible form for behoof of general readers, and also with a view to its being adopted as a manual for the young, the author has himself abridged the larger work, which contains many details, such as those respecting the history of the invention of the locomotive engine and of the railway system generally, as to which the reader might fairly be referred to that work; so that thus and otherwise a very considerable reduction in dimensions and in price has been effected, without injury to the popular and attractive nature of the work, and it is still a faithful record of a true man's career, teaching practical and interesting lessons of steady industry, patient encounter with difficulties, and unflagging perseverance in the accomplishment of great and worthy objects.

The volume is illustrated with a portrait of George Stephenson and various woodcuts.

Having already made good use of the larger work, and on various other occasions touched on interesting passages in the career of the maturer of the locomotive, all we need here do is to recommend the present abridgment to the notice of our readers, and especially for behoof of the young, among whom it is well fitted to excite a spirit of perseverance and industry, which may lead to great things in the future lives of some of them, and will, at all events, improve the minds and strengthen the efforts of all who peruse its instructive pages in the proper spirit.

Things not generally known familiarly Explained. A Book for Old and Young. By JOHN TIMBS, F.S.A. Kent and Co. Fleet-street, London. 1859. Second series.

MR. TIMBS has made this branch of literature a peculiar province of his own; but the fruits of success are begetting a spirit of imitation and a greedy desire, on the part of those who cannot strike out a new idea for themselves, to fast, like parasites, upon the ideas and the successes of others. There is a vast deal of this second-hand sort of ability in the literary world, and the unscrupulous way in which it is carried out constitutes just a species of civilized reversionism worthy only of the savage state.

No less than 23,000 copies of the first series of the work have already been sold; and, although each volume is complete in itself, we have no doubt that many more of the first will be sold, along with the present, to new subscribers for

both, over and above all those thousands who, having tasted the quality of the first issue, will make sure of a share of the last.

The interest of the present volume is especially of the domestic character, and discloses many interesting glimpses of the manners, customs, and ceremonies of our ancestors. There is some interesting matter of a psychological character, popularly treated, and various other topics are discussed.

Popular Astronomy. By FRANÇOIS ARAGO. Translated and edited by Admiral W. H. SMYTH, D.C.L. and ROBERT GRANT, Esq. F.R.A.S. In two volumes: Vol. II. London: Longman and Co. 1858.

THIS is unquestionably a valuable and interesting work, notwithstanding M. Arago's peculiar mode of showing his national prejudices and paltry jealousies. The present volume contains a good deal of miscellaneous and useful matter not strictly astronomical, besides an account of most of the planets, the earth inclusive. Among the numerous illustrations are engravings of the pendulum and gyroscopic of Foucault, whose experiments are described at some length. The editors and translators appear to have done their duty with fidelity and skill.

VARIORUM.

GOETHE is especially the poet of art; and his "Poems and Ballads," as translated by Professor Aytoun and Mr. Theodore Martin, may claim from us a passing notice.* These deal rather with Amor than Apollo; but we can find one to quote—"Nectar Drops," rendered with admirable taste and kindred feeling by Mr. Theodore Martin:—

NECTAR DROPS.

When Minerva, bent to favour
Him she cherish'd most, Prometheus,
Brought a chalice brim'd with nectar
Down from heaven, to work a blessing
On the men he had created,
And inspir'd them with devotion
For the arts that deal with beauty;
Fleet of foot, she clove the ether,
That she love might not espy her;
And the golden chalice trembled,
And as ne drops—not many were they—
Fell upon the emerald meadow.

Came the bees, and settling swiftly,
Suck'd their sweets with busy ardour;
Came the butterfly, as eager
To imbibe a droplet also,
Even the unwelcome spinner
Crawl'd anear, and suck'd with fervour.

Blessed was the draught they gather'd,
They and other tiny insects;
For they now, with men, contribute
Unto Art, that highest power!

Without being oblivious to certain doubtful renderings of particular lines, we arrive at the conviction that the translators have done their work well.—The municipal commissioners of the town of Calcutta have presented to the Lieut.-Governor of Bengal the report of Messrs. Rendel, on the proposed new system of drainage and sewerage of Calcutta, and this report, and other documents, have been printed in form of a pamphlet. Messrs. Rendel's report embraces three distinct schemes. The first is a modification of the committee's plan, which makes the salt-water lake the receiver of the sewage; the second recommends the Hooghly; and the third relates to water supply.

The commissioners state, in their report, that the first scheme will entail a very heavy increase of expenditure, and that their engineer, Mr. Clark, "has shown most satisfactorily that the alterations and modifications recommended are not essential; whilst, in reference to the second scheme, supported by medical evidence as to the innocuousness of sewage matter," they continue, "we have to observe that, after a minute calculation, as shown in Appendix C, the proposed scheme, instead of being economical, is the reverse; whilst the fact of Parliament having last year voted a large sum to get rid of an intolerable nuisance in London, strongly militates against the medical evidence collected the very year before on the subject of innocuousness."

The commissioners consider that the plan as adopted by the Calcutta committee might safely be undertaken, and is the best for the town under all the peculiar circumstances, "and that Mr. Clark's plans are entitled to their confidence. They, therefore, advise that the experimental sewer, as suggested by the committee, should be at once commenced."

A new and revised edition of the well-known and long-established and esteemed work for youth, titled "Mangnall's Historical and Miscellaneous Questions," has been issued by Messrs. Longman and Co. It has been remodelled throughout, enlarged, and improved.

—Part first of "The Warwickshire Antiquarian

Magazine," published by subscription, and under the direction of a committee of management, by H. T. Cooke and Son, booksellers to the Queen at Warwick, has just been issued. The editor is Mr. J. T. Robinson, of Leamington, architect. Warwick is an interesting county to antiquarians, and its archaeological stores are likely to be done full justice to in this new periodical, which devotes a whole part, with illustrations, to a single subject. Solihull is that subject in the present instance. There is, however, an able preface; and appended are Heraldic and Genealogical Memoranda relating to the county, with illustrations. The part is illustrated by a photograph of Solihull Church.

Messrs. Longman, the publishers, have issued a very useful little book on "Mental Arithmetic, &c." by H. G. Reid. Mr. Reid is an able author. His present object is to produce a text-book on the principles of arithmetic for the learner, and numerous exercises, with answers, for the teacher; and one main purpose in view is to prepare the way for the introduction of the decimal system into England.

Miscellaneous.

VALUATION OF LAND AT BIRKENHEAD.—A court of arbitrators has been opened at St. George's Hall, Liverpool, to assess the value of land on the north side of Wallasey Pool, compulsorily appropriated by the Mersey Docks and Harbour Board, in connection with the Birkenhead great float. The importance and probable development of the Birkenhead dock works are made an element in estimating the value of the land. The question of Liverpool v. Birkenhead is thus partially opened up, and the inquiry assumes the character and interest of past contests in parliamentary committees. Among the witnesses have already appeared Mr. Tite, M.P. Mr. Pownall, and Mr. Hunt, architects. There are eleven claims for compensation against the dock board. The proceedings have been opened by the case of Messrs. Pollard and Grey, who claim about 230,000*l.* in respect of 86,000 yards of the land in question, and this is considered by the Mersey board an exorbitant sum. The eleven other claimants seek compensation to the extent of half a million of money. This is considered the great arbitration case of the day.

A PANIC ON RAILWAY WORKS IN INDIA.—Considerable alarm, says the *Engineers' Journal* of Calcutta, has of late prevailed on the railway works along the Rajmatal district, arising from rumours in circulation about the movements of peopled down to the Sonthal hills. Unfortunately, these rumours react upon the railway works, and as they are gaining ground daily among the zemindars and labouring population, a total stoppage of the works may take place if measures are not taken to re-establish confidence and security. A few Goorka troops have been sent up, but they are insufficient, as the whole line of country from Calcutta to Dinapore, *via* the Sonthal hills, is denuded of all troops, with the exception of the Hill Rangers at Bhagulpore. Complaint is made that the magistrates do not adequately support the engineers under these difficult and dangerous circumstances.

HANSLOPE CHURCH PAINTINGS.—The *Northampton Mercury*, quoting some recent statements in our pages as to the wall-paintings found here, says: "The appeal of the correspondent of the *Builder* has, unfortunately, been made too late. The painting has been effectually chopped away, and the wall 'made good.' The pictures were said to be unsightly; but they could scarcely exceed in unsightliness the sham stonework which has been substituted for them, and they had the merit of being curious and historical, while the latter is mere ugly falsehood. At all events, one cannot help being surprised that no drawing was made of them before they were destroyed, especially as there is evidence of good taste in what has been done in other parts of the structure. The chancel arch has been cleared of the innumerable coats of white-wash with which it was choked, and the Norman work re-appears remarkably well preserved and sharp. Two eminently graceful Early English windows, one in the north and one in the south aisles, have been treated with similar judgment and success. A trefoil-headed window, partly hidden by pewing, and apparently in fair preservation, deserves the same attention. It is very possible that the wood-work in the chancel, so which the correspondent of the *Builder* alludes, may conceal Norman work, for at one period the chancel must have been a glorious specimen of the style, but the evidence is conflicting."

STRIKE.—The bricklayers' labourers at St. Helen's have struck for an advance in wages from 2s. 8d. to 3s. per day. The masters are said to have resolved to let matters stand for a month.

DISCOVERIES AT CARISBROOKE.—A Roman villa has been discovered at Carisbrooke. A tessellated pavement, worked in a pattern of various colours, has just been partially uncovered, making the fourth floor that has been found, though the others are of a very coarse kind. It is in the Vicarage grounds that these remains are situated.

WOODWORK FOR ST. MICHAEL'S, CORNHILL.—Mr. W. G. Rogers has arranged the wood-carving, just completed by him for the church of St. Michael, Cornhill, in his rooms, Soho-square, for inspection. The pulpit is an elaborate specimen and there are ninety-four bench-ends all of different designs. Besides other portions of the decoration, there are 300 carved panels with motifs, original emblems, and sacred flowers. Mr. Rogers's supereminent skill in his own walk is well known.

ROYAL MONUMENT AT OSTEND.—The monument for the late Queen of Belgium, which the town of Ostend has offered to her memory, has already been erected in the church. The group is executed by M. Franklin, and consists of three figures;—the Queen lying on her death-bed, the crown gliding from her hand; and an angel reaching the palm to her; and a mourning female figure at her feet, representing Belgium. The figures are more than life-size.

LARGE CASTING.—Last week a large anvil-block was cast at the foundry of Messrs. Morrison and Co. Osburn, Newcastle-on-Tyne. The block is for an immense hammer to be used at the making of Sir William Armstrong's guns at the Elswick Engine Works, in that town. When finished it will weigh upwards of 21½ tons. It was cast in one run, and the quantity of metal melted for it was 23 tons. The size of the base of the block is 6 feet 6 inches by 9 feet, its thickness 9½ inches, and the size of the body part 3 feet 10 inches by 3 feet 9 inches.

HANDEL COMMEMORATION AT THE CRYSTAL PALACE.—The engagement of performers for this festival has been completed by the Sacred Harmonic Society. The extent of the orchestra will be appreciated when it is stated that it will comprise beyond 3,000 performers. The orchestra itself is 216 feet wide. The full rehearsal of the entire orchestra will take place at the Crystal Palace at from half-past ten to eleven o'clock on the morning of Saturday, the 18th June. Arrangements are now in progress at the Crystal Palace for the exhibition of various relics and memorials of Handel, in a court arranged for the purpose. This collection gives promise of great interest. Handel's autograph scores of "Messiah," "Israel in Egypt," and the "Dettingen Te Deum" (works to be regarded with the deepest veneration), now in the Royal Library, and the portrait of the composer, presented by Smith (his amanuensis) to George III. now at Buckingham Palace, will be lent for the occasion by the Queen, and his Royal Highness the Prince Consort.

ARCHITECTURE NUMISMATICA.—Under this title Professor Donaldson announces a work on the architectural medals of classic antiquity; illustrated and explained by comparison with the monuments, with 100 lithographs and woodcuts. The subject, which has occupied the author's attention for several years, may be presumed to be of deep interest to the architect, the numismatist, and general scholar; as the series of medals explain many of the noblest monuments of antiquity, and set at rest several moot points that have arisen on account of the conflicting statements of Vitruvius, Pliny, and other ancient authors. The following classification will be adopted. 1. Sacred.

—Temples, altars, tabernacles, adieules, funeral edifices, such as those connected with the apotheosis of the Roman emperors. 2. Monumental. —Commemorative columns, votive and triumphal arches, trophies. 3. Public Utility. —Forum, basilica, macellum, thermae, villa publica, bridges. 4. Public Games.—Theatres, stadia, circi, amphitheatres. 5. City Gates.—Cities, camps, harbours, ports. Mr. Donaldson's system has been to consult, with a powerful glass, every example to be met with in certain British and foreign collections. With his own hands he has drawn the details from six to even twelve times the original dimension. These have been reduced by photography to one general size of 3 inches in diameter, and then lithographed. The prints, at this large scale, enable the reader at once to comprehend the minutest feature of the edifices represented, which include above ninety different buildings, chiefly of the period of the Roman empire. There can be no doubt as to the value of the work.

THE OFFICE OF CHIEF ARCHITECT, &c. OF THE GOVERNMENT AT MELBOURNE.—From the *Victoria Government Gazette* we learn that Mr. William Wilkinson Wardell has been appointed to be inspecting Clerk of Works and Chief Architect in the Department of Works and Buildings.

A GOOD EXAMPLE.—Mr. Whiting, one of the foremen connected with the works of Messrs. Maudslay and Co. in the Westminster-road, has recently waited upon Mr. Norton, the magistrate, and asked to be allowed to hand him the sum of 10*l.* the subscription of the workmen of that establishment, to be supplied to the sufferers in the late accident at the Westminster Palace Hotel. Mr. Whiting observed, that the reason of selecting his worship for that purpose was the hope that the fact would thus obtain publicity, and that this might induce the persons employed in other large factories in the district to follow their example in such a cause.

RHYMES AT THE ACADEMY.—The present exhibition has made some of our correspondents poetical, but we are unable to print their lucubrations. One lady-writer, who signs S. E. M., commenting on, amongst others, "The Vale of Rest," says, cleverly:—

"The nun digs her own grave,—not a gladsome employ;
But how many do this with a face full of joy!
The maiden who opens her heart to the smile,
Which that heart of its peace shall hereafter beguile;
She turns the first sod in the green path of life,
And deems not how soon will be ended its strife:
How quickly the chasm she makes in the peace
Of her once joyful heart will extend and increase.
The seeker of fame, be he youthful or grey,
He putteth his hand to the spade every day,
And helpeth the enemy seeking his prey,—
That foe that still feasteth on poor human day."

THE INCREASE OF SHIPWRECKS.—Notwithstanding the improvements which have been made in lighthouses and harbours, and the increased knowledge of both officers and seamen, the report of the Shipwrecked Mariners' Society shows a growing increase of casualties amongst shipping. Last year no fewer than 3,329 were recorded at Lloyd's, of which 1,170 had occurred on our own coast. The 500 agents who are established by this useful society, in different parts of the kingdom, have in one year clothed, fed, and sent to their homes 5,037 shipwrecked persons; 3,168 widows and orphans have also received assistance. These figures give an idea of the "dangers of the sea," and show how much this society is deserving of support. The number of vessels now carrying the society's flag amounts to 3,035, and the number of fishermen and mariners subscribing has amounted to 43,000.

UNIFORM MUSICAL DIAPASON.—On the report of a commission appointed by the French Government to consider this subject, an official order has been issued establishing by law a uniform pitch to be used by all the musical establishments of France which have any connection with the Government. This "normal diapason" is an A, given by a standard tuning-fork, to be preserved at the Conservatoire, and it vibrates 870 times in a second. Thus has France settled for itself a question which has still more need to be decided here, and which has for some time been occupying the attention of all who feel interested in music as a branch of the fine arts. Our readers will recollect that in this, as on many other occasions, the *Builder* was an early pioneer on behalf of something like a fixed standard of musical tones, the special occasion which called forth the pioneering efforts being the uncertainty as to what constituted E natural in church or turret and clock bells. Englishmen qualified to speak authoritatively on the subject, are about to consult as to what should be done in this country to establish a "normal diapason."

INFLAMMABLE MATERIALS IN LONDON.—During another great fire in Lime-street the burning and explosion of numerous casks of turpentine and the flaming of other dangerous matters effected great destruction, and terrified the dwellers in the surrounding neighbourhood. It does not appear that there was any naphtha stored, but without doubt, that and other matters nearly as dangerous are kept in large quantities in various parts of this crowded city. The other day a fire took place near the Portman-street barracks: the newspapers stated that at one time the danger was imminent, for there was only a party-wall separating the barracks from the place on fire, and not a dozen yards off was the powder magazine, the contents of which were at once removed by the soldiery. It was understood that the quantity of powder was not great, but had it exploded the effect in such a situation would have been terrible. It is really necessary that provision should be made to prevent the keeping in dangerous quantities such destructive commodities.

IMPROVED FINGER-POSTS.—Mr. Ballard, surveyor of highways for Lillington, has recently erected posts with the letters of the road directions in bas-relief; so that wayfarers may obtain information in the dark as to their whereabouts.

THE ABEL SMITH MEMORIAL.—The *Record* says the name of Abel Smith is to be handed down to posterity by means of a memorial which is to assume the shape of a girls' national school, for the benefit of the town of Hertford. Nearly 800*l.* of the required sum have already been subscribed.

CAMBRIDGE ARCHITECTURAL SOCIETY.—On the 26th ult. the second meeting was held of the Cambridge Architectural Society for the Easter Term. Mr. Maples, Clare College, the secretary for the Goodwin testimonial, laid on the table the design for the east end of St. Edward's church, which has been sent down by Mr. G. G. Scott, and which met with general approbation. Mr. Fawcett, Jesus College, made a communication respecting a curious coffin-lid, which has been found in Cherry Hinton church. Mr. Clarke, Trinity College, then read a paper on the Royal Chapel at Palermo, which was built in the year 1140, by Saracen architects, for the first Norman king of Sicily. Mr. Clarke described at length the mosaics, with which the whole church is covered, representing the histories of the Old Testament and of our Saviour, and in the aisles the legendary life of St. Peter and St. Paul. The chairman said that he availed himself of the earliest opportunity of correcting a mis-statement which he had inadvertently made, in a paper which he had read before the society, and which had since been published—to the effect that Mr. L'Estrange had borrowed the design of the roof which he is executing in the nave of Ely Cathedral from a church at Hildesheim. He had learnt from Mr. L'Estrange himself that his original conception of the design for Ely had been formed before he knew of the existence of the roof at Hildesheim. The original suggestion had been derived from a richly-illustrated manuscript in the British Museum, executed about the same period as the nave of Ely Cathedral.

PAPER WATER-PIPES.—Water-pipes have been made of almost every conceivable material—wood, metals, gutta-percha, india-rubber, stone-ware, glass, &c. but paper pipes are novelties. The new pipes, a Parisian invention, are made with paper dressed with bitumen: they are capable, says *The Scientific American*, of resisting a pressure of fifteen atmospheres, and made to bear much more by increasing the thickness of their walls. They are, of course, very light, homogeneous, inoxidable, wholesome, and cheap. The bitumen is mixed with a certain quantity of chalk, not given, and is heated in a boiler to melting: a roll of paper is then made to pass through the liquid bitumen, and immediately afterwards it is rolled upon an iron mandril of the size desired for the interior of the pipe, to the thickness required. When this is done, the mandril is placed into another cauldron, which contains pure bitumen, and afterwards rolled upon a flat stone sprinkled with fire: the mandril is then drawn out, and the inner surface of the pipe dressed with pure bitumen. These pipes are four times cheaper and five times lighter than cast-iron. Joints are made with perfect ease.

PARLIAMENTARY EXPENSES OF RAILWAY COMPANIES.—A return has been issued of all the parliamentary expenses incurred by railway companies, from the period of their incorporation to the end of the session of 1857. The return embraces 193 companies. Seventy companies had not forwarded any information at the time the return was ordered to be issued. We give the figures returned by the principal companies:—Caledonian, 158,618*l.* 1*s.* 8*d.* or 3*l.* 13*s.* 7*d.* per cent. of the total loan and share capital, 8,574,420*l.* 8*s.* 3*d.*; East Lancashire, 154,161*l.* 5*s.* 11*d.* equal to 3*l.* 12*s.* 9*d.* per cent. of the capital of 4,237,831*l.*; Eastern Counties, 268,201*l.* 2*s.* 3*d.* or 2*s.* 3*d.* per cent. upon 11,611,085*l.* the capital; Great Northern, 334,219*l.* or 2*s.* 2*d.* per cent. upon 11,444,404*l.*; Great Western, 760,270*l.* 6*s.* 1*d.* or 2*s.* 7*d.* upon 27,430,716*l.*; Lancashire and Yorkshire, 461,722*l.* 19*s.* 3*d.* or 3*s.* 4*d.* upon 13,593,608*l.*; London and North-Western, 869,771*l.* 0*s.* 9*d.* or 2*s.* 5*d.* upon 34,041,013*l.*; London and South-Western, 313,702*l.* or 3*l.* 6*s.* upon 9,506,225*l.* 4*s.* 2*d.*; London, Brighton, and South Coast, 43,690*l.* 9*s.* 5*d.* or 4*s.* 6*d.* upon 7,799,257*l.* 12*s.* 7*d.*; Midland, 397,788*l.* 10*s.* 10*d.* proportion as to capital, 20,712,981*l.* 3*s.* 11*d.* not given; South-Eastern, 515,707*l.* 11*s.* 3*d.* or 4*s.* 6*d.* upon 11,044,592*l.* The return contains similar information as to gas and water companies and turnpike trusts for the last ten years.

MUSEUM OF PATENTS, SOUTH KENSINGTON.—Number of visitors for the week ending May 28: mornings, 1,070; evenings, 1,102. Total, 2,172.

NORTHFLEET DOCKS, GRAVESEND.—At a public meeting of the inhabitants of Gravesend, the directors of the company, formed, as we have already announced, for the purpose of carrying out the project of converting the immense chalk excavations at Northfleet into docks, at a cost of 2,000,000*l.*, explained the nature and prospects of the scheme, and resolutions in favour of it were unanimously passed.

THE WEDGEWOOD STATUE.—A meeting of the subscribers to the Wedgwood statue fund was held at Stoke-upon-Trent, on the 16th ult. when the chairman stated that 1,736*l.* had already been subscribed. Mr. E. Davis, of London, reported on the expense of a statue in three different positions; namely, 3,000*l.*, 3,600*l.*, and 1,400*l.*; the latter being at Stoke station, on a suitable pedestal, with iron railing, the size of the statue to be 8 feet. After some discussion it was unanimously resolved that the site in Winton-square, Stoke station, be conditionally chosen.

THE CAMPANA MUSEUM.—This celebrated museum has now become the property of the Pope, through the ingenuity of Cardinal Antonelli, who is said to have extorted from the Marquis Campana, in prison, a sale of his museum for 200,000*l.* instead of 300,000*l.* its minimum or market value; the 200,000*l.* to go towards balancing the marquis's deficiency at the Mont de Piété. The deed was signed, it is said, by two gendarmes, as witnesses. The marquis affixed his signature in the certainty that a refusal would keep him for life in the dungeons of which he had had eighteen months' horrible experience. He still acknowledges himself the debtor of the Government.

EDUCATIONAL LECTURES AT THE BROMPTON MUSEUM.—On Saturday last, in pursuance of an order in council of the Committee on Education of the Science and Art Department, the first of a weekly series of public lectures was delivered by the Rev. W. Brookfield, M.A., one of her Majesty's inspectors of schools, on the subject of "Reading Aloud." There were present 340 masters and mistresses connected with the training schools of the metropolis, and altogether an assemblage of 500 persons connected with the educational interests of London and its suburbs. The more especial object of the dissertation was to illustrate and indicate the advantages of "readings," as a means of profitable entertainment among the people generally. The next lecture was to be on the question of "What Mechanical Workmen should be Taught, and How," to be delivered by Mr. Scott Russell, F.R.S. Other lectures, the course consisting of six—the entire series being the suggestion of Mr. Cole, the director of the museum—are to follow on practical topics on consecutive Saturdays; the subjects being on "How Much Art School Children should be Taught," by Dr. G. Kinkel, formerly Professor of the History of Art and Civilisation in the University of Bonn; "Singing on General Education," by Mr. Hullah; "The Study of the English Language," by Mr. Walrond, of the Civil Service Commission; and "Adult Education among the Poor," by Rev. W. Rogers, M.A. of St. Thomas, Charterhouse.

TENDERS.

For building Hensted House, in the county of Kent, for Mr. Gathorne Hardy, M.P. Mr. D. Braudon, architect:—

E. S. Smith	21,300 0 0
Kelk	21,160 0 0
Cannitt and Co.	20,947 0 0
Foster	20,540 0 0
Piper and Son	20,475 0 0
Myers	19,700 0 0
Messrs. Panson	18,544 0 0

For erecting new chapel, at Edmonton. Mr. Charles Laws, architect. Quantities supplied by Mr. James Barnett:—

Nash	23,516 0 0
Patman and Fotheringham	2,359 0 0
Humphreys and Son	2,350 0 0
Hill	2,283 0 0
Butlers	2,198 0 0
Glenn	2,101 10 0
Perry	2,162 15 0

For Gainsborough police station, lock-up house, &c. Mr. M. Drury, Lincoln, architect. Quantities supplied:—

Pinchbeck, Horncastle	2,450 0 0
Cant, Gainsborough	2,141 0 0
Fox, Lincoln	1,895 0 0
Ashton, Retford	1,859 0 0
Ledger, Gainsborough	1,799 0 0
Squire, Lincoln	1,795 0 0
Clepham, Norwell	1,750 0 0
Jackson, Lincoln	1,749 0 0
Young, Lincoln	1,719 0 0

* Mr. Young's tender, reduced to 1,740*l.* was afterwards accepted.

For a new farmhouse, and certain new farm-buildings, at Manor Farm, on the estate of Mrs. Williams, of Crawley, Grange, Buckinghamshire. Mr. John Belcher, Architect:—

J. Billson	2,1340 0 0
J. Rose	1,280 0 0
Jackson and Shaw	1,235 0 0
Freshwater	1,200 0 0
Lawson and Joy	1,109 0 0
Conquest	1,000 0 0

For building tower, and additions to Datchett Church, Berks, and vicarage, for Rev. H. Hall. Mr. R. Brandon, architect:—

Fashage	2,812 0 0
Dove, Brothers	2,745 0 0

For building tower and bell-turret to Tooting District Church. Mr. B. Ferrey, architect:—

Lucas, Brothers	1,475 0 0
Evans, Brothers	1,460 0 0
Nicholson	1,322 0 0
Myers	1,292 0 0
Piper	1,146 0 0
Chinnock	1,142 0 0
Dove, Brothers	1,110 0 0

For public-house, and private house adjoining, Great Windmill-street, Fenchurch, for Messrs. Goding and Co. Mr. F. Edwards, architect. Quantities supplied:—

Hall	2,187 0 0
Patrick	1,710 0 0
Panson	1,698 0 0
Patman and Fotheringham	1,675 0 0
Ashby and Horner	1,620 0 0
Smith	1,550 0 0
Chitter	1,539 0 0

For building a residence for Mr. Maillard, in Maiden-lane. Mr. G. Lamb, architect:—

Taylor	2,845 0 0
Mashman	1,743 0 0
Dove, Brothers	1,665 0 0

For enlargement and re-seating King's Langley Church. Mr. D. Brandon, architect:—

Young, St. Alban's	2,200 0 0
J. Chalk, Abts. Langley	1,125 0 0
Foster, London	1,058 0 0
Roberts, Islington	948 0 0
J. Hurst, King's Langley	900 0 0
Saunders, Oxford-st. London	789 0 0
G. Cooper, Aylesbury	759 10 0

For cleaning and painting the entire roofs, and making good all the cracked flags, to the Fenchurch-street Station. Mr. Tite, architect:—

Rothway	1,050 0 0
Mann	998 0 0
Bracker and Son	975 0 0
Smith (accepted)	977 0 0

For the erection of a new wing to house at Clapton. Mr. F. Warburton Stent, architect:—

Mansfield and Sons	2,377 0 0
Jackson and Shaw (accepted)	545 0 0

For school, with mistress's house and offices adjoining, at Peter Green, near Beaconsfield, Bucks, exclusive of the bricks and tiles, which will be delivered on the ground for the contractor. Mr. Louis Butcher, architect:—

Williams, Cowley	2,449 0 0
Graham, Stoke	417 0 0
Mortimer, Chalfont St. Giles	350 0 0
Jessop, Maidenhead	335 18 0

For the schools of SS. Peter and Paul, Milton next Gravesend, Kent. Mr. Richard Jas. Jones, architect:—

J. H. Andrews, Rochester	2,462 0 0
W. Wood, Gravesend	360 0 0
W. H. Everest, Gravesend (accepted)	373 15 0

For alterations at West Hackney Church. Mr. William White, architect. The quantities by Mr. Samuel Field:—

Taylor	2,352 0 0
Badley	315 0 0
Terrey	310 0 0
Porter	288 0 0
Wentner Smith	259 0 0

For restoration of factory, Mile-end New-town. Messrs. Hammock and Lambert, architects:—

Perry	2,910 0 0
Heath	279 0 0
Tolley (accepted)	257 0 0

For first portion of alterations at "The Two Brewers," Stratford. Same architects:—

Hudges	2,296 0 0
Heath	282 0 0
Perry	278 0 0
Tolley (accepted)	253 0 0

To Mr. Williams, for repairs at Batavia Mills, Highgate:—

Ring and Stanger	2,340 0 0
Scott	297 0 0
Tolley	257 0 0

For excavating foundations of the Chelsea Vestry Hall. Mr. W. W. Pocus, architect:—

Keats	2,173 0 0
Milton	151 0 0
Ellis	140 0 0
Neave	137 0 0
Carter	104 0 0
Rose and Burt	95 0 0
Willis and Cowley (accepted)	88 0 0
Hornsbay and Son (two late)	100 0 0

The Builder.

VOL. XVII.—No. 853.

Architectural
Copyright.

HOSE who are interested in the progress of architecture, and believe with us there are public objects to which our profession can minister, might well be justified in their own particular regret at the interruption of business which has so long deferred consideration in Parliament of the whole question of artistic copyright. It seems to be incident to the situation of this free country, that at frequent intervals, measures of any social importance shall be stopped, whilst some one question is adjusted

between political parties; and the acquisition of a right of property in their works by architects, is amongst the class of nationally important objects, as we are prepared to show, which we have spoken of as held in abeyance.

It has been so much the habit of parliamentary orators and newspaper critics to depreciate architectural talent in our country, that we should hardly hope for attention to any detailed account of what has been lately effected by the profession itself. How much, however, has been done, and is in progress, our ordinary readers know. The proceedings of the now numerous societies; all the exhibitions of designs, and many buildings; with the recent report of the Institute; demonstrate that there will be shortly, few efforts omitted which can be initiated by the profession. Absolutely, whatever reason there may be to regret the condition from which we have emerged, the prevalence still of much that is bad in what should be architecture, or the lingering dispute about styles whilst there should be unanimity of aim and appreciation of all real art, there is no reason for our profession to think lightly of its claims, amidst demands greater and more varied, as we have ere this taken occasion to show, than were ever made upon it in any period of its history. What is needed further, chiefly is the aid of the public.

It is the public demand which makes the good or the bad in architecture; it is the peculiarity of the architect's branch of art that the public must express a demand: not only is the architect, like every other artist, the creature of his time and of its state of intelligence, but he must be subject to any caprice of the individuals at whose instance alone the profession can set to work. The architect can influence the character of the demand only by labouring *educationally* to improve those for whom he ministers. True, while he is thus using his energies for ultimate good, his own views are often warped or tainted by the fallacies which he meets with, and the inevitable yearnings of his apparently immediate self-interest.

All that has been said above, is now perfectly familiar to the profession, and requires only to be diffused as information when a somewhat unreasonable public complain that

they have not got the matured plant which they themselves have weakened at every period of its growth.

There is, however, another view of the subject of the interests which are common between our profession and the public. It is not recollected, how essential, in the progress of art, is the question of the rights of the architect, of property in his invention. The Institute at length moved in the matter; and claimed, a year ago, by petition to the House of Lords, the right which had been conceded in principle to literary productions, and manufactured articles of utility, and which it was sought by the Artistic Copyright Committee, working in conjunction with the Society of Arts, to have confirmed or established for paintings, sculpture, and engraving. More recently, as stated in the Report of the Institute, a committee was appointed to watch over the interests of architecture in the committee obtained in the Lords, just at the close of the last Parliament. Any results from Lord Lyndhurst's labours have yet to be made public; but we cannot doubt that his lordship will pay greater regard to the claims of architects than appears to have been paid by those professors of the sister branches of art who have made themselves heard loudest in the matter of copyright. The title which is the proper subject for protection, is that to *design*; and it is impossible for us to understand that there can be clear views in this respect amongst persons who would attach less importance to work of architecture than to that of painting.

Lord Lyndhurst was reported to have said, when moving for the committee, that the case had been mentioned to him of "eight or ten persons who had sent in designs competing for the construction of a certain very important work." He proceeded:—"None of them were employed to execute it; but when it was completed, it was found to be made up of parts taken from all these competing designs." But the deprivation of just rights to the profession is greater than is involved in a case like this, or one where a competitor receives only a "premium" not sufficient to compensate him for appropriation of work of his brain. The architect is defrauded habitually through the want of recognition of his rights by the law, and through the deficiency which results amongst builders and the public of the sense of what is due to property—or the fact that what happens to be criminal and punishable in one case, is larcenous by any code of morals in the other. Lord Lyndhurst said, referring chiefly to painting,—"In practice the effect of the present state of the law is, that a very extensive circulation of spurious copies issues, which is most injurious to artists of different descriptions, and which operates injuriously in many ways. The artist has lost the copyright in his works, and has been injured in reputation in consequence of their being copied by inferior artists. The public has been injured by the frauds committed. The extent of those frauds is most surprising." This, equally, is true of buildings and architects' work. The architect is employed to design, say an ordinary suburban residence—a work which cannot be remunerative to him on the established system of professional charges. It could be remunerative only on the supposition that the same design and drawings, with variations which he would readily introduce, could be turned to account in other houses to be built for the same description of demand. He will see, however, houses built to the very pattern, sometimes by the builder who had worked from his drawings; he will see his enrichments multiplied, and in unsuitable positions; and every time a degree worse in execution. At length he may be disgusted with his own work; and instead of having had the opportunity to effect those progressive improvements, through which would be realized the most satisfactory advance in architecture, he will become prone to extravagance, or variety without beauty, anxious less to improve upon what he has done, than to keep beyond his imitators. The new labour of design will have been saved to some one; or will have been charged for by the builder, without any return to the architect. In literature, such practice would in very short time stay the production of books,

and bring to an end all that is good and noble in results from the labour of the pen guided by the intellect. It was the apprehension of such results more especially as regards England and America, which induced the demand for international copyright by authors of the respective countries. The rights of architects, and the interest of the public in the maintenance, form a case which is strictly analogous.

It is marvellous that it should ever have been contended that there was any pretext of justice or of interest, for the denial to inventors of the exclusive return to them of gains from their inventions for some reasonable period during which it might be probable the invention would have preceded others. The principle in the grant of patents, and the registration of designs for articles of utility, has always seemed to us correct; and the arguments for what the author of a pamphlet once called "the Policy of Piracy," and what appeared to be defended by one of the prominent men in the Upper House when the law was amended, were directed against what is a bargain advantageous to all parties, as well as favourable to progress. There is no such arrangement possible in the present state of the law between architects and the public: there is therefore no inducement to promote, by means of the exercise of professional qualifications, infusion of art into a class of building-work through which, by reason of its quantity, the greatest proportion of an architectural result at any time, from the mass of buildings in any populous district, will be manifested. Architects do not care to undertake work where the disproportion is so great as it is in ordinary houses, between the amount of contrivance required and the amount of remuneration. The destinies of our art therefore have got virtually into the hands of speculators, whose interest it is that bad work should not be noticed, and who represent that the expense of an architect is needless, putting the cost of one at the same time into their own pockets. "*Populus vult decipi*," &c. Paterfamilias, far from deeming it at all wisdom to give an architect more than 5*l.* per cent. on the three or four hundred pounds outlay, may offer less; or rather, will in few cases give anything at all. Thus whilst architectural ability of a higher order, in our public buildings, and in localities like the city of London, and towns where circumstances are specially favourable, is each year progressively displayed; the singular contrast is put forth of a general state of architecture of which we can scarcely say whether it has not a tendency to become worse.

The value of architectural ornament, in which for the present argument we are right in including mouldings and all other decorative features, is obviously according to the place in which the form is used, as much as to its beauty viewed by itself detached. Nay, what may be called the intrinsic beauty may be utterly destroyed by erroneous allocation. Also, matter of detail cannot be lengthened or shortened, pared down here, or increased in enrichment there, without absolutely altering the conditions, and destroying the character and the beauty which there was at first. These results it should be quite clear, without any experience or architectural knowledge, are such as must accrue from working in opposition to principles by which ends are obtained, of whatever kind, by men of genius, or practical men of business. The facilities of reproduction by manufacture are now so great, that the architect himself is liable, under pressure of time, to seize upon ready-made ornaments, to the hazard of his work—which, under the old system, would have been throughout designed, each part specially, by himself or those impressed with his spirit. How much more liable then is the uneducated man whose horizon is bounded by his own plasterer's shop, and remnants of paperhangings. The question will be not affected by our admitting that the ornaments produced by certain decorators and manufacturers are themselves excellent in taste. It is not the moulds themselves which are faulty, but the hands which, with a small stock of patterns, are ever trying at architecture, by connecting forms together which have no bond of proportion or other union; from

which the result inevitable is that worst of demerits in a building, the predominance of failure and pretence.

If that exhibition of improved architecture is to be made, which we have said a section of the public asserts is wanted, an assertion which we should be the last to controvert; the public must simply, in the first place, enlist the services of those who are qualified by position, acquirements, and taste. Call the men by any name: for convenience we call them architects. It is useless, however, for the public to cry for results so long as they deny the inducement.

We do not hesitate to say that this inducement, and eventually the corrective for the large amount of bad design in buildings, which is exhibited in suburban London, in fashionable watering-places, and in almost every town and populous district, would be supplied by a system of architectural copyright. It is not to the pains and penalties provided by an Act that we look mainly, but to the moral influence from the simple registration of a fact, previously not apparent to many otherwise good and honourable men, as to what is comprised under the head *property*, and the injury done by every appropriation of it. Mr. Robertson Elaine, the Reporter to the Committee of the Society of Arts, well remarked in January, 1858,—"All the legislation which has taken place on the subject of copyright in England has proceeded upon the just theory that an author or artist has a *property* in his work. Where, therefore, a copyright work is *literally* copied, or copied with merely colourable alterations, it seems difficult to distinguish the moral guilt of such a theft from that of picking a pocket, and, consequently, that such an act of piracy ought to be punishable as a *criminal offence*." This, applicable to architecture as to each other branch of the exercise of genius, is what every man with the sense of right and wrong must exactly agree with. An unfortunate omission, however, was made in the Report to the Society of Arts. The Report stated it to be the object to secure a copyright "for the author's life, and thirty years after, for such of the designs of an artist as he may himself have conceived, and as have been produced by his own hands, or by those of his assistants, and as he may himself have signed and marked, so as to claim copyright for;" and it explained that such designs would be "works of which the artist's own brain may be considered as the inventor or primary source, and would include all, however first embodied; and whether they profess to be portraits of men or things, or the products of imagination; and will apply especially to the works of painters and designers, sculptors and die-engravers, and architects." But then after all this, they put forth the "qualification,"—"As to architectural plans, models, &c.;—only the use of the originals to be secured; but not to prevent new drawings, &c. being taken from executed buildings or works." This would not be a sufficient improvement upon the laws at present in force, which are protective of architects' designs engraved, or lithographed, and published under Hogarth's Act. The original drawings only would be copyright; and as many of the speculative builders even work entirely without drawings, there would be nothing to prevent that sort of imitation or perversion of an original design which we have spoken of as one of the chief sources of annoyance and of injury to the reputation of architects. The enactment proposed would be useful only in the case of a competition such as that mentioned by Lord Lyndhurst. We cannot think that the clear intellect of the noble and venerable lord who has taken up this subject, will recognize a distinction of criminality, or will have suggested to him no means of working a clause which would prevent that reproduction of a lately erected building, of which instances will present themselves to recollection of most professional men. One instance will be found mentioned in a letter in our present number. The petition of the President and Council of the Institute of Architects, after saying that architects were "liable to considerable injury in the piracy of their designs and inventions, and that other parties can, and do, copy and appropriate to themselves such original ideas, without any benefit or remuneration to the

authors," and that, therefore, "it was desirable to afford protection to architects for the copyright of their works," said,—

"Such copyright should extend to their executed works, as well as to their publications; that the copyright of an architect in any work executed, or of a work proposed to be executed, should not pass to the employer, except under special agreement, but remain with the architect; and that the designs, or drawings and specifications, prepared for the purpose, shall still remain so far the property of the architect, that the execution of a building shall be considered equivalent to registration as a work of art and science; that no other person be justified in pirating or reproducing the same in such points as are peculiar to the author of the design, without the permission of the author."

Generally, the petition sought the assimilation of the position of architects to that of authors and inventors. Such identity of claim seems to have been admitted by the congress on literary and artistic copyright which met at Brussels in December last. Works of design, paintings, sculpture, architecture, and engraving, were to be placed on the same footing as regards copyright, as works of literature. Nothing else can satisfy the justice of the case, and give the architect the reward for his labour, or effect the improvement which is demanded in our architecture.

Great has been the delay since the subject was started at the Society of Arts, owing to the shortness of the session and the dissolution. We trust that the question will be at once advanced in the Lords. A movement is going on, independent of that of the Society of Arts, and the draft of a bill has been prepared. But, this draft, when we saw it, purposely was made to omit all mention of architecture; and otherwise, the wording did not show the due recognition of that which must be the whole object of protection, namely, not the vehicle, or the process in the painting or drawing, but the original invention or design,—in short, not the manipulation, but the art. It is impossible, we maintain, to have correct views on this point, and to exclude architecture.

We, architects, want a demonstration by the law, of the fact that there is a right to property in architectural invention, as in all works of mind. The question affects not only architects, but those who might be benefited by becoming their clients: and it affects vastly the future of architecture. Piracy actually tends to the destruction of the profession, in what should be its widest field. Let the corrective be applied to the moral sense of the public (builders inclusive); architects will find it then their interest to attend to the smaller class of houses; many persons will be surprised that good planning and tasteful design may be had at very slight cost; and architecture may be advanced with benefit to all parties, and with the improvement which is needed in the aspect of our streets and our places of abode.

ON THE CONSTRUCTION OF DOMES.*

HAVING some few years since to erect a dome of very considerable span, I was surprised to find how little practical information existed on the subject. Being thence led to investigate and to make notes relative to domical structures generally, I have now put them together, in the hope that others may also be induced to give the result of their experience and studies respecting this beautiful class of buildings—the most beautiful termination, it appears to me, for any grand architectural composition.

In the present paper it would not be convenient to enter into elaborate mathematical investigations. I shall, therefore, merely refer to the principal theories on the subject; describe the construction and the cause of failure of some few of the most celebrated domes; and then try to sketch out some broad principle for adoption.

The theories best known are those of Dr. Robison, of Venturoli, and of Rondelet.

Dr. Robison's was, I think, first published in his "Mechanical Philosophy," and then re-written by him under the article "Arch," for the "Encyclopædia Britannica." It has been referred to in almost every subsequent work on mechanics.

From this theory, the particulars of which may be found in the works to which I have alluded, are deduced directly the following somewhat startling results,—that a dome starting from a perpendicular drum could not stand at all; and that a reversed curve is a much stronger form than the usual insistent one.

Venturoli's theory is given by him in his "Treatise on Mechanics," a very good translation of which has been made by Mr. Cresswell. The results are very much the same as Dr. Robison's.

Rondelet's theory is given in detail in his well-known work on "Construction;" and it has been very well condensed in Gwilt's admirable "Encyclopædia." It is of a much more practical nature than the others, and assumes that the weight of the upper part, pressing outwards, is counteracted by that of the lower part; the difference of the two forces giving, so to speak, the measure of weakness in the dome.

There is another theory to be found in the well-known "Parentalia," but to which I should not here allude, were it not almost the only one mentioned in that work; and although it may now appear almost absurd, the author's extended notice of it would induce us to believe that it must have been favourably accepted in his time. It will be found given at considerable length in any edition of the "Parentalia." It refers, however, more particularly, to arch construction.

Now, I have too great a reverence for the study of mathematics, and I am too sensible of the advantage that our profession derives from that science, to say one word that might appear to slight it; and, indeed, the great names I have mentioned would prevent my speaking so strongly as I am obliged to think of their theories, had I not found words as strong used by one of the most noted of the authors themselves, Dr. Robison.

In one of the articles to which I have referred, he gives an analysis and description of the arch. He puts the theory before his readers in a perfect manner; shows how beautifully the exact size of every stone, and the curve of each arch can be calculated; and, in fact, leaves us quite satisfied that the theory is correct. Then, having made everything so clear, he quietly informs his readers in an equally clear manner, that the speculations of all the eminent persons who have written upon it are of no practical value whatever.

The fact is, that the most celebrated of these theories assume as a basis that the arch or dome is formed of layers of stone, sliding freely upon each other, without bond, friction, or the interposition of cement—conditions which never have occurred, and which never can occur in actual practice. Moreover, it is really, for all practical purposes, almost waste of time to deduce calculations for constructing stone domes at all; for, curious as it may seem, I believe that there is not existing, and that there never has been built, any stone dome of very large size, since the time of the Atride at Mycenæ.

The construction we have to consider, if it is to be of any practical use, is of brick, and this material is so combined, in execution, with cement, that the theoretical joints do not really exist; for, with good cement, the bricks themselves are as likely to yield as any of the joints. In stone construction the case is different. The thinness of the mortar in the joints makes them really what their name implies, and we should consequently approach near to, though we can never actually realize, the conditions of the theory.

Now, in addition to the difference in the materials, we must also remember that the details of construction in the domes now existing vary very much, and that they are by no means to be resolved by one theory. As I propose to notice actual examples only in this slight sketch, I must ask you to examine with me, briefly, the principles of construction of the most noted. The first to which I will allude is the celebrated tomb of the Atride at Mycenæ.

I need scarcely mention that it is formed of horizontal layers of stone, in large blocks worked to the form of the curve on the inside only, and without, so far as I am aware, any cement in the joints. It is of considerable size (48 feet 6 inches in diameter), being about that of St. Vitale, at Ravenna, and somewhat larger than that of St. Stephen's, Walbrook. The construction displays great simplicity, and, theoretically, no power, short of what would actually crush the very stones, could, so far as I can see, break this dome. The pressure at every joint is perpendicular, so that there is really no outward thrust, and the tendency of each stone to fall inwards is met and destroyed by the opposite thrust of the other stones. If the task were now given to erect a dome of a pointed vertical section, with large

* Read by Mr. T. Hayter Lewis, hon. sec. at the Royal Institute of British Architects, May 16th. For report of discussion that followed, see page 347, ante.

masses of stone, such as the architects used of old, I doubt if a better mode of accomplishing it could be found.

The next examples are those of the well known Pantheon (142 feet diameter), and of the Temple of Minerva Medica (81 feet diameter);—baths or temples, as you will.

These domes are formed of several ribs of brick, which appear to have been built quite distinct from the filling in work between them; just as in early Gothic vaulting the various ribs were first formed and set in their place, and then the intermediate light chalk panels added to complete the whole.

This opinion as to its construction is confirmed to a certain extent by the way in which we know, to our regret, that the dome of the so-called Minerva Medica has perished. But a few years ago the ribs stood firmly, although a great part of the filling in between them had disappeared.

I believe the same might occur at the Pantheon, and that its skeleton construction is just that of York Chapter-house; so that, without at all altering the leading principles, we might arch the filling in to steady the ribs, and convert the great dome of the Pantheon into a gigantic resemblance to its graceful little English rival. Whether or not the change would be approved, it is not for me to surmise; but that the vast building would at once display, as it never has displayed, its enormous size, I have no doubt whatever. Setting, however, this question aside, it seems to me that, in this greatest and noblest of domes, we have the essentially Gothic principle of security by abutment, and not by a tie; for if, as I believe, the stress be borne by the great ribs, the tie, to be effectual, must clearly be straight from one of them to the other; otherwise, if we put it in the circular form, the feet of the ribs would spread outwards, until the tie became straightened. But if we fill up the space between the ribs, this filling in would serve to strut them; and preventing, by its circular form, the tie from straightening, may occasion it to act. If, therefore, in the Pantheon dome, there be any real binding courses, I believe that they act as ties to the ribs only by the filling-in acting as strutting. But I do not believe that the tie exists at all, but that the stability of the dome is secured by the strong abutment only.

The next example is the dome of St. Sophia, at Constantinople, of about 110 feet diameter. Of this we have ample information, beginning with the history of the building, so beautifully condensed by Gibbon, down to the recent elaborate drawings and description of Salzenberg. Unfortunately the ancient accounts, so clear and precise, are erroneous in one important particular; for while all state that the dome was finally reconstructed as it stands, of pumice stone, or light Rhodian bricks, Salzenberg informs us that no trace of these can be found, and that it is formed altogether of ordinary well-burnt bricks. It appears that the four great piers at the angles of the square on the plan were the only supports at first adopted, and that the pendentives and dome were formed on them.

The pressure of the eastern and western arches springing from the great pier was resisted by four walls, forming transepts running north and south. Against the eastern and western walls respectively abutted two semi-domes. The superstructure having given way towards the east, taking away the semi-dome on that side, the eastern pillars were strengthened, and the dome was again turned; but it again gave way before it was completed. Strong buttresses were then built to the east, and a dome (this time of pumice stone) turned for the third time. But it became cracked and split, the arches under being so fractured that those on the north and south sides required to be filled in with the three-storied arcades now forming such prominent features in the interior. This dome then stood awhile; but it was destroyed by an earthquake, and was subsequently rebuilt.

All this narrative would show that the substructure was the defective part, the great arches not having sufficient abutment; and that, whether the dome as first built would have stood or not, not one, however sound in itself, would have stood upon such a base. Whether constructed of pumice stone or of light or heavy bricks, the recent dome seems to be of homogeneous construction, without separate ribs; answering, in fact, to our ordinary idea of a dome, as typified by the internal brick dome of our own St. Paul's. The general thickness varies from about 2 feet to 2 feet 6 inches. It has strong buttresses as abutments (8 feet 6 inches thick) above the springing, and the walls under are excessively thick, as compared with the thickness of the vaulting.

The next example is the dome at Bejjapore. It is formed of a solid mass of brickwork, put together with good mortar. It is 124 feet diameter, and varies in thickness from 10 feet 6 inches at a little above the springing, to 10 feet near the top: so that it is four times as thick as that of St. Sophia, with a diameter one-eighth larger. I have few data from which to form an idea of the strength of the material, but I assume the general construction to be on the same principle as that of St. Sophia, but differing from it in weight, thickness, and bearings.

The dome of the cathedral of Florence is 138 feet 6 inches in diameter, octagonal in plan, with a great rib at each angle, and two smaller ones on each face. These are connected together by a thin casing, about 2 feet thick outside, and a thicker one (averaging about 7 feet) inside, with tiers of arches turned between the ribs, in order to strengthen these casings. At the foot of the dome is a strong tie, composed partly of timber and partly of iron; and the whole mass rises clear above all the surrounding parts of the edifice, showing that the dome is quite self-supporting, and that it derives no strength from external abutments of any sort. It supports a heavy ornamental lantern; being the first great example in which this weight, extraneous to that of the dome itself, has to be supported.

Some settlements appeared soon after its erection, but the whole seems to have stood without any serious defect until the end of the seventeenth century, when several fractures appeared for the first time, or were then considerably increased. They are said to have extended through the whole thickness of the dome, to have descended also, through the tambour, to the main arches, and thence, in a clearly traced line, down to the ground. It was, therefore, the opinion of some, that the foundations only were in fault; whilst others considered that the dome had opened from lateral extension, thereby bursting upon the tambour, &c.; and that it should be encircled by iron ties, to prevent further spread. Fontana was of this opinion, and his advice being adopted, three iron ties were prepared. However, before they were completed, the contrary opinion, advocated chiefly by Nelli, prevailed: the ties were not fixed, and the fractures were merely secured by dovetailed cramps. The present stability of the dome proves that this remedy was effectual.

The dome of St. Peter's, the design of Michelangelo, though carried out by Fontana, is about 139 feet in diameter, and differs from that of Brunelleschi just described, by being circular instead of octagonal on plan; but like it, is formed of sixteen ribs, united together by a double casing, the outer about 2 feet 10 inches thick in the centre, and the inner 6 feet thick. It stands on a tambour without abutment at the springing; but a little below it is encircled by a peristyle, not, however, of mass enough to act in any great degree as a buttress to counteract the spread of the dome; and at the top of all is a heavy lantern. The dome is built of brickwork. Four ties were first inserted, at different heights. These proved ineffectual, the dome becoming very much fractured; and in 1713 two others were added, encircling the tambour and peristyle below the springing. The next year three others were added round the exterior of the dome, one near the top, a second half-way down, and the third at the foot. In 1718 another tie was put round it, at some distance above the springing; and this is, I believe, the last addition, the dome having appeared to be secure since that time. If my theory of dome construction be correct, this tie is the only one required.

I come now to the important question of the double wall or casing of this and of the Florentine dome. I scarcely know the general idea respecting this system of dome construction; but, so far as I have been enabled to ascertain, it seems to be considered a method of obtaining strength by a clever arrangement of the material, much in the same way as we obtain it by casting a given amount of metal into a large hollow column instead of a small solid one.

Now, let us try how these domes could be broken, and we shall then get some clue towards calculating their strength.

Taking any one part separately, it might be bent or broken horizontally, as a bow might be; or it might be similarly broken in its perpendicular section by the weight of the lantern pressing on the top, whilst the bottom was secured by an abutment or tie. This weight would act upon and be resisted by the perpendicular section, in the same manner as in the large boxed iron cranes now used in the docks, &c. For, if we may apply to these magnificent domes so homely an illustra-

tion, we may consider each pair of two ribs composing them, with the casings between, as huge bent tubular girders, of almost the same outline as those forming the dock cranes.

Now, any force that we can conceive likely to act as destructive to the dome would produce a strain on the outer flange or casing tending to tear it asunder, whilst it would endeavour to compress or crush the inner one: we should, therefore, expect to find (supposing that the great architects who designed these domes adopted the hollow walling for strength) that they had arranged them as we should arrange the metal in a girder, distributing it in different amounts, in proportion to the forces that they have to resist. It is clear, however, that this was not the idea of Brunelleschi, or of Michelangelo; for the external casing of their domes has no provision for resisting extension, whilst the materials of the internal vaults appear from their thickness to be intended to resist direct compression only.

I know of no other way in which the double vault could be intended to be used so as to give strength. It could not be with the notion of obtaining it as we do in a square hollow column, because a direct strain, perpendicular throughout to the direction of its length (an element necessary to the stability of a column), could not be brought upon it. It would, in fact, give way in the curve, as a bow would when pressed at the ends.

Brunelleschi's own description, as recorded by Vasari, seems to give us clearly his idea of the whole, and to show that his plan was to obtain the necessary strength by the ribs, and not at all by the double vaulting. He states that the external vault is necessary in order to protect the inner one from the weather, and he directs that the latter, after it had been raised to a certain height, should be formed of the lightest materials that could be found, whilst the ribs were to be built up throughout with solid stone.

I apprehend, therefore, looking at the whole question, that Brunelleschi's idea was to construct the ribs of a certain form and thickness, and then to fill in between these ribs, so as to stiffen them and complete the vault inside and out, leaving a hollow space between, in order to lessen the weight as much as possible. The inside casing, both at Florence and at Rome, is made the thickest, as it has to bear, to some extent, the strain of the ties.

We have in England a beautiful example of the way in which stone ribs will stand when the rest of the vaulting has fallen, in the picturesque ruins of Mayfield, one of the most interesting remains in our southern counties. The whole of the ceiling, whatever it may have been, has disappeared, but the ribs still span the width of the great hall strongly and boldly; and with a few cross arches to steady them, and take the strain of the ties, I believe that the grand stone ribs of Brunelleschi's skeleton would do the same.

The last example I shall quote is the dome of our own St. Paul's; the first, I believe, of its type, but the general system of construction of which has been followed ever since. I do not wonder at its being thus copied; for the majestic effect gained in it by its architect has never been surpassed, and the whole composition of the exterior, at least, is to me the most glorious specimen of Italian architecture.

There is no direct abutment to sustain the thrust of its cone, which, contained by its tie, and held together by the general goodness of the work, stands firmly upon the tambour, without exerting any expansive force. I believe that in this cone we have the true secret of domical construction, which shows itself here in the simplest form, unconcealed by the carved outlines which in other cases mask whilst they adorn the reality. Secure this cone at the foot, and I know of no power that would break it, short of what would crush its materials to powder. Bend the straightness of its sides into a curve, so as to enlarge it to the form of a dome, and as the curvature is increased the strength is lessened. Where would this curved dome break? Clearly, if it were weighted at the top, and the foot kept from spreading, it would break, like a bow, between the two points. Tie in this weak part, and the danger at that part disappears, being transferred to two other points between them.

In this view it will be seen that I look upon the fabric as being necessarily secured by a system of ties, and that it is not to be safely trusted to the independent strength of its own construction.

Assuming, however, this latter notion to be correct (as undoubtedly it is in theory), and that each particular ring of the dome is, by the goodness of the bond and the strength of the materials, strong enough to resist the pressure tending to

burst it outwards, we might suppose that it would be self-dependent, and safe, without any extraneous guard of iron or other tie. But I apprehend that in practice, this construction would be decidedly unsafe. Doubtless a vault of good brick-work laid in cement would be strong enough to resist any strain that the weight of a dome above could bring upon it, for we know its strength to be such that it is uncertain whether the bricks or the joints would break first, but in practice it is not safe to trust to this extent; strong as the work may be, the slightest yielding in the foundations will cause an unequal bearing in the weight above, and in a moment read the strongest work. We may, indeed, imagine that a dome on a small scale may be formed of materials so strong and yet so light as to be, effectively, of one piece only, as though cut out of a solid block of stone, as is the tomb of Theodoric at Ravenna, or formed in one piece like a reversed cup; and in such a structure, no doubt, from the extreme tenacity yet strength of its substance, no ordinary rules for estimating the strength will apply.

Such also may be, and probably is the case with such small semi-domes, for instance, as have been put up by my friend Mr. Scoles. One of them has a diameter of 30 feet, and is formed of four courses of plain tiles in cement, altogether 11 inches thick. I believe that no failure has occurred in this kind of construction, which I have, in my own practice also, found to succeed very well. The strength, in fact, of this kind of work is so great, while its weight is so little, that it would perhaps render the fabric independent, to some extent, of a failure in the foundation, and unless it were heavily loaded in some particular part, would require scarcely any abutment or tie. Certainly, this may and does suffice for small works; but if we extend the size, we shall find the plan a somewhat dangerous one. We may strengthen the vault—put 2 feet of thickness where theory tells that one will suffice—and so trust our theoretically self-tied unbattered dome to stand as the great ones of old have stood. But in adding to its strength we shall have doubled its weight; and should the carefully secured foundations yield only a hair's breadth to this weight; should a little spring but carry away, gradually and unnoticed, grain upon grain of the sand on which the masonry piers of the dome may rest, soon will come the inevitable settlement, and our massive dome will rend and break away as though an earthquake had rocked it, and the more certainly in proportion to its very massiveness.

Send but a single fracture through the thickness of the vault, and its self-tied structure is resolved into two or more separate parts; therefore, although I do not doubt that a dome may be made so strong and well compacted as to need no extraneous tie, yet the risk of fracture is so great that we ought not to depend upon the safety of such construction only, but insure for it such an abutment as may resist thrust, or such a tie as shall be free to some extent from the risk of fracture from the pressure of the mass above, in case a settlement should cause the latter to press unequally.

One instance, indeed, the well-known one of St. Vitale, at Ravenna, exists, in which the construction is so arranged as apparently to provide against the necessity of any extraneous aid.

The dome is formed of a triple coil of earthen jars, the end of each being socketed into the top of the one adjoining in a very ingenious way, so that it seems to me that if a settlement were to occur in the substructure, this peculiar arrangement would allow of a slight re-adjustment of the coils without destroying their connection. The only guard against the outward thrust is, so far as I am aware, the weight of the walls above the springing; and, altogether, this dome appears a very fine piece of construction, and worthy of a close and detailed investigation. In fact, I know of no other existing which combines all the qualities of strength, lightness, and flexibility, without the aid of any extraneous tie; but it has not to bear the great weight of the lantern which presses so heavily on the Florentine, Roman, and London dome; and I should hesitate to speak too confidently of its capacity to bear it, even if its outline were raised to that of a pointed arch.

Passing, then, this example by as one of doubtful authority, and looking only on the form of dome-construction most usually adopted, and supposing its work to be good and solid, there will be little principle of the arch involved in its construction, whilst it might in fact be built up in a solid mass like the arched rib made by the elder Brunel some years back, by building it out from each side of a pier so as to maintain the equilibrium of the two half arches.

We know that he proceeded with the construction till each semi-arch overhung 60 feet, and if the corresponding half had been carried out, the two together would apparently have formed one arch of 120 feet span; in the same way that two raking pieces of timber would form an arch by abutting against each other.

Now, how should we break one of these carved ribs, assuming it to be secured at the bottom and loaded at the top with the heavy weight of the lantern?

I apprehend that it would snap at the lower part of the bend, and at that point, therefore, we should want the tie: if secured there, any weakness would be felt at an intermediate part of the curve. But supposing that, instead of a curved beam we had an angular one, and that it was carefully secured at the angle, it is obvious that we should have the form of the Mansard roof alluded to by Dr. Robison; and I know of no power that could break it, short of actually crushing it. Now we have this condition actually fulfilled in the cone of St. Paul's, which, so long as the tie exists, may be considered indestructible: let us, therefore, take this as a starting point, and going one step further, suppose that Wren wished to make, as Brunelleschi did, the shell of the fabric form its outline, inside and out, instead of concealing it, as in St. Paul's.

Add any form of curve we like, the cone itself would still remain as the great constructive skeleton, to which any super-added mass would serve only as a clothing. I believe that this is the real secret of constructing domes whose size exceeds the safe limits of a brick or other beam, and that we ought to make such domes approach so closely to the conical form that their section should include that powerful outline within their thickness.

I do not say that a great dome cannot be safely erected with other outlines, because by careful attention to the goodness of the materials, and to the general bind of the work, it may, no doubt, be made secure. But I believe the form above mentioned to be the safest, and that any departure from it entails risk. To test the correctness of this opinion as far as possible, I have applied the form to the sections of the domes of the Pantheon, of St. Peter's, and of the cathedral at Florence, with the following results:—In the Pantheon, a cone of 2 feet thick (about 6 inches thicker than that of our St. Paul's), is contained in the curved surface from the horizontal line at top to the abutment. In the Florentine example a cone of much greater thickness is contained within the curved section from the foot of the lantern to the tie originally inserted by Brunelleschi, and never added to since. In St. Peter's, a cone of similar thickness is contained in the curved section from the bottom of the lantern to the tie last put in, since which time no other has been, I believe, required.

The rule bears, of course, upon one particular class of domes, in which a top mass of great weight has to be borne, independently of the fabric itself.

There are, however, other cases in which this conical form does not obtain; but in these, so far as I am aware, the weight of the lantern is wanting, so that the curve has only the weight of its own section to sustain. Such are the domes of S. Sophia at Constantinople, and the celebrated one at Bejjapore. Having no personal knowledge of the Indian domes, I speak of this last example with much diffidence, but judging from Mr. Fergusson's excellent description, I should say that the enormous thickness of this well-compacted roof renders it, as it were, equivalent to being cut out of one solid stone.

I am the more satisfied that this is a correct idea respecting these domes, because it is stated that in some of them, though the foundations have given way, the domes are left intact.

I shall, however, assume it to be composed of somewhat inferior materials, so as to render the outline of consequence, to ensure stability.

In these flat-topped domes we have to provide both against the weight of the mass, and the extra weight after every snow-storm; and although this is not likely to demand the precaution of the single cone, still the conic principle modified must, I think, be carried out; and we must provide against the strains as we should in a Mansard roof, by inserting a tie at the base of each cone (answering to the roof strut) varying in strength in proportion to the angle and the weight. But it is clear that there is a limit to the angle, beyond which it would not be practically safe to trust to the cone, and for reasons too long to mention, I think that 40 degrees with the horizon should be the limit.

Beyond this upper cone there remains an almost horizontal flat portion (seen most clearly in the example at Bejjapore) of such evident weakness, that Brunelleschi was of opinion that it could not be strengthened sufficiently to bear the weight of a lantern, and for this reason he gave his dome the section of a pointed arch. It is undoubtedly weak, and cannot be treated in the same way as the lower parts.

Let us suppose a solid ring at the top of the cone, leaving an opening as at the Pantheon. So far it will be safe. We have now to fill in this space with brick or stone work capable of bearing the superincumbent weight; and this filling in, must, I think, be considered as a solid curved beam, cut out of a mass, and strutted well at the abutments, conditions requiring no great strength where there is no lantern.

In conclusion, I would briefly recapitulate my opinions respecting the construction of domes.

I consider that the essential element of strength in a dome is a straight cone (whether simple in one unbroken length, or compound in two or more lengths) comprised within the section of its vaulted covering. That the base of each cone must be securely tied. That although, for the same reason as in ordinary walling, we ought to secure by bonding and perfect bedding this vaulted covering in every part, yet, with good materials and work, these ties at the base of the cone are the only ones theoretically required. That the strength of such ties at any part is to be found by resolving the weight, by the ordinary resolution of forces, into the lateral pressure at that part. That in domes with heavy weights at the apex the straight cone is the only safe one to adopt. That the vault may be made strong enough by ribs alone, and that when these ribs are required not to project beyond the general face line, inside or outside, double vaulting, as at Florence and at St. Peter's, may be safely used, but only as a means of lightening the weight. That although, by the goodness of the work, domes may be erected strong enough to bear any amount of weight without any extraneous tie, yet that such tie should be always inserted as though the ribs were quite separate, in order to guard against settlements. Lastly, that the thickness of dome will be sufficient if it include within its sections a cone, necessary to bear the weight.

Though believing these views to be correct, it is with considerable diffidence that I put them forward, as they are, I have reason to think, opposed to those entertained by some who are well qualified to form a judgment on the subject, which is, indeed, one not to be entered on lightly. No one can forget the sense of solemn awe with which he has viewed the gigantic vaults of which I have spoken: for my own part, when engaged in investigating the secret of their build, in laying bare as it were the skeletons of these great works, and touching at every turn the memorials of such men as Brunelleschi, Michaelangelo, and Wren, there arises with the ordinary methodical calculations respecting strength and materials a strange feeling of reverence for the works we have been examining, and of distrust of my own ability properly to comprehend them.

ARSENIC IN PAPERHANGINGS.

ANOTHER case of illness is recorded by a medical man, in connection with the use of green paperhangings. Mr. Medlock, of Great Marlborough-street, says, "I have analyzed three specimens of the paper, and also some of the dust swept from the carpet. In each of the papers I found a great quantity of arsenic, and in the dust a very large proportion of that fearful poison. I would, therefore, earnestly recommend the public to avoid purchasing green paperhangings; and, in cases where rooms are already covered with such papers, to have the walls well sized and varnished, in order to prevent the atmosphere becoming poisoned by the arsenical dust." Surely the manufacturers of paperhangings will now arrange to prevent the evil alluded to. Its existence cannot longer be denied. If they will not of themselves discontinue the use of deadly poison, the power of the law must be tried.

HOUSES IN ISLINGTON.—A correspondent, "J.S." says that for a seven-roomed house in Murray-street, New North-road, rent 32l. "in twenty-four hours no less than forty applicants rushed for it," and maintains that "1,000 houses are wanted there, and would let before finished." It seems to us there is no lack of builders in this quarter; but it is quite true that houses let as soon as ready. Whether or not they sell as readily we cannot say.

ROMAN REMAINS, IN LOWER THAMES-STREET, LONDON.

*Hypocaust.**Ancient Wall, East Side of Coal Exchange.**Fragments taken from the Hypocaust.*

ROMAN LONDON.

REMAINS ON EAST SIDE OF COAL EXCHANGE,
LOWER THAMES-STREET.

It will be remembered that when the ground was excavated for the Coal Exchange in Lower Thames-street, a hypocaust, well, and other remnants of Roman construction were discovered. Mr. Bunning, the excellent City architect, took pains to preserve them, and they are visible to such visitors to the Exchange as may ask for them. Few people, it seems, do ask to see them, and those who expended money, and made their arrangements in order to preserve these remains, are perhaps disappointed that it is so. They may rely upon it, however, that they have the thanks of many whose thanks are worth having, and that the money expended was most wisely laid out. What we have now to say, however, is, that in excavating for a house on the east side of the Coal Exchange, an additional portion of the Roman building, including part of a hypocaust, has been thrown open. It was found at a depth of about 11 feet from the present surface. The hypocaust is nearly square, with a semicircle added towards the east: the covering has been broken down, and exposes the piers formed of square tiles as in other cases: some of these are also broken down. In clearing this from the rubbish which has for ages collected, bones of various descriptions, Roman tiles and portions of flues, fragments of pottery and glass, portions of tesserae about an inch square, and pieces of vessels of a mediæval date, were discovered.

To the west of the hypocaust, against the Coal Exchange, is an ancient wall, built upon a foundation of Roman materials: in one part, which is marked B in the engraving, the work is formed of stones of large size: this may have been a portion of the old wall of the Thames.

It will be noticed that the depth at which these Roman remains have been found is not nearly so great as that at which antiquities of a similar date were found in Cannon-street.

We are told, by a person who had carefully inquired into these things, that, in the streets leading towards Blackfriars, pavements of large boulder-stones have been found, at the depth of between 11 and 12 feet from the present surface. These boulder pavements are not unlike the Roman road still to be seen in the Forest of Dean, Gloucestershire.

REFERENCES.

- A. Foundation of Roman tiles and Roman débris.
- B. Ancient wall of large stones.
- C. Back of the chamber in Coal Exchange, in which the hypocaust, formerly discovered, is preserved.

AN ASYLUM FOR DRUNKARDS.—An asylum is being built at Binghampton, U.S. for that class of lunatics usually called drunkards, who cannot restrain their passion for alcohol. The building is 350 feet long, 65 feet wide, and four stories high. Since the work was begun 2,800 applications for admission are said to have been received.

WHAT SHOULD MECHANICAL WORKMEN
BE TAUGHT?

On Saturday evening last, Mr. Scott Russell delivered a lecture at the Brompton Museum on the description of instruction which should be communicated to mechanical workmen.

The theatre of the building was crowded in every part.

The lecturer commenced by observing that he had the honour of appearing before them in a somewhat unusual capacity, in consequence of a conversation which had taken place not long ago between one of that great establishment and himself on the subject of the education of the class of workmen to whom he (Mr. Russell) belonged. Mr. Cole had shown him some papers which he had prepared for the purpose of examining workmen as to the progress which they had made in the kind of education generally provided for them; and expressed to him what he (Mr. Russell) now expressed, that the education provided in this country for workmen was not that which was very directly calculated to render them good workmen. He did not mean to infer that education did not make us all the better and wiser,—at all events, it put in our hands the means of acquiring knowledge, and therefore reading, writing, drawing, and accounting were good for the skilled workmen, and for everybody else. It did not, however, consort with his experience, that the best reader and the best writer were always the most skilled workmen: on the contrary, the best man he ever knew could neither

read, write, nor account, and yet he was a very admirable workman. As a large employer of skilled labour, he now asked whether there was any description of education which in their opinion would tend greatly to the increase of the skill, dexterity, ability, and success of the practical working mechanic. He maintained that there was, but that the mechanic did not get it. It was extremely difficult to give, but if the rising teachers of the next generation—if the institution in which they were then met—if the Government—really and earnestly cared about the mechanic, and wished to make him a good and skilled workman, and wished to keep the next generation of workmen where English workmen had ever been—namely, at the head of the workmen of Europe—he would show what it was their duty to do, and what ought to be done. It was, no doubt, difficult to accomplish; but, if they all pulled together, it could be done. It would want a good deal of money, large and wise views, and great energy and self-denial. Having said thus much of the difficulties of the undertaking, he would recommend them not to be disheartened, as, if a little seed were sown, a little agitation commenced, and a little ventilation given to the matter, the Government might be induced to do all that ought to be done. The matter, moreover, was a serious one, because the Governments of other countries were doing a great deal for the education of their practical mechanics, which we, as a nation, were not doing. He himself was obliged to get his very best draughtsmen and mechanics from foreign countries. He had men in his employment from Prussia, Germany, and Holland; and he was bound to say that, as far as preliminary education was concerned, although the workmen of foreign countries had not the skill obtained by the British workmen from practical experience, their scientific knowledge was greater, and that knowledge was telling so rapidly on the present generation of workmen, that we were now equalled (he would not say excelled) by the workmen of many countries upon whom we were inclined to look down a few years ago. He hoped they would clearly understand that he did not say anything against the education now given. On the contrary, he would say, "Continue to teach drawing, reading, writing, and accounting in the best manner you can; but if you have a class of young workmen coming forward to learn, think how you can turn the little time they can afford to give to the best advantage, so that you may raise them higher in the social scale, and make them better workmen." In order to do this, it would be necessary to give them a higher class of education than they were ever taught before. They had already been taught arithmetic, and they could answer such questions as, "How many yards of ribbon at 3d. can be bought for 30s.?" Now, this was all very right and proper for shopmen and shopwomen, but would not do for mechanics. They were also taught geometry. They were taught the 16th, 17th, 18th, and 19th propositions of Euclid, but that description of knowledge was not of the slightest use to his workmen, or to anybody else. They were also taught mechanics, and the law of the lever. That was right; but then, mechanics and the law of the lever were not ordinarily taught in books in such a way as to be of practical use to the British workman. We did not go far enough; but the pupil teachers whom he addressed were not to blame. The persons to blame were their teachers. Two years was perhaps all the time that could be devoted to education, and six months were often devoted to as many books of Euclid, which were wasted for all practical purposes, unless, indeed, the student intended to become a professor. He would advise them to skip over the beginning, and devote the least possible time to Euclid—in fact, he would advise them to do a very heterodox thing—to cut off all the propositions but the useful ones. They might naturally exclaim: "Then, how little will be left." Precious little, he admitted, but plain trigonometry would be left. Suppose, for instance, a man had but six months in which to learn. Six weeks might in that case be given to Euclid, and then trigonometry might be commenced, solid geometry might next follow, and that constituted the whole education of the workman. But that was precisely what he did not get in the present day. He would also teach within the six months conic sections, and afterwards the nature of curves, within the first, second, third, and fourth degrees. He was aware he might be met by the exclamation—"Oh! but we will be teaching them more than we ourselves understand;" but to this he would answer—"That is the fault of your education." Sir Isaac Newton discovered no less than 130 curves, and nine-tenths of them would be of

great use to the mechanic, if he had them in two places—in his head and at his fingers' ends. Having now got to teaching something which they did not know, and had not learned, the next thing they wanted was the assistance of the Government. Decent elementary text-books were wanted for the higher departments in mechanics, but there were many able men versed in the sciences, and what he wanted the Department of Science and Art and the Government to do was, to ask the four cleverest men in England to write, in the fewest possible English words, all that they knew (not all that they had read), or in fact so much of their brains as they carried about with them. If Government would but pay handsomely for these books, a set of treatises might be collected such as the world never saw before, and such as would be sufficient to teach any mechanic his business. They might, it was true, say, "But we do not know where to get these clever men." But he knew where they were to be got. There were three of the four present at that moment; and, if the Government would but give them a thousand pounds a-piece for writing the books, he was sure they would write them. What he had said about geometry was true as to mathematics. Thirteen yards and a-half at 3d. was not what was wanted. Of far more importance to the working man was the comprehension of the laws and relations of numbers, so as to enable the working man to think in figures about the immediate business before him. Having explained the manner in which mechanics might make reduced or enlarged models, and the relations and practical properties of numbers, the lecturer illustrated the value of a knowledge on these points by an anecdote. He remembered an instance in which a respectable working man sent in a tender for 12,500*l.* for a very large piece of work. The tender appeared to be low, and he obtained the order, and had got on some way with the work when he found he had made a trifling omission—he forgot to multiply by *two*. His figures were all right, but in one place he forgot his multiplication, and his whole calculations were wrong. He was of opinion that geometry ought to be taught by a large and comprehensive system. Professor Airy had written the best and the clearest treatise the world ever saw upon weight or gravitation. It was published in the *Penny Cyclopædia*, and he recommended every working man to read it; for, although the subject might appear to be a dry one, he could assure them that it was most fascinating. Ellaw's Mathematical Treatise was also a succinct and admirable work, which would be found of the utmost practical utility to the working mechanic. The first and most important doctrine to remember in mathematics was, that shape is not size, and size is not shape. This might appear to be an axiom, and he thought it was as good as any in Euclid. The doctrine of similar triangles was a fundamental principle entitled to the dignity of an axiom: it was that, without regard to shape and size, any number of triangles might be made all of the same shape and not of the same size. Mr. Russell having illustrated this principle by drawings on the board, continued to say that, with respect to solid geometry, the two great duties in a workman's life were conversion of materials and adaptation to strength. A mason who used up a wrong stone, or a carpenter who selected a wrong plank, or piece of timber, showed that he was ignorant of one of the most useful portions of his art or calling. Now nothing would teach conversion of materials like solid geometry: it was in fact the daily business of the workman. It had been said that every block of marble cut from the quarry contained a beautiful statue, but the art was how to get it out of it. This was very true; for what workmen wanted to know was every shape, and how to get out another shape. The workman who took from a heap a block of stone, or a piece of timber that cost his master 50*s.*, when a piece could be got, answering quite as well, which cost 25*s.*, inflicted a loss upon his employer perhaps equal to a week's wages. Hence the necessity of acquiring a knowledge of solid geometry. But if there were beauty in the quantity of numbers, and in regular geometrical figures, there was infinitely more beauty in curves. It was the duty of many mechanics, especially of those engaged in ship building, to make curved lines. To him it had always been an interesting subject to learn how curves grew. He was aware he might be told that the higher curves were never taught, but his answer was that they might easily be taught, and that they were very easy of comprehension. In order to effect this, somebody, who understood the subject, would have to be prevailed

upon, not to write a book, but to put down in the shortest and plainest possible language what he knew of curves. This would be a treatise which the workman could understand, and would be well worth the thousand pounds which he hoped the Government would be prevailed upon to give to one of the four clever men to write. The lecturer then explained, with the aid of the board, the various mathematical figures, known as conic sections, parabola, ellipse, hyperbola, and the movement of comets. These, he contended, might be learned so as to make the workman master of the principle within six months. The subject of the education of the workman was one which he had very much at heart. He did not know how it was to be given, but as the pupil teachers were present as an institution which took charge of the mechanic, and a Government which was anxious for the spread of education, he would urgently beg of them to take counsel with half a dozen of the best mathematicians of the day, and arrange with them to write short treatises, which could be circulated at a cheap rate, and which could be taught in our elementary schools. He also thought that there ought to be a large quantity of apparatus—a sort of inventory of education—of every conceivable shape and object. In addition to these models, he would have the school-room hung round, not with pictures of animals, but with solid bodies, which could be explained and drawn. He would, in fact, impart any kind of practical, rather than theoretical, knowledge. If drawings merely were used instead of models, he did not think the student could imbibes so correct a notion of the object to be produced or delineated. This was called *la théorie de développement*, but the plain English meant nothing more than making flat surfaces into round and angular forms (as models now made from sheets of paper). If this description of education could be given, he would take the pupils educated in that department and give them three guineas a-week. He would afterwards raise them to foremen with salaries of 500*l.* a-year, and that would be far better than remaining all their life at the bench, earning 30*s.* a-week. Machinery could now be obtained to do all the unintellectual drudgery of mechanism. He was not opposed to machinery, and had no apprehension that it would supersede skilled intellectual handicraft. He would employ machinery to do all the drudgery that degraded the workman into a beast of burden. He would give him higher views of mathematics: he would show him that he was an intellectual, thinking being, with a soul for high and immortal things.

Mr. Russell concluded, amid cordial applause, by expressing a hope that Government would seriously undertake the education of the working man, so as to enable us to maintain our superiority among the civilized nations of the world.

THE METROPOLITAN MAIN-DRAINAGE.

ACCOUNT OF THE WORKS TO BE UNDERTAKEN IN CONSTRUCTION OF THE SOUTHERN HIGH-LEVEL SEWER.*

As anticipated in our last notice of this matter, the Metropolitan Board of Works at their meeting on Friday last week, decided that their engineer should at once proceed with the drawings and specification for the Southern Outfall Sewer, intended to convey the sewage from the point at Deptford, at which are to be the works for the temporary outfall and storm-water outfall, which we particularly described, to the reservoir, pumping-station, and outfall at Crossness Point, in Halfway Reach, midway between Woolwich and Erith. We now continue our account of the intended Southern High-level Sewer, or rather sewers, tracing their course upwards from the Broadway, Deptford, where the "main line" and the "Edra Branch" are to be regarded as separate constructions, being at different inclinations, though still for some distance parallel on plan.

Looking at the main line, we have first a length of 9,500 feet, from the Broadway, Deptford, along the New Cross-road, and thence past St. Mary's Church, Peckham, to the White Post-lane Sewer. This length is to be barrel-sewer of 10 feet 6 inches clear diameter, and to have a fall of 1 in 2,248. Where the sewer passes under the North Kent Railway, the thickness of the work for 70 feet in length is to be 2 feet 3 inches, enclosed in a further solid mass of brickwork—the whole in cement. The abutments of the bridge which there crosses the railway, are to be carried down below the level of the sewers, for a width of 30 feet. Where the sewer passes

* See page 371, ante.

under the London and Brighton Railway, a length of 100 feet is to be 22½ inches thick, enclosed in solid brickwork in cement, making up 15 feet 3 inches in width. The remainder of the length, or 9,330 feet, is to be of brickwork, 18 inches thick. As generally throughout the sewers, the upper half is to be in mortar, and the lower half in cement,—with a segment of the lower half, of Staffordshire blue bricks, half-brick thickness as lining, or of glazed stoneware blocks, as may be decided upon. The existing sewer in the New Cross-road, is to be broken up, and the drains flowing into it, are to be connected, furnished with flaps. Where the sewer crosses the brickfield, between St. Mary's-road and Slough-lane, it is to be surrounded with concrete, 2 feet thick, for a length of 300 feet, and banked up both sides with earth.

From White Post-lane Sewer the Main High-level Sewer passes to Victoria-road, Peckham, through and under Hanover-street, a length of 1,790 feet, where the inclination is 1 in 2,248, the diameter 10 feet 3 inches, and the thickness of brickwork 18 inches, the work being, as elsewhere, embedded in concrete. From Victoria-road, along Hanover-road, and under West Lodge, Lyndhurst-road, the sewer passes to Camberwell-grove, a length of 3,320 feet, in which the inclination is 1 in 2,248, the diameter 10 feet, and the thickness of the brickwork 18 inches. Thence it passes under the houses, 10 and 11, on the west side of Camberwell-grove; through the gardens between them and Grove-lane, along De Crespigny Park-road; as already stated, crossing Denmark-hill-road; under the third house to the north of St. Matthew's Church; through gardens and land, and part of two houses in Denmark-road, across Cold Harbour-lane and Denmark-street, to Lilford-road, and thence along Holland-road to Loughborough-road. The length of this portion is 4,750 feet; the inclination 1 in 2,248, and the diameter 9 feet 9 inches. The brickwork for about one half of the length is 18 inches in thickness, and for the remaining half it is 13½ inches. From Holland-road the sewer passes along the Loughborough-road, to the "White Horse" public-house, Brixton-road; and the length is 1,190 feet, the inclination 1 in 2,248, the diameter 9 feet 3 inches, and the thickness of the brickwork 13½ inches. Crossing the Brixton-road, the sewer thence passes along Robert-street, Park-street, and Love-walk, through an old candle factory, and the gardens and premises formerly occupied by the late Alderman Farebrother, to Stockwell-road, a length of 1,870 feet. The inclination of 100 feet of this is 1 in 100; and that of 1,770 feet is 1 in 590; the diameter is 6 ft. 3 in.; and the thickness of the brickwork as before. Through Stockwell-green and Stockwell Private-road to the Bedford Arms, Clapham-rise, a length of 2,970 feet, the inclination is one in 205; the diameter 8 feet; and the thickness of the brickwork 9 inches. Along High-street, Clapham, a length of 310 feet, the sewer is to be of egg-shape—5 feet by 3 feet 4 inches—of 9-inch brickwork and invert blocks of stone-ware, the inclination being 1 in 205. From the lower end of Bowyer-terrace, along High-street to the termination at the "Plough," Clapham, a length of 1,740 feet, the form, construction, and thickness, are to be the same, whilst the size is to be 4 feet 6 inches by 3 feet, and the inclination 1 in 100. In all these cases the sewer is imbedded in concrete, level in bed, and bounded by upright sides.

The "Effra Branch," commencing at the Broadway, Deptford, opposite Clarence-place, and taking, first, a course which may be called parallel to that of the principal sewer, arrives at Dennett's-road, a distance of 6,250 feet, by an inclination of 1 in 352, the diameter in the clear being 8 feet 3 inches, and the thickness of the brickwork 13½ inches, except under the railways, where it is 22½ inches in one case, and 18 inches in the other, and where the construction otherwise is like that already described for the main line of sewer. From Dennett's-road, through private land, the line along the Cemetery-road, Nunhead-green, and Nunhead-lane, and across Peckham Rye Common, to Peckham Rye-road, a length of 4,990 feet, will have the inclination 1 in 240, the diameter 8 feet, and the thickness 13½ inches. Thence along East Dulwich-lane to Goose-green, and across private lands to Lordship-lane; a length of 2,030 feet, will have an inclination of 1 in 240, a diameter of 7 feet 6 inches, and a thickness of 13½ inches. Along Lordship-lane the length of 1,550 feet will have an inclination of 1 in 176, a diameter of 7 feet 3 inches, and thickness as before. From Lordship-lane the sewer will pass through private property, to the burying-ground at the south end of Dulwich (1,000 feet of this length having to

be tunnelled), and then through Dulwich along Back-lane and Croxted-lane to the Effra Main Sewer, at the junction of the Norwood Branch; the total length being 7,350 feet, the inclination varying from 1 in 176 to 1 in 480, the diameter being 7 feet in the clear, and the thickness, except in the tunnel, 13½ inches. For the 1,000 feet in tunnel the thickness is to be 18 inches, wholly in cement; and the vacant space round the sewer, hard up to the timbering or maiden earth, is to be filled in solid with bricks and tiles, bedded in Portland cement. For the construction of the tunnel, shafts, not less than two, are to be sunk, each 7 feet in diameter, and 18-inch work, the bricks in mortar and all headers; and these shafts are to be domed over, and furnished with grates, to serve for permanent ventilation.

At the upper end of this Effra Branch Sewer, where it joins the open Effra, the sewer will be for 30 feet in length, of egg-shape, 4 feet by 2 feet 8 inches, and 9 inches thick, in cement, with invert of stoneware blocks; and the inclination will be 1 in 5. The 30 feet length will terminate in a head wall, beyond which will be an open invert, for 10 feet, at the same inclination, in cement and blue bricks, ending at the bottom of the present stream or sewer.

The concrete to be provided at the spandrels, side walls, and under the inverts of the different sewers, is estimated at 75,000 cubic yards. Additions or deductions from that quantity are to be priced at 6s. 6d. including every expense of putting in.

The specification comprises, besides what has been spoken of, a considerable amount of work in bell-mouthed and otherwise formed junctions of existing sewers, some of which, like the Ravensbourne Sewer, have to be reconstructed for certain portions of their length. There are twenty-seven of these bell-mouthed junctions, and five other junctions. The formation of these is carefully explained by drawings. The meeting parts of the inverts are coped with granite. The present Effra Main Sewer at the "White Horse" public-house, Brixton-road, is to be connected with the new sewer by a bell-mouth, and about 75 feet of circular brick sewer, 8 feet in diameter; gradually tapering into the existing form of the Effra Sewer, which is 8 feet 2 inches by 10 feet 2 inches. The bell-mouth at the connection with the new sewer is to be covered with arches of blue bricks, carried by iron girders,—the crown of the new sewer inside being here about 5 feet below the surface of pavement. The construction at the junctions appears to vary in every case, from the difference of dimensions and form in the branch sewers, and from the arrangement of side entrances and ventilators.

The ventilating-shafts, inclusive of those over side-entrances and bell-mouths, are seventy-eight in number; but exclusively of the shafts in the tunnel at Dulwich. They are to be 3 feet in the clear, in 9-inch brickwork in mortar. The aggregate length of these will be 1,000 feet. They are simple shafts, on the present principle. There will be thirty-six side entrances, variously formed, and 200 gullies, each trapped by a bend in the stoneware drain-pipe from the receiver. The 12-inch pipe specified amounts to 1,000 feet; the 9-inch to the same quantity; and the 6-inch, to 6,000 feet. There will be stoneware oblique junction blocks,—500 6-inch, 300 9-inch, and 200 12-inch; and stoneware drain-mouths, with galvanized iron flaps,—100 6-inch, 50 9-inch, and 50 12-inch.

The materials and the manner of executing the works have been carefully specified. The bricks, picked stocks, and the blue bricks or salt-glazed stoneware blocks, are to be equal to specimens; no broken bricks are to be brought upon the works: the bricks are to be well wetted before being used, and the mortar-joints next the interior surface of the sewer, are not to exceed three-sixteenths of an inch. The sand is to be river sand, unless other is sanctioned; and the lime is to be blue lias—as Barrow, or Abergthaw. The cement is to be the best Portland, ground extremely fine, and weighing not less than 110 lbs. to the striked bushel, and is to be capable of maintaining a breaking weight of 400 lbs. seven days after being made in an iron mould, of the form and dimensions as shown in one of the drawings, and immersed six of these days in water. The cement is to be brought on to the works only in small quantities; and is to be mixed—usually one of cement to one of sand, no cement being used which has become hard or set. Brick blocks, put together in boxes, are to be generally 18 inches in length, and are not to be fixed till they have been made at least a week—having remained two days in the boxes. Punning-in to the trenches is to be executed in layers of earth, of not more than 6 inches in thickness.

The contractor is not only to give all notices to companies and authorities, when authorized to proceed, and to provide shoring and be responsible for accidents, but he is to make terms with owners, lessees, and others, compensating them whether for loss of trade or for any other sort of interference. Messrs. Kingsford's mill must be stopped, compensation being given to them. Pumping-machinery and all other temporary contrivances are to be provided for the works and the protection of the public. Tunnelling, only such as may be allowed by the engineer, is to be executed. Existing old sewers met with are to be filled up where required, and house-drains and water-courses now draining into those sewers are to be connected with the new sewers.

The general conditions extend to twenty-six clauses, all drawn up with care and precision. In these, provisions are inserted for liquidated damages of 5s. per day for non-removal of condemned materials after notice; or, unless unavoidable, for obstruction of footways by rubbish. The works are to be finished in twenty months from date of the engineer's order to commence, the damages for each day beyond the time being set at 50s. Advances are to be at the rate of 80s. per cent. till the works are half completed, and variously afterwards.

In the prices for extras and omissions, digging, with every expense, is set down at 2s. 6d. per yard cube, and without cartage at 2s. Filling and carting away earth or rubbish, any distance, is 1s. 6d. The brickwork of stocks and Portland cement is set down at 14 guineas a rod, in half brickwork at 15 guineas, and in the blue bricks at 24s. Work in the picked stocks in lime mortar is 11s. 10s. Mamel or Riga timber left in trenches is put at 2s. per foot cube, and driven in sheeting piles, at 4s. 6d. Cast-iron work in girders is at 10s. per cwt. and in side-entrance flaps at 18s. The lime is at 1s. 1d. per bushel, and the cement 2s. 3d.

The drawings include a most interesting sheet of sections of borings which were taken in March last, seventeen in number, along the lines of the two sewers. With the assistance of borings on other lines of the sewerage, the Metropolitan Board of Works will shortly be in possession of a geological map, and sections of the London soil, of the greatest value.

We have now given our readers, what is after all only a sketch, however carefully compiled, of a most important division of the Metropolitan Main Drainage. The High-Level Sewerage is first commenced in order to relieve the Low-level districts. It will be apprehended, however, that the complete attainment of this object requires the immediate prosecution of the outfall sewer, and of the pumping arrangements at Crossness Point, and even more urgently than the relief of the northern high-level was required; and this outfall extension—best under the actual state of affairs—having been decided upon, doubtless will be quickly commenced.

THE DRINKING-FOUNTAINS ASSOCIATION COMPETITION.

THE committee have not begun very well. They followed our advice to a certain extent, and invited Mr. Digby Wyatt to assist the committee in their selection. Mr. Wyatt, assenting, attended a meeting, at which he learned that several designs had been admitted at a later date than was named in the advertisement, the 25th of May, and in a way that he could not approve of. Accordingly, and much to his credit, he at once wrote a note, stating that he should be happy to assist the committee at any time if he could be assured that the drawings to be adjudicated upon had been duly received at a date antecedent to twelve o'clock p.m. on the 25th ult. The designs, however, had been so mixed up together, that it was alleged to be impossible to state which had, and which had not, been sent in time. The chairman (Mr. William Hawes) resigned, and the committee broke up in a "muddle." The following circular shows how they have tried to get out of the difficulty. What satisfaction it may give an artist to allow him the option of withdrawing his design if he thinks himself ill-used, we cannot quite see. It is just one of those cases in which, through carelessness in the first instance, and want of proper appreciation in the second, professional men are treated "like dirt."

This is the circular referred to:—

"SIR,—From a slight inadvertence in drawing up the advertisement offering premiums for designs by this association, a few artists and others have sent designs after the 25th of May, and the committee have decided to include such designs in adjudication. If, however, on this account you desire to withdraw your plans, be

pleased to communicate such wish by letter per return of post.

As some designs were received with mottoes, the committee appointed me to open such letters, in order to forward this circular.

I shall therefore retain them sealed in my possession, and not sit upon the adjudicating committee.—I am, Sir, &c.

S. GURNEY.

What the circular means by "a slight inadvertence in drawing up the advertisement" we do not understand. The advertisement is perfectly clear,—the designs were to be sent in "on or before the 25th."

The Drinking-Fountain Movement in the City.—At last week's meeting of the City Sewers Commission a report came up from the General Purposes Committee upon a proposal by the Public Drinking-Fountains Association to erect a fountain in front of the Royal Exchange. The committee understood that the property of the fountain would be vested in thirty trustees, under conditions to which they could see no objection, and they therefore recommended that such trusteeship should be recognized, the commissioners reserving to themselves the power of removing the fountains, if desirable. They also recommend the court to defray the expense of the water supply to the Royal Exchange fountain. The report was agreed to.

Fountains for New York.—At the meeting of the board of councilmen of New York city, on the 9th May, the following resolution was carried with but one dissentient voice:—"Resolved: That the Croton aqueduct department report to this board, as soon as possible, plans and estimates for the placing of 500 drinking-fountains or hydrants in the streets and squares of this city; such fountains to be used for drinking only, and to be under the supervision of the Croton board."

ART AND ENGINEERING ABROAD.

(From our own Correspondents.)

A NUMEROUS detachment of military workmen of the French Government have just been installed at the Caserne de Lourcine, for the purpose of constructing camp ovens for baking bread, &c. on a large scale.

It is proposed to give to the Paris bridges handsome tablets, inscribed with their names, engraved so as to act as useful indicators to strangers, who are very apt to mistake one bridge for another, and be led out of their way. They are to be panelled with Genoa serpentine, and will contain the names of the constructors, also the sovereigns under whose rule they were erected.

A few days ago one of the two steam-tugs, or dredging-boats, at work at the ancient piers of the Pont du Change, struck against a pile and foundered. The engineer had just time enough to open the safety-valve and mount on deck. The clearing away of the old foundations is rather a tedious affair, there being at least 1,000 piles under each pier, which must be all extracted, as also the stones around them. The dredger takes up from thirty to forty per day.

A plaster model of the statue of Tronchet, by M. Hippolyte Ferrat, is now exhibited in the grand court of the Council of State of Paris. A letter, addressed from Burgos, the 18th November, 1808, by the Emperor Napoleon I. to the Minister of Justice, Regnier, ordered a marble statue of Tronchet to be there placed. Tronchet, the first compiler of the Code Napoleon, was thus honoured by the first emperor, who had an opportunity of personally appreciating "les grands talents," as he says, "dans les conférences qui ont eu lieu lors de la rédaction du dit code."

On the Paris and Vincennes Railway, the works of which are now drawing to a close, the viaduct on arches, reaching from the Passage des Quinze-vingts, near the Place de la Bastille, as far as the Rue de Rambouillet, in the very Faubourg St. Antoine, presents a curious aspect, at once novel and ingenious, perhaps correct in a strategic point of view. All the piers of these eighty or a hundred arches are open, by means of jack-arches, to thoroughfare or passage, from one arch to another, along the length of the viaduct from end to end.

At the station in course of erection near the Place de la Bastille, fronting the enlarged Rue de Lyons, for a width of 200 metres, and the projected Boulevard de Reuilly, the first story of the ground-floor has been raised. It is expected to be terminated on the 15th of August, the *fête* of the emperor.

Mons. F. C. Sebille, at Nantes (Loire Inférieure), carries on the manufacture of leaden pipes tinned inside and outside, by their being made to pass through a bath of melted tin, from which they

emerge completely covered with the latter metal, all pores and cracks filled up, and proof against any oxidation. This is not a new process, but the first application to practice, in France, on a large scale.

The *Courrier de l'Isere* announces that a decree has ordered, in the town of Vienne of that department, the disengaging, from surrounding buildings, of the ancient temples of Augustus and Livia. Prompt measures are being taken by the municipal authorities for carrying out this design.

After a long delay, caused by the exigencies of the war and its preparations, the railway from Aubagne to Toulon was opened to the public on the 30th May.

The Cherbourg papers announce that works have actually commenced for a line to join the railway station with the ancient arsenal, running along the quay at the east of the basin. It will be principally used for transporting coal.

The shareholders of the Aix and Maestricht Railway have unanimously resolved to raise a capital of 350,000*fr.* by the issuing of preference shares, to provide for the expenses of carrying out the undertaking. It has been decided that application should be made to the Governments for an advance of two years' interest on the working capital.

The opening of the Baden Baths took place on the 1st inst. This season promises to be very brilliant: on the 20th ult. the number of strangers amounted to 200. H.R.H. the Princess of Prussia has arrived, and is likely to make a long *sejour*. Since last year new buildings have sprung up in every direction in Baden. Twenty-five new villas have been erected in the Lichtenhal-avenue, vieing with each other in comfort, luxury, and splendour. Important changes were made during last winter in the railway terminus, with great improvement in the arrangements for public accommodation.

The old kiosque of the promenade is replaced by a new one of a very elegant form, under which the band, playing three times a week, is stationed.

On the 20th April last, a decree was published by the Tuscan Government, reducing to 10 soldi per 1,000 *liras* the duty on exportation of worked marble. This duty was fixed, by the decree of 17 Dec. 1854, at 10 soldi per 100 *liras*. The *soldo* = 0 *fr.* 4·2 centimes, or $\frac{1}{24}$ of a penny English, nearly. La *lira* = 340 grammes.

The submarine cable between Gotthland and the Swedish coast was successfully laid on the 17th May.

The opening of the Exhibition of the Works of Living Artists, at the Hague, took place on the 23rd May. The number of works exposed amounts to 700: those of foreign schools are more numerous than in former years. There are some Italian works.

It appears that it has been decided to establish, in Madrid, a railway by horse traction, on the system of Galy-Cazalat. Starting from the *Plaza de Chamberi*, one branch is to run as far as the *Puerta de Bilbao*, and another in the direction of the grand circular road, following the line of the same *Puerta de Recoletos*, the promenade of the same *Puerta de Atocha*, the Alicante railway, the circular road as far as the *Puerta de Toledo*, where it divides into two branches, one leading to the Canal Wharf, and the other to the *Plaza de la Constitution*.

This line has been conceded to the Tramway Company, represented by its director, General D. Emilio Lalobere, and will soon place the north and south of the capital in useful and active communication. The works are under the immediate superintendence of D. Manuel Guendias.

ALL SAINTS' CHURCH, MARGARET-STREET.

SIR,—The decorations in the chancel of All Saints', Margaret-street, to which Mr. Street refers in his letter, were executed from the designs and under the superintendence of Mr. Dyce. It was thought reasonable to entrust to that distinguished artist the decoration of a portion of the church, which was in such close proximity to, and might have such important bearings upon, his magnificent frescoes. The intent of his work was to harmonize the frescoes with the decorations and painted glass already existing in the nave. The yellow glass in the chancel clerestory was added in consequence of the injurious effect upon the frescoes of the cold bluish light which streamed through those windows before the alteration.

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Bells.—Hitherto the west end of London has been rather indifferent about its church-bells; some

churches having one, others having two, and so on. "All Saints' Church," Margaret-street, recently illustrated in these pages, has lately received three bells, which are ultimately to form a peal of eight. Those now hung are the 1st, 4th, and 8th, or tenor, weighing one ton and a half in the key of E flat. The frame is made to contain a peal of eight, and it is to be hoped the Committee will not be long before they will have them completed. The casting of these bells was entrusted to the Messrs. Warner and Sons, of Cripplegate, and the tone is said to be good.

The Marble Work.—We learn that all the marble and alabaster work, the pulpit, font, screen, shafts, and inlaid work, on walls, and elsewhere, were executed by Mr. Field, of Parliament-street, and gladly mention it. Some of this work is new (to us of the present day), and he is entitled to great credit for the manner in which he has performed it.

THE ASHTON INFIRMARY COMPETITION.

THE committee have selected the design marked "Nil Desperandum" for the first premium, found to be by Mr. Joseph Lindley, of their own town; and the design marked "Experience," understood to be by Mr. Haley, of Manchester. The first design is Elizabethan in style. From a review in the *Ashton Reporter* we judge that the views we have set forth on hospital construction, and our advocacy of the pavilion principle, have influenced several of the competitors. How far the committee have acted in accordance with them we have yet to learn.

THE MUTUAL LIFE ASSURANCE SOCIETY KING-STREET, CHEAPSIDE.

THE building shown by our engraving has been erected for the Mutual Life Assurance Society, which was established, in the year 1834, to carry out the pure principles of mutual assurance. It now ranks amongst the first offices, and has a steady annual increasing business. The society appears to be conducted in an economical and efficient manner, obtaining for the assured the greatest amount of benefit that can be commanded. We desire so strongly to see the advantages of life-assurance extended, that it is always a gratification to us to point to an office in which confidence may be safely reposed.

The new building is in King-street, Cheapside, and stands upon the site formerly occupied by the offices of the society, with the additional ground upon which No. 38 stood, altogether comprising a frontage of 57 feet. The front external wall is built with Portland stone, and the windows to the ground floor have rusticated quoins with semi-circular heads; and upon the key-stones to the arches are carved heads, representing the four quarters of the globe—that to the centre window to the head of Time. The entrance-door to the building is near Cheapside, and has a bold projecting cornice carried upon trusses enriched with carved swags of fruit and flowers.

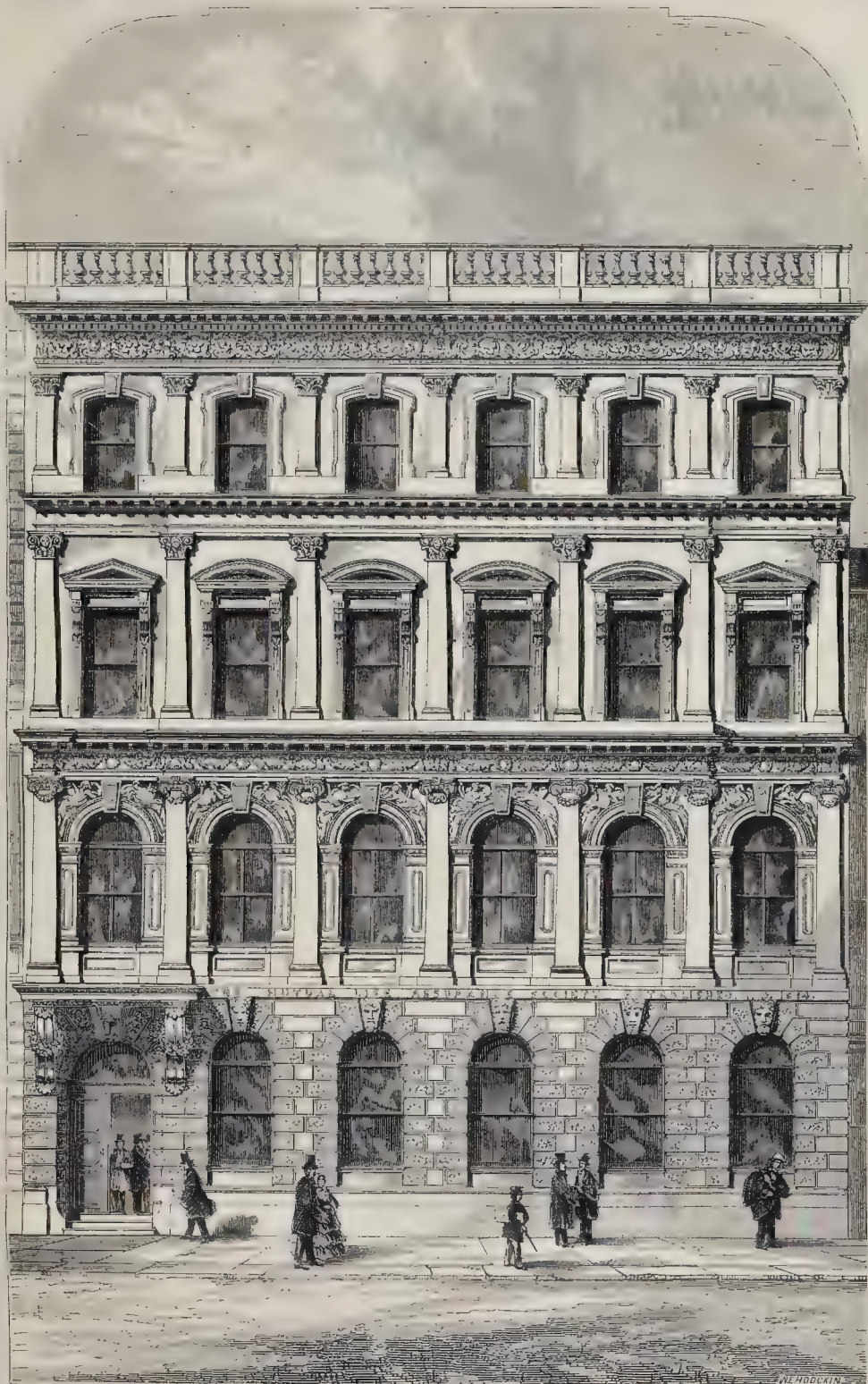
The first floor consists of a range of semi-circular headed windows, compassed with Ionic pilasters, and swags of flowers hanging from the volutes of the caps. The cornice to this story is enriched, in the frieze, with carved festoons of fruit and flowers, hanging shields, and wreaths of oak and laurel.

In the spandrels, formed by the archivolts of the windows, are emblematic figures of History, Industry, Justice, Mercy, Peace, Plenty, Sculpture, Painting, Faith, Temperance, Music, and Poetry, which are partly in *alto*, and partly in *basso rilievo*.

The second floor windows have pedimented heads, with trusses and architraves, and this floor is divided, like the first, with pilasters with carved caps, consisting of volutes and leaves, between which are heads. The third floor is divided like the last with pilasters, and windows with architraves, and the front is surmounted by an enriched cornice, having the frieze filled in with a scroll, in centre of which is a shield.

The internal arrangement of the building on the ground floor consists of entrance-hall, public office, actuary's room, and waiting-room; the whole divided by mahogany screens, glazed. On the first floor are the board-room, and directors', medical, and waiting rooms. On the basement floor there are two strong rooms, offices, and rooms for papers, and a messenger's room.

The design was selected in a limited competition of six architects, and is the work of Mr. John M. K. Hahn, of Newgate-street. The works have been carried out by Mr. George Myers, and the carving by Mr. Reddick, for Mr. Myers.



THE MUTUAL LIFE ASSURANCE SOCIETY'S OFFICES, KING-STREET, CHEAPSIDE.—MR. JOHN M. K. HAHN, ARCHT.

DECLINE OF ARCHITECTURAL
DRAWING.

NEVER having followed the arts professionally, but merely as an assistant, in certain departments of trade, especially that of architectural ornaments, and having been regularly admitted into all the schools of the Royal Academy, I still continue, as an old student, to enjoy a free admission at all times to the different schools, the library, and exhibition-rooms, particularly where architecture forms a prominent feature. Taking a retrospective view in my mind of the general state of the fine arts, as exemplified in the various metropolitan exhibitions during certain periods, say every ten years, a gradual and decided improvement is unquestionably taking place. If it were possible to measure or weigh the exact quantity of talent in one entire exhibition at the Royal Academy, we should find the collective amount of merit, each year, greater than that of the year preceding. This remark applies equally to oil and water-colours, at all the exhibitions in London and elsewhere. If I follow the same train of examination to pictorial architectural drawings,—that is, to perspective views either of existing buildings or imaginary designs—the result is not quite so satisfactory as in other departments of the graphic and plastic arts. The architectural draughtsmen, as a body, are not making the same slow, gradual, and certain advancement in the right direction, which is so evident amongst the painters and sculptors. I tremble at the very idea of retrogression in a body of liberal-minded men, uniting together, in the most friendly manner, for mutual improvement: I also exert my utmost energies against falling imperceptibly into a habit of telling long stories, to the present generation, of the many wonderful feats that “we did, when we were young,”—

“Goodnatured, harmless, kind grey-headed men,
Arrived at more than three score years and ten,
Talk of their youth, and marvels they did then.”

Yet I cannot persuade myself to believe that the generality of drawings now exhibiting at the gallery in Conduit-street, display as much artistic judgment and execution in the effects of light, shade, distance, and aerial gradations of tone in colour, &c. as were displayed in the drawings of a former period, perhaps twenty or thirty years since.

On looking at the architectural drawings in the Royal Academy Exhibition, I am disposed to consider they are altogether better; that is, they display far more artistic ability than is to be found in Conduit-street. In conversation with a gentleman belonging to the Royal Academy, I inquired respecting the small number of architectural subjects exhibited in their rooms: his reply was, that the greater number offered were so deficient in merit, as pictures, that, in the opinion of the judges, they would be almost wholly without interest to the public, and certainly not very creditable to the authors of them; and that the hanging committee found it necessary to put a few oil paintings and other subjects amongst the architectural drawings, to induce visitors to go into that room; otherwise it would be empty and unnoticed, except by a few architects or builders. The idea immediately flashed across my mind,—Can this be one of the reasons why there are so few visitors in Conduit-street? For I have been there several times lately, on purpose to examine attentively the general merit of the drawings as works of art, and found I could do this without interruption, for the galleries were nearly deserted: occasionally two or three individuals might be observed to stroll in, buy a catalogue, carry it about without opening it, gaze round in a queer sort of incoherent manner during about a quarter of an hour, and walk out as if they had lost themselves, were bewildered, or had made some grand mistake.

I have sometimes ventured, in a very friendly manner, to remonstrate with my young friends about their flat, tame, feeble, and almost shadowless perspective drawings, which have been prepared expressly either for some world-wide competition, or else to be hung in a public exhibition room, perhaps close to a powerful and effective picture, which by contrast will make my friend's performance look still more in want of strength. The mild remonstrance has generally been answered by, “Oh, I only drew the outline. I got Mr. — to tint it. Architects now hardly ever shade or colour their own designs.” I hear this mode of obtaining assistance is very frequently adopted in modern times; and if it were an improvement upon the past—if better drawings were produced—if the end were more successful—it might be but of little importance what means were resorted to for the purpose of gaining a favourable and honourable result. Judging from

appearances and frequent trials, this modern practice seems to be a step in the wrong direction; not because there are no artists fully capable of making clever architectural drawings, but because highly-talented artists, even if they are disposed to work second-hand, require higher remuneration for their services than their cousins of the rule and compasses can afford to give: consequently the latter are obliged to put up with the help of an inferior artist; or if the clever man can be pressed into the service, the pay is so trifling that, in justice to himself, he is obliged to get through the work most expeditiously, and determines not to touch the drawing after the architect says “It will do.” In this species of manufacture the artist loses no credit by the performance, because his name is altogether withheld from the public.

If these architects ever were able to make their own drawings; being out of practice, the hand, and the judgment, too, become as it were paralyzed, or unskilful, and thereby incapable of either making good drawings, or knowing whether they are cleverly made for them. It may be considered as an invariable rule, that if ever an artist ceases to improve, either from his own indolence or other cause, he cannot put a drag to the wheel, or make a dead stand-still: if he do not go forward, he is sure to go back at a rapid pace, and in all probability without having the most remote idea of his own retrocession, although it may be evident enough to his friends and admirers.

I do not presume to interfere in matters of taste, composition, colouring, or any of those undefined qualities in a picture, which admit of a wide diversity of opinions; but I object to whatever is a stretch beyond the bounds of possibility in nature; such as light shining, with equal intensity, on more than two sides of a polygonal building, at the same time; and many other defects, not of a doubtful species, but of a positive and definite kind.

I have a horror of being classed amongst those anonymous critics who, although unable to paint pictures, conceive themselves at full liberty to judge them, and who treat the artist, whether good or bad, as an animal whom everybody is privileged to attack. By not particularizing individual works, I hope to avoid giving offence to any one: each artist may therefore enjoy the peculiar felicity of believing his own performances to be entirely free from the defects which have been mentioned, and discriminate, perhaps for the first time, glaring faults in all other pictures. It is in our nature to consider advice as something very like presumption, bordering upon insolence to our understanding, which we are all tenacious of having doubted, or of having our discernment called in question, especially after having “arrived at years of discretion.” Notwithstanding truths may at times be disagreeable, in some cases they are indispensable; but should I have expressed myself in warm or harsh terms, I can conscientiously assert that my earnest desire is to do good; and that a little friction is always required to produce the most beautiful polish.

C. H. SMITH.

THE BRITISH ARCHEOLOGICAL
ASSOCIATION.

THE concluding meeting of the present session was held on Wednesday evening last, at 32, Sackville-street, Piccadilly; Mr. Pettigrew, F.R.S. in the chair.

The formal business having been disposed of, and several interesting relics presented, including the original letters patent granted by William and Mary for the manufacture of calico, muslin, and fine cloth produced from wool of the growth of British plantations in the West Indies, equal to those brought from “Calcutt” and other places in the East Indies.

The Chairman called attention to a letter which he had received that day from Mr. Thomas Wright, giving a description of the discoveries at Wroxeter, and inclosing a drawing of a capital recently found amid the excavations at that place. The latter was a good deal mutilated, but sufficiently perfect to show that the Roman houses were not wanting in architectural ornament. Mr. Wright stated that they were at present excavating a very extensive mansion, with a court 40 feet square, paved with small bricks in herring-bone fashion, with apartments at the side 10 or 12 feet square, which would appear to have been shops or workshops. The capital, which was 3 feet high, had been found in the outer court of this mansion. There was reason to believe that the excavations would now be conducted with energy, as the Duke of Cleveland, to whom the property

belonged, had compensated his tenants; so that two acres of ground could be laid open. The Society of Antiquaries had subscribed fifty guineas towards the excavation fund, and it was to be hoped that the public would furnish whatever remaining funds might be required to develop and bring to light these interesting remains of Roman art. The chairman next called attention to a communication which had been received from an Associate in the Isle of Wight, relative to the discovery of a Roman villa near Carrisbrook. These remains, which promised to yield a handsome reward for the zeal of the antiquary, were discovered on the 28th of April last, when some workmen were digging the foundation of stables for the vicar. The site was about a quarter of a mile from that of the Chatterford villa, discovered some years ago. The permission of the Rev. Mr. James (the vicar) had been obtained, and steps were about to be taken to examine the relics. A tessellated pavement and two floors had already been traced. On the north side a handsome pavement of red, black, white, and stone colour had been found in a room 14 or 15 feet long. At the southern end there was a concrete floor, with a portion of the wall still standing. Among the debris were found burnt wood tiles (with the nails still in them), hinges, knives, plaster, bones of horses and sheep, a few Roman coins, portions of a cinerary urn, and many specimens of the external decorations of a Roman villa. These remains were discovered at a distance of 3 to 5 feet of the surface.

Mr. Cumming (honorary secretary) then read an interesting paper on Battersea enamels, a species of manufacture which appears to have perished after a short-lived existence of less than twenty years. Judging from the devices, the fabrication commenced about fifteen years before the close of the reign of George II. and terminated in the third year of the reign of his successor. The subjects were for the most part birds, portraits, &c., and in a few instances landscapes. Of the specimens exhibited to the meeting two contained portraits of George II. and Frederick Prince of Wales; there were also portraits supposed to represent Robert Walpole, Earl of Orford, and Maria, Duchess of Gloucester, widow of the Earl of Waldegrave, and niece of Horace Walpole. Little was known about these fabrications beyond the circumstance that Horace Walpole mentioned them incidentally in his catalogue of the Strawberry Hill Collection. The paste of which the enamels were formed was good, and the drawings were in many instances spirited and well defined. The artists (whose names had perished with their work) portrayed also mythological and pastoral subjects, with a dash of allegory in the representation. But the artificers of Battersea sometimes soared higher, and produced works entirely of enamel, such as snuff-boxes, caskets, &c. (one of the former was produced, representing a gentleman conducting a lady down a terrace, with a little boy in the foreground; the composition of which is extremely pleasing). The Battersea enamels were principally used for the lids of snuff-boxes, bracelets, brooches, window pins, and the like. The colours were for the most part red, blue, or brownish, and although they could not vie with the gorgeous plaques of Sevres, or other continental manufactures, they were still interesting and valuable as specimens of home enamel. A few of these were still to be found in old country houses, but their story remained an unwritten chapter in the history of British art.

Mr. Pettigrew said it was singular that there were so few traces of this art still left. There was no specimen either in the British Museum, the South Kensington Museum, or the Gernym-street Museum; neither was there one in the collection of the late Mr. Bernal.

Mr. Solly observed that he was old enough to remember that a gentleman, a friend of his, wore a set of buttons of Battersea enamel, illustrated with hunting subjects. This gentleman was accustomed to join in the hunting parties of Louis XVI.

A gentleman inquired whether there was any mark by which the Chelsea enamels might be known, similar to that in the Chelsea or Dresden ware.

Mr. Cumming said he had been unable to detect any trade mark. With regard to the scarcity of the ware, he had been to at least fifty collector's shops, and he could not find a trace of it; in fact, the shopkeepers maintained that there was no such thing. Mr. Wilkinson (of the firm of Wilkinson and Sotheby, the well-known auctioneers), had told him that he had never met with a specimen, and at the British Museum they were equally in ignorance of it.

Mr. Gray inquired whether the copper foundation was a peculiarity of Battersea enamels.

Mr. Cuning replied in the negative;—all enamels had a metallic base.

Mr. Pettigrew next read a portion of an elaborate and erudite paper by Sir Gardner Wilkinson, one of the vice-presidents of the society, on the rock basins of Dartmoor. It referred to the inquiries of Mr. Ormerod, and to the conclusion drawn by that gentleman that the basins were of natural formation, and were to be attributed to the decomposition of the granite. The fact that the large basins differed from the smaller ones, and that they were to be found in other rocks besides granite, was, in Sir Gardner Wilkinson's opinion, sufficient to show that their origin was to be traced to mechanical and not natural agency. In support of this theory, he referred to the fact that there was evidence that some of the basins had been filled with peat 150 years ago, to prevent sheep falling in, a precaution which it was evident needed not have been taken had there been a deposit of decomposed granite. Had Mr. Ormerod seen the basins in the granite rocks at Redruth, in Cornwall, he would have observed that they were not natural, but were formed with much art and labour. The sides were 2 feet high, and neither the bottom, which was level, nor the sides had the slightest appearance of being decomposed. They had a lip cut to drain off the water, a proof that they were made by human agency. They were also to be found in rocks, other than granite, as in the Peaks of Derbyshire, in Staffordshire, at the Devil's Punch Bowl in Lincolnshire, and also in Northumberland. It was also a noteworthy circumstance tending to show that their formation was artificial and not natural, that they were to be found in early British remains. It was his opinion that they were connected with the religious worship of the Druids, whose existence it was impossible to deny. Redruth was the head-quarters of Druidism in that part of the country. The paper then referred to the rude concentric rings or circles to be found in the neighbourhood of these remains; expressing an opinion that they were in no way connected with the worship of the serpent, as some persons contended, but that they were intended as boundary lines to keep off the *profanum vulgus* from approaching too close to the rites of the priests. Mr. Pettigrew having eulogised the great labour and learning which Sir Gardner Wilkinson had devoted to the subject, announced that the paper, together with the accompanying drawings, would be published *in extenso* in the Transactions of the Society.

Mr. Gould said he did not agree with Sir Gardner Wilkinson in attributing the rock basins to human agency; and mentioned that, in the year 1823, he had visited the falls at Powerscourt, in Wicklow, and observed that the volume of water fell into a basin precisely similar to those described in the paper just read. Being of opinion that the basin was formed by the action of the water on the stone, he stripped, and, having searched the pool, picked up a fragment of granite as round as a cannon-ball—a clear proof, in his mind, of the manner in which the basin had been scooped out.

The thanks of the meeting were then awarded to Sir Gardner Wilkinson for his communication. Mr. Pettigrew announced that the next congress would be held at Newbury, in Berkshire, under the presidency of the Earl of Carnarvon, and would continue from the 12th to the 17th of September, inclusive, this period (somewhat later than usual) having been fixed in the hope that Parliament would have concluded its labours by that time.

THE ARCHITECTURAL ASSOCIATION.

At a meeting held in the rooms at Conduit-street, on Friday the 27th ult. Mr. T. M. Rickman in the chair, Mr. Randall Bruce read a paper on—"The Necessity of a greater Power of Artistic Drawing among the Architects of the present Day, and the important Means to that End that the 'Class of Design' ought to and might become."

The writer urged that the designs produced depend much more upon the power of artistic drawing possessed by the architect than some were willing to admit, and maintained that originality and variety come more naturally when the hand is capable of portraying whatever the eye sees, or the imagination prompts: he afterwards dwelt forcibly on the advantages the Class of Design offers. We would add to his, our own most earnest recommendation of this means of improvement. Every student-architect should

join this, or some similar class immediately, and be contented to fail again and again, as the only means of acquiring power to succeed.

Class of Design.—On June 3rd, the president of the class (Mr. R. Druce) in the chair, various designs for cemetery chapels were contributed by Messrs. Druce, Lewes, Sheldrick, and Ough. The half-hour's sketch was a "Well-cover." Some remarks were made in the course of the evening with reference to the prizes to be offered for the best series of sketches contributed to the class during the session, which subject will be brought forward at the special business meeting of the Association on June 10th. "An Organ Case" will be the subject for the sketches for the last meeting of the class this session, June 17th, on which evening the election of the officers of the class, and the selection of the subjects for the sketches for the ensuing session, will take place.

IMPROVEMENTS IN KENSINGTON.

THE Government are busy pulling down the cavalry barracks, at Kensington, near the turnpike. Now, it was a suggestion of the late Sir James M'Adam, that whenever these were removed, it would afford the opportunity of continuing the carriage-drive on the south side of Rotten-row into Palace-gardens, whereby the Queen would be able to drive from the park through Palace-gardens without, as at present, passing through the High-street, Kensington. It would of course take off a slice at the bottom of Kensington-gardens; but as that part is little used, we do not apprehend any objection to the proposed improvement would arise on that head. It would be an advantage to others as well as to the Queen.

STAINED GLASS.

Westminster.—On the death of Mr. Germain Lavie, auditor of Christ Church, Oxford, a committee was formed, consisting of Vice-Chancellor Sir W. Page Wood and others, to collect subscriptions (limited to two guineas) for the purpose of erecting a memorial window in Christ Church, Westminster, of which Mr. Lavie was a churchwarden at the time of his death. The work has been executed by Mr. O'Connor, under the directions of Mr. Butterfield. It is in the south aisle, and consists of two lancet lights, with a trefoil as tracery above them. In the two lancet lights are represented two enthroned figures of David and Solomon, with three panels beneath each, giving three principal events (on a smaller scale than the enthroned figures) from the lives of each of them. The three under the figures of David are—1. David in the character of shepherd rescuing the lamb from the lion. 2. His being anointed by Samuel. 3. His encounter with Goliath. The three subjects under the figure of Solomon are—1. The Vision, in which he requested of God an understanding heart. 2. The building of the Temple. 3. The meeting with the Queen of Sheba.

Stourbridge.—A stained-glass window is now being placed in St. Thomas's church, Stourbridge. The subject is the Unbelief of St. Thomas, in which the apostle satisfies himself of our Saviour's resurrection. The other apostles are grouped round the unbeliever. At the top and bottom there is a trefoil intersected with vine-leaves. The window has a thirteenth-century border, in which vine-leaves are also introduced. Its height is 18 feet, and breadth 8 feet, a size which has rendered its execution rather difficult; indeed, it is said to be the largest piece of stained-glass work in any church in the midland counties. The manufacturers are Messrs. Chance, and the designer Mr. S. Evans.

Bury St. Edmund's.—The work of filling the west window of St. Mary's, Bury, with stained glass, has now been completed by Messrs. Heaton and Butler, of London. The window was commenced as a thank-offering for the abundant harvest of 1854, and some of the lights were filled soon after. By the liberality of individuals, provision has been made for the chief part of the remainder, but there still remains a deficiency in the funds to defray the whole expense. The subjects of the west window, which contains two tiers of five lights each, and a heading of perpendicular tracery, are described in the *Bury Post*:—"In the upper centre light Christ and his disciples in the corn-fields under a canopy of vine foliage with inscription. In the lower centre light the Crucifixion. In the upper side-lights are eight panels on grisaille ground, with flower-work, containing the Six Acts of Mercy, and our Saviour restoring the blind to sight, and feeding the multitude. In the lower side-lights are the figures of

St. Peter and St. Paul next the Crucifixion; and the Agony in the Garden, Christ bearing his Cross, and seated figures of the Evangelists, in the outer lights. In the lower compartments of the tracery are angels with scrolls. Above these are the emblems of the Redemption, and of the Evangelists, and other Christian symbols, the Dove surmounting the whole. The artists have laboured under considerable disadvantage in the piecemeal execution of this work, owing to which they had not the opportunity of viewing the progress of it as a whole, and it is not, therefore, so perfectly harmonious in its effect as might have been desired."

East Wotton.—In the parish church of East Wotton, which was built by the late Marquis of Ailesbury, there has just been erected an east window of stained glass, the gift of the Marchioness of Ailesbury to the church. The window is one of five lights, representing our Lord in Ascension in the middle, with the four Evangelists, one in each side light. Underneath the figures of the Evangelists are appropriate passages from each of their Gospels. The lower panels and the canopy are worked in colours, and the tracery is filled with angels bearing scrolls, and with coloured foliage. The window is the work of Messrs. Lavers and Barrard, of London.

IRELAND.

THE requisite works for the lighting of the town of Mullingar with gas progress under the superintendence of Mr. F. Dooner. Mr. R. L. Johnson, patentee for the manufacture of peat gas, is contractor for the iron-work.

We are told that considerable improvements are about to be made by the Midland Great Western Railway Company in the approaches to their station at Mullingar.

With respect to barracks, we receive complaints of the indifference with which the published opinions of scientific men regarding sanitary improvements are treated, particularly as to ventilation, heating, and lighting. There are many barracks in Ireland to which no attention whatever has been paid in this respect.

SCHOOL-BUILDING NEWS.

THE foundation-stone of the boys', girls', and infants' schools, at Winchmore-hill, Middlesex, was laid on the 27th ult. by Mr. C. T. Busk, assisted by the Bishop of Carlisle and Mr. R. Hanbury, jun. M.P. The buildings comprise an infants' school, 44 feet by 18 feet; girls' school, 33 feet by 18 feet; and a boys' school, 40 feet by 18 feet, with entrance porches, forming a receptacle for hats, coats, &c. prior to entering the school; to which is also added a sink, with a constant supply of water. A class-room is provided to each school, in accordance with the instructions of a Council on Education, who have promised a liberal grant. There is also a house for the master, with bell-turret. The style of the whole is Gothic. The buildings are now progressing under the superintendence of the architect, Mr. Charles H. Edwards. The contractors are Messrs. Pickard and Co. of Caledonian-road.

School buildings have been erected in the new village or town of Stantonbury, between Wolverton and Newport Pagnel. The style is Early English. A church is also in course of erection. The architect of both is Mr. Street.

CHURCH-BUILDING NEWS.

Little Casthorpe (Lincolnshire).—The first stone of the new church was laid by the Incumbent, on Monday last. The building is to be wholly of brick inside and out, without plaster, and will consist of a nave, chancel, vestry, and porch, with tall spirelet. The site is on a hill opposite the Vicarage. The architect is Mr. Withers, of London, and the builder, Mr. Clark, of Louth.

Wantage.—East Challow Church, which had become very dilapidated, has within the last twelve months been all but rebuilt, except the chancel, which was restored by Mr. J. S. Gillmore, the owner of the great tithes. The interior is now supplied with moveable benches, increasing the accommodation by ninety-six sittings. The aisles and the floor of the chancel have been laid with tiles. The design was by Mr. G. A. Bevin, of London, architect; and the works were executed by Mr. Hunt, of Wantage, builder. To complete the building a tower is still required. About 350*l.* or 400*l.* are still wanted for this purpose.

Newbury.—The work of building a new district church has been commenced, on a site at the upper end of the town, near that part called the "City," and adjoining the road leading towards

Greenham. The church will afford sittings for 500 persons. Mr. Myers, of London, is the contractor.

Llanllyfenni (Pembrokeshire).—The works at the new church are progressing, and will be roofed in during the summer. The design comprises nave and chancel under one roof, with spirelet at the intersection; south porch and vestry on north side of chancel. The material used is local stone, with Bath stone dressings. All the seats will be open, and uniform throughout. The builder is Mr. James, of Llanychaer; and the architect, Mr. Withers, of London.

Derby.—St. Peter's Church, Derby, has been reopened. The three huge lofts or galleries have been removed. The western arch has been thrown open, and the organ removed from the chancel and placed within it. The flat ceiling has been taken down, and the timbers of the roof have been varnished and renewed where necessary. The columns supporting the clerestory on the north side being very insecure have been entirely rebuilt, and those on the south side restored. The church is paved with tiles, laid upon a bed of concrete, and seated with benches. The plaster and whitewash which encrusted every part of the walls has been removed, and the stonework repaired and pointed. The glass in all the windows has been coloured amber. The church is lighted by gas standards supplied by Messrs. Skidmore, of Coventry. The restoration has been carried out from the designs of Mr. Street, of London, by Mr. Wood of Derby.

JEWS' HOSPITAL COMPETITION.

THE REFERENCE, Messrs. Digby Wyatt and Moesta, have completed their award, which is now under seal in the hands of the secretary, as is also the key of the room in which the designs are. No one but themselves has been allowed to see them, we believe; not even a single member of the committee. There are thirty-three designs, and many of them are very good, the majority thoroughly well studied on plan, but not many well proportioned architecturally.

ELECTRO-TELEGRAPHIC PROGRESS.

GOVERNMENT are ready to guarantee the Atlantic Telegraph Company a dividend of 8 per cent. per annum for twenty-five years, provided the cable is in successful operation and capable of conveying 100 words an hour; they will also pay 20,000*l.* per annum for messages. The company are, however, to enjoy the benefit of the original arrangement for a payment of 14,000*l.* per annum from the United States Government. They intend to guard by a policy of insurance against accidents or loss from the process of submerging the cable, and also that the contract for the manufacture shall be accompanied by provisions for its efficient electrical working for a considerable period. The new capital is to consist of 600,000*l.* in 5*l.* preference shares.—Another Atlantic Telegraph company, it is reported, is being formed for the purpose of laying a cable from Cornwall to Canada. The proposed capital is 500,000*l.*; and it is anticipated that the shares will be readily taken up, as the company will be unencumbered with debt. It is proposed to lay down two cables of peculiar construction, on the principle of secondary insulation, and with improvements suggested by the failure of past experiments. The cable consists of the usual coil of copper wires insulated with Manila hemp and India rubber or gutta percha, and exteriorly covered with hempen rope alone instead of metal, not twisted spirally, but close woven on the sash-line principle. The new company, it is asserted, do not intend to go for a guarantee.—Mr. J. B. Lindsay says,—"Yesterday (May 17) I telegraphed successfully [without any crossing line or telegraph wire] across the Tay opposite to Glencarse, where it is about half a mile broad. The action on the needle was strong, and the same battery power would cross, I think, at Broughton Ferry."—The Red Sea cable, it is believed, is, probably, by this time, safely laid down from Suez to Perim, when only 100 miles will remain for its completion to Aden. The second section will be from Aden to Kurrachee, where we shall at once be in communication with every part of India. The cable for this purpose is in course of construction.

TASTE IN DRESS.—We hear that in Munich feeling has been roused to the institution of a committee for the reform of attire, and the head man of the movement is Kaulbach, the artist.

DUBLIN WATER!

SIR,—By your last publication we learn that "Belfast has assumed the initiative in the drinking-fountain movement," and, in justice to the stirring townspeople there, I must suggest by way of supplement—in many other things likewise. The water we drink here—when we can get it—is none of the purest or wholesomest, although both its quality and mode of supply have been a *questio vexata* for some years past, and our corporation orators have made long speeches on the subject. Reports, numerous and voluminous; plans, various and well digested (no doubt), have come under public notice, and yet matters remain pretty much in *statu quo*. It seems we require a daily supply of 12,000,000 gallons for our "city," and yet, surrounded as it is by canals and perpetual mountain streams of clear crystal *aqua*, there appears to be an actual difficulty in giving us the wherewith to drink. The committee, No. 2, of the Municipal Council have called in the aid of Mr. Hawksley, an eminent engineer (as you are aware), and upon his report have come to the following resolution:—"That this committee are of opinion that it is necessary and expedient the corporation should take measures to procure for the citizens of Dublin an ample supply of water of a better quality and description than at present supplied to them; and that it should be delivered at 'high pressure,' and on constant service, in the manner now being universally adopted in the cities and large towns in England and Scotland." To effect this, it is proposed to borrow from Government 150,000*l.* at 4 per cent. Would that the high-pressure system in this instance were directed in the proper quarter. For though the corporation have been "taking measures" for years past, we as yet see no practical results; and as for the enormous outlay proposed, and the consequent taxation, they are both unnecessary, and must prove detrimental to an already over-taxed city. First improve the system of filtration in the reservoirs—which is palpably defective—say I:—this can be effected at a comparatively small cost;—and then regulate the required supply by proportionate pressure from the present sources, which are the most convenient, natural, and economical.

As to public drinking-fountains we have none, nor does there appear to be a desire that we should have any: a few pumps—that run dry occasionally—are distributed here and there, but their construction precludes the possibility of a thirsty soul getting a refreshing draught therefrom, unless he brings a vessel with him; and there is no trough for animals. Pray, urge our sluggish corporation—now that the warm weather is coming—to give these matters their earnest and immediate attention, and devote themselves in preference to necessity rather than embellishment. A CORRESPONDENT.

Dublin.

HOW THE HULL CEMETERY COMPANY GOT A DESIGN.

SIR,—Much has already appeared in your valuable journal in exposure of the mal-practices of the cemetery and other boards in obtaining and adjudging designs, but though a constant reader I do not remember observing any case of the nature of that to which I now beg to draw your attention. The facts are briefly as follow:—The Hull General Cemetery Company having resolved to erect an additional chapel on their grounds at Spring Bank, Hull, advertised for tenders for the same;—particulars of the works to be obtained of Mr. Shields, at the cemetery. The builders, on making application to inspect the plans and specification, are coolly informed that they must visit a small Gothic chapel recently erected from the designs of a Hull architect, at the village of Newland, a mile distant, and take their quantities from that building, as the required chapel is to be "exactly the same size and pattern" in every respect; except that what is an attached Sunday school in the case of Newland is to have a division wall in the cemetery chapel, and be appropriated to the purposes of a robing-room and dead-house. Thus, sir, these worthy and wise directors of the Hull General Cemetery Company may claim the credit of inaugurating a new system of obtaining designs, without even offering a 5*l.* premium! or exposing themselves to the well-merited odium generally consequent thereon. They can also further lay claim to the virtue of economy, by saving (query) the amount of an architect's commission; although they do cause a poor builder the annoyance and vexation of being denied, at the office of the architect whose design they appropriate, the loan of his drawings and his specifi-

cation to estimate from, and although they do incur the risk of being considered by the profession scarcely up to the mark as exemplars of true rectitude, high principle, and honour. BETA.

VENTILATION OF SCHOOLS.

THE COMMITTEE OF COUNCIL.

SIR,—Having had a paper forwarded to me from the Committee of Council on Education, being instructions to promoters and architects of school buildings for their ventilation, I am of opinion that its principle is wrong, both in theory and practice. The paper referred to is to be found "appended to General Report, by Rev. H. Mosley, her Majesty's Inspector of Schools, in minutes of Committee of Council on Education, of 1848-49-50, vol. ii. p. 38." In speaking of this ventilating apparatus as used at the National School of Hyde, near Winchester, the paper states that "Each school-room has been constructed with an ordinary fireplace, measuring about 3 feet 6 inches wide. The hearth, paved with tiles, is raised about 2 inches above the floor level, and extends into the room about 44 inches. In the middle of the hearth an ash-pit has been dug about 15 inches in depth, about the same in length, and about 9 inches in width. The ash-pit is covered with a moveable grating, on which the fire is made. The draught of the fire is supplied by a cold-air drain, which enters the ash-pit from under the door, and into which there are two openings, in opposite parts of the room, so that the air consumed in the fire is supplied from the room itself."

Thus it appears that the rooms are to be ventilated by air drains which draw the air downwards: this is only the lowest stratum, and this is the part of the system that is under wrong. It is a well-known fact that all vitiated air, being lighter than pure air, immediately ascends, and if not allowed immediate escape, it cools and mixes with the other air, and in that state I have no doubt some way will find its way to the air drains; so that, instead of true ventilation, it has quite the contrary effect, and stops any natural ventilation that might exist.

Also the fresh air supplied to the rooms will come in through or very little above the floor. If being a moving current, the greater part will flow at once to these outlets intended for the foul air, and thus leave the foul air in a stratum about the right height for breathing, owing to the two attractions—that is, the vitiated air wants to ascend, and does, but cannot escape; the air drains draw it down, the fresh air rushes in between, and keeps it stationary.

I think the apparatus and system would be perfect if the air for feeding the fire were conveyed by pipes having their openings close to the ceilings, instead of in the floor.

I have been induced to make the above observations from the fact that the system I condemn is getting into practice. E. BEATTIE, JUN.

THE NINE-HOURS MOVEMENT.

SIR,—The address from George Potter, the secretary of the amalgamated trades, in Saturday's *Builder*, June 4, will fill many a mechanic's heart, as it does mine, with fear and sorrow: since I have read it, I have hardly had a wink of comfortable rest, for we and our wives must look forward to the great evil; and the Lord then have mercy upon ourselves and little ones, for a strike of one or two or more months will heap misery upon us, disarrange all our present comforts, and involve us in debts that it will require many a year to set to rights. If Mr. Potter and other delegates had not interfered, and sought to make the men discontented with their present easy condition, there would not be distrust between master and man. This is what destroys the mutual good feeling that one ought to have for the other. I, for one, deny that the mechanic, in his "physical comfort and social independence, in regard to the masters," is retrograding. The address alludes, in the first instance, to machinery as a main cause. This is an old cry. But I thought it was well known that machinery does not lessen the demand for labour: on the contrary, by increasing supply at a cheap rate, it creates a market for production, and, in consequence, demand for labour. Now it is well known, that machinery in our trades relieves the mechanic from the very lowest class of work, and is applied mostly to the sawing. That occupation of saw—saw—saw, all the day long, is above all apt to dull any man's capacities, for nothing could be more wearisome. As for miserable dependance and social slavery, no mechanic was certainly ever so low as at present; but in a different sense from what the address means. We are in subjection, truly, for a man dare not take a job; he dares not settle for wages; he dares not work over-time, and many other like things which would find him more money, unless he does them under the control and at the bidding of the union, and this not only in regard to himself, but to his own fellow-workmen. Is this freedom? Do not the mechanics exercise the most cruel tyranny over each other? Have I not known the man refuse to work with his own master on the same scaffold, because he was not of the union; and did not they threaten to strike if he went on? Is this free trade? Why may I not work over-time to help finish a job out of hand in which time presses, and where no relay of other hands could take up our work and carry it on? and why may I not earn a few extra shillings to buy boots for my wife, a frock

for my girl, or a new cap for my boy? Is this freedom? Why am I obliged to pay my three-pence and more a week to the union, which never did me any good, and which goes only to maintain others in idleness, and keep up agitation? Is this freedom? When I attend the amalgamated meetings, as I am forced to do, or I shall be a marked man, I see Mr. Potter and other members of the committee. They are not in rags, they are dressed as well as any gentlemen. There is no pinching want in their cheeks; and when I look around and see my fellow-workmen about me, they are generally strong, hale, and hearty, never better able to do a full day's work,—none of your wizeny chaps like the clerks in offices. Ten hours a day too much for a man to work at such healthful labour! Are there not twenty-four hours in the day? I give ten hours to work, two hours to meals, say eight hours to sleep. Are not the remaining four hours enough for self-improvement and to pass with my family, and see how Jack can write, and Molly read? What class in working society has more to spend with their families? I understand that lawyers and doctors, and a pack of such folks, would be glad of four spare hours to rest their minds in. Am I not sure of my wages every Friday night, or Saturday afternoon? What's the case with my master? Has not he been running about all the week to get the money to pay me? As soon as he has cleared the wages, often have I heard master say, "I know not how I shall meet the next week to pay my men." And then comes some turn, they say, in the money market, and the papers tell us of higher interest. Still we receive our wages all the same. We do not lose, though master does; and when we are out at a distant job, he often sends us in a cart, and brings us home in like manner, and our other like comforts for meals are attended to. And yet we are told to look on our masters as task-masters. Whereas, if we do not do as the union likes, if we wish to act independent, we are hooted and hunted out of our work.

But as regards ten hours' work being too much for an able-bodied man, what other class of workmen have ever set up such a foolish pretence? I recollect my father, who was a farm-labourer, getting up through the summer at four o'clock every blessed morning, and remaining away at work ploughing, reaping, and mowing, all day: my little sister or I often took him something warm for his dinner from my mother, but generally cold bacon and bread was his fare; and he used to return at seven or eight o'clock at night. Yet he did not complain, if he could make the two ends meet. We can have wholesome food, and enough of it, if we are frugal with our present wages; and what with the public schools and dispensaries, and our club, and conveniences of the baths and wash-houses for our wives to work in and soon get up our washing for the family, we can meet all our wants, enjoy our comforts, bring up our children, and might be contented and happy if Mr. Potter and his delegates would let us alone. This movement will be our ruin, and bring misery to our domestic hearths. God help us in His mercy, and make our real task-masters Christian men.

A WORKING MAN.

THE LATE FATAL ACCIDENT AT THE WESTMINSTER PALACE HOTEL.

The adjourned inquest was resumed yesterday before Mr. Bedford and a jury of fourteen gentlemen.
Mr. Sergeant Ballantine appeared for Messrs. Myers and Son, the contractors of the building; Mr. Sturgeon, barrister, and Mr. Mosley (a solicitor), for the representatives of some of the deceased persons.

Mr. Ashted acted as foreman of the jury.
William Richardson, civil engineer (examined at the last inquiry) was the first witness called. He said:—I attended by request of the solicitor for the family of one of the deceased persons at Mr. Myers's yard, to witness experiments made by hydraulic pressure on a piece of timber which was described as one of the unknown transoms. I found it to be 21 feet 6 inches long by 24 inches deep, and 3½ thick. I saw the hydraulic press applied to it, and if the apparatus be correct, the pressure was equal to three tons. A piece of wood 3 feet long by 3 or 2½ inches thick, and about 10 inches deep, was placed in the centre of the sculline, and the pressure was applied as near as possible in the centre of that piece. This caused the wood to deflect something like four inches. I should state, the timber was perfectly sound, and that as far as I could see, none of the fibres had given way.

To the Coroner.—Then what is gained by the experiment?

Witness.—That the timber would carry three tons.

The Coroner.—Any more?

Witness.—Yes. I think the transom would have borne a steady weight of four tons. I can give no opinion as to whether the engine or the weights were correct, but I have no doubt they were.

To a Juror.—I was told by Mr. Myers that the piece experimented upon was taken indifferently from the next scaffolding. It was a better piece of timber, and less knotty, than one which broke. The transom that broke was an inch less in thickness than the one I saw tested.

To Mr. Sturgeon.—The transoms that broke were,

I think, 9 inches by 4½, and 9 by 4½. I should not consider a piece of timber without three or four knots not dangerous to use, provided there was no vibration or oscillation.

To the Foreman.—If the weight had been distributed equally all over the transom, it would, I should think, have borne four times the pressure?

The Coroner.—Was there any external appearance of knots on the transoms that were broken?

Witness.—There was, but they were not bad timbers. The timber experimented upon was manifestly better than the broken transom; but Mr. Myers said it was selected as that which was next to the one which broke, and therefore I consented to its being tried.

To a Juror.—I have no reason whatever to doubt the fairness of the experiment, nor do I believe Mr. Myers would tell a lie on the subject.

Mr. William Coleman, 14, Cowley-street, Westminster, and the general foreman of the works, deposed as follows:—I have been several years employed as a general foreman, and have seen a good many scaffolds erected. The scaffold in question was erected partially under my superintendence. The foreman of Scaffolders (Patrick O'Neill) acted under me. The appointment of foreman of scaffolders depended upon the magnitude of the job. I told O'Neill that I wished him to take the lead of so much scaffolding. This was a rather small job, and he was not a foreman of scaffolders, but a foreman of scaffolding.

He had a gang of scaffolding men under him, numbering from ten to twenty. The foreman of scaffolders is chosen in consequence of experience. I would know a sound foreman of scaffolders by the way he spoke. He had a gang of scaffolding men under him, numbering from ten to twenty. The foreman of scaffolders is chosen in consequence of experience. I would know a sound foreman of scaffolders by the way he spoke.

I sent for five transoms. O'Neill did not ask me for six either before or after they came. Five was the number we both agreed upon. I saw the transoms. O'Neill told me that he had made six transoms by splicing two pieces of timber together. I said, "So much the better."

It occurred to me that the span of 20 feet between the transoms was a long span, and I thought it would be better to have a strut at each end. The planks were one inch and a-half thick and 12 feet long. I think the centre planks lapped upon the ends. I do not recollect any other scaffolding remaining to me that there was a spring or a crack in one of the transoms. No one ever said to me that if the stage was loaded any more it would fall. I often told the men to go down the ladders, and not jump on the stage, and to be careful of the under-stage. I saw the stage at a time. There is never any jumping on the stage when the men are returning from dinner. I have no doubt but that the jumping on the stage tended to weaken it.

It was not spoken to about the stage that fell on the evening before the accident; but Mr. Myers, jun. spoke to me about putting another stage up higher. I objected because the work had not been brought up to the level, besides, I wanted all the men to get up to get up from joists, of which we took up forty-nine that evening. We got up a few barrows of stuff on the stage that evening.

The last I heard of the stage was the planking it with the boards from the under-stage. I saw the stage at eight o'clock on the evening before the accident happened; but I cannot tell what quantity of stuff was upon it. I never was called to see a crack in it. I did not know that the lower stage was removed, and I remember telling O'Neill that they could easily be removed.

I have seen the transoms that broke, and, although they have knots in them, they are not what could be called knotty. There could have been much stuff on the stage that fell, as the men were otherwise engaged, and could not load it. I might have said to O'Neill, "Paddy, I'll give you a shilling a week, because you are foreman of the scaffolders." He knew he was getting a shilling a week as foreman. It was not given to him because there was a strike at the works at the time. The putting up a scaffold similar to that which broke down is not essentially a carpenter's job.

Cross examined.—Darcy was discharged because he was lazy, not because he gave evidence. I caught him reading newspapers when he should have been at work. I will positively swear that I never was told that the stage was insecure. I cannot tell why Warren, the bricklayer, was discharged. Taverney, one of the witnesses who gave evidence at the last meeting, has been sent to another job. My duty as general foreman is to order all material, and I look after the work generally. I never discharged O'Neill from this job, nor do I know if he was eight days out of work. I had not been drinking the night before the accident; was as sober as I am this minute.

To Mr. Sergeant Ballantine.—Mr. Myers gave me orders that the lower stage was to remain intact, as a work-shop.

To a Juror.—If O'Neill said he did not know he was a foreman, it would be quite untrue. There was never any difficulty in getting good or any materials for the works. John Woodley, 14, Leamington-street, Vauxhall-bridge-road, foreman of the bricklayers—No man named Hayes told me that if I did not stop the stuff going upon the stage there would be a break-down. Between two and three o'clock on the day before the accident, I told him not to bring up more stuff until the stage was cleared. There were then about 1,600 bricks on the stage, and a little mortar. I saw Mr. Joseph Myers the night before the accident, and he told him men had been complaining that the stage was unsafe. Previous to this, Mr. Myers had asked me whether it was usual for the men to work overtime in getting up bricks, and I told him they were allowed to do so by the society of bricklayers who gave evidence at the last meeting, but Mr. Coleman (the last witness) said he could not spare the men to do it, because he wanted the men to get up iron joists. Moreover, he said the walls were not properly secured up. I never said to Hayes, "You must get on loading the stage while Mr. Myers is here."

Cross examined.—My duty as foreman bricklayer is to see that the men do their work. I remember having said, when I heard that the lower stage had been taken away, that Mr. Myers would be very angry if he knew of it. I consider the stage which fell perfectly safe, as I trusted my life on it every day. The upper stage might have been strengthened by struts from the lower one.

To Mr. Mosley.—A deputation from the workmen waited upon Mr. Myers an hour after the accident, and asked him to discharge the men because they alleged that he desired the lower stage to be removed. I was then discharged, or removed to another job. I am now in the employment of Mr. Myers.

Mr. George Myers, re-examined by Mr. Sergeant Ballantine, said he did not know until after the accident that the lower stage had been removed.

To the Foreman.—The stage was supported partly by scaffold-poles and partly by transoms.

William Bridgend, bricklayer, in the employ of Mr. Myers, said he remembered the day before the accident, and that he had told Mr. Woodley (the last witness) that he did not like the look of the stage. Next morning he said to Woodley, "What do you think of it now?" and his reply was, "For God's sake, don't say anything more about it." This was after the accident. His attention was called to the stage by seeing it shake. He did not know if O'Neill was foreman of the scaffolders. He did not tell him that he thought the stage was unsafe. He told his foreman, who was the proper person to speak to.

Timothy McCarthy, a labourer, was the next witness. He deposed that the evening before the accident he spoke to the foreman, about the stage being overloaded, and told him that if some of the bricks were not taken from the centre it would come down. Mr. Woodley then sent two men to remove the bricks to the side, where the stage had bearing. The Wednesday evening before the accident he was under the scaffold, and saw a splint rise on one of the transoms. Told O'Neill of it; did so because he was the leading man of the gang, and took orders from the foreman. Saw O'Neill, Mr. Coleman, and Bridgend afterwards talking together, and as they were looking up at the stage, he believed that they were talking of the danger.

Michael Russell, another labourer, was next examined. On the morning of the accident there were about seven or eight tons of stuff on the stage. Assisted in carrying the men to the hospital. On his return, Mr. Joseph Myers, in his own words, ordered the men to send away all the men except six, and to employ them in taking away the stuff that fell. Did not see them do so. The evening before the accident he noticed the insecurity of the scaffolding, and told the men about it.

The evidence having been brought to a conclusion, the coroner addressed the jury at some length, pointing out the issues on which they were called to pronounce their verdict. He observed that the evidence was not sufficient to justify a verdict of manslaughter, and left it to them to say whether the accident was one arising from inadvertence or from culpable negligence.

The jury returned, and after an absence of nearly two hours, announced that they had agreed to the following verdict:—

"We, the jury, appointed to inquire into the cause of the late accident at the Westminster Palace Hotel, which resulted in the death of seven persons, are of opinion that such deplorable occurrence was entirely owing to the accidental falling of an overloaded scaffold on which the unfortunate men were at work. That the jury are further of opinion that there is not sufficient evidence before them to affix the blame of such overloading on any particular person or persons; but that some blame attaches to Mr. Wm. Coleman, in not properly securing the scaffolding, and to the employers, in making a new scaffold. And they cannot consider the most painful inquiry, without expressing an earnest and fervent hope that in all such erections, whether of iron or wood, which are likely to be persons are likely to be jeopardized, more caution and circumspection should be practised by the workmen in future. And the jury cannot separate without expressing an opinion at the loose, confused, and unsatisfactory manner in which the evidence has been collected and put before them.

Signed on behalf of self and fellow-jurors,
CHARLES T. FOWLER."

Books Received.

Maynard's Treasury of Knowledge. New Edition. London: Longman, Brown, and Co. 1859.

TWO old writers who warned disputers to "beware of the man of one book," must have had this solid, varied, and thickly-stored little volume in his mind. At any rate, if a man who had devoted himself to any one book would be a dangerous antagonist, none can doubt that the man who had mastered this book would be particularly so. The present edition, which is edited by B. B. Woodward, B.A. F.S.A. assisted by J. Morris, solicitor, and W. Hughes, F.R.G.S. comprises an English Grammar, an English Dictionary, and a History of the English Language; Directions for Pronunciation and Lists of Scripture Names and Christian Names; English Verbal Distinctions and Table of Abbreviations; Foreign and Classical Proverbs, Terms, and Phrases, with English Translations; a compendious Geographical Dictionary; the Population of the United Kingdom, with other Statistical Tables; Cities, Boroughs, and Market-Towns of Great Britain, with the Statistics of each; List of Animal, Vegetable, and Mineral Productions; a Classical Dictionary of Greek and Roman History, Biography, and Mythology; a Compendium of Modern Chronology and History; Correspondence of Eras and Epochs; Synopsis of the British Peerage, with Mottoes, Coronets, Privileges, and Tables of Precedency; Forms of Epistolary Address; a compendious Law Dictionary; Abstract of Tax Acts; Commercial Table of Exchange, Coinage, Weights, and Measures of all Nations; and Scientific and Miscellaneous Tables! Such a body of information, ably conveyed, and obtainable at a cheap rate, needs no recommendation, but simply to be known.

VARIORUM.

In a reprinted article "On the Action of Hard Water upon Lead, by W. Lander Lindsay, M.D." from the *Edinburgh New Philosophical Journal* for April last, this interesting and important subject is ably treated of. The singular differences of opinion, or of statement, by different chemists, as to the comparative action of hard and of soft waters upon lead, are here explained to

have arisen, to a certain extent at least, from the indefinite meaning of the terms hard and soft. Thus sulphates of lime, &c. will make water hard, and so will muriates or chlorides of the same bases; but the sulphates may form a crust or deposit with and upon the lead, and so protect it from further action, while the chlorides will not, and may even prevent the sulphates from doing so where both co-exist in the same water. Professor Christison's experiments, which were first of all brought under the notice of the general public in our columns, are confirmed by Dr. Lindsay, while he more pointedly distinguishes the exceptions from the rule. The result of the whole investigation still is that cases of lead poisoning on the small scale, or in a minor degree rather, are constantly occurring in all our large towns from the use of lead cisterns and pipes. — "Notes on the Defences of Great Britain and Ireland. By Lieut.-General Shaw Kennedy, C.B." (Murray) are said to embrace "the only general and systematic plan for the permanent defence of this country that has been proposed in recent times," and to have been submitted to the criticism of officers of eminent skill in both services, who have unanimously expressed their opinion that they ought to be laid before the public. The author's plan of defence, besides strong forces of men, comprises the erection of detached works of masonry capable of sustaining a regular attack with heavy ordnance, such works to be placed round London, Woolwich, Chatham, Sheerness, Dover, Portsmouth, and Plymouth, each fort at one mile's distance from those next in course. For London alone there would be thirty of these strongholds. It is not for us, however, to decide on the merits of such a plan, or even to describe it at any length.

As connected with our national defences, we may here note down the title of a small tract comprising "A few Words of Advice to the Mariners of England, and enterprising Youths inclined for the Sea-service; showing the Advantages to be derived by Service in the Royal Navy. By a Seaman's Friend." (Bradbury and Evans, printers.) By contrast with the merchant service, as here shown, these advantages are now certainly great and unquestionable.

Miscellaneous.

MUSEUM OF PATENTS, SOUTH KENSINGTON.—Number of visitors for the week ending June 4th: mornings, 922; evenings 901. Total, 1823.

ELECTRICITY IN THE SPROUTING OF SEEDS.—A committee of savans have been occupied at Paris in the investigation of the new discovery of Dr. Reybold, opposed by the Academie some time ago. Dr. Reybold's system of applying electricity to the earth itself enables him, it is now said, to force sown grain to sprout in three days. The expense is trifling, and the electric power so great, that a powerful electric shock is felt by applying the hand to the earth acted upon by Dr. Reybold's machine.

FIRE-PROOF COMPOSITION TO RESIST FIRE FOR FIVE HOURS.—Dissolve, in cold water, as much pearlsh as it is capable of holding in solution, and wash or daub with it all the boards, wainscoting, timber, &c. Then diluting the same liquid with a little water, add to it such a portion of fine yellow clay as will make the mixture the same consistence as common paint: stir in a small quantity of paperhanger's flour paste to combine both the other substances. Give three coats of this mixture. When dry, apply the following mixture:—Put into a pot equal quantities of finely pulverized iron filings, brickdust, and ashes: pour over them size or gum water: set the whole near a fire, and when warm stir them well together. With this liquid composition, or size, give one coat; and on its getting dry, give it a second coat. It resists fire for five hours, and prevents the wood from ever bursting into flames. It resists the ravages of fire, so as only to be reduced to coals or embers, without spreading the conflagration by additional flames; by which five clear hours are gained in removing valuable effects to a place of safety, as well as rescuing the lives of all the family from danger! Furniture, chairs, tables, &c. particularly staircases, may be so protected. Twenty pounds of finely sifted yellow clay, a pound and a half of flour for thickening the paste, and one pound of pearlsh, are sufficient to prepare a square rood of deal boards. When the Chinese were told the risk we ran of being roasted alive in our many-storied mansions, they remarked, "What little land the English must possess, that compels them to build such high houses!"

J. B. N.

THE CARPENTERS AND JOINERS OF PLYMOUTH. A meeting of the carpenters and joiners of Plymouth and Stonehouse has been held at the Plymouth Mechanics' Institute, for the purpose of helping the society already formed of members of these trades, with a view to place the carpenters and joiners on an equal footing in the receipt of wages and other respects with the mason, plasterer, and operatives in other branches of trade. It was stated that out of their wages, which averaged generally about 18s. per week, they had to find their own tools.

THE BRITISH SCULPTURE WORKING ASSOCIATION.—Under this title ateliers have been opened for some patented machinery intended to execute the rough work of the sculptor, either in transferring his modelled design to the stone, or of copying existing statues. Those conversant with the pentagraph used by surveyors will understand us when we state that while by means of a combination of mechanical parallelisms a blunt tracing-point is moved about the model, a rapidly-revolving cutting-point clears away the redundancies of the stone intended to become the statue; and as the point is brought nearer to the model, the cutting-point makes a closer and closer approximation to the hitherto rough mass of stone, till at last the sculptor has little left to perform than to apply the minute and delicate finishing process. The British Sculpture Working Association proposes to raise a capital of 20,000*l.* with Mr. W. Barnes, architect, as the manager and secretary *pro tempore*, for the purpose of producing, by means of the improved appliances indicated, works of good character and execution, at prices within the means of the less opulent.

HOME TOURS.—Our professional and architectural readers will thank us for drawing their attention to the facilities for their advantage arranged by the London and North-Western Railway Company, according to a notice just made public, that "Tourists' tickets, available for one calendar month, will be issued on and from the 1st June to the 30th October, to North Wales and Ireland, Holyhead, Bangor, Caernarvon, Conway, Abergelle, or Rhyl; to Windermere, for the Lakes of Cumberland and Westmoreland; the Furness Abbey district; the Lancashire watering-places of Fleetwood (for Belfast, Lough Neagh, The Giant's Causeway, Lakes Erne, Londonderry, &c.), Lytham, Blackpool, or Southport, and the lakes of Killarney, Cork, &c. from the following and other stations:—Euston station, Oxford, Bedford, Northampton, Peterborough, Rugby, Coventry, Tamworth, Leamington, Birmingham, Dudley Port, Wolverhampton, Worcester, Shrewsbury, Hereford." Monthly tickets at reduced rates will also be issued, in connection with the tourists' tickets, to all who desire to resort with their families to the favourite Welsh watering-places on the Chester and Holyhead line. There are also monthly excursion tickets to the Isle of Man during the summer season.

DOCKS, HARBOURS, &c.—A new graving dock is about to be built at Depford, Sunderland. The dock is to be 310 feet by 60 feet wide, the entrance to have a caisson gate. The contract has been let to Messrs. James and George Young, contractors. The whole is to be carried out according to the plans and specifications of Mr. J. G. Brown, architect.—The Works Committee of the Mersey Dock Board having recommended that the width of the proposed steam dock at the north end of Liverpool be 250 feet, as originally laid down by the engineer, Mr. M'Iver, the principal local partner of the Cunard Company, made a strong objection to the width being less than 300 feet, and gave notice of a resolution to the effect that the committee be requested to state the reason which had led them to make the recommendation complained of.—A new lighthouse is to be erected on the Hanois rocks, Guernsey. Mr. Walker is the engineer. A plan for the extension of the Harbour Esplanades, at Guernsey, through the land under Port George, whence the filling for the works is now obtained, has been proposed by Mr. Lyster, and submitted to the Secretary of the War Department, by whom it has been approved; and the land has been ceded to the Harbour Committee for the use of the public.—In two blue books, recently published, is the report of the Commissioners on Harbours of Refuge, from which we learn that three harbours are recommended to be constructed in the Isle of Man; namely, one at Douglas, one at Peel, and one at Port Erin. The Douglas Harbour is to be of 46½ acres at low water. The estimated cost is 100,000*l.* The Peel harbour is to be a simple breakwater, running 500 feet from Peel Castle. The cost is 25,000*l.* The works at Port Erin consist of a pier 400 feet long.

HANDEL AND ST. MARY'S, REDCLIFF.—We learn that at a recent meeting of stewards of the Bristol Handel Centenary Commemoration, the Mayor in the chair, a statement of the accounts was produced, showing a small deficiency, the concerts not having been sufficiently supported by the public, partly in consequence of the general election, and other causes, which materially interfered with the sale of the tickets. It was resolved to raise by subscription a sum to meet such deficiency, and also for the purpose of carrying out the original intention of the promoters, by restoring a window in Redcliff Church as a memorial of the name of Handel. The Mayor, with the Rev. Mr. Young, Messrs. T. Proctor, T. P. Jose, R. Lang, A. Bleeck, S. V. Hare, C. W. Finzel, Jas. Bush, W. Powell, W. Baker, G. Ashmead, J. H. Hirst, and G. W. Edwards, were appointed a committee, with power to add to their number.

BESSEMER'S STEEL.—This day, says the *Mining Journal*, we quote, for the first time, amongst the metallic manufactures of the country, the steel produced by the processes patented by Mr. Bessemer, and we are informed that the new material can be supplied in almost any quantity. The usual price of engineers' tool steel is from 2*l.* 15s. to 3*l.* 5s. per cwt. whilst Mr. Bessemer offers an article, which competent judges pronounce equal to the best, at 2*l.* 4s.; his other kinds of steel being proportionately lower. As to the quality of the article there can be little doubt, since the tests to which it has been submitted at Woolwich have given every satisfaction to the officials; and we understand a contract for a considerable period has been concluded with Mr. Bessemer. It is needless to commend Bessemer's steel to the consideration of our readers.

MEMORIALS.—It has been resolved that a full-length marble statue of Mr. R. Hall, late M.P. for Leeds, be obtained, and, with the consent of the Town Council, placed in the Victoria Hall; the statue to be executed by Messrs. Dennis Lee and Welsh, Woodhouse-lane, Leeds, after a model which they have prepared. The model represents Mr. Hall in his costume of Recorder of Doncaster, addressing the jury. The statue is to cost about 600*l.* and the greater portion of the money has already been subscribed.—It has been determined to erect an obelisk and a statue, in memory of Adam Clarke, the commentator, at Portrush, near the Giants' Causeway, the neighbourhood of his birth-place; also to build a school-church, and minister's house, at Portstewart, near Coleraine, where he was brought up. Two-thirds of the money required for this purpose (2,000*l.*) have been raised, and the proposed erections have already been commenced. The statue of Dr. Clarke has been presented by his admirers in the United States.

SANITARY ARRANGEMENTS FOR THE SOLDIERS IN INDIA.—Having been the first to draw attention to the necessity of looking to the sanitary state of the British soldier in India, and to demand the issue of a commission with that end in view, we were taken to task by certain of our respectable and in general reliable Indian authorities on the subject, and reproached for even hinting at such a thing, although in the very face of fresh evidence sent home in their own columns, side by side with the reproof, clearly showing that we were fully justified in so doing. But perhaps the best evidence that some inquiry and amendment are even now necessary is the fact which has just been announced, that "Mr. Sidney Herbert is to be the Chief in a Commission, to consider the sanitary arrangements for the protection of the British soldier in India."

A NEW FIRE-ESCAPE.—Mr. John Ottignon, of 59, High-street, Bloomsbury, has obtained a provisional registration, under the Designs Act, of a new fire-escape, which consists of a metal cradle or basket, to be retained within a balcony screen at a window, and slung by means of a chain or rope, passing over pulleys and a miniature crane, and running through the house, either to the back premises, or from floor to floor, to a heavy counter-balance weight to which it is fastened. Another chain or rope is attached to the bottom of the basket, in order to be thrown into the street, to enable those present to aid in either pulling down the basket, swerving it to some other window, or keeping it off projections. Except when in use, the escape is hooked to the balcony, and the chains are kept in the bottom of the basket. How the counter-balance is disposed of, ready for action, however, does not appear from the specification; but of course it can readily be kept slung with a portion of the chain attached, the junction with the escape portion being easily effected near the escape itself.

SWEEPING CARPETS WITHOUT DUST.—There was lately exhibited, at St. George's Hall, Liverpool, a patent carpet-sweeper; consisting of a cylinder of four radiating brushes, revolving in a wooden box, which has metal ledges on both sides; the brushes acting as shovels to receive the dust and dirt. A long handle is attached by a hinge to the box, which runs upon four metal wheels at the corners; and in the middle there is a larger wheel multiplying the revolutions of the brush axle or cylinder, and thus increasing the rapidity of its action.

EXHIBITION OF 1861.—The following resolutions have been passed by the council of the Society of Arts:—"Resolved,—That with reference to the present and prospective condition of the Continent, the council is of opinion that the International Exhibition proposed to be held in 1861 should be postponed to a more favourable opportunity. That this resolution be communicated to his Royal Highness the President of the Society, and to her Majesty's Commissioners for the Great Exhibition of 1851. That the chairman be requested to prepare a report of the proceedings which have been taken by the council to ensure the success of the intended International Exhibition of 1861, together with an explanation of the grounds on which the council has come to the conclusion that the Exhibition should be postponed to a more favourable opportunity. That the chairman's statement form part of the annual report to be laid before the Annual General Meeting on the 29th June next. That the foregoing resolutions be communicated to the Guarantors." This decision is much to be regretted.

TESTING THE STRENGTH OF IRON BEAMS.—On April 18, there were some experiments at Trenton, N.J. on the strength of iron beams made for the Government, at the rolling-mill of the Trenton Iron Company. The beam is in the usual form, the stem 6 inches high, and a 4-inch in thickness, and 3 inches wide at the top and bottom. The beam was 12 feet in length between the bearings, and the pressure was applied in the centre by means of a powerful hydraulic press. Under a pressure of 6,500 lbs. there was a deflection of about 4-inch, but on relieving it from pressure the bar sprang back to its original position. An addition of 500 lbs. showed a slight set, which continued to increase until at 10,500 the set was 2½-inches, and an addition of 500 lbs. warped and twisted the bar, showing that its ultimate strength was designated by 10,500 lbs. The beams are for the roof of the Custom-house at New Orleans, and are being made under the direction of Major Anderson, U.S.A., who superintends the Government work at this place. The beam tested yesterday is of a new pattern, weighing only 39 lbs. to the yard, but calculated to sustain great weight—gaining strength without increasing the weight inconveniently.—*U.S. Railroad and Mining Review.*

FUEL FROM STEAM, AND STEAM FROM THAT FUEL.—An apparatus for the decomposition of water, and combustion of the hydrogen thus obtained, has been invented by a M. Meudt, according to *Galignani*. The apparatus, it is said, consists of a small copper boiler, with a safety-valve and a pipe passing into a tubulated bottle with two necks: thence another tube passes under the boiler. About half a gallon (two litres) of water is poured into the latter, and about half a litre of weak tar-water into the tubulated bottle. A spirit-lamp applied to the boiler sends steam into the bottle, where it is said to give its oxygen to the tar. The hydrogen of the steam thus accumulates in the bottle, and then passes under the boiler back to the spirit-lamp. A sort of perpetual motion is described as being the result; for the spirit-lamp being taken away, the hydrogen generated burns with its own flame, and makes the water boil: this engenders fresh steam, which is decomposed as before, and furnishes a new supply of hydrogen, which feeds the flame, and so on—not *ad infinitum*, but—until the water in the boiler is exhausted. This discovery is actually said to have been already applied to steam-engines and locomotives! The decomposition of steam by "tar-water" deserves a Bishop Berkeley to celebrate its wonders. The whole thing reminds us of a semi-jocular proposal which we once made in the *Builder*, that heat should be produced by friction till it could boil water, with the steam of which new heat might be evolved by friction apparatus whereby to produce new steam, &c. any surplus steam power to be used as required! This idea was seriously entertained by some French mechanic or engineer—it may have been M. Meudt himself,—and at least this new idea is closely akin to it.

COMPETITION.—The Scotch Church, near Regent-square, is about to undergo some alterations. A select competition has just been decided in favour of Mr. Gibson.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—The fifth conversation of this Society was held at the Architectural Gallery, Conduit-street, on Wednesday evening, when some papers were read, interesting, but too long.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—At the closing general meeting of the session, to be held on Monday evening, the 13th of June, the following paper will be read:—"On the General Theory of Proportion in Architectural Design, and its Exemplification in Detail in the Parthenon," by Mr. W. Watkiss Lloyd.

PROPORTIONS OF ANCIENT BUILDINGS.—Dr. Henszlmann announces a volume, entitled "Méthodes des Proportions dans l'Architecture Egyptienne, Dorique et du Moyen Age." The prospectus says:—"The exactness of the discovery made by Dr. Henszlmann is proved by the reports of three different commissions,—one in England, named by the Royal Institute of British Architects, and two named by the *Comité de la langue, de l'histoire et des arts, in France*." This is surely saying too much so far as the report, made by the Committee of the Institute of Architects, is concerned. If we remember rightly, that report was worded very cautiously, and was far from certifying to the exactness of the discovery. The prospectus quotes one of the other reports alluded to, signed by M. Albert Lenoir, wherein it is suggested that the system of proportions discoverable may be founded on revelation,—may be dated from the form of the tabernacle given by God to Moses, and the plans for the temple at Jerusalem received from God by David.

TENDERS.

For works for the Blackwall Railway Company:—
Peto and Brassey £24,800 0 0
Lucas 21,186 0 0
Piper and Son 20,489 0 0
W. Lawrence and Sons 19,830 0 0
Brass 18,959 0 0
Jay 18,099 0 0
(Sir,—When quantities are furnished, how comes this fearful difference?—*INQUIRER.*)

Alterations, &c. to the Eagle Insurance Office, Bridge-street, Blackfriars. Mr. H. Currey, architect. Quantities by Welch and Atkinson:—
Cubitt and Co. £4,350 0 0
Lucas 4,329 0 0
Trollope 4,247 0 0
Mansfield 3,950 0 0
Ashby and Horner 3,940 0 0
Piper 3,923 0 0
Holland and Co. 3,883 0 0
Lawrence, Brothers 3,740 0 0

For the erection of the premises of Messrs. Phillips and Son, Chart Publishers, South John street. Messrs. J. W. and J. Hay, architects:—
Robert Wells £4,528 0 0
William Tomkinson 4,433 0 0
James Burroughs 4,416 0 0
Kilpin and Montgomery 4,297 0 0
Parker and Son 4,127 0 0
Holme and Nicol 4,124 0 0
Parker and Son accept of the masonry, and Holme and Nicol for all the other branches.

For building a pair of villas at Boltons, West Brompton, for Mr. J. Keating. Mr. Thomas Burton, architect:—
Ashby and Sons £3,245 0 0
Lawrence and Sons 3,342 0 0
Conder 3,300 0 0
Piper and Son 3,287 0 0
Mansfield and Son 3,204 0 0
Brass and Son 3,193 0 0
Downs 3,160 0 0
Stimpson 3,150 0 0

For rebuilding the mansion at Trueloves, near Ingatstone, Essex. Mr. Wm. White, architect. The quantities supplied by Mr. Samuel Field:—
PAnson £2,830 0 0
Holland 2,697 0 0
Nixon 2,687 0 0
Wood 2,540 0 0
Higgs 2,306 0 0
G. Mansfield and Son 2,300 0 0

For new schools and master's residence at Haslington, near Crewe, Cheshire. Mr. James K. Colling, architect:—
Samuel Parns, Old Road £1,415 14 6
Lockwood & Farrimond, Chester, 1,335 0 0
(No name.) Booth-lane Head, Sandbach 1,272 0 0
Edward Hughes, Liverpool 1,250 0 0
John Buckley, Davenham 1,080 0 0
John Preston, Newcastle, Staff. 1,075 0 0
Richard Boughay, Nantwich 1,068 0 0
Daniel Bloor, Newcastle, Staff. 830 0 0

For works at St. Matthews' Church, Brixton. Mr. Edward Ellis, architect:—
Smj-ol £289 0 0
Coleman 720 0 0
Acceck 778 0 0
Smith 777 0 0
Colls and Co. 744 0 0
Gammon 737 0 0
Super 729 0 0
Piper 697 0 0
Myers 598 0 0

For converting Camden-town Plate-Glass Works into a forty-quater brewery, for Messrs. Garrett, Whitaker, Grimwood, and Co. Mr. Robert Davison, engineer and architect:—

Builders.	
Thompson	£1,798 0 0
Easton	1,792 0 0
Wills	1,591 0 0
Roe	1,591 0 0
Coleman	1,516 0 0
Carter (accepted)	1,469 0 0
Ironfounders.	
Cockrane	£1,400 0 0
Lawrence	1,389 0 0
Grissell	1,387 0 0
Ladlaw	1,279 0 0
Garrett (accepted)	1,156 0 0
Backmakers.	
Oxley	£1,150 0 0
Ramsden	1,115 14 4
Hurrell	1,110 0 0
Middleton (accepted)	999 0 0

For farm-buildings, at West Horsley, Surrey. —

Loe and Son, Guildford	£1,091 0 0
Jeffreys, Ipswich	1,060 0 0
Smith, Ditchburgh	990 0 0
Nye, Guildford (amended)	969 0 0
Moon and Son, Guildford	967 0 0
Wood, Cobham	922 0 0
Reynolds, Brighton	879 0 0
Barnes, Nutfield (accepted)	879 0 0

For buildings, Peel-grove, Bethnal-green. Mr. F. G. Widdows, architect:—

Tolley	£1,277 0 0
Sargeant	1,040 0 0
Raby	972 0 0
Sanders, Brothers	920 0 0

For the restoration of Sawbridgeworth Church, Herts. Mr. G. E. Pritchett, architect:—

Cox and Son, Lambeth	£202 14 0
Dickinson, Bishops Stortford	558 0 0
Barton, Sawbridgeworth (accepted)	541 0 0

Crowtree-lane Villa, Louth. Messrs. Bellamy and Hardy, architects, Lincoln:—

Clark, Louth	£1,698
Ryall and Son (accepted)	1,690

Restoration at Wellesley Hall, Spalding. Bellamy and Hardy, architects, Lincoln:—

Brett, Spalding	£531 0 0
Dawson	519 10 0
Moore and Son	490 0 0
Pepper and Dalman (accepted)	480 0 0

For erecting four cottages at Loughton. Mr. Wm. D'Oyley, architect. Quantities supplied by Mr. R. L. Curtis:—

Perry	£657 0 0
Pilkington	651 0 0
Bill and Son	650 0 0
Ring and Stanger	650 0 0
Martin	629 0 0
Gill	600 0 0
Ravett	595 0 0
Cushing	590 0 0
Page	550 0 0
Carter	540 0 0

For 1,200 feet of brick sewers and other works at Dalton. Mr. E. Swansborough, architect. Quantities not supplied:—

Holmes	£450 0 0
C. Maers	436 18 0
E. Maers	422 0 0
Hocken	418 0 0
Hill (accepted)	398 0 0

Repairs and alterations to be made at No. 9, Clements-lane, Lombard-street, for Mr. H. Barnes. Mr. C. G. Seale, architect:—

Axford	£637 10 6
Deacon	574 0 0
Turner and Sons	517 0 0
Taylor	514 0 0
Carter	496 0 0

For the erection of a new house and shop, to be built for Mr. Mark Sherrin, in Half Moon-street, Sherborne, Dorset. Messrs. Haggett and Pocklington, architects:—

Guppy	£773 10 0
Hamblin and others	750 0 0
Sanell (accepted)	660 0 0

For getting out foundations and putting in drainage of Mr. Spurgeon's new Tabernacle. Mr. W. Pocock, architect. Quantities supplied:—

Green	£983 18 0
Reddin	800 0 0
Walker and Neve	853 0 0
Myers	827 0 0
Messenger and Porter	791 19 0
Widdien	774 3 8
King and Howa	744 0 0
Wilson	722 0 0
Carter	706 1 4
Little and Son	693 0 0
Lavers	658 0 0
Downs	593 0 0

Midlewich Cemetery Chapels. Bellamy and Hardy, architects, Lincoln:—

Two Chapels in blue brick facing.	Extra, if faced with Welsh stone.	Entrance Gates, Bell, &c.
Buckley	£930	£62
Wilson and Jones	1,000	78
Faram (accepted)	860	61
		Supposed to be in the 1,000 189

The Builder.

VOL. XVII.—No. 854.

The Oxford Museum.—Balliol Chapel.—Blenheim.



OXFORD offers a fresh point of interest at this time, even to those who know the ancient city well, in the University Museum now approaching completion. Of Oxford itself, often spoken of in our pages, few of our readers can require to be told anything. They know, if they have not seen with their own eyes (and if they have not, why have they not?), that it is the most picturesque and interesting of cities: they know of Magdalen Tower and bridge, of St. Mary's spire, the beauties of Merton, the High-street, the noble outline of the Radcliffe Library, the rarities of the Bodleian, and of the hundred other things "of interest wonderful" that make up Oxford,—a city which may be viewed not merely with present pleasure,

"But with pleasing thought,
That in this moment there is life and food
For future years."

The new Museum is in the northern part of the city, to the east of St. Giles's-street, in the open space known as The Parks. We have given a plan and views of it,—two of the latter only a few weeks ago,* and even more recently some particulars from Dr. Acland's little book about it.† The principal of our two recent viewshows the south end of the Museum, including the laboratories, studied from the kitchen at Glastonbury, and conveys very strictly the character of the building. The main front is at present somewhat flat, the entrance doorway and the carving around the windows and elsewhere, on which much of the effect will depend, being incomplete. The dormer windows, simple triangles, thin and poor, are not satisfactory; and the office buildings at the northern end are shabby disfigurements: still, as a whole, the building is agreeable on one, presenting many points of great interest, especially internally. Reference to the plan will show that the gateway opens into a glazed court: this is formed into five unequal aisles, by columns and arches of iron, supporting the roof. The roof as at first raised was too light. This is not the case with the present, whereof the iron box girders of pointed-arched form, in their present unpainted state, oppress, not to say overwhelm, the decorative ironwork in the shape of spandrels and columns below. When varied with colour this evil will doubtless be lessened.

It has been shown that the object of the Museum is "to give the learner a general view of the planet on which he lives, of its constituent parts, and of the relations which it occupies as a world among worlds; and, secondly, to enable him to study, in the most complete scientific manner, and for any purpose, any detailed portion which his powers qualify him to grasp." The decoration of the building is being made to bear on this purpose.

The wrought-iron spandrels are worked to represent interwoven branches, flower, and fruit of various trees and shrubs, native and foreign,—the sycamore, the palm, the oak, the chestnut, the elm, East Indian plants, Australian, and others; while in the capitals of the columns we have the water-lily, passion-flower, holly, and other plants, skilfully wrought and arranged. Around the court is an open arcade of two stories, formed of piers and shafts, with arches:

in the upper story four arches are supported by three shafts; while in the lower, two arches are supported at their union by one shaft,—the piers being the same in number in both cases. In the whole there are 125 shafts, and, including the capitals and bases of the piers, 191 capitals and bases, which are or are to be carved to represent groups of plants and animals, illustrating various climates and epochs. The shafts, properly arranged, under the direction of the Professor of Geology, represent the various marbles and granites of the united kingdom: thus, on the lower level, we have on the west the granitic series; on the east the metamorphic; on the north calcareous rocks, chiefly from Ireland; and on the south the marbles of England. To analyse a little more minutely, and taking the west side for the example, we have on the south of the entrance Aberdeen grey granite, surmounted by the sculptured capital of Alismaceous plants; next, Aberdeen red granite, crowned by the Euto-macæ; then the largely porphyritic grey granite of Lamorna, with a capital of the date palm. On the other side of the entrance stands a column of syenite, from Charnwood Forest, with the cocoa-palm for its crown; then the mottled granite of Cruachan, the capital being Pontederacæ; and, finally, the red granite of Ross in Mull, the gift of the Duke of Argyll, whose capital is Liliaceous. Hereafter the name of each granite and marble should be cut or written below it: in fact, there should be inscriptions everywhere to make the building speak. Many of the capitals of the lower shafts are already carved, together with adjoining corbels on the piers; and we have engraved a few of these as specimens. The fern capital and the marsh-mallow corbel which are in conjunction (without any particular reason by the way) are charmingly executed. The capital comprises the maiden-hair spleenwort (*Asplenium Trichomanes*), the hart's tongue fern (*Scelopendrium vulgare*), and the more common, but not less elegant, *Lastrea Filix mas*.

In the lily-capital a snipe and some reptiles are cleverly introduced. The carving of the capitals and corbels has been mostly designed and executed by the O'Sheas, of whom we spoke commendingly long ago, when they were at work in Dublin, and their nephew, James Whelland. The sum allowed them for the carving in each bay, consisting of two corbels, one capital, and some leaves on the base of the shaft, is 15*l*. In arranging two or three of the capitals, Mrs. Brodie and Lady Trevelyan have lent them their aid with good result. It is to be hoped these able carvers will not be spoiled by praise, and led to think they need make no advance. They must continue to throw their whole mind into the work, and sedulously seek aid wherever it is to be found, or the last will be worse than the first. We speak not depreciatingly, but with good intent.

Returning to the wrought iron work, we must congratulate Mr. Skidmore for the able manner in which much of it is executed, and express a hope that means will be afforded him by architects of keeping together the body of workmen which the execution of it has created. The amount of the contract for the ironwork of the roof and the pillars is 5,000*l*. and this is to include any charge that he might have considered himself entitled to make in respect of the first roof. After examining a piece of his hammered iron-work in progress, Mr. Skidmore's theory, that Early English foliage in stone had its origin in metal work, concerning which he read a paper in Oxford, it will be remembered, not long ago, seems less unlikely than before.

Great variety has been introduced in the capitals and spandrels; but the available types offered by the field, the garden, and the hot-house, are endless. Take the beautiful iris, that happens to be before us as we write, for one example, with its three single petals and three doubled ones, its high stem springing directly from the root, and with long, bending, grass-like leaves; or another flower that suggests itself, known as "Solomon's seal;" this has

a long leaf-stalk with smallish leaves growing in pairs all the way along, forming a drooping green feather, the leaves being "set up," like butterflies' wings, and from the under side of the feather hangs a row of small white bells, the size and shape of the wild hyacinth or blue bell. Then there is the laburnum, and scores besides, that at once suggest themselves.

A variety of experiments in colour have been tried on the iron-work, mostly villanous; and it has been determined to adopt white and buff as the prevailing colours, parts being picked out with maroon; the box girders will be relieved with patterns. Nor will what we have described be the only adornment of this Court. On corbels, projecting from the front of the piers, it is proposed to place, as funds allow, the statues of the great men who first discovered, or first brought to important results, the several branches of knowledge which the edifice is intended to promote. "In the mathematical department, Archimedes, Leibnitz, Newton; in astronomy, Hipparchus, Galileo; in geology, Cuvier; in chemistry, Lavoisier, Cavendish, Davy; in biology, Aristotle, Linnaeus, John Hunter; in medicine, Hippocrates, Sydenham, Harvey; and, on special but very different grounds, as benefactors to the human race, Bacon, Volta, Oersted, Watt, and Stephenson, will be among the first whose statues it is proposed to place here for the contemplation and example of all who may hereafter enter, with various purpose, this place of study and of work."

Of these statues, as our readers may remember, the Queen has contributed five;—those of Bacon, Galileo, Newton, Leibnitz, and Oersted. The bachelors and undergraduates have added Aristotle and Cuvier; Mr. Ruskin, senior, Hippocrates; the Rev. F. W. Hope, Linnaeus; and Mr. Boulton, Watt. Two or three of these statues, by Mr. Munro and Mr. Woolner, are already on the premises, but cannot be judged of in their boxes as they lie. We may mention by the way that they were sorry to see no arrangements for artificially lighting the Museum Court. Gas will be needed, and should at once be provided for to prevent the expense of a fresh scaffold hereafter, to say nothing of the injury that may be done. The roof of the Court is glazed with glass slates, and the woodwork, rather heavy bars placed diagonally, interferes with the ironwork from some points of view.

Around the Court are dispersed the lecture-rooms, work-room, and private studies required in each department. Some of these have been decorated by Mr. Swan, cleverly, but so roughly as to have a make-shift appearance which is not entirely pleasing.

Indeed, in many parts of the building there is a mean and pinched aspect, which those who have praised the building the loudest have not been able to ignore. The vaults that cover some of the rooms are turned more roughly than those of many speculative builders' cellars, and are simply coloured blue. The effect of these is altogether unsatisfactory. The best piece of Mr. Swan's work is in Mr. Hope's Museum, where the decorations, simple as they may be, show great life and variety. Even here, however, we must note that the diaper would have been more praiseworthy if the lines had been upright.

It is to be regretted that the artist is not to be allowed to carry out his views in the Library, a fine apartment, where the colourings of blue and pale green proposed in lieu promise but ill, and will be worse when the boarding shrinks and shows open joints. In the Geological lecture-room the Rev. Mr. Twytritt, of Christchurch, is covering the walls with representations of mountains, but these were not sufficiently advanced to admit of safe judgment.

Let us add, before leaving the Museum, that the arrangements for the chemical department seem particularly good; that the shell of the building was executed by Messrs. Lucas; and that Mr. Braunwell is the clerk of the works.

The Reading-room which has been built for the University under the same architects, if we mistake not, Messrs. Deane and Woodward, up a quaint court in the Corn-market, close to the Star Hotel (not a bad haven), is of the same character as the Museum; and, like that, with

* Pages 252, 253.

† Page 335.

* See page 108.

much that is truthful, excellent, and piquant, is injured by want of finish and completeness. It is chiefly remarkable for the paintings with which the upper part of the walls is decorated by various artists. Unfortunately, being painted round the windows, the light is such that it is scarcely possible to see the pictures, excepting at night when the gas is lighted. Coloured glass in the window openings would probably obviate the objection.

Very different in respect of finish and completeness (and of course costliness) is the new chapel of Balliol College, by Mr. Butterfield; the interior of which must be pronounced a very satisfactory work. It is rich in marbles and alabaster, and colourings and ironwork, and shows its connection with the church of All Saints in Margaret-street, London. The chancel is lined with alabaster, pierced with quatrefoils, with slate behind. The walls are decorated in a sort of *mosaïque*. There is a screen of iron work at the west end to form an ante-chapel. The pavement is of marble inlaid.

The exterior of the east end is less satisfactory. Variety has been sought by the use of a reddish stone with the ordinary freestone, applied in such a way as almost to excuse the common assertion on the spot, that it belongs to "the streaky bacon style." There is a large five-light window, and some of the carving is very good.

The Chapel at Exeter College, under the direction of Mr. Scott, is approaching completion externally. With its apsidal east end, buttresses, and lofty spirelet, it recalls at first sight the *Sainte Chapelle* of Paris. Within, it has a stone vaulted roof, white and red, larger columns than ordinary in such a position, of red stone, in the organ-gallery at west end, and is being finished without stint. We prefer to withhold opinions of it until the removal of the scaffolding. The mouldings seem somewhat large, not to say clumsy; and this applies to some of the details of the spirelet. Other very extensive works have been executed here under the same able and excellent architect, for whose abilities and character we have an equally high regard. When the honorary secretary of the Oxford Architectural Society said the other day, at a meeting of that society, that in our recent remarks touching Hereford Cathedral, we had "tried to leave the impression that the present restorer (Mr. Scott) was the author of his predecessor's mischiefs," he said what was untrue. Mr. Scott needs no such defender with us. The works at Exeter College include a residence for the Rector, as the principal of Exeter is called,—an excellent design,—and a new Library in the Fellows' Garden.

If our readers, when they visit Oxford, should find the sun shining as pleasantly, and the streets and even the more rural outskirts smelling as unsavory, from some unexplained cause, as we did, they will be tempted to get into the country,—to Nuneham-park perhaps, where they will see the odd seventeenth century conduit, which was taken from Carfax in Oxford, (the point where the two main streets cross,) and so itself has come to be popularly called Carfax.* Or they may "pull" down the Isis to the old Norman church at Ifley, with its well-known fine west front and doorways, where they will find the circular window has been restored and filled with stained glass in memory of Elliott Warburton, and,—a less common event,—the churchyard cross on the south side of the church renewed; and there, under the ancient yew, *semper virens*, from which our forefathers cut their bows, may acquire a feeling of repose from a contemplation of the dignity and nobility of the Norman tower.

If, however, they have time on hand, let them go farther afield, to duke-ly Blenheim, where Vandenberg, though he has "laid many a heavy load" on earth, is shown he was an artist; not content to stick up a portico against a wall with windows in it, or to reproduce a building from abroad of which he had obtained the details. The skyline is picturesque and varied, and there is an admirable expression of power about the whole. At Castle Howard, King's

Weston, near Bristol, and elsewhere, he shows the same love for massiveness, and skill in producing effect. Blenheim was a nation's noble gift. Why the inscription on Bysbrach's elaborate statue of Anne, in the library, should place so much to the credit of the queen's munificence, is not clear. In D'Israeli's "Curiosities of Literature," a history of the building of Blenheim is given, which shows how many vexations after the death of the queen it brought on Vanbrugh's head, through the proceedings of the duchess, Sarah.

The fineness of some of the pictures here is universally known, but the works themselves are less so even to Londoners than they should be, considering how easily a visit can be paid. In paintings by Rubens, it is singularly rich. There is no private collection of his works which can be compared with this;—scarcely, indeed, any national one. The pictures, gifts from the cities of the Netherlands, are mostly in his best manner. Take, for example, the picture of himself and his second wife, Helena Formann, with a little child, or the Venus and Cupid endeavouring to dissuade Adonis from the Chase. A marvellous painter, truly, was Peter Paul Rubens, king of colourists! He dealt in the large. As he says in a letter to W. Trumbull (1621), "I confess myself to be, by a natural instinct, better fitted to execute works of the largest size rather than little curiosities. My endowments are of such a nature that I have never wanted courage to undertake any design, however vast in size or diversified in subject." His power and facility were wonderful, his industry enormous; and with noble purchasers waiting on all sides, he was able to say to the alchemist who wished him to aid in discovering "the philosopher's stone," "My friend, you are twenty years too late: with these pencils and this palette all I touch turns to gold!" It must not be supposed that he executed with his own hands all the acres of pictures which bear his name, and were, indeed, sent out by him. He appears almost habitually to have been aided by others. Thus, fault being found with a picture he had painted for Ambassador Carleton, from the view of making him take less, Rubens writes to Trumbull (1621), "If the picture had been painted entirely by my own hand, it would be well worth twice as much. It has not been gone over lightly by me, but touched and retouched everywhere alike by my own hand."* Again, in a letter to Sir Balthazar Gerbier (1640), seeing himself "pressed to speak the truth [as he writes], and not to deceive his Majesty of Great Britain," he says of a picture about to go from his house as one of his works, "I confess the said picture is not by my hand, but entirely painted by one of the most common painters (called Verhulst) of this city [Antwerp], after my design." It would appear that he had, as assistants or disciples, at the time he painted the well-known remarkable series of twenty-one pictures for the Luxembourg Gallery, representing the principal events of the life of Marie de Medicis, Vandyck, Justus Van Egmont, Jacques Jordans, Peter Van Mol, Cornelius Schut, Jan Van Hovek, Simon de Vos, Deodato Delant, Nicholas Vander Horst, Franck Snyders, Mosquera, and Wubens. With their aid, working from his sketches and under his superintendence, he was able to complete this enormous work in less than two years.

But it is not simply in the works of Rubens that the collection at Blenheim is rich. There is a most important picture by Raffaele, representing the Virgin enthroned, with the Infant Saviour in her lap, and St. John the Baptist on one side, and St. Nicholas of Bari on the other. This picture, with exquisite beauty and wonderful painting, is full of deep religious feeling. Of Vandyck, too, there are several fine specimens; for example, Strafford dictating to his secretary, Sir Thomas Manners, where thought on the part of Strafford, and the attention of the secretary, are most strikingly expressed. We must notice, too, Carlo Dolce's Virgin, with a crown of thorns, a charming picture, one of the finest ever produced by the master: the head and out-

stretched hand are exquisitely painted. The portrait of Sarah, wife of the great Duke of Marlborough, "that wicked woman of Marlborough," as Vanbrugh calls her, is one of the best of Sir Godfrey Kneller's works, as the portrait of George Duke of Marlborough is of Romney's.

Before going out into the gardens, the visitor will see in the chapel the new pulpit of which we gave an engraving a few weeks ago.* It is a very elegant production, and part of the carving, the foliage round the top, is beautifully executed. It is to be regretted, however, considering the number of persons who are admitted to view it closely (in the season from three to four hundred each week), that the sculptor did not devote a little more time to the heads, so as to give to them a greater amount of finish. The attendant who showed it had never heard the architect's name!

The domain is of large extent, perhaps twelve miles round; the cultivated gardens, themselves, occupy a very large area, and are well filled with fine trees,—

"The gloomy pine, the poplar blue,
The yellow beech, the sombre yew,
The slender fir that taper grows,
The sturdy oak, with broad-spread boughs."
Dyer.

These, indeed, constitute the chief charm of the grounds; for though there are some fine vistas, a good piece of water, and views of considerable expanse, there are few remarkable scenic effects—results of the landscape gardener's art. Those who are curious in trees will find, besides the wide-spreading oak, the stately elm, and quivering ash, some of less common occurrence,—as golden yews, rose-coloured horse-chestnuts, the *cryptomeria japonica*, *Araucaria imbricata*, and two or three remarkable specimens of the elegant *diodora*; and when they have seen and admired all these, made a few sketches of leafage, to serve in capital or string-course hereafter, and perhaps loitered to enjoy the park, they may buck with fresh zest to Oxford.

"That false attic, wherein make abode
So many learned impostors."

ARRANGEMENT OF HOSPITAL-PLANS.

THE ASHTON INFIRMARY COMPETITION.

IN the course of the week elapsed since our announcement of the decision of the Committee in the matter of the Ashton Infirmary Competition, we have inspected the designs, and find that the inference as to the adoption of our views on hospital construction was correct. Aided by advice from medical men in Ashton and Dukinfield, to whose exertions, in sanitary measures, we testified when speaking lately of the district, as well as by the opinions so zealously put forth or advocated by Mr. Robertson, of Manchester, and about being brought to practical result in the infirmary at Blackburn, the Committee at Ashton appear to have been from the first desirous to render their new building an example of arrangement and construction on the recently matured principles which we have so strenuously advocated; and, we are glad to know, with good results in other localities. The Ashton Committee are, we believe, anxious to build such an infirmary as shall be a model institution arranged on the pavilion plan; and, we trust, they will take all pains, before their building is commenced, to satisfy themselves on the probability of the embodiment of their views, whether regarding the site, the selected design, or the details of construction.

Contrary to intimation made to us, we found the designs at the Ashton Town-hall packed up in readiness for return to the competitors; and therefore, the time and the facilities, never great for our purposes, have in this case been reduced very seriously. We may console ourselves for exertions in such cases by stating, some day, conclusions which will be useful, on the course in many points, which it would be best for committees to take, when desirous to arrive at accurate knowledge of designs submitted to them. We were, however, able to look at the majority of the designs carefully. Nearly the whole of the competitors have adopted the "pavilion principle" in intention, and a majority seem to have been influenced by the particular design for the Blackburn Infirmary, in which the wards containing so

* A better derivation of the term than *quadrium*, or *quadrivium*, seems wanted.

* Sainsbury's "The Master: the head and out-trait of the Life of Sir Peter Paul Rubens."

* See page 312, ante.

few as eight or ten beds each, and the central block containing the business and domestic offices, and the operating rooms and wards, are placed at right angles to a very long corridor, in such manner that the wards are separated, and all well ventilated; whilst the corridors having windows on both sides can be ventilated independently, and thus, it is supposed, would not conduct bad air, and produce the "hospital atmosphere" in the building throughout its extent, as in the arrangement adopted at Netley, and in other defective forms of plan, described and illustrated in our last year's volume. The plan at Blackburn will be at once understood by aid of the rough diagram here



given. The proportions are of course exaggerated. At the parts marked A, are staircases, and the corresponding parts, appropriated as dining-rooms, reading-rooms, and rooms for special cases, are separated from the wards with which they are in line, by the central corridor. This reference to the Blackburn building it was necessary to make, because it serves to suggest what is the difficulty in working out the principle. The object of all planning is concentration, and if one object in hospital arrangement is the opposite, or diffusion, it may be safely said that great distance of wards will be disadvantageous for inspection, and for the supply of food, objects of special importance in hospitals. The plans, therefore, which recognize the pavilion arrangement as important, do not all copy the Blackburn plan; and several, securing its merits, vary from it with advantage. A considerable proportion, however, do little more than copy the plan; or they adopt our assertions of requirements, by rote, or letter, rather than the principle intelligently, to adapt it, and improve upon it. The architects who communicated with the secretary before the competition were referred by him to the *Builder*, whose authority, with that of Miss Nightingale and Mr. Robertson, is quoted in the competitors' reports pretty frequently,—perhaps sometimes for what none of those desired allies of the contending parties would endorse. There was little else in the way of "instructions," in fact, nothing more than the advertisement, and a plan of the ground,—a course quite chiming with our ideas, save that the competition was to be under mottoes, that there was no scale directed, and that the plan furnished was hardly clear as to the actual limits of the site. The result regarding judgment of merits need not be mentioned. The design was to be based on a supposed outlay of 10,000*l.*, but the first outlay was not to exceed 6,000*l.*; and the committees were "desirous to ascertain" how many patients could "be accommodated for the proposed outlay." There were to be two stories only; and there were certain specified uses of the apartments and offices of the ground-floor. The designs were sent in on the 14th of May, and the sub-committee met on the 18th. On the 28th they selected five designs, to be submitted in an order of merit to the general committee, by whom, on the 2nd of June, the decision as to the design which had been put first was overruled, and the second and third were put first and second. Of the five, we should have thought the original first, with the motto, "Pure air and sunlight," best entitled to the place; whilst there are other designs in the collection which would have better deserved to be placed amongst the number for preliminary selection, than one or two of the actual five. Professional assistance in the opinion, it was thought might lead to unfairness and collusion.

Thirty competitors sent in designs, some of them more than one design; and we believe there were about 150 drawings. The exhibition was open three days to the general public, and longer by private view.

The site for the infirmary is at Chamber-hills, on the Mossley-road, towards the north-east of the town, near the workhouse, distant about three-quarters of a mile from the town-hall, and sufficiently elevated, though somewhat exposed to the smoke of the town driven by the prevailing winds, and we apprehend not easily to be supplied with water. The site is given by Lord Stamford; but part of it is leasehold, and subject to a Chancery suit. The whole ground (about three acres), including area for the extension proposed, would be not unfavourable to the arrangement of the future buildings, though the line of the principal street runs obliquely. There is,

however, a deep dell at the back of the ground which would interfere with inexpensive execution of such designs as leave the principal unoccupied space in front, whilst the portion of ground which, according to the plan, appears to be immediately available, is of triangular form. The result is apparent in the designs. Defects have arisen from difficulty of the reconciliation of the required direction for the axis of each ward, which should be north and south, with the immediate requirements for working the establishment, and with the extension which is in prospect. The author of the design with the motto "Pure Air and Sunlight," whose design for some days stood first with the committee of selection, and who must have paid very praiseworthy attention to the subject, claims, whilst adhering to the instructions, to have completely overcome the difficulties, and "turned them into advantages," by "boldly" planning the structure "facing nearly due west, slightly inclining to the south," and thereby securing a more advantageous view of and from the building. The extension in this design would be wholly northward—the direction in which the land to be hereafter enclosed extends. Most of the other competitors place the general line of the building—that is, of the corridor of communication—parallel with the street or road, the wards being still north and south, and as to the whole building, somewhat less exposed; but many of them overstep the ground, or encounter the other difficulties referred to, in their proposals. Amongst the number of these is certainly the selected design—which does not quite accord with the conditions as to site, and perhaps not those of outlay—taking into account foundations—if the block plan is to be adhered to. The difficulties, however, in the way of comparison have been very great. We cannot but feel, that, but for these in addition to other demands upon us, the present occasion would have afforded an opportunity for our further advancing knowledge of requirements in hospital construction; and we need not hesitate to say as much. It is impossible, however, we are continually saying, for ourselves or others, to make adequate use of the matter in competitions, contributed to knowledge of any given subject, so long as the work of weeks has to be compressed into a few hours. With whatever habits and experience reviewers have acquired, they cannot utilize the mass of material which comes before them, any more than committees can adjudicate according to any expectation that they hold out; each occasion like the present, therefore, passes by, and much labour of brain and hand is wasted that might have been made to contribute to the advancement of a great social question, if not to the advantage of individual architects. Such designs as these we have looked at, in Ashton, without reference to the difference of their scales, would require a vast amount of calculation and analysis, ere any opinion could be expressed as to the chief point set before the competitors, the question—how many patients could be accommodated, and with what amount of convenience in plan and apparatus for attention and treatment. That question was one such as the committee were quite justified in submitting to professional opinion: in proportion, however, to the newness of the "pavilion principle" in this country, and to the difficulties created by their own instructions, should have been the means taken to discover and schedule the facts of the designs, to pronounce an opinion which might be just, and to have the best result for themselves. No professional architectural opinion, however, as we have said, was taken; and no great time was spent, in a case where the analysis of designs, and the tabulation and comparison of their features and cost, were a work of even unusual difficulty, and demanded time.

We are, in truth, not altogether satisfied with the position of the matter at this moment of writing. We do not allude wholly to the site, though it be a clay soil, favourably placed, however, for drainage; but to the manner in which the majority of the competitors, including several of those whose designs have been most noticed, have served up rather than intelligently examined and perfected our views, or those embodied in the Blackburn Infirmary. The latter building, as in progress, we shall know more of shortly: but the plan, with Mr. Robertson's paper, in the Transactions of the Manchester Statistical Society, gives eight beds to a ward, which circumstance has probably led to the remarkable similarity of the designs for the Ashton building, in providing either eight or ten beds. Miss Nightingale says in her answers to the questions of the Commission on the Sanitary Condition of the Army,—"*The*

best size of wards for ensuring the two conditions of health and facility of discipline, is from twenty to thirty-two sick. Wards smaller than of twenty beds, multiply both the attendance unnecessarily, and the corner, unfavourably for ventilation, in proportion to the number of patients;" and that wards "smaller than of twenty beds, are more difficult to ventilate by natural means alone. A certain amount of space is requisite for diffusion, in order to secure perfect natural ventilation."


It is true that these opinions may have been intended to apply to military and naval hospitals, specially, or to those for large rather than small towns: but the population here to be provided for is very great. The design which had the second premium adopts the principle of the larger number of beds, but is in several parts not satisfactory; and the first design, which in our opinion should not, on account of its deviations from the conditions, have received the premium, and would require further examination as to its securing the object intended by its designer and by the committee, is defective decoratively, and if built with its present details (intended as Elizabethan in character) would be a future discredit to the town, and wanting in that architectural beauty and taste which are legitimate objects, and indeed essential, by all the reasoning, in a hospital on a model plan. The committee have selected an architect in whom, probably, they can put confidence in many points. The motto system is no reason for their not knowing him and others. We could ourselves guess safely at the authorship of half-a-dozen of the designs, as in the last case at Manchester, from style of drawing and handwriting. But, apart from any unfairness from what we have noticed, as to the conditions, we doubt whether the plan has been selected best for the objects amongst those sent. Having raised for themselves difficulties which there are in the competitive question, in having to choose between injustice and acceptance of a design from an unknown man, the committee should have taken means to ascertain what was the best design, and should have given the premium to the author of it—employing the same individual to carry the work into execution, if they could feel satisfied as to his capability and integrity.

As usual in these cases, we have little chance for description of the designs, and of the very points of importance to the principle, wherein one design differs from another. We have a number of notes and facts, and have many of the designs at our elbow; but we always feel that in describing in words what it is the office of drawings to describe—these it being impossible to give—we are working against what may be almost insurmountable. We will make the attempt in some few cases.

The design by Mr. Joseph Lindley, marked "Nil desperandum," to which the first premium of 100*l.* was given, consists of a central group of offices and rooms for residence and business purposes of the infirmary, with corridor of communication, surrounding an open quadrangle; whilst from this central mass the wards extend as two wings in the principal front, and as two obliquely-disposed wings at the angles at the back. The last-mentioned parts of the building are intended for future erection. They are reached by staircases at the angles of the central block, and, as regards the upper floor, are quite shut off, each ward from the main building. The wards in line with the front have also their own staircases; but these are connected by a corridor of communication. The difference here of detail between this design and others, which may affect the principle, is this: whilst the wards are in themselves planned according to the improved ideas, for ventilation by opposite windows, and with bath-rooms and closets at the far end, and intermediate lobby; and with nurse's room and inspection window at the other end, along with scullery, and a shoot for bandages and dirty linen, the corridor, being only occasionally, rather than habitually, shut off from the staircases of the wards, would remain a channel for conduction of effluvia, instead of being designed, as in other cases, with a view to isolation of the wards, and provided with a very large area of window, capable of being completely opened. Those who can refer to our plan of the hospital at Bordeaux,* with which we inaugurated our more recent advocacy of the "pavilion principle," or who can refer to the plan of the Hospital de Lariboisière, which we have engraved, and shall give in an early number, may see that the pavilions are in these cases treated as separate buildings, placed at right angles to a

corridor or arcade, open, or entered at almost any point from the uncovered central court; and that some exemplification of the full principle is made in the plan at Blackburn. The defect, if such, in the chosen design is not that two wards are connected end to end, a staircase between,—this would be found in the best designs which were sent in; but is, that the whole of the wards in the ordinary working of the hospital are connected to one another and with the central building, unless in the case of the upper wards at the wings of the back, by corridors, which, though better than many in the older hospitals, could not be ventilated in the manner now considered to be required. If the French system or the Blackburn plan be correct, the design under consideration for Ashton is not the best of the number we have examined. Continuing the description, the internal court is surrounded by a balcony on iron columns of doubtful advantage, and it seems to be proposed to cover the area with glass. The staircases, we should say, are ventilated by lanterns at the top. Carrying the eye round the central block of the plan, it contains the kitchen, scullery, and dairy departments, with bed-rooms over; the matron's bedroom and sitting-room, the reading-room over; an entrance-hall, with convalescents' room over, and way out to a balcony in the front; the surgeons' rooms, a consulting-room, with the dining-room for convalescents over; a waiting-room for out-patients, with one entrance from the exterior; a dispensing-room, and an apothecaries' room, over which parts of the plan are the operating-room, with a gallery for students, and a skylight over, and accident wards adjacent. There is also a hoist for injured patients. The laundry and wash-house fill the space at the end of the quadrangle, and are one story in height. Under these may be placed the dead-house and post-mortem house. Each ward is 62 feet by 30 feet, and 15 feet in height; and as there are to be ten beds, there would be the large amount of 2,790 cubic feet per patient.

Few of the designs give anything like this quantity; yet most of them give the amount of nearly 2,000 feet as now generally deemed requisite. Twenty patients would be accommodated in each wing; that is to say, there would be forty patients in the part of the building to be first erected, and the same number in the obliquely placed wings. The accommodation of special cases and accidents, is very small. Eighty beds, exclusive of two small rooms for accidents, is a small number for the district. In other points than those mentioned, the design seems to us open to reconsideration. It is scarcely desirable to place a tower without reference to the plan below, so that its brickwork has to be carried on girders, resting on 9-inch walls. It should be considered whether the radiating arrangement for the wards is desirable, considering sunlight.

The design which received the second premium, and is marked "Experience," is by Messrs. Hayley and Son, of Manchester. It differs from other designs mainly in giving a much larger number of beds to each ward, and a less amount of cubic feet per patient, by which the design would get 120 beds in the buildings when wholly finished. The plan is somewhat in the form of the figure ; but the end perpendicular lines in the plan, representing principal wards, are connected at the mere angle, with the horizontal part of the figure on the front of the building, though still too much so, we might perhaps say. The principal wards at the ends, are for twenty beds each, and are 77 feet 6 inches in length, and 26 feet in width, by 16 feet 6 inches in height, giving a space of 1,716 feet per patient. Besides these four wards, two in each wing, to be built as the future extension, there are two wards to the principal block in the upper floor: these, indeed, give somewhat less, or 1,609 cubic feet per patient, being for sixteen beds in a space of 60 feet by 26 feet. In all these cases the wards are planned with the opposite windows, improved system for conveniences, ablution, and inspection. Fewer wards would occupy a separate building. The kitchen is in a central position beyond the principal staircase; and the wash-house is beyond it. Glass-covered spaces are proposed at intervals for convalescents, not far from distinct wards which there are for the same class. The decorative details are of a modified character of Romanesque; and the design has arched-headed windows and towers: it is better in many respects than the last-named design; but is not so suitable to the purpose as some of the other designs,—for instance, one already mentioned.

This design—"Pure Air and Sunlight"—provides wards for ten patients, 50 feet by 24 feet, and 15 feet in height, or a cubic space of 1,800

feet each, besides convalescents' rooms 24 feet by 18 feet, and accident-rooms 14 feet by 10 feet. The plan appears somewhat irregular on the ground, but above resolves itself into pavilions; that is to say, blocks either wholly disconnected, or, in the case of those of the front block, joined only by an ample staircase, which could be well ventilated. Some of the rooms of the ground story have flat roofs, forming a terrace which could be used by convalescents. In the ventilating arrangements, the air is admitted under each bed, and would pass out by openings immediately below the ceiling. The fire-places are disposed under the windows. The decorative character is a modified Italian, with good grouping and several excellent features of effect, and is altogether better than either of the selected designs. In another design, by the same author, sent as a model design, and not for the special site, the corridor of communication between the pavilions is treated as a low clerestory.

Under the annexed device, two designs on the pavilion principle are contrasted, differing mainly as to the selection of the key-note of the arrangement, in one case the kitchen, and in the other the laundry. Both designs have a central corridor of communication parallel with the principal front, and connecting the main building to the wings and staircases. This corridor, in one part, is only an arcade with terrace-roof, and windows both sides, filled with casements which can be thrown completely open, whilst the main buildings would be shut off by doors in glass screens, so that complete isolation of the wards and thorough ventilation of the corridors would be obtained. The general arrangement in the chief of the designs, marked "A," may be understood from the diagram in the margin, which, however, necessarily omits many principal features, which we must supply by description. "Design A," has



the kitchen close to the corridor, indicated by a single line; and has the laundry and wash-house at the back. "Design B," reverses that arrangement, so as to allow the dirty linen to be passed down one shaft to the wash-house, and the clean linen to be brought up from the laundry at the landing of the principal staircase. The latter design displays ingenuity in this respect; but, as the plans are worked out, the inconvenience attending long carriage of the clothes would be less than that of the carriage of the food. There is also a difference between the plan of "A," where two wards for male patients, on each floor, forming, with their staircases and adjuncts, one range of buildings at the north-west, are connected with a corresponding range, south-east, by the corridor of communication; and the plan of "B," where the wards are entirely in the buildings which project from the general line and corridor. In both designs half the principal wards are placed on the ground-floor, Miss Nightingale's evidence published in the Report on Military and Naval Hospitals, being quoted as justifying the arrangement. In "design A," the entrance-lobby opens into the side of a hall, 50 feet 6 inches by 15 feet, to be roofed with glass as a conservatory, and heated by an open fire-place and hot water circulated by a boiler at the back of the grate. In this hall, and in a gallery over the entrance-lobby, stands for flowers are proposed. Besides the cheerfulness of effect, the flowers are regarded as desirable for disinfection. The surgeon's retiring room, 15 feet by 11 feet, is at one end of this hall, and the physician's retiring-room is at the other. From the further side of the hall, from doors close to the end, long corridors, crossing the central corridor of communication, lead to the laundry on one side, and the wash-house on the other, at the very back of the plan, a drying closet, circular on plan, being between the two latter, so that the horses would revolve on a central pillar to admit of the clothes being put in at the wash-house, and taken out at the laundry. Not so far back as the laundry and wash-house, are the kitchen, larder, and pantries; one corridor, separating these offices from the dispensary (which has one entrance external), and the corridor on the other side separating from the servants' hall and scullery. The central group, of which the rooms and offices last mentioned comprise one-half, may be considered as all one story in height. The portion lying between the central corridor and the entrance-hall, and which has a garden-court 39 feet by 38 feet 3 inches in the centre, and lighting on two of its sides the corridors which run from the entrance-hall, contains,

besides a board-room to serve as chapel, an operation-room in a central position, and operation-wards, and wards for special cases to hold two patients each. Each of these last has a bath-room, and a closet connected with it by a lobby. The details here have been well studied, and the wards, part of the main building, project so that they are lighted as are the large wards from windows opposite one another. In the same division of the plan are the living-rooms of the surgeon on one side, and of the matron on the other. The outlying blocks of the general plan contain two wards in each story—the staircase in the middle. Each ward at the farther end, has scullery (with shoot for dirty bandages), a bath-room, and other conveniences, separated by passage-ways from another, and from the ward, and perfectly contrived for ventilation. One ward has at the other end a day-room, and the other ward has a nurse's room. There are dinner and coal hoists. There are ten beds in each ward—placed between the windows. The fireplaces are at the ends, with openings 5 feet in height. Provision for ventilation also is made by panels of wire-gauze placed over the windows, to be closed at pleasure. The windows would be glazed double, so that alternate halves might be opened. Also, four flues would convey vitiated air from the ceiling to the roof—whence it would be exhausted by flues in the chimney-stacks. The large wards are 46 feet by 24 feet, and 16 feet in height. Accommodation is provided in them for eighty patients: the special and operation wards raise the number to eighty-eight. For each patient in the ordinary wards there are 1,766 cubic feet of air; and in the operation wards there are 1,920 feet. The floors would be of pine or white deal plated with Norwegian oak three-eighths of an inch, laid crosswise and glued. The walls and ceilings to be covered with Martin's cement. In "Design B," there appear to be greater facilities for classification, through the provision of a greater number of staircases; and there is a grand staircase in the centre, beyond which an operation-room, with wards adjacent, is conveniently placed on the intermediate level, the ascent being very gentle in a straight flight of stairs—4-inch risers. This design provides seventy-four beds. Each of the principal wards, 38 feet by 24 feet, and 16 feet high, has eight beds, and 1,824 cubic feet per patient. The wards for operations and special cases afford in some cases 2,400 feet. The decorative effect in either design would be exceedingly good. The materials proposed are light red bricks for the general work, purple brick in bands below the sills of the ground-story, and white stone in bands, strings, and impostes, and alternate voussairs, &c. The lower story is treated chiefly as an arcade of windows, with impostes and labels, and chamfered and moulded angles; the upper windows are finished with the cusped square-headed form seen in many Gothic doorways; and the eaves are carried by wooden brackets. Projections at the ends of the wards are differently treated, and are finished by gables of Elizabethan character. The style is the architect's own, and does him much credit.

We are compelled to reserve any further notice of the designs that we may have space for, to a future number.

BYZANTIUM AND ITS ARCHITECTURE.*

In the choice of the site of Byzantium for his new capital, Constantine displayed as much judgment in his selection as he afterwards evinced energy and determination in carrying out this grand resolution. Placed at the apex of the triangle which faces the shores of Asia, and meets the waters of the Thracian Bosphorus; bounded upon three sides respectively by the Propontis, the Bosphorus, and the Golden Horn; comprising at one view a prospect of the continents of Europe and of Asia; commanding the trade of the Euxine, and open to that of the Mediterranean; surrounded by nature's most bountiful gifts, and a scenery not to be surpassed for beauty and interest, the site selected for the city of Constantinople has perhaps no equal—certainly no superior—in the world. The importance of its natural advantages was not lost upon the ancients. Besides a frequent change of masters in its early career, the city had already sustained two great sieges by the Greeks, under Alcibiades and Philip, and two by the Romans, under Severus and Maximin, ere Constantine wrested it from Licinius for his own benefit. But the prize so coveted then was of comparatively small value to that which urged the insolent invader, in an after age, to strike his battle-axe against its

* See p. 354, ante.

Golden Gate; and fresh sieges were endured by Latins, Persians, Greeks, Slavonians, Bulgarians, Saracens, and Ottomans, ere the crescent finally supplanted the cross, and the last of the Constantinian fell, nobly defending the ruins of his capital—a worthy successor of the great founder of the empire. The ample area of the new city demanded a corresponding amount of buildings to fill it, and the various structures requisite to maintain the dignity of a great capital were rapidly proceeded with. Thus arose, as described in the "Notitia utriusque Imperii," churches, palaces, basilicæ, theatres, baths, porticos, reservoirs, granaries, a circus or hippodrome, a capitol or school for learning, and 4,388 houses. But we intend not to attempt a description of the original city of Constantinople; for all that is worth knowing about it will be found in the several authors that have touched upon it, from Procopius to Gyllius. A few words from the luminous pen of the great historian, each line of whose writing seems to contain a page, and each page a chapter, may convey all that we would express.

"The buildings of the new city were executed by such artificers as the reign of Constantine could afford; but they were decorated by the hands of the most celebrated masters of the age of Pericles and Alexander. To revive the genius of Phidias and Lysippus surpassed, indeed, the power of a Roman emperor; but the immortal productions which they had bequeathed to posterity were exposed without defence to the rapacity of a despot. By his commands the cities of Greece and Asia were despoiled of their most valuable ornaments. The trophies of memorable wars, the objects of religious veneration, the most finished statues of the gods and heroes, of the sages and poets of ancient times, contributed to the splendid triumph of Constantinople, and gave occasion for the remark of the historian Cedrenus, who 'observes, with some enthusiasm, that nothing seemed wanting except the souls of the illustrious men whom those admirable monuments were intended to represent.'"

Throughout the long centuries of the Byzantine empire, the faults and vices of its original construction display themselves in characters which show that, as a representative of the old Roman nation, its qualifications existed but in name. With the language it seems to have discarded all participation in the old republican associations which still survived the fall of Roman liberty. In each successive reign we see, more or less displayed, the leading features of Asiatic tyranny. Murders, treasons, and revolutions pass before us in rapid succession; ceremonious observances and Oriental forms of dignity fatigue by their prolixity; and in literature and art artificial and florid display supplies the want of genius and sincerity. "Even Christianity failed to reconcile the conflicting elements and hostile influences of the East and West, and was itself penetrated by an admixture of Oriental thought and sentiment; and in later times, after the severance of Constantinople from the Latin communion, the rest of Europe had no sympathy for what was considered an alien creed."

The "Byzantine empire," properly so called, commences with the accession of Leo the Isaurian, who so reorganized the administration, which had fallen into a deplorable condition, that the reformed government outlived for many centuries its contemporaries. Some writers date the commencement of the empire so early as Zeno and Anastasius, others so late as Maurice and Heraclius. Clinton, in his "Fasti Romani," terminates the empire of Rome, properly so called, with the third year of Zeno, i. e. A.D. 476. Gibbon says:—"Tiberius by the Arabs and Maurice by the Italians are distinguished as the first of the Greek Cæsars, as the founders of a new dynasty and empire. The silent revolution was accomplished before the death of Heraclius."

To the effect produced upon art and literature by the peculiar circumstances under which the Eastern empire was placed we shall presently have occasion to revert. Our present care is to deal with its architecture as we find it. Byzantine architecture, properly so called, is the style which the art assumed in Constantinople after the complete separation of the Eastern and Western empires, when, under Justinian, it had already attained that development of character which conferred its impression upon the architecture of the Greek church, as practised in the Christian countries of the East down to the sixteenth century. Although we know that Byzantine architecture is a lineal descendant from that of Rome, yet we see plainly that it contains some element derived from a foreign source, and though much has been said upon the subject, yet the work has yet to be written which shall trace that ele-

ment back to its source, or rather adduce such conclusive proofs in support of theories as shall change surmise into certainty. The leading feature of the Byzantine style is without doubt the dome, which is of all descriptions of roof the most beautiful and most scientific; for to cover a space inclosed by walls of brick or stone with a vault of the same materials would seem to be the first and most natural thought that could suggest itself, (albeit the most apparently hopeless to execute) although the want of knowledge of the great principle that could effect it caused the diversion of the master-mind of the Greek into the columnar and trabeated method of construction that formed the essence of his architecture. The form most typical of this noble development has been referred with strong probability to the Parthian predecessors of the Persian nation, as carried to a considerable degree of perfection under the rule of the Sassanides.

The dearth of examples that might throw light upon the dark period of the dynasties of the Seleucids and Arsacids, renders the forms of their architecture an enigma yet to be solved. In the ruins of Diarbekr and Al Hather—attributed by Fergusson to the commencement of the Sassanian dynasty—the only known illustrations of the period in question exist. Barbarous details of Roman art characterize these buildings, but of their exact date we are ignorant. From Al Hather we lose our clue for an interval, until we take it up again in an altered form. "They retained," says Fergusson, "the great tunnel-like halls of Al Hather, but only as entrances. They cut bold arches through the dividing walls, so as to form them into lateral aisles. But, above all, they learnt to place domes on the intersection of their halls, not resting on drums, but on *pendentives*, and did not even attempt to bring down simulative lines of support to the ground. Besides all these constructive peculiarities, they lost all trace of Roman detail, but adopted a system of long reed-like pilasters extending from the ground to the cornice, below which they were joined by small semicircular arches. They, in short, adopted all the peculiarities which are found in the Byzantine style, as carried out at a later age in Armenia and the East. We must know more of this style, and be able to ascribe authentic dates to such examples as we are acquainted with, before we can decide whether the Sassanians borrowed the style from the Eastern Romans, or whether they were, in fact, the inventors, from whom the architects of the more Western nations took the hints which they afterwards so much improved upon."

The exact period when the old basilican form of church grew into that of the Latin cross is not quite certain; but the adoption of that form of plan was the result of accident, not design, and was quite independent of the deep symbolic meaning which it was afterwards considered so clearly to express. So also did the Greek cross of Byzantium, though in after ages tenaciously adhered to as a grand symbol of separation between the adherents of the Pope and the Patriarch, obtain its origin in the determination of the Byzantines to give the architecture of their new faith a form and expression as different as possible to that of paganism. In the time of Constantine the circle, as a form of plan, was as prevalent as the rectangle; the one inherited through the Etruscans from the Tartars, the other derivable through the Greeks from the Egyptians. Of the churches erected by Constantine in his new capital none remain; but it is probable, from the descriptions of Eusebius, that they were mostly circular, and ornamented by domes. This was the first stage in that form of construction that burst into full development in St. Sophia, the master-piece of Justinian, which, after serving as the type for all the earlier churches of the Byzantine empire (though nothing upon the same scale was afterwards attempted), was at once adopted by the Turks in the fifteenth century, and retained by them to this day, as the model for their mosques.

Joined to the desire of honouring the new religion with temples for its celebration novel in construction and fresh in association, were the exigencies of the new country of Constantine's adoption, "tant il est vrai que ce qui est convenable et parfait dans un pays ne peut s'appliquer exactement dans un autre." The principle of expansion belonged to the West; that of concentration was adopted by the East; and in place of the long and vaultless avenue of the basilica, four massive piers at the angles of a vast square supported four vast arches, whose spandrels, converging from the springing to the summit, completed a circle surmounted by a cornice, whence sprung, without the presence of an inter-

vening cylinder, a hemispherical or segmental dome, formed of cylindrical jars of peculiar construction, for the double purpose of obtaining lightness and cohesion, and forming at once the ceiling and the roof of the vast area. The four arches that upheld the aerial structure, formed respectively the portals to as many naves of equal length, constituting the figure of the Greek cross. Semi-cupolas covering these naves, clustered round the great central dome, and formed a resistance to its outward thrust. The nave, or branch of the cross that formed the principal entrance, was preceded by the narthex or porch, whilst the opposite one formed the apsis. The other two branches were divided in height by a gallery for women. The larger absides were sometimes continued by smaller ones, also covered with the semi-cupola. The lower portion of these domes and semidomes were pierced with a continuous row of small windows to admit light.

"Arches," says Hope, "thus rising over arches, and cupolas over cupolas, we may say that all, which in the temples of Athens had been straight and angular, and square in the churches of Constantinople, became curved and rounded,—concave within, and convex without,—so that after the Romans had begun by depriving the architecture of the prior Greeks of its consistency, the Christian Greeks themselves obliterated every mark of the architecture of their heathen ancestors still retained by the Romans, and made the ancient Grecian architecture owe its final annihilation to the same nation to whom it had been indebted for its first birth."

The above description may serve very well to illustrate a diagram of a Byzantine church in the abstract, but a glance at Mr. Fergusson's admirable "Handbook of Architecture" will afford the reader an amount of instruction upon the preliminary stages that conduce to such a development that we have no desire to attempt to convey in this sketch. He will there see the processes detailed and illustrated by which the Byzantine architects laboured to obtain space and variety in their interiors without having to incur those dangers and difficulties caused by weight and thrust, which have rendered the noblest of all architectural features a thing of such comparatively rare occurrence. Of the fourteen hundred religious foundations recorded to have been raised in the empire between the reigns of Constantine and Justinian none exist at Constantinople. Fortunately in the greater and lesser St. Sophia we not only see undoubted specimens of the age of Justinian, but two different methods of internal arrangement; in one the dome springing from an octagon, in the other from a square.

Beauty in all these early churches was internal, for their exteriors possessed no elements of it; but, as time progressed, a total change was effected, and, as exhibited in the church of Theotokos, a façade of some elegance, but of a style perfectly *en sui generis*, exhibits Byzantine architecture in all its completeness. One apparently exceptional case of a Romanesque church of a simple basilican plan exists at Constantinople, as illustrated in the splendid work of Salzenburg. It is divided internally into three aisles by columns supporting galleries, which, as well as those of the narthex, are of debased Corinthian, and show the extent of transition in A.D. 463.

From thence to the lesser St. Sophia the growing change becomes more apparent still, and in the greater St. Sophia, which forms the third and crowning example of internal Byzantine arrangement and decoration, we find a beauty and originality of detail which prove conclusively that an actual and new style has been evolved.

Such was the development assumed in the East by the remains of the architecture of old Rome. In the West, as we know, it had already become a mere shadow of its former self; and so it remained for ages. Had Constantine still made Rome his capital, the decline and fall of the nation might possibly have been arrested. But that his abrupt departure precipitated the ruin of the western empire, with whatsoever was left to it of art and literature, the result too clearly demonstrated; and thus does Tiraboschi make his charge against him: "La città di Costantinopoli da lui innalzata a gareggiare con Roma, e scelta a sua stabile dimora come a Roma e a tutta l'Italia così all' Italiana letteratura fu sommamente fatale."

The arts and literature of a nation are ever influenced by the political and social condition of the country of their cultivation; and with the various phases of position which that country may assume in the scale of civilization and power, so do they flourish or decline. Literature and art, too, walk hand in hand, and the same period in

Roman history exhibits the progress and retrogression of both those highest tests of her social position. It was during the republic that the principal conquests of the Romans were effected, and the empire, generally speaking, had employment enough in reserving the territories conquered to it by the emulation of the consuls and martial instinct of the nation. The possession of this vast legacy, composed of a long list of provinces, many of which have since risen into powerful monarchies, might almost excuse the fatal feeling of security which, in the fancied enjoyment of the dominion of the whole earth, lost sight of those distant regions whose barbarian offspring were destined to convince them one day of their error by a terrible teaching.

The influence of Greece prevented the growth of a truly national literature in Rome, though the elements for its formation existed; and from the introduction of the Greek hexameter, by Ennius, the old national poetry ceased to exist.

The intimate connection of Rome with Greece had the effect of softening that military spirit which made valour a synonyme for virtue, and the facility afforded for encircling Rome with the productions of Greek art, though one cause, perhaps, of the comparatively few artists of the period recorded, yet infused a taste for literature and science in this warlike people that in due course produced its fruits in the galaxy of talent that shed a halo of glory upon the Augustan age. The old military spirit, however, still smouldered beneath the surface; and even Virgil himself, in the sixth book of the "Æneid," exhibits a spice of the old leaven by reminding his countrymen that to extend their empire, spare the conquered, but humble the proud, are the *arts* best worthy of a Roman's study.

The space of about a century and a half, terminating with the death of Augustus, may include the period when Roman eloquence and literature had displayed their highest degree of advancement, and the Latin of Cicero and his contemporaries may be supposed to illustrate the most perfected stage of the language. Public oratory is the natural sequence to a free government, and therefore was cultivated by the Romans from an early period; but it was from Greek rhetoricians that they studied its principles. From the same preceptors the love of philosophical disquisition was acquired, and the Stoic and Epicurean persuasions found zealous advocates amongst the stern republicans or aristocratic sensualists, whilst patriotic, academic, and numerous minor subdivisions found ready proselytes either from novelty or conviction. Cicero, as has been happily observed, taught the philosophy of Greece to speak the language of Rome, whilst he rendered the doctrines of the Grecian ages more perspicuous and captivating than they were found even in their native idiom. In other words, as Dr. Thomson remarks, "Cicero endeavoured to bring back philosophy from speculation to practice, and clearly evinced the social duties to be founded in the unalterable dictates of virtue; but it was easier to demonstrate the truth of the principles which he maintained than to enforce their observance while the morals of mankind were little actuated by the exercise of reason alone."

In Cicero and his contemporaries, says Paternus, forensic eloquence burst forth complete; and it is only by them and their immediate successors that our admiration is called forth, or our pleasure excited. But the secret of success in art or pleasure was the same then as now. "Alit simul ingenia; et nunc invidia, nunc admirationem accendit."

Cicero himself seems to have been aware that the art of history had reached its climax, for, in his "Tusculan Disputations," he prophesies its downfall in these words—"Atque oratorum quidem laus, ita ducta ab humili vixit ad summa, ut jam (quod natura fert in omnibus fore rebus), successit brevique tempore et nihilum vetustate videatur." This prophecy, which attained to such excellence in the instances of the Græci, Horatius, Cæsar, and Cicero; and after them in Cælius Rufus, Cato, Lælius Calvus, and his contemporaries, was one of the greatest triumphs in the history of Roman letters, but with the decline of the spirit of patriotism that had evoked it, it gradually sank and expired.

The orations of Asinius Pollio—a man of talent, but a detractor of Cicero—are lost. Of Seneca, the rhetorician, and of Quintilian, the declamation have come down to us. On the Paganic and the Epistolæ of the younger Pliny, the false taste of the declining school of letters is evident, though clothed in allured brilliancy. And our illustration of the schools of oratory that were yet

preserved, and eulogized to the highest degree by their contemporaries, may close with Aurelius Symmachus, in the reign of Theodosius.

Among the historians of the Augustan era, Sallust and Livy, compared by Quintilian respectively with Thucydides and Herodotus, take the first rank; the former possessing the highest qualities as an historian, the latter justly considered a model for composition for all time. Tacitus, at a later date, "the first of historians who applied the science of philosophy to the study of facts" and whose concise but expressive descriptions, and we may add, perplexing difficulties, have so taxed the talent of the translator and the antiquary, whilst his originality has excited the genius and penetration of the modern philosophic historian, may be considered the last of the great historians of the brilliant period of Roman literature.

The age of oratory was outlived by that of poetry. First in the list were the speculative Lucretius, and the melodious Catullus; the latter, according to Niebuhr, Rome's greatest poet, and equal to the great lyrists of Greece, previous to Sophocles. Of Catullus it may be truly said, "Nihil tædium quod non ornavit." Far different was Niebuhr's opinion of the merits of Virgil whose "Æneid" and "Eclogues" he considers failures, and his "Idylls" far inferior to those of Theocritus. But Niebuhr ever loved to overturn old theories; nevertheless, Virgil still sways the sceptre of the Latin epic. Amongst the elegiac poets, Tibullus is generally allowed to hold the highest rank; and Gallus, another *protégé* of Augustus, his reputation only surviving. Third successor to the elegiac lyre, stands Propertius; and the circle is completed by Ovid, not only deeply skilled in the "ars amatoria," but also "nimium amator ingenii sui." As chief exponent of the lyric muse, Horace needs no comment. Of the "Pharsalia" of Lucan, leader of the secondary array of heroic poets, of which Valerius Flaccus, Statius, Silvanus Italicus, and himself were chief examples, as contrasted with the "Æneid" of Virgil, the judgment of Tiraboschi can hardly be surpassed for justice and for poetical imagery.

To Lucilius, of pre-Augustan repute, may be ascribed the originating of that form of satire, which afterwards received its full development in Horace, Persius, and Juvenal, of whom the first is the keenest, most polished, and most admirable; the second, the most dramatic; and the last, the most denunciatory and terrific. In Martial, the epigram is best exemplified.

In Anonius—the favoured of Valentinian—the feeble flicker of the sacred flame of poetry announced its near extinction; and in Claudian, the last of the classic poets, in the reign of Arcadius and Honorius, the Latin muse was consigned with honour to her tomb. The ruins of Rome's greatness, the proud monuments of her triumphs, and memorials of her eventful history, are gradually passing away from the scene; but in the remains of her literature, she will yet redeem her claim to immortality:—

"Alas! for Tully's voice, and Virgil's lay,
And Livy's history, and all these shall be
Her resurrection; all besides decay."

Augustus, as Suetonius informs us, devoted himself from early youth to the study of eloquence and the liberal arts, being devoted to Greek and Latin literature, and patronising men of genius in every possible way.

Those men of genius were, however, the offspring of the Republic, for the process of vitiation was not the work of a day. The successors of Augustus were men of a different stamp; but though an affliction of artistic patronage here and there relieved their literary instincts, or lent vigour, yet the public spirit had undergone a change, and the progress of decline could not now be arrested.

Literature, though in some degree recovering its credit under Trajan, speedily lost it again under his successors. Marcus Antoninus, the most learned of them, utilised his privilege to the State philosophy; and, in accordance with Pythagoras, held the arts and sciences generally in contempt.

As we before observed, the old mythology at the time of our Saviour's birth was worn out and supplanted, to a great degree, by systems of speculative philosophy. Of these systems the Greek and Roman ages had adopted kinds, and these again were subdivided into numerous contending sects. In the ranks of the former, Epicurus and Aristotle, Aristotelians, Stoics, and Platonists formed the chief varieties; and from the latter sprang the Gnostics—a school whence issued the leaders and originators of those

sects which, during the three first centuries, disturbed and troubled the Church.

Of schools, the Stoics and Platonists were the first; and of sects, the voluptuous followers of Epicurus outnumbered all antagonists. Soon, however, the junction of philosophy and Christianity produced a fresh school in the Eclectics; and the Eclectics, in their turn, displayed a new development in the New-Platonists, a school of philosophy opened at Alexandria at the close of the second century by Ammonius. This mixture of Christian and Platonic principles occasioned a war between faith and reason, devotion and argument, that has influenced the state of the Church ever since.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE closing general meeting of the session was held on Monday evening last, at 16, Grosvenor-street.

Mr. George Godwin, V.P. presided. The minutes of the last meeting were read and confirmed, and Mr. C. C. Nelson (hon. secretary) read a list of donations to the library, and also the names of the gentlemen who had subscribed to the removal fund. Among the latter were Professor Donaldson, 25*l*.; Mr. R. C. Hussey, 10*l*.; Mr. C. Mayhew, 10*l*.; Mr. G. G. Scott, 5*l*.; Mr. P. Anson, 5*l*. 5*s*.; Mr. T. H. Lewis, Mr. Marnable, Mr. G. Morgan, Mr. R. L. Roumieu, Mr. B. C. Robins, Mr. Godwin, &c.

Mr. George Somers Clarke, of 2, Brunswick-square, was elected a Fellow of the Institute; and Mr. Richard C. B. Wood, of 139, Fleet-street; and Mr. J. H. Metcalfe, of 41, Duke-street, Manchester-square, Associates.

The Chairman, in moving that the thanks of the meeting be given to the donors of contributions to the library, called attention to a pamphlet on "The Application of Water-glass (soluble alkali-silicate) in the Arts," by E. Kuhlmann, Professor of Chemistry at Lille, fifty copies of which had been presented to the Institute by his Royal Highness the Prince Consort. There was, he remarked, a considerable want of knowledge on this subject, and, therefore, it was desirable that gentlemen competent to form an opinion should inquire into it, so that any statements which might be made with reference to it might be checked by those not interested. A notice of this pamphlet will be found in our present number.

Mr. Penrose said he was making some experiments on water glass, and would be happy to communicate the result to the Institute.

The thanks of the meeting were also accorded to Mr. St. Aubyn for his donation of five shares in the Architectural Union Company.

Mr. W. Watkins Lloyd next read a very interesting and elaborate paper on "The General Theory of Proportion in Architectural Design, and its Exemplification in Detail in the Parthenon."

At the conclusion, the Chairman invited discussion.

Mr. Mathews said he could only thank Mr. Lloyd for his ingenuity. It occurred to him that if a scale of numbers were taken, there were very few proportions which those terms would not show. Take the room, for instance, in which they were met that evening: if they went upon that scale, they would find it to apply, and also to apply to the street and to the houses at either side.

It seemed to him there was nothing whatever extraordinary in the circumstance that the Parthenon could be measured as Mr. Lloyd had shown, as the same scale would measure anything.

Mr. Penrose said it was impossible that a paper such as that read by Mr. Lloyd could be followed out with the minuteness necessary for its adequate consideration. He had tested many of Mr. Lloyd's deductions from the measurements, and he could state that he found them perfectly accurate. But that which he would rather call attention to was the extremely practical character of the system which Mr. Lloyd had brought under their notice. The design of all buildings, such as the Parthenon, must have been in the mind of the inventor, and the system of proportion must have been his rule and method. He had occasion, some time after Mr. Lloyd had discovered his scheme, to design a Gothic building; and, having tried it upon that, he found, after a few hours' work, that he was enabled to get the proportions designed on his method. The four-to-nine scale did not agree; but he had not occasion to devote many hours to the work before he put all the dimensions that he required to adjust into a key of that nature.

Mr. Bell (sculptor) remarked upon the great

* To be continued.

value of definite proportions, and said he was inclined to think that the system discovered or elucidated by Mr. Lloyd that evening might also apply to the human figure. With regard to the Parthenon, Mr. Joplin had assured him that the proportion of four to nine guided a great many of the designs. (Mr. Bell explained, with the assistance of the board, the theory of Mr. Joplin, as to the proportions of the columns of the Parthenon).

Mr. Ashpitel said it was a matter of some difficulty to deal with a paper full of decimals of the first, second, and third order. It struck him that the 1,000th part of a foot, or the eleventh of an eighth of an inch, in a height of 98 feet in a building 2,060 years old, a portion of which had been blown up by gunpowder, was rather too fine to be of much weight. It seemed to him that the proportions of the Parthenon depended very much upon the measure on which it had been set out. The architect, no doubt, set it out, as the architect of the room in which they were then met. He said, for instance, he would make a room 20 feet long by 16 or 18 broad, and never contemplated making it 20 feet 1 inch by 17 feet and 11½ inches broad. The ordinary common-sense rule of measurement he found to prevail in the measurements of Gothic cathedrals, which seemed to have been made not by the foot measure but by the old cloth yard. He could not help thinking that the Greek architects set out their buildings very much as we did, and told their workmen to set out so many feet this way, and so many feet that way. It was far more important for the architect to learn what were the proportions of the building itself. Little more than a twelvemonth since he had been requested by a friend who was writing a history of Sicily, to give him the relative proportions of Greek remains, to compare them with the Sicilian temples, and he could find no proportions of one temple relating to another. He was therefore inclined to think that the Greek architect was in great part regulated in his design by his eye and his taste for the beautiful. Since that period he had conversed with a distinguished Royal Academician, with whom he had consulted as to examples of the Greek Ionic, including the Erechtheum and other places, and there he had some difficulty in finding anything like a definite proportion. He might have been wrong, and in that case he would be delighted to be set right; at the same time there might be some rule on the subject. He had not, however, been able to find anything to guide him as to the relative proportions of one Greek temple with another.

Mr. Kerr observed, that these attempts to discover the rule of proportions were like searching for a key to the Book of Revelations, and that young architects would do well to avoid losing time in pursuit of such a chimera. It was impossible to trace the history of arithmetical proportions. All they knew was, that from the nature of the Greek mind it was very improbable that the architects of the Parthenon were in possession of any system so elaborate as that which had been laid down by Mr. Lloyd. The Greeks might have understood simple arithmetical proportion, which, after all, was the only safe rule to go by. There was, however, one point raised by Mr. Lloyd which struck him as being extremely valuable, and that was the remarkable principle that you might adopt a key-note of proportion, as, for instance, 1 to 6, and found upon that key certain other proportionate proportions, which, when carried out, would produce as the result perfect melody of proportion. If this was what he meant, it was a most important principle to establish.

Mr. P. Anson expressed a hope, that as time did not admit that evening of a full discussion upon the subject, it would be resumed on some future occasion. It seemed to him that they ought not lightly to set aside the consideration of these reconduct schemes.

Mr. Ashpitel moved the hearty thanks of the meeting to Mr. Lloyd, and observed, that if that gentleman could ascertain whether the same principle applied to other temples besides the Parthenon, so as to get at what the Greek architects considered their relative scale, he would confer a great benefit upon the profession.

Mr. Kerr seconded the motion.

Mr. C. H. Smith said that few persons were more conversant with the architectural remains in the British Museum, or with the practical working of materials, than he was, and that, upon measuring some of these remains some years ago, and comparing them with works he was himself executing, he found that his own measurements were far more accurate than theirs. He examined with great care the capitals of the Erechtheum, and other fragments, and he discovered very few

instances in which the original surface of the marble was not gone to the extent of the tenth of an inch, and sometimes even to a quarter of an inch. There was, for instance, in the Museum, an entire column from the Erechtheum, and it would be extremely difficult to ascertain what was the original diameter of it, as there was none of the original diameter left. Some blocks were more decayed than others. The surface of the remains in the Elgin collection had wasted more than a quarter of an inch, and consequently it would be difficult to tell how their dimensions could be taken after a lapse of more than 2,000 years.

Mr. Penrose said it should be remembered that the fragments in the British Museum had been tumbled down and exposed to the action of the weather for many centuries. If we were to examine the whole building, and select these little spots where decay had been less rapid, and which, from their position, had escaped mechanical injury, it would be found that measurements might be taken with a very considerable degree of accuracy.

The Chairman observed, that in his opinion Mr. Lloyd had submitted a series of most valuable deductions, which, so far from being abstruse, might be reduced to the utmost simplicity. When given as measurements, and stated in decimals, the deductions might appear elaborate, but that did not alter the facts placed before them. He would say nothing of their practical value, but he thanked Mr. Lloyd, on the part of the Institute, for the very interesting paper, the result of much attention, which he had placed before them. The Chairman then announced that the next session of the Institute would be opened at the new Home, in Conduit-street. In taking leave of the old, where the Institute had assembled for many years, he might be permitted to remind the members that the profession to which they belonged had during that period undergone important changes; that both the art and the profession had advanced; and from the spirit of inquiry which was about, he hoped the ensuing campaign would not be without renewed interest to the profession. They were now agitating some matters which were formerly considered beyond their province. The majority of the profession approved of those endeavours, and he hoped all would aid in bringing these questions to an issue tending to the prosperity of the profession and the advancement of art.

The meeting then separated.

ELECTO-TELEGRAPHIC PROGRESS.

A recent meeting of the Atlantic Telegraph Company, as a new board was appointed to carry into effect the arrangement with Government, and the issue of new 51 shares, to the extent of 600,000*l.*, to enjoy a preferential dividend of 8 per cent. per annum, was sanctioned. — A somewhat unusual cause of injury to submarine or other telegraphs is recorded in the *Saturday Times* of last week. During a violent thunderstorm, an explosive noise, like that of a pistol, was heard at the Submarine Telegraph office, in Jersey, and the transmission of messages was suddenly checked. By some strange misunderstanding, however, the state of the apparatus in the station was not examined, and workmen were sent off to other places to search for the cause of interruption. It was ultimately found, however, that both coils of wire in the office itself, had been so burnt by the electric force as to render them quite useless. The coils being replaced and connected, communication was immediately restored. Had similar injury occurred to the line under the ocean, it might have been no easy matter to trace it, and even then the precise cause might have been misunderstood. Thunderstorms appear to affect telegraph lines much more frequently in America than elsewhere, so far as we can learn. Some preventive should be seen to. — Sicily is about to be united to Malta by an electric cable. — The attempt to lay a submarine cable between Alexandria and the Island of Candia, which would have completed the connection from Aden to London, *via* Constantinople, has unfortunately temporarily failed. The expedition started from Alexandria on the 25th of May, and the line appears to have parted on the 1st of June, when the whole had been laid within 60 miles. — In consequence of the successful laying of the Red Sea cable, future telegrams from India may be expected to be accelerated about seven days. This cable was safely laid as far as Aden on the 28th of May. — The Submarine Telegraph Company are about to submerge a cable from Weybourne, on the Norfolk coast, to Toning, on the shores of Denmark. The cable, which will comprise three wires, will be 388 miles

in length, and will be supplied by Messrs. Glasse, Elliott, and Co. who seem to be doing their utmost to "put a girdle round the earth," although the operation takes more than "forty minutes." — Mr. Horstmann, of New York, has patented a submarine cable, in which he proposes to use a thick covering of shell lac for the insulator. He also suggests the idea of manufacturing his cable on board the vessels, as it is being paid out into the ocean.

THE SITE OF SMITHFIELD.

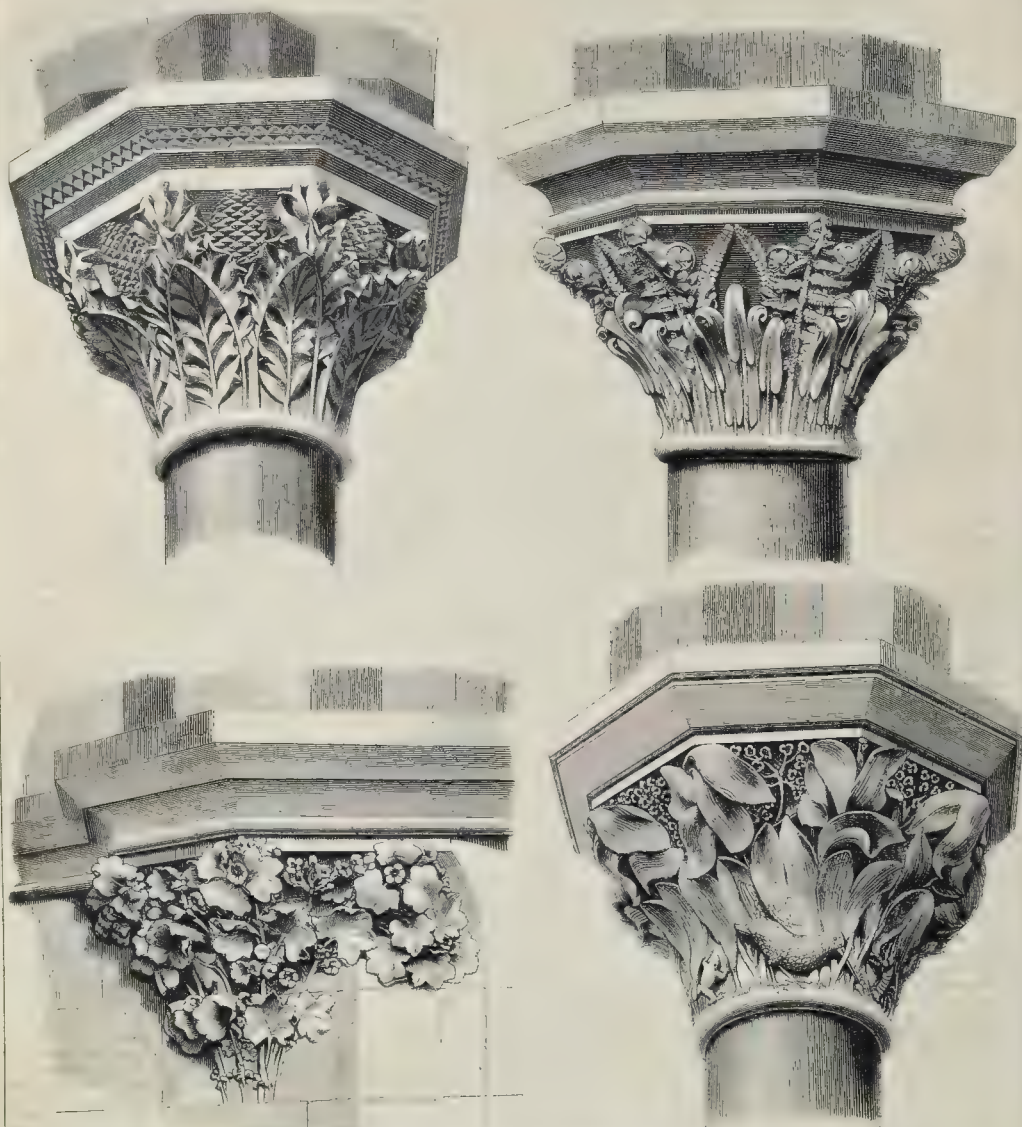
As might have been expected, the neglected condition of the site of old Smithfield market has led to evils which required speedily to be remedied. The pavement has been broken, and the unsightly accumulations which have for so long a period been allowed to sink into the soil become a means of tainting the air of the neighbourhood. The scavenging has been neglected, and foul matters mentioned by the City officer of health have been allowed to collect. A considerable time has now elapsed since the removal of the cattle market to the Caledonian-road, and, notwithstanding that the need for a properly constructed place for the sale of dead meat is great, time has been spent by the corporation authorities endeavouring to use a large portion of the space of Smithfield, and by those interested in St. Bartholomew's Hospital and the Government to prevent it. We believe that a fair compromise has been made, and that nearly all the ancient part of this historical site will be left for the public use. If Smithfield were properly cleared, paved, and kept in good condition, it would form one of those playgrounds which are so much needed by the pent-up Londoners. Several of the old and dilapidated houses have been removed, and, when the market matter has been decided upon, better houses will rise up, and at a small cost an ornamental character might be given to this open space. The spot a little in front of the ancient gateway of St. Bartholomew's, where many have perished for conscience' sake, should not be left unnoticed, but the spot marked by some memorial which, by keeping in recollection the cruelties of the dark ages of our history, will cause us to feel thankful for the advancement which has been made. An obelisk, with a suitable inscription, backed by a few trees, would form an agreeable feature.

The centre of this site would be an admirable one for an important public monument or fountain.

THE ARCHITECTURAL MUTILATION OF YORK MINSTER.

The fact of York Minster being "restored," after a fashion by no means to be commended is fully corroborated by the *York Herald*, which says, in a leading article under the above title, — "A short time since we published a letter from the *Builder*, wherein the writer called attention to the wilful destruction, and ignorant manner in which the restorations are being carried out, on the exterior of our cathedral, and directed attention to the pinnacles as not being copies of the original ones, but from other people's drawings. We have since investigated the matter for ourselves, and find that the writer's statements are but too true." The *Herald* then proceeds to give some measurements of the old and new work, in evidence of the truth of our statement, and adds, "Any one standing at the south entrance, and looking down the new set of pinnacles, at the east end, from the chapter-house, cannot fail to be struck with the poverty-stricken appearance of these alterations. Thus we could go on showing deviations from the original forms, but we will content ourselves with one instance more of this reckless destruction. The original parapet which, with slight repairs, was good for a hundred years to come, has been pulled down, and is being replaced by one 6 inches lower. This lowering of the parapet has at the same time the effect of shortening the top of the hood moulding 6 inches — thus one thing affects another until the original conception is lost. And this is called restoration! Now we do not impugn the character or skill of the master-mason as a workman, but this we do say, that it is evident he is not the proper person to superintend the restoration of such a building as York Minster."

VICTORIA-BRIDGE, PIMLICO. The foundation-stone of this important work, the first railway bridge over the Thames within the metropolis, was laid on Thursday, the 9th, by the eldest son of Mr. Fowler, the engineer of the work. The superstructure, which will consist of four arches, each of 175 feet span, will be formed entirely of wrought iron.



OXFORD UNIVERSITY MUSEUM. — *Carved Capitals and Corbel, from lower Arcade.**

CAMBRIDGE DRAINAGE.

A RECENT storm has flooded the basement floors in some of the streets. The surveyor, Mr. Rowe points out that nearly all the flooded basements have been excavated and formed since the sewers were laid in, and that the owners of property might have exercised more caution in their arrangements.

For premises thus situated he suggests, as leading principles, that—

“Water from the rear of premises should not be conveyed to the front under the basement floor.

Rain-water from the roofs should not be conveyed into the basement, but conducted into the sewer by shallow drains.

Cast-iron pipes may be used for basement drains in some instances.

The scullery sink should be kept as high as possible, and approached by a step. A flap trap should be fixed between the sink and sewer.

There should be no water-closet on the basement floor; if it cannot be arranged elsewhere, the soil-pipe should have a flap trap, or similar contrivance, to prevent the influx of sewage water.”

The enlargement of an existing sewer is proposed; but the surveyor recommends that, before

the board entertain the proposal, the owners of property subject to floods “be requested to raise their basement floors, and alter their private drains in the best practicable manner, so as to guard against a recurrence of future floods.”

THE “HOLY CATHOLIC AND APOSTOLIC CHURCH,” GORDON-SQUARE, LONDON.

THE accompanying engraving represents the interior of the church built for the community who take this title, in Gordon-square. It was designed and carried out under the superintendence of Mr. Raphael Brandon, known as the author, in conjunction with his late brother, of “The Analysis of Gothic Architecture” and other works, at the time when he was in partnership with Mr. Ritchie.

The church consists of chancel (with an eastern chapel, occupying the usual position of a Lady chapel), north chancel aisle (provision is made for a south aisle at some future period), north and

south transepts, with lantern at intersection, nave and aisles.

The present total internal length is 210 feet; when the church is complete the length will be 270 feet. The internal width of nave and aisles is 55 feet. The height from the floor of nave to the ridge is 90 feet.

The church is faced both internally and externally with Bath stone, but almost the whole of the carving, with the exception of that in the eastern chapel, is left in block. The carving in the chapel is exceedingly well done, especially that in the arches of the last three divisions on the south side of the arcade which encompasses the walls. The chancel has a stone-groined roof, with some excellent carving in the bosses. As an adaptation of the Early English style, this church must be considered one of the most successful modern works.

Mr. George Myers was the contractor, and he also erected the buildings on the north side of the church, which, it may be observed, are built after the Paris plan, each floor being a separate residence.



THE "HOLY CATHOLIC AND APOSTOLIC CHURCH," GORDON'S SQUARE, LONDON.
MESSRS. RAFAEL BRANSON AND RICHIE, ARCHITECTS.

A JOURNEY TO THE ROMAN WALL.

DURING the present summer it is to be feared that the troubled state of the Continent will prevent travellers from moving in that direction. Many, however, will not be losers by it, for it will enable them to "discover" their own country, and see its rare beauties, studded with antiquities, and connected with events of the deepest interest.

The fair hills of Gloucestershire, the noble Severn, the beautiful Wye, the picturesque wilds of Yorkshire, the wide-spreading flats of parts of Essex, which, like the ocean, charm the mind by their great extent; the hills of Derbyshire; the cathedrals and churches everywhere; the mountains, Lothians, and rivers of Scotland, and the varied charms of the Sister Island, afford ample opportunities for many a delightful and instructive journey.

In these railway times, although the artist and antiquary can be whisked from place to place at wondrous speed, and so save time, a less rapid mode makes investigation more charming and novel to those who are in cities pent, besides giving the opportunity of discovering the less known objects, and the pleasure of meeting with simple, kind-hearted people, in remote rural spots. If ye have time, therefore, ye youthful artists and architects, buckle on your knapsacks, and, with staff in hand, sallie out of the beaten track, and gain both health and useful materials in parts which, although of rare beauty, have been little noticed. Take, as an example, that worthy and self-made man, William Hutton, the author of the "History of Birmingham," and other useful works, who, in his seventy-ninth year, undertook a journey on foot from that place for the purpose of exploring the "Roman Wall." In his Life Hutton says, "In June, 1800, some friends paid us a visit, and agreed with my daughter to make a tour of the lakes of Cumberland the following June. They wished to be of the party. My consent was quickly obtained, for having many years had a strong inclination to see the famous 'Roman Wall' which crosses the island of Britain from the German Ocean to the Irish Sea, I embraced the plan, because when they were engaged at the Lakes, I could make a trip to my favourite object. The year winged away in feasting upon a pleasure to come."

June arrived, and the friends declined the tour; but Hutton was not to be disappointed, and it was arranged that his daughter was to mount behind her servant upon one of the horses, and "I," said Hutton, "to walk on foot,—a mode of travelling which, of all others, I prefer. Many arguments were spent upon me to ride, but in vain. I comforted myself, that being upon a stage-coach road I could be taken up if unable to perform. We agreed not to impede each other on the way, but to meet at certain inns for refreshment." His daughter, in a letter to a friend, gives some interesting particulars of this old-fashioned method of travelling. Having in vain endeavoured to prevail on her father to ride only a portion of the way, she says:—"I rode on a pillion behind the servant, and our mode of travelling was this,—my father informed himself how he could get out of the house next morning before the servants were stirring: he rose at four o'clock; walked to the end of the next stage, breakfasted, and waited for me. I set out at seven; and, when I arrived at the same inn, breakfasted also. When my father had rested two hours he set off again. When my horse had fed properly, I followed; passed my father on the road, arrived before him at the next inn, and bespoke dinner and beds." At Penrith the father and daughter parted; he to study one of the most remarkable of our national antiquities, and Miss Hutton to a quiet village amongst the lakes. We glean some idea of the appearance of the venerable antiquary during this journey, from some particulars of Hutton's book of "The Roman Wall." "I was dressed," says he, "in black, a kind of religious warrant, but divested of assuming airs; and had a bag of the same colour and materials,—much like a dragoon's cartridge-box or postman's letter-pouch, in which were deposited the maps of Cumberland, Northumberland, and the Wall, all three taken out of Gough's edition of the 'Britannia'; also Warburton's 'Map of the Wall,' with my own remarks, &c. To this little packet I fastened with a strap an umbrella in a green case, for I was not likely to have a six weeks' tour without wet, and slung it over that shoulder which was least tired. A person of my appearance and style of travelling is so seldom seen upon the highway, that the crowds I met in my whole journey viewed me with an eye of wonder and inquiry, and I have reason to believe that not a soul met me without a turn of the head to survey the rear as well as

the front." The general impression seems to have been that he was a poor parson; but at times he was taken for an exciseman; at others for a tax-gatherer; at others for a land-surveyor or estate agent on the look-out for the purpose of raising the rents for his employers; at others, for a person employed by the Government to examine private property with a view to increasing the taxation; and once he was frankly told that they took him for a spy employed by ministers. But Hutton never failed to disperse speedily, by his frank and cheerful manner, all these unfavourable impressions; and although the farmers and rustic inn-keepers could scarcely conceive how so old a man could give himself so much trouble about a ruined wall, they generally treated him with the kindness and respect he merited. At one farm-house he was treated with great shyness, being taken for a surveyor of land preparatory to enclosing the commons. He carried an ink-bottle fastened to the breast of his coat, and a note-book in his hand. This gave him the professional appearance which was so much disliked. During this journey Hutton's daughter received two scraps of paper torn from her father's pocket-book, the first dated from Carlisle, July 20, in which he told her he was sound in body, shoe, and stocking, but had uncomfortable lodgings; the second, from Newcastle, July 23, when he said he had been at the Wall's-end, that the weather was so hot he was obliged to repose under hedges, and that the country was infested by thieves; "but," says Miss Hutton, "lest I should be under any apprehensions for his personal safety, they were only such as demolished his idol the Wall, by stealing the stones of which it was composed."

Hutton, notwithstanding his advanced years, re-examined the Wall, joined his daughter, and walked home, the whole distance being about 600 miles, and wrote a useful account of his observations.

BURIAL VAULTS IN THE METROPOLIS.

At a recent meeting of the trustees of the parish of Clerkenwell, the condition of the vault beneath St. James's Church was brought under notice. Mr. Churchwarden Webb mentioned that Mr. Grainger had been appointed by the Government to inspect the vaults, and it having been intimated that the Government inspection might result in an order for alterations which would entail serious expenses on the parish, the churchwarden, inspector, and sexton descended into the vaults. Upon being questioned, the sexton stated that there was a certain amount of effluvium arising from a particular corner of the vaults. Mr. Webb mentioned that, after two hours' inspection, there was the defect as previously stated by the sexton, and only in that particular place. Had it been previously known, the evil, whatever it was, might have been remedied, and in that case the inspector would have had no reason to find fault with the vault. The effluvium appeared to arise from a leaden coffin, which had fissures in it so wide that a finger might be laid in them. Had 10*l.* been expended on the vault, no possible objection could have been found: as it was, if the inspector presented his report to the Government, an order would come down for them not only to brick up that particular coffin, but also to have the whole put down covered with charcoal and gravel, and bricked down, at a cost of from 300*l.* to 400*l.* Mr. Webb further remarked that the coffin complained of was only thirty years old.

Some discussion took place, one gentleman considering that the effluvium complained of might come from some neighbouring cesspool, and not from the dead bodies; another that the acids of the body had caused the decay of the lead. It did not, however, seem to be considered that in all vaults in which the dead are stacked together, as they are in this and many other of the London churches, there must be a continual escape of the most dangerous gases. The circumstance of a coffin thirty years old yielding effluvium, shows that after the lapse of that time the danger is not past when the air is admitted into coffins. It should be borne in mind, that if the lead cases are so closed as entirely to exclude the atmosphere, decomposition goes slowly forward. In the vaults of the church of St. Martin-in-the-Fields, it was found that the bodies which had been stored there in wooden coffins had become dried and withered, and reduced to a weight of about five or six pounds: all the remainder had been diffused around, and a large part of the gases breathed by those who attended the church, or who resided in the neighbourhood. In some of the lead coffins the case was different, for in them, after a lapse of half a century the most dangerous matter remained.

It is a number of years now since we first visited the vaults of St. James's, Clerkenwell, and it was here we first learned that it was necessary to puncture lead coffins in order to prevent them from bursting with a loud explosion. There can be no doubt that in vaults situated like this there is a constant escape of effluvia, and that the danger is increased by the rupture of coffins which takes place from time to time. This church is generally attended by a crowded congregation, and it would be well for them if the work were set properly about, and the whole of these coffins carefully buried, so that they might not cause further mischief.

WATER GLASS, OR "OIL OF FLINT."

THE "oil of flint" of the old chemists is likely to become a very useful agent in its modern applications in the arts. An important report on it by a French Government Commission has been translated and printed for private circulation at the instance of his Royal Highness the Prince Consort, as president of the Society of Arts; and from a copy of this report,* we shall give a few condensed passages; premising that the reporters are M. Bourdonquoy, Ingénieur en Chef des Mines; M. Kolb, Ingénieur on Chef des Ponts et Chaussées; and M. Bossey, Ingénieur Ordinaire des Mines.

Theory of Hydraulic Cements.—The silicious solution, silicate of potash, or silicate of soda, forms the basis of all the new processes. Since 1840 researches upon the origin and nature of the efflorescences upon walls have furnished Mr. Kuhlmann with the opportunity of ascertaining the presence of potash and soda in most of the limestones of the various geological epochs, in larger proportion in hydraulic than in fat limestones (*a chaux grasse*). Quicklime, when left in contact with a solution of silicate of potash, is immediately transformed into hydraulic lime. This lime and an alkaline silicate, very finely pulverized, and mixed in the proportion of 11 of silicate to 100 of lime, likewise furnish an excellent hydraulic lime. A mortar of fat lime, repeatedly wetted with a solution of alkaline silicate, is transformed into hydraulic mortar. Lastly, with the glassy silicate and lime, more or less energetic hydraulic cements can be produced at will, which will be found very useful in countries where only fat limestones exist.

Silication.—From observing the great affinity of lime for silica when set free in a nascent state from its compound with potash, Mr. Kuhlmann was led to study the action of the silicates of potash and soda upon the calcareous stones, upon chalk in particular. He observed that, by placing some chalk in contact with a solution of silicate of potash in the cold, a portion of the chalk is transformed into silico-carbonate of lime, whilst a corresponding portion of the chalk is displaced, that the chalk hardens gradually in the air, and acquires a greater hardness than that of the best hydraulic cements. If the chalk is made into a paste with the silicate, it will adhere strongly to bodies to the surface of which it is applied. Thus a cement was discovered capable of being employed in restoring public monuments and in the manufacture of cornice-work. Pushing his experiments further, he ascertained that chalk when plunged into a solution of silicate of potash, was capable of absorbing a considerable quantity of silica. By exposing it alternately and repeatedly to the action of the silicious solution and to that of the air, he found that this stone acquired in time a great hardness on the surface, and that the hardening, which was at first superficial, penetrated gradually to the centre, so that a piece which had been subjected to the process fifteen years ago, and which was examined by your commission, had become hardened to a depth of nearly a centimetre. This silication of the stone is due to the decomposition of the silicate of potash by the carbonate of lime on the one hand, and by the carbonic acid of the air on the other. A solution of silicate of potash, when left to the air, gives origin, in fact, after some time, to a gelatinous and contractible deposit of silica, and to a stratum of carbonate of potash. In course of time the deposit of silica acquires sufficient hardness to scratch glass.

Calcareous stones, thus prepared, acquire a compact grain and a lustrous appearance, and become capable of receiving a fine polish. The hardening is singularly assisted by heat. From limestones Mr. Kuhlmann passed on to porous stones, and has succeeded in showing that the action of the carbonic acid of the air upon silicate of potash was sufficient to effect a superficial consolidation of the stones, varying with their porosity.

Upon sulphate of lime or plaster of Paris the action of silicate of potash is essentially the same; but it is more rapid, and has the disadvantage of giving rise to the formation of sulphate of potash, which, on crystallizing, disintegrates the surfaces. Consequently the silicious solution ought to be more diluted, so as to render the action slower. The consolidation, however, must be sufficient to avoid the effects of the crystallization of sulphate of potash.

Mode of Application.—Mr. Kuhlmann takes his silicate of potash, and dissolves it in twice its own weight of water. This solution is to be had in commerce, and marked 35 deg. of Beaumé's aerometer. All that is required is to dilute this with twice its volume of water, in order to obtain the degree of concentration most convenient for the process of hardening. In recent buildings, the walls, when completed at once, older constructions require to be cleansed by washing with a hard brush, or by means of a solution of caustic potash, and must frequently by smart scraping. Large surfaces are sprinkled with the silicious solution by means of pumps or large syringes with divided jets. Care must be taken to collect the excess of liquid by means of gutters of glazed earthenware placed at the foot of the walls. For sculptures and certain portions of buildings, soft brushes are employed, and, with great advantage, also the painting-brush. Experience has shown that three applications of silicate, on three consecutive days, suffice to harden stone. The quantity

* On the Applications of Water Glass (soluble alkaline silicate) in the Arts; by F. Kuhlmann, professor of chemistry at Lille.

of solution which is absorbed varies with the nature of the stone and its porosity; the coat of silicate does not exceed 75 centimes (7½d.) per square metre for the most porous stones.

Dyeing of Stones.—Mr. Kuhlmann observing that the silication of buildings and sculptures gave rise to various colorations which rendered, for instance, the white more marked, was led to seek a remedy for these colorations. By means of a double silicate of manganese and potash, he obtained a dark solution which could be applied to very white limestones. By suspending some artificial sulphate of baryta in the silicious solution, he was able to introduce a little of this sulphate into the porous stone together with the silica, in such a manner as to whiten surfaces of too dark a hue. He proved experimentally that porous limestones, when boiled in solutions of metallic sulphates (the oxides of which are insoluble in water), give rise to the fixation, to a certain depth, of these oxides in intimate combination with the sulphate of lime. With sulphate of iron he obtained a rust-colour of more or less intensity, with sulphate of copper a magnificent green tint, with sulphate of manganese brown tints, with a mixture of sulphate of iron and sulphate of copper a chocolate tint, &c. He observed, at the same time, that the double sulphates thus formed penetrated into the stones, and likewise increased their hardness.

Silicious Painting.—There was but one step from silication to silicious painting. Mr. Kuhlmann applied the colours directly by means of a brush. He endeavoured at first to replace, in the application of mineral colours upon stone, the fixed and essential oils usually employed, by solutions of silicate of potash, and white lead, the formation of silicate of lead was too rapid to permit the application of this colour by means of the painting-brush. Oxide of zinc gave satisfactory results. The artificial sulphate of baryta, which had already found employment in whitening stones of too dark a colour, was again usefully employed; and by mixing it in large proportion with the oxide of zinc, Mr. Kuhlmann obtained a white colour of greater brilliancy and transparency. It appeared at first that sulphate of baryta could not be employed by itself, but it was found that by applying it repeatedly by means of glue or starch paste, or by means of a mixture of starch paste and silicious solution, it covered as well as white of lead and zinc white in painting, and in the paste colours. This observation was of the highest importance: a new white colour was found which could be employed in the place of those hitherto in use.

New White Colour (Base blanche).—The commission has been vividly impressed with the results already obtained by the employment of artificial sulphate of baryta in the decoration of several buildings at Lille. The brilliancy and whiteness of the finest white colour obtained when compared with painting in sulphate of baryta. This colour possesses the advantage of remaining unaltered under the influence of emanations of sulphuretted hydrogen: it enables us to execute dim or lustrous white paintings at a saving of about two-thirds. This new branch of useful industry does great honour to Mr. Kuhlmann. For the sake of economy and sanitary amelioration, it would be desirable to see it employed in military buildings, in barracks, schools, public monuments, and in the most humble dwellings.

Mineral Colours (Bases colorées).—Mr. Kuhlmann, passing from whites to the various coloured mineral substances, has observed that under the influence of silicate of potash or soda, the same reactions are produced; that colours which are alterable by the alkalis cannot be employed, but that the ochres may be used, as well as blue and green ultramarine, oxide of chromium, zinc yellow, sulphide of cadmium, red lead, calcined lamp-black, oxide of manganese, &c.; that the colours which dry slowly, may be rendered fit for painting by mixing them with colours which dry more readily, or by the addition of white colours which dry rapidly.

Upon Wood.—Upon wood, the application of silicious painting presented some difficulties. Woods impregnated with resin do not receive the colour uniformly. Wetting with the water of the solution tends to cause the wood to crack. Ash and yoke-elm, however, answer very well with a few precautions.

Upon Glass.—The commission has examined with the greatest interest paintings which have been executed upon glass. Artificial sulphate of baryta, applied to glass by means of silicate of potash, imparts to it a milk-white colour of great beauty: in a few days the silica is found intimately combined with it, and the colour is found lasting with warm water. By the action of a strong heat, this silicious varnish is transformed into a fine white enamel. Blue ultramarine, oxide of chromium, and pulverized coloured enamels may be applied. Silicious painting upon glass is destined to find advantageous employment in the construction of church windows, whilst silicious painting upon stone will serve for mural decorations.

Following similar ideas, Mr. Kuhlmann has extended his researches to printing upon paper and upon stuffs, to the employment of silicate of soda in scene-painting and in dressing stuffs.

Results not yet published may be summed up as follows:—

The oxides and metallic salts which enter into the composition of silicious colours or of cements, have the property not only of combining with the silica of the silicates, but also of fixing, in an insoluble state, variable quantities of potash. The colours which act most energetically in this respect are the ochres, oxide of manganese, oxide of zinc, oxide of lead, and artificial sulphate of baryta also retain potash.

Mr. Kuhlmann hopes he will be able to show that excellent cements may be obtained without the intervention of carbonic acid, merely by the slow consolidation of the silicates of lime, of alumina, or of magnesia and potash, and that the natural hydraulic limes approach more or less, in their composition and their properties, to the nature of these cements.

Conclusion.—Your commission, actuated by a strong desire of making known and appreciated, as much as lies

* This process has been applied to the new sculptures of the Exchange at Lille, to the works of restoration in the church of St. Maurice, to the construction of a new church at Wazemmes, to the hospital of Seclin, to some works of the Corps du Génie, and to several private buildings at Lille; it has been found to answer perfectly. Since the year 1841, Messrs. Benignat, Marteau, and Vorlé have tested the efficacy of the new process. It has likewise been employed in other places, at Versailles, at Fontainebleau, at the Cathedral of Chartres, at the Town-hall of Lyons, at St. Germain, at the Cathedral of the Holy Dams in Paris. The best architecture, such as M. Lassus, Lefebvre, Viollet Le Duc, &c. have obtained most satisfactory results.—*Report.*

in its power, the important researches of Mr. Kuhlmann upon silification, would propose in conclusion, —

1. To have distributed to the services of Ponts et Chaussées and of mining the pamphlets in which the results of Mr. Kuhlmann's works on silification are to be found, and to call the special attention of engineers to the advantages which they may derive from the new process.

2. To order the publication of the present report in the "Annales des Ponts et Chaussées," and in the "Annales des Mines."

To the translated report is appended the translation of a pamphlet, by Mr. Kuhlmann, titled "Practical Instructions on the use of Soluble Alkaline Silicates (Water-Glass) in Painting, and for Hardening Stones."

GAS.

THE Derby Gas Company have agreed to a further reduction in the charge for gas, equal, in the annual consumption, it is stated, to 550l. Another, and it is said a successful, attempt at the production of water-gas for illuminating purposes has been patented by M. Gillard, C.E. of Paris. He brings superheated steam in contact with the decomposing material, and when the gas is produced it is purified by passing through hydrate of lime, either alone or mixed with carbonate of soda. The steam is superheated by passing through tubes embedded in the brickwork of the furnace, and arrangements are made for the ejection of the steam upon the decomposing material in such a manner that this latter shall be kept equally heated. To impart luminousness to the hydrogen flame he employs platinum wicks or wirework, or by preference wicks of an alloy of platinum and iridium. The inventor can impart to his gas, which is without smell, any odour that might be required. The light is said to be quite brilliant.

There is some prospect of Hong-Kong being lighted by gas, a proposition to that effect having been made by an American company, which has already introduced gas to the Mauritius and the Havannah. It has been remarked that the introduction of gas would be dangerous, owing to the probable carelessness of Chinese servants, but the *China Mail* thinks the probability is, that the Chinese would be very careful in the matter—more so, at least, than the Indians of Calcutta and the negroes of Havannah, where no catastrophe has ensued from the use of gas. At the annual meeting of shareholders in the Burslem and Tunstall Gas Company dividends were declared at the rate of 8 per cent. upon the original stock, and 6 per cent. upon the new shares. At the annual general meeting of the directors of the Lutterworth Gas and Coke Company, it was unanimously resolved to reduce the price of gas from 8s. 4d. to 7s. 6d. per 1,000 feet, and to allow 5 per cent. discount on accounts paid within a month of the time when they become due.

THE LINCOLNSHIRE ARCHITECTURAL SOCIETY.

At the Grimsby meeting of this Society, the Rev. E. Trollope lectured on St. James's Church, the lecturer taking his position on the steps leading to the chancel. The meeting then adjourned for the first day's excursion. Clee Church, now being re-pewed, was first visited. The party then proceeded by Humberstone to Holton, and thence to Wathe. Grimsby Church was next visited, and Ravendale, *via* the Old Barton-street or old Roman road. Here about 150 partook of refreshment offered by the Rev. Dr. Parkinson. After seeing Ravendale Priory, where a paper was read on the history of the priory, by Dr. Parkinson, a call was made at Brigisley. Waltham was next on the list; then Scatho Church, whence the party returned to Grimsby, after a drive of not less than twenty miles.

In the evening, about 600 persons met in the Exchange, where a congratulatory address from the corporation was read, together with the Society's reply. The Rev. E. Trollope then read a paper on the Danes in Lincolnshire, and the Rev. G. Atkinson one on architecture, particularly Saxon. During the day there had been an exhibition open to the public in the Exchange.

Next morning, after a breakfast given by the mayor to 150 persons, including the members of the society and about 100 friends, and at which the Bishop of Lincoln was present, the party took a special train to Thornton Abbey and Barton. Nearly two hours were spent in examining the interesting remains at Thornton, after which Barrow Haven and Barrow Castle hills were visited, and the train continued to Barton, where the church of St. Peter formed the chief object of interest, and next the church of St. Mary. The party returned to Grimsby about 5 p.m. The gas and hydraulic tower at Grimsby were then

visited, and the hydraulic principle explained by Mr. Adam Smith, the resident engineer. A dinner and speeches followed, and then Professor Latham read a paper on "Havelock the Dane," and the Rev. E. Trollope, one on the "Historical Memorabilia of Grimsby." A general address, by Sir Charles Anderson, concluded the proceedings.

STAINED GLASS.

Stockport.—The large east window in Christ Church, Stockport, has been filled with stained and painted glass. The window in style is pointed, of three large lights, the centre one measuring upwards of 20 feet high, by 3 feet wide; the sides a little less. Each light is divided into three compartments by ornamented canopy work, containing a subject representing a scene in the life of Christ, viz.—The Nativity and the Baptism of Jesus; Our Lord teaching, Humility; the Last Supper; the Agony in the Garden; and the Bearing of the Cross. The three subjects in the centre light are much larger, and represent the Resurrection of Our Lord in the bottom compartment; at the top, the Ascension; and in the centre, Christ blessing little children. In the background of the centre subject, a distant view of Galilee is introduced. Messrs. R. B. Edmundson and Son, of Manchester, were the artists. The work was done at the expense of the mayor. The cost was 170l.

Tilmanstone (near Sandwich).—Tilmanstone Church has recently had a Gothic stained glass window placed on the south side of the church. The height of the window is 8 feet by 4 feet 2 inches wide, and it contains a large pictorial subject of the Woman with the Issue of Blood, touching the Hem of Christ's Garment. The group contains four large figures, Our Lord and the female being the most prominent. Above the tracery is an angel in a kneeling position, holding a scroll. The other spandrels are filled with lilies. At the bottom of the window is the inscription—"In memory of Lydia Ayers." The stonework is new, and was designed and executed under the directions of Mr. Parker Ayers, of Dover, who has placed the window in the church. The stained glass has been designed and executed by Mr. Charles Gibbs, of London.

Upton Bishop (Herefordshire).—A new window, by Messrs. Hardman, of Birmingham, has been placed at the east end of the chancel of the church here. It consists of two lights, of the Decorated period, with a quatrefoil above. In the lower part of the window is the inscription, to the memory of the Rev. James Garbett, for many years vicar of the parish. The window was erected by his widow. The subject represented is the interview between Mary Magdalene and our Saviour, early on the morning of His resurrection. The upper part of the window is filled with the representation of an angel with extended arms, bearing a scroll.

PROVINCIAL NEWS.

Lincoln.—The elevation and plans of the Franklin Museum, says the *Lincolnshire Chronicle*, have been prepared at the offices of Mr. Goddard, architect, and are to be submitted to the committee for approval. The estimated cost of the building is 2,500l. while the subscriptions scarcely reach half that sum.

Sudbury.—On the Queen's birthday, the completion of the Memorial Tower, recently erected at Pentlow, by the Rev. E. Bull, rector, to the memory of his parents, was celebrated. The tower is octagon, 90 feet in height, of the Tudor style of architecture, embattled, and built of red brick, relieved with string courses of white moulded bricks, and variegated with designs in black. On the top is a flag-staff. The summit is reached by a spiral oak staircase, of 114 steps, lighted by windows placed in the sides of the tower. From the top a view is obtained, embracing forty-one churches, sixty windmills, two castles, and several large halls and estates. The tower, according to printed statements, was designed and erected by Mr. L. Webb, of Sudbury, superintended by Mr. J. Johnson, architect, Bury St. Edmund's.

Salisbury.—We are indebted to the *Sherborne Journal* for the following additional particulars as to the new Market-house recently opened here:—Mr. Strapp, the engineer of the South-Western Railway, was the architect, and the contractors were Messrs. Maybone and Co. of Manchester, for the iron work, and Messrs. Bull and Son, of Southampton, were the builders. The gates, which are of wrought iron, with scrolls, are from the workshop of Messrs. Hill and Smith, of Dudley.

Bath.—The foundation-stone of a new mineral water hospital has been laid at Bath. The buildings will cost upwards of 20,000*l*. The site is that lately occupied by the Bath Commercial Rooms, and some other buildings. The new hospital will provide convenience for the patients during the day time, a chapel, board-room, offices, and other accommodation, in which the present contracted building is deficient. The old building will be converted into a dormitory for the patients, which, when re-arranged, will provide twenty more beds, and will enable 100 more patients to pass through the hospital in the course of a year than can be done at present.

Tamworth.—The new workhouse here has been opened. The building will accommodate 212 inmates. The kitchens are fitted with steam cooking apparatus, heated from a boiler in the basement, and hot and cold water is laid throughout the entire buildings. The tank for cold water is placed in the central tower, to which the water is supplied by a crank pump from the well in the able-bodied men's yard. The adults' dining-hall, which is also used as a chapel, is in the rear of the centre of the main building. The children's wards and schools form a separate and distinct department. Each sex has a day-room and class-room, and a lavatory and bath-room adjacent to day-room. The dormitories are over the schools on the one-pair floor. Separate playgrounds are provided for boys and girls and infants. The children have also a dining-hall to themselves. The hospital is a distinct building, and the fever wards are distinct from the other wards. The front entrance building consists of porter's lodge, entrance gateway, waiting-room, &c.; the board-room, with open-timbered roof, clerk's office, retiring-room, &c. over. All the staircases throughout the buildings are of stone, and a fireproof corridor intersects the main building from end to end. The building is of brick, with stone dressings, and is Gothic in character. The works in its erection have been executed by Messrs. Ferguson and Allen, of Nottingham. The engineering works and water-supply are by Mr. W. Jeakes, of London. Mr. Walton, of Tamworth, was clerk of the works. The whole has been carried out from the designs and under the superintendence of Messrs. Briggs and Everal, of Birmingham, architects.

Coalbrookdale.—The Coalbrookdale Literary and Scientific Institution has been inaugurated. The site is on the slope of the hill. The building is in the Tudor style. It is built of the Coalbrookdale Company's blue and white brick; the clays having been moulded to carry out, in the friezes, string-courses, and tall pointed gables, the design of Mr. Crookes, who is the architect. The material used is abundant in the district, and was generally in use during the old Roman period, and again in the latter half of the fifteenth century. The front of the building is relieved by a central porch, and three slightly projecting gables. Above rises a treble roof, with ornamental cross and frieze. Upon an entablature of blue brick are the words, formed by smaller ones, moulded in yellowish clay, "Literary and Scientific Institution." At one end is the residence of the librarian. In front of the entire building is a terrace with balcony, approached by a flight of steps at either end, with gravel-walks 20 feet wide, enclosing a grass-plot. The suite of rooms comprises the large lecture-hall (a small gallery or orchestra over the passage at the end is added), the library, reading-room, room of art, and some smaller ones.

Manchester.—A commencement has been made in the erection of a building for the branch library in Livesey-street, Rochdale-road. The reading-room, according to the *Courier*, will be 44 feet by 31 feet, with coved ceiling, and lantern light. Provision will be made for ventilation, warming, &c. A tower surmounts the building, to act as a ventilating-shaft and chimney. On the left of the entrance there will be a house for the librarian. Mr. Thompson, of Cheetham-hill, is the contractor.

Leeds.—Steps are being taken by the Midland Company, says the *Leeds Intelligencer*, to obtain from architects of eminence plans and estimates, which it is expected will be prepared in time to be submitted to the shareholders at their next half-yearly meeting, for the erection of a suitable hotel at their Wellington-street Station, Leeds.

Bradford.—A circular has been addressed to the shareholders of St. George's Hall, inviting attention to a proposed alteration in the interior of the hall, by which a much smaller room than the present hall may be obtained, capable of accommodating from 800 to 1,000 persons. The need of such a room, according to the *Observer*, has been long felt. By a re-arrangement of the entrance-hall and grand staircase, and by taking in the saloon and dressing-rooms, it will be pos-

sible to obtain a room 76 feet in length and of proportionate width, on the same floor as the present area, and adapted for public meetings and lectures of various kinds, for public dinners, balls, bazaars, minor concerts, exhibitions, &c. The present entrance, however, will have to be sacrificed. The cost will be about 1,000*l*.—The Waterworks Committee, disappointed with the contractors, had taken in hand the effort to lay the conduit under the river at Hirst Mill, in the valley of the Aire, but, failing therein, they have again placed the matter in the hands of the contractor.

Stockton.—The baths and washhouses at Stockton have been opened by the mayor and corporation. The building, according to the *Gateshead Observer*, contains a swimming-bath, eight warm baths, three shower-baths, one vapour-bath, and a washhouse, drying-room, and laundry. The estimated cost was 3,000*l*, including the land. The buildings have been completed, however, considerably within that sum, leaving a balance in the hands of the corporation to begin with. Messrs. Oliver and Lamb, of Newcastle, were the architects; Mr. Bowron, the builder; and Messrs. Dickson, Brothers, the engineers.

Sunderland.—Mr. Alderman Hartley proposes, with the permission of the local authorities, to erect, at his own expense, on the west side of the Sunderland Park, a glass palace, in the style of the "Floral Hall," in Covent-garden, provided the committee would properly furnish the building, and the Park Committee make the proper walks. The building would be 50 feet in length, 14 feet in width, and of sufficient height to display the models to the best advantage. This offer has met with a favourable reception from the committee.

Newcastle-upon-Tyne.—The tender of Messrs. W. and C. Burnup for the erection of a new lecture-room for the Literary and Philosophical Society of Newcastle, has been accepted: the amount is 1,083*l*. 1*s*. exclusive of five iron girders for the support of the floor of the library, to be supplied by Messrs. Hawks and Crawshaw, at a cost of 165*l*. 15*s*.: total, 1,249*l*. 9*s*. The whole cost will be borne by Sir W. G. Armstrong, C.B.

Leith.—The merchants in the corn trade at Leith have had a meeting, with the view of forming a corn exchange in that town. The revenue of Leith is the largest of any port in Scotland, except Glasgow; and its imports of corn are larger than those of Dundee, Newcastle, or Glasgow. It is expected that a good exchange may be built for 3,000*l*.; and of that sum 2,500*l*. were subscribed at the meeting.

CHURCH-BUILDING NEWS.

Bengeo (Herts).—The tender of Mr. Ekins for the erection of a shingle spire at the cost of 899*l*. has been accepted. Mr. Ekins has offered to erect the spire of stone at a slightly increased cost, and the offer is in abeyance. The expense will be defrayed by the family of the late Mr. Abel Smith.

Southampton.—The tender of Mr. Brinton (1,195*l*.), for the enlargement of St. Luke's parish church has been accepted. The addition will comprise a new aisle, without a chancel. The cost of both would be 1,300*l*. The amount already contributed is 900*l*.; so that 400*l*. are yet required.

Worcester.—The new Congregational Chapel, in Angel-street, says the local *Chronicle*, is now nearly completed. The principal façade is of Bath stone, with a portico of the Corinthian order. The portico is semi-circular, with four columns and two pilasters, each 25 feet in height, with carved capitals. These are surmounted with an entablature, of which the cornice is ornamented. The main entrance opens into a lobby, which leads to doors that open immediately into the chapel. On each side of the building, clear of the portico, is an entrance leading to the gallery, by means of a vestibule, or porch, and a flight of stone steps in the interior. In the centre the façade is raised by means of an attic surmounted by a pediment, which is decorated with a carved apex stone. Beneath the roof of the portico three windows give light to the chapel, and beneath these are two others, one on each side of the central entrance, lighting the lobby. Between the upper windows and the lower the wall is panelled and moulded. On each side of the portico, above the gallery vestibule, another window is introduced with mouldings. On the extreme right and left of the façade are entrances leading to the rear of the edifice. The windows are filled with ground glass. The iron gates are filled in with work in keeping with the design of the façade. The principal source of light in the edifice is a large dome in the roof, glazed with ground glass. The plan of the

interior approaches a square with the corners rounded off. The passages on each side, leading to the premises at the rear, are taken from the area of the floor by a wall which assists to support the principal gallery. This gallery sweeps round the interior in curves, and above this on each side is a smaller gallery. The roof is coved, panelled, and moulded. Behind the pulpit is an alcove or recess, extending to a considerable height, and covered with a semi-dome, on the top of which is a window of stained glass. The opening to this recess is flanked on each side by a free column and a pilaster, 18 feet high, which support an entablature. Above the opening is a semi-circular arch, which rests on these columns, and is moulded and panelled on the face. The arch is also decorated with springing trusses. The capitals of the columns are Corinthian, and are cast of Parian plaster. The recess is provided with seats to accommodate the choir. The pews on the floor and large gallery are curved, nearly according to the radii of which the pulpit is the centre. The pews are low, and made of deal, with raised and moulded ends and dwarf doors. They are simply varnished. The aisles are flagged with stone, along which are ornamental iron gratings, through which the building is warmed and ventilated. Colour has been extensively used in ornamenting the place. The walls are of French grey with vermillion stem-cillings; the brackets supporting the galleries, lavender picked out with white; the iron railing in front of the two upper galleries, and the orchestra gallery, lavender with golden stars; and the railing round the pulpit platform, lavender picked out with gold. The panels in the ceiling are touched in pattern with vermillion, and the mouldings enclosing the panels are French grey. The dome in the roof is twelve sided, is 28 feet in diameter, and rises immediately from the ceiling. The outer roof rises to a pyramid over the dome, and the portion towards the apex is covered with glass instead of slates. Thus the light has to pass through two thicknesses of glass before reaching the chapel. The interior is ventilated by ornamental louvres at the foot of the dome communicating with the interior of the roof. To provide for lighting the chapel at night a row of 374 gas jets has been carried round the base of the dome, about a couple of feet from the sides. The dimensions of the building in the clear are 79 by 59 feet, and from the floor to the top of the dome is 44 feet. The roof is formed of four main queen trusses; the square made by their intersection being the base of the dome. Two segmental trusses of wrought-iron, with a series of diagonal straining bars, are also introduced to discharge the weight from the four points of intersection. Immediately at the back of the chapel are vestries and other apartments, and behind these are school-rooms. The chapel, schools, vestries, and lobby are all heated by means of hot-water apparatus, by Mr. Mallory, of Cheltenham. The architects are Messrs. Poulton and Woodman, of Reading. Messrs. Wood and Sons are the contractors; and Mr. G. Johnson, clerk of the works. The contract was 3,210*l*. but this, adds the *Chronicle*, could scarcely pay the contractors. The iron-work, including the gallery rails and gates, is from the foundry of Messrs. Hardy and Padmore.

Nottingham.—A new Baptist Chapel, erected in Circus-street, has just been opened. The chapel is without galleries. The pews gradually ascend upon a slight incline from the pulpit. Light is obtained from two sun-lights in the ceiling. The total cost of the erection is 3,300*l*. towards which, says the *Notts Guardian*, about 2,300*l*. have been realized, leaving a debt of 1,000*l*. upon the building.

Cromford.—Cromford church has recently been re-opened. At the cost of Mr. Peter Arkwright it has undergone various alterations and improvements. A chancel has been added at one end, and an arcade at the entrance: these, with a new roof, are amongst the most marked of the external changes. Amongst the internal alterations are windows decorated with stained glass, and a new tessellated pavement. The pulpit, reading-desk, gallery, and pews are new, and made of wainscot. Under the chancel altar is a new tablet, commemorative of the late Sir Richard Arkwright and other members of the family. Opposite the chancel is the gallery with three arches, those on either side for the use of the schools connected with the church, the middle one being filled by a new organ, built for the church by Messrs. Hill and Sons, of London. To Mr. I. H. Stevens, of Derby, the architecture was confided, and the builders employed were Mr. William Frances, of Cromford, and Mr. Webster, of Wirksworth.

Repton (Derbyshire).—A school chapel has been

built and opened at Repton. The preparation of the design was entrusted to Mr. H. I. Stevens, of Derby, architect, under whose direction the works have been carried out. The chapel is on a site affording a frontage to the road from Willington. It is built of stone throughout, the whole being from the Little Eaton quarries, except the dressings of the windows and the inside bands, which are of Ancaster stone. The date of the original foundation of the school suggested the latest period of Pointed architecture as the most appropriate style for the building, which is a parallelogram 68 feet by 28 feet, with north and south transeptal projections, each 16 feet 6 inches by 7 feet, and opening to the nave by moulded arches, the entire width of the transepts. The entrance porch is by the side of the north transept. Each side of the nave is lighted by four two-light windows, placed in couples. There is a large window of five lights at the east end, and the west gable is perforated with two single lights and a Marigold circular window-door. Each of the transepts has a three-light window. The walls of the nave are 21 feet high. The roof is high pitched, covered with Burlington slate, and the ridge is surmounted with an iron cresting. The roof is divided into bays by trussed principals filled with tracery. A louver of oak rises from the ridge with traceried opening and spirelet termination, and makes a total height from the ground, level to the top of the vane, of 80 feet. The building is heated by an apparatus fixed by Mr. S. E. Rosser, of London. The builders were Messrs. Elliott and Lilley, of Ashby.

Warrington.—In consequence of the unsatisfactory condition of the tower of the parish church, and want of sufficient accommodation, it has been resolved to restore the whole fabric, on plans by Messrs. Francis, architects. The work has been commenced, and about 4,000*l.* or two-thirds of the requisite means, have been realized.

Ancoats (Manchester).—St. Andrew's Church, Ancoats, has been repewed, repainted, and otherwise improved in its interior arrangements. The entrance to the chancel has been improved by the erection of open wooden arches, the pulpit carvings renewed, and brass standard lights erected on either side of the aisle. The pews are all open, and nearly 800 are free.

RESTORATION OF LICHFIELD CATHEDRAL.

CONSIDERABLE works are now going on at Lichfield Cathedral. The *Staffordshire Advertiser* has a long article on the subject, in the course of which it says,—It is proposed, we understand, to place the altar table in its original place, and to re-erect the reredos which was taken down in the changes made some sixty years ago. This will permit again the use of the lady choir for the early service appointed by the statutes to be daily said there. It ought to be generally known that the statutes distinctly provide for a service for the convenience of labouring people, servants, artisans, and those engaged in trade (*non modo servi, sed etiam mercatorum gerentium officines et mercatores*, are the words of the statute), at an early hour—about seven in the morning—to be said, and not sung, in the lady choir; but that part of the sacred edifice having been injudiciously thrown in to form part of the great choir, the important and truly English service, ordered so considerably to be there performed, has been almost necessarily omitted since the change. The communion-table and reredos will be placed as formerly at the second pillar westward from the lady chapel: and near to it, some yards farther westward on the south side, will be the bishop's throne, between which and the gates opening into the choir, we are informed, will be the stalls, eighteen on each side, beside the substalls; the six middle stalls on each side, with their substalls, being set apart for the vicars choral and the choristers. The design (which we have seen) for the choir-screen and gates is of open work and very elegant, sufficient to preserve the character of a choir, and yet open enough to permit a full participation in the service by the worshippers about and outside of it. One advantage of this arrangement will be that persons will be relieved from the undesirable necessity of facing each other in service, as was the case in the old choir; the annoyance of which would be still more felt in the new fitting up which is proposed, inasmuch as the stalls will now, it appears, be nearer to each other, and not recessed. The reason for not recessing them again is stated to be the projection of the pillars of the great tower at the entrance to the choir. To recess the new stalls would, it is alleged, hide the officiating ministers from the

view of the congregation seated in the tower and nave. The narrowness of Lichfield Cathedral creates a great difficulty, both in the arrangements of the choir and in the placing of the organ. How the latter difficulty, namely, the placing of the organ, will be got over, we cannot say. Had the side aisles been higher and broader, a place might readily have been found here for the organ. The beautiful double tier of arches in the great tower, now hidden from view by the comparatively modern insertion of a stone roof, will, it is hoped, be taken away, and a new roof put in at the old place high up in the tower, so as to form a lantern. The place where the old roof formerly was is sufficiently indicated by the remains of the old corbels. When the reredos is restored, and the Lady Chapel thus again made distinct, we may trust that a screen will be erected where one formerly was, namely, at the entrance to the Lady Chapel. The stone roof of the church dates from the time of Bishop Blythe, who lived a little before the Reformation. It is in course of being rescued from the whitewash, which has long hidden much of its beauty. In clearing it, traces of the old colouring and gilding have been very distinctly brought out, and will now to some extent at least be restored. In certain of the bosses in the middle rib of the choir roof are drilled holes, probably for the suspending of lights or other pendants—as for example, before the Grand Altar, before the Altar of the Lady Chapel, and over St. Chad's Shrine. There is no crypt under the church, but on the south side of the Lady Chapel are three small chantries or cells, interesting and deserving of restoration, their dilapidated appearance being painfully conspicuous on approaching the Close from Dam-street. In the restoration which was made of the great tower, after its fall, some little deviation was allowed from the old proportions, the tower part being scarcely so high, and the spire part a little higher, than it used to be. The centre porch of the west front would require careful restoration if touched at all. When it was meddled with some years ago, two at least of the canopies of the figures, as well as the figures themselves, were taken away, and plaster canopies and pedestals substituted without figures. The old canopies are in a garden, near Lichfield, and are exquisite pieces of work. No restoration of the exterior could take place without pulling down and rebuilding the large masses of bare stones placed as buttresses at the corners of the south transept, and one on its western side.

SUNBURY, MIDDLESEX.

SIR,—If you were to pay a visit to the pleasant little aristocratic village of Sunbury, you would, I am convinced, find an abundance of subjects for comment; and if your visit did not have a very beneficial effect upon that remote part of Middlesex, I should be very much surprised. You will be astonished to hear that though this village is one of if not the most wealthy village on the banks of the Thames, it has one of the most unsightly churches that disgrace that noble stream. This was, until very recently, a plain brick structure, without the slightest ornament whatever; but it appears that some of the rich inhabitants began to think it a very mean edifice for such a wealthy and pretty village; and, instead of building a new church, they did one of the most absurd things that could be done: they caused the old one to be decorated by a few small windows in the Byzantine style, with coloured brick arches, which are very creditable to the architect and the builder, but which make the church look like an elephant decorated with a few feathers from the tail of a peacock; or,—but I will leave the church to the criticism of your able pen, and will call your attention to a more serious subject.

When you honour Sunbury with a visit, you will find that the palatial residences of the nobility are interspersed and disfigured by the rude and dilapidated dwellings of the lower classes: poor there are none, for they have all got their pig in a sty, which invariably adjoins their sitting-room, if not their bed-room. The contrast between the dwellings of the upper and lower classes cannot be greater; and, if a "local board of health" is in existence, it is the most inefficient one. In fact, it is most extraordinary that such a state of things should be in existence in so wealthy a village. I believe the *laissez faire* system does not prevail to such an extent in any village so contiguous to London; and, if some epidemic were to reduce the population, no one acquainted with the place would be surprised.

Permit me to inform these unphilanthropical millionaires, that their duties do not end in employing the working classes; but that it is part

of their duties, as superiors, to establish such sanitary measures as are necessary to make the dwellings they own fit for the human race. By a few well-directed efforts, Sunbury might become as pleasant to the poor as it is to the rich; but it certainly is not up to this age of progress, which I fear is to be attributed to a spirit of meanness prevalent amongst the latter. T. J. S.

VENTILATED BEDS.

The inside of a bed, although agreeable probably to the majority of humankind, generally produces a depressing and wakeful effect, and disqualification for active exertion when the time arrives to enter upon the duties of another day. This feeling may be observed even if the hours of rest have been not moderate, say from six to eight hours, and moreover considerably prolonged beyond that period. Of course, the extent of lassitude varies with individuals, from different circumstances such as age, health, or sickness. The reluctance which many of us feel is especially to be noticed in cold and cheerless weather, and doubtless has a much greater influence over persons of weak or delicate constitutions, than when suffering from sickness or disease. A remedy for this unwelcome disposition would probably be found by having the coverings or upper portions of bedding perforated with holes, cut out in various patterns by way of ornament, and so arranged that the perforations of each separate covering should not be opposite the perforations of that next to it, and thus admitting the air to circulate. The adoption of the means suggested would allow of the egress of foul air from sickness or disease, which is so imperfect in a small quantity, the greater portion being retained within the bed, and also permit the ingress and circulation of pure air into the room. In addition to this there should be constant communication with the atmosphere, without the house, to a moderate extent, by means of two tubes, or piping, fixed in the wall nearest the outside: one at the top near the ceiling, for the escape of hot and foul air, the other about midway, for introducing fresh air into the interior of the room, as far as the wind will permit, which requires to be kept warm, and thus prevent colds at the serious ailments arising therefrom, having valves or other apparatus to close, one or both, when deemed desirable. SATIS.

IMPORTANT TO PATENTEES.

Carters, Garton & Co. In this case it was decided that the user of a patent was liable to the patentee in the shape of royalty, if he persisted in using the invention after receiving notice of its being an infringement of a patent. "The one of the defendants was 'the surrounding a gas light with cut-glass drops.' The jury gave a verdict for 2*l.* 10*s.* 6*d.* per annum per light royalty, the defendant having used seven lights that surrounded a three-way gas light."

CAUTION TO STONE MERCHANTS SELLING OTHER STONES THAN THOSE ORDERED.

DRUMPTON COFFIN COURT.

Wills and Executors, Todd.—The plaintiffs are stone merchants of the Markfield Granite Quarries, near Leicester, and the defendant is a builder, of Chelsea. Mr. George Keene appeared for the plaintiffs, and Mr. W. B. Davies was for the defendant. The sum now sued for was 11*l.* 5*s.* 3*d.* balance of a bill of 42*l.* 12*s.* 6*d.* A mass of correspondence was read on the part of Mr. Todd, concerning having had a portion of the stones of not the size that was ordered, and also a letter from a surveyor placed over Mr. Todd, refusing to have any other paving work done with the stones complained of. Mr. Price, the London manager of the plaintiffs, stated that he executed Mr. Todd's order for the stones, which were 4 in. by 4 in. All the stones sent in were used. A frivolous complaint having been made of sound of the stones being larger than the others, the witness went to defendant's works to see, and found about twenty or thirty stones had been sent to the defendant's, of a more expensive description than those ordered. Witness asked the defendant to make a proposition to fetch the stones back and turn others. Allowed for all differences, and gave defendant a more expensive stone.

By Mr. Davies. Does not know the difference in price between Mount Sorrell and Markfield granite. Is not aware the stones were examined by the surveyor. When witness first saw Mr. Todd, it was on a wharf, at Camden-town, and no complaint was made about the quality of the stones then. The second time he saw Todd he said they were very large ones, and witness did not make it out. The defendant talked a great deal about the stone and surveyor, but witness then believed the stone was all laid down. Mr. Todd said he would be a great loser. Did not tell the foreman to take the stones back to King's-cross. Knew Todd was under a contract, and knew the stones witness sent were put down under this contract. Never knew a surveyor, nor does witness know of better stones being laid than those of the specification. It was not arranged that a third should be chosen Mr. Todd, consequently upon his death the day after the stones were delivered, the witness could not attend to all things. Made an allowance on 3 in. by 3 in. stones being sent in lieu of 4 in. by 4 in.

By the Judge. The stone delivered was Markfield, not Mount Sorrell. There is frequently a mistake. Markfield was superior to Mount Sorrell stone. Mount Sorrells were ordered. The stones supplied Mr. Todd as 4 by 4 the plaintiffs are constantly in the habit of supplying surveyors with stones, and the stones are taken on the trade as such. Only knows by hearsay that Todd had sent the plaintiffs a cheque for 28*l.* Had had a very great deal of pleasant conversation with Todd. Had sent him a box of stones out, and had had no more to do with the case.

Mr. Davies here handed a copy of letter sent to the plaintiffs at Leicester, that enclosed a cheque for 28*l.* with a request that the cheque might be returned if the plaintiffs were not satisfied with the amount.

Mr. Price and he could not say anything to this letter or cheque; and Mr. Todd proved by his cheque-book that the money had been paid.

Mr. Keene said, in the absence of the plaintiffs, he could not say why the cheque had been received. It was a trick of Mr. Todd's.

Mr. Todd said he considered he was taken in. The Judge.—Trick by trick, then; but I have no doubt whatever that, as the plaintiffs did not send this cheque back, they are bound by the letter as an agreement in full satisfaction. Verdict for the defendant, with costs.

Correspondence.

THE NINE-HOURS MOVEMENT.

SIR,—It appears from the declaration of Mr. Potter and the delegates of the amalgamated trades that a crisis is fast approaching, and it behoves the classes affected by these demands of the self-constituted leaders of the building mechanics to take instant and urgent steps to counteract the baneful effects of the movement. In its results are implicated the interests of three classes,—the mechanics themselves, the builders, and the public, who employ both builders and men. The high-spirited and independent mechanic has to consider whether he will be any longer domineered over by men who make mere tools of them to effect their purpose. The mechanic now dares not do anything or take any steps but at the will and bidding of these club-men, as the "Working Man" observes in his letter in the last number of the *Builder*. If at one time he had one master in his employ, he has now many, and much harder ones, in the Union. They lay down the law in various trades, that the women shall not do such and such work, nor boys; that no more than a certain number of apprentices shall be taken; and many other regulations, which go to fetter trade; and now the nine-hours movement is the great object of the coming struggle. And what are the grounds? Not that the present wages are insufficient, but that their physical and intellectual faculties are impaired by the over-work of ten hours per day. Has any of them read the life of that noble specimen of a working man, George Stephenson, written by Mr. Smiles, and now published in a condensed and cheaper form? Did he complain of his usual working hours? Was he satisfied with ten or twelve or even more hours of labour? Did he not after the usual day's work set to on other profitable and instructive occupations, and cultivate his mind? And what was the result? The present improved railways; the locomotive on those railways, with its mighty powers; a colossal fortune, and an imperishable name. Would not he have scouted the nine-hours movement? Have our mechanics read the volume in the "Library of Entertaining Knowledge," entitled "The Pursuit of Knowledge under Difficulties," illustrated by the examples of men of the humblest origin rising to the highest ranks of fame, not impatient of their usual day's work, nor complaining of over-fatigue from the toil of ten or twelve hours' labour, but employing many more to acquire knowledge, increase the sphere of science, and themselves examples of the most laborious industry,—Franklin, the printer; John Hunter, the anatomist; Simpson, originally a stuff-weaver, ultimately one of our first mathematicians; Brindley, from being a millwright becoming an eminent canal engineer? Let an artisan consider the humble origin of the late Thomas Cubitt, and the success of his unceasing toil; and of that distinguished engineer, John Rennie, whose career has been that of many of the leading men of our day. We here see men not shrinking from a fair day's work, not afraid of their faculties being deadened; but, however humble their origin, however adverse their circumstances, urged by the strength of their passion for improvement, but by the force of application overcame all obstacles, even natural defects, as blindness, dumbness, and even deafness, as in the case of Dr. Kitto, and poverty itself. And yet our mechanics complain of being overtasked by ten hours' labour per day.

I will now turn to the builders. It is time for them to be up and doing, or they will render themselves the slaves of those to whom they should be the masters. It is avowed by many, that this movement for a reduction to nine hours is but the prelude to that of eight, and to many other limitations upon the free action of the builders, to which they must ultimately accede, if they yield this. They have within a few years added 10 per cent. to the wages of the artisan. They have conceded the two or three hours of the Saturday; they have studied the comforts of the working man; and this is their reward. Few builders can now make any reliable calculation as to the probable cost of any work; and, in fact, all their plans may be deranged any day by the sudden resolution of the amalgamated committee of delegates. Can the builders afford this? Are they to be in jeopardy every hour? Is all their honest industry to be depen-

dent upon the reckless caprice of the men they employ. The men say that they demand a less number of hours' work, that those out of work may be employed. Is this consistent with reason and fairness? Why do they not let those out of work take work, even at lower wages, if by that means they can find it, and earn an honest though a lower remuneration, rather than be out of work and subsist upon the charity of their fellows? Such a system as that insisted upon by the amalgamated association, is at variance with sound political economy. When one class of men conspire, those whom they would oppress should combine. The masters must now unite. They must be firm in their resolve. Their late reply to the demands of the delegates was most reasonable, but it should have been stronger. It is best at once to meet the evil by a determined stand. Their interests may be permanently injured by continual concessions, whereas they had better put up with the dead loss at once, and leave the issue to time. They have not sought such a crisis. It has been forced upon them by those to maintain whom in work they have sunk all their capital, and employed their credit and other means. The men will learn the difficulties resulting to themselves from embarrassing commercial speculation and fair enterprise, and that these cannot be lightly tampered with by them without involving in misery themselves, their families, and all belonging to them. All the branches of trade will suffer, through the madness of these leaders of the movement.

As for the architects, who represent the public, the main employers of the working classes, they must assist the builders. I myself have added a clause in my recent agreements and contracts, that no penalties for delay in completion should arise in case of a strike.

I sympathise with your correspondent, the "Working Man." I wish for him and all such to be relieved from their thralldom; the fair artisan to be well paid, and to see him give a fair day's work for his wages. But now the mechanic is demoralized by these unions. Few give a fair day's work in return for the sum they receive; and in some of the trades the nature of the work turned out is very inferior to what it was twenty or thirty years ago. Parliament must soon take up the question, and appoint a committee to inquire into the regulations and working of these trades unions, their effect upon the working men, and their employers, and the influence they have upon trade.

T. L. DONALDSON.

SIR,—In the *Builder* of last week, appeared a letter, signed "A Working Man," which letter is so full of wild statements that I feel it my duty, as a real working man, and one who is a true member of the United Building Trades, which I very much doubt your other correspondent to be, to place you and the public in possession of the truth. With regard to his frightened cry about a strike, I have yet to learn that such a proceeding is contemplated, and unless the person who wrote the letter of Friday had some other grounds than his tears for such a statement, I think it would only have been just on his part to have been silent. That the condition of the mechanic is retrograding to miserable dependence and social slavery, and that machinery and rapacious competition are two of the most powerful agents in producing those evils is too apparent, and has received too frightful confirmation in the present position of the weavers, the stockingers, the tailors, the shoemakers, and the sempstresses. Machinery, animated by the breath of steam, sinks the mine, ploughs the land, reaps the harvest, spins the yarn, weaves the fabric, and makes the garment to clothe the body; and not only does the rough sawing in our trades, as stated by your correspondent, but runs the moulding, ploughs, mortises, and tenons, and does everything, in fact, excepting the bare putting together. There is no person of common discernment but will, I think, be able to see that machinery does, therefore, seriously interfere with our labour, and to our detriment; and as machinery is yet in its infancy, are we not right in anticipating still further encroachments, and justified in endeavouring to prevent the tide of degradation by which we see the trades I have mentioned overwhelmed, drowning us? The senseless abuse cast at Mr. Potter and his brother delegates, I dare say, is appreciated at its full value by him and his colleagues. As an independent friend of the movement, I think I may be allowed to say that the movement has resulted from the misery imposed by the ten-hour system on the employed, and the tyrannical and inhuman conduct of many of those employers of whom your correspondent seems so much enamoured, not from Mr. Potter's agitation—Mr. Potter and his colleagues are only our elected representatives. Your "Working Man" asks why he is compelled to pay his threepence a week to the union, and states that he is compelled to attend the meetings of the trade at Exeter Hall, &c. or be a marked man. I wish to state that he knows to be downright and deliberate untruths, for though the movement counts its members by thousands, none have been coerced, but all have joined of their own free will; neither has there been the slightest attempt to annoy those who have kept aloof. There has been no hooting and hunting out of work on our parts. I wish that I could say as much for the employers. He states that the meetings which he has attended, Mr. Potter and his colleagues appeared well dressed; and having previously insinuated that they are living in idleness at the expense of myself and others, proceeds rather wildly to argue that the building operatives are all in a position of respectable comfort.

I will first tell him that we, the building operatives,

allow no man to live on our hard-earned pence. Mr. Potter and his coadjutors toil for their daily bread, at their several callings, during the day, the same as any other among us; and I am ashamed to say, labour for us at night without other remuneration than the satisfaction of knowing that they are serving the cause of their suffering fellow-workmen. Your correspondent—who has assumed the title of "A Working Man," but who is so destitute of manliness that he fails to give his name, must know that the dress of a few does not represent the condition of the many; or, if he does not know, I ask him to come with me through the districts inhabited by the mechanics, and I will show him thousands of comfortable homes, and sunken cheeks, and men made prematurely old by want and disease, not the results of carelessness or dissipation, but the indications of that system which we are endeavouring to reform. Your correspondent of Friday last falls into an error, common to the advocates of a bad cause—that of proving "a wee bit" too much. He tells us that by labouring ten hours during the day he is enabled to comfortably support himself and family. Perhaps, being so fond of "Master," master, like Philip Quarrel with his monkey, is very fond of him, and finds him employment all the year round, an advantage not more than six out of ten of us receive. He then immediately complains of being prevented from working overtime. Why, if ten hours is sufficient to maintain him and his family in comfort—providing, as he states, not only comfort but enjoyments—does he crave for overtime, when he must be conscious that thousands of his fellow-workmen would be glad of the opportunity of earning a crust for their destitute families, by a share of that employment which to him is superfluous? Such a man must be destitute of every true feeling of humanity. I would, in conclusion, beg to say that in future the writers of any letters on our movement would do well to manifestly append their names to their productions, and then we will be able to determine whether they emanate from working men or are weak inventions of the enemy.

SAMUEL PORCHES.

Books Received.

Public Health: Report of the Medical Officer of the Privy Council, with Appendix. 1858.

IN this first annual report by Mr. Simon, matters concerning the public health in Conway, Wraybury, and Windsor, are treated of.

In respect to Windsor the official inquiry, in which Mr. Austin, whose report appears in the Appendix, took part, fully justifies all we said in first bringing the subject of the Windsor epidemic under notice. According to these reports, the sewerage of the town is pretty fair, but in the house-drainage, ventilation of noxious gases has not been provided for, and those houses which have had the advantage of communication with the sewers through the house-drains, sinks, &c. were precisely those to which the cause of typhoid fever was thus introduced; and even low-lying and poor districts where no house-drainage had been then effected, were free from the fever, while the drained ones were exposed to it. The Local Board of Health are held to be "not without responsibility" in this matter; but they have since been endeavouring, it seems, to make up for previous short-comings. In Windsor, the report states, there has been extreme slovenliness as to the removal of filth, but it is to be hoped the late lesson will not be without some good effect in the reformation of such habits.

A Handy Book on Villa Architecture. By C. WICKES, Architect. Thompson and Co. 111, Strand. 1859. Nos. 1 and 2.

MR. WICKES, favourably known by his fine work, "The Spires and Towers of the Mediaeval Churches of England," has issued the first two parts of what will doubtless prove a very useful book, consisting of five designs for villas, in various styles of architecture, and at various costs of erection. It will be published in six parts, and will contain thirty plates of plans, elevations, and sections, together with letter-press. When the work is further advanced we shall be better able to express an opinion. The drawings are very well executed in outline-lithography by Messrs. Day and Son.

Dictionary of Geography, descriptive, physical, statistical, and historical; forming a complete General Gazetteer of the World. By A. K. JOHNSTON, F.R.S.E. &c. Third edition. London: Longman and Co. 1859.

Tax favourable notice which we heartily accorded to a former edition of this work, is fully justified by a call for a third edition, in which it appears that the whole work has been revised and rectified down to May, 1859. There are no less than 50,000 entries in the book; and although it comprehends the topography of the whole world, nevertheless, as a Gazetteer in particular of England and Wales, Scotland, and Ireland, it will also be found to be a most useful and excellent condensation of essential particulars, as to every separate parish, if we mistake not; inasmuch as even the most out-of-the-way, or generally unknown, names of parishes appear to be included, together with their more salient and im-

portant statistical and other particulars. As to towns and villages, of course, it is no less comprehensive. The author is the Queen's geographer in ordinary, at Edinburgh, and author of the splendid Physical Atlas, which we had occasion some years since to notice; and good use has been made in the present work of the immense mass of materials which must have been collected and used in the preparation of the Physical Atlas and other similar works by the same author.

Miscellanea.

GAS AND PICTURES.—In order to have an authoritative investigation into the whole question of lighting public galleries with gas, the Lord President of the Council has named a commission of inquiry, consisting of Professors Faraday, Hoffman, and Tyndall, with Mr. Redgrave, R.A., and Captain Fowke, R.E., who will commence their investigations immediately.

LOW LEVEL SEWERS.—Mr. J. J. Morewood, in a tract titled "Low Level Sewers: indefinite Delay in the Purification of the Thames, and in the Removal of the Sewage Nuisance; injurious Diversion of upland Rain Waters, and probable Waste of 2,000,000. l. a Letter to the Sewer-rate Payers of the Metropolis" (Stanford, Charing-Cross), renews his scheme for low level sewers, as a first step towards the thorough purification of the Thames and drainage of the metropolis, and deprecates the formation of the high-level sewers now in progress, at least till the low-level sewers are fairly in action, these, he believes, being sufficient to give to the metropolis perfect sewerage, at a cost of one million sterling instead of three millions. Mr. Morewood suggests the appointment of a select committee to consider the question of high *versus* low-level sewers.

MOULDED CARBON WATER-FILTERS.—A simple and ingenious invention has been patented, and is sold in various forms by Messrs. Harrison and Co. of Fleet-street. The essential principle of this invention consists of a ball of moulded carbon, into which a tube is fixed, and water is filtered by various simple arrangements through this ball and tube, either into a separate vessel below the filter, into a lower portion of the filter itself, or, as in the pocket-filter, into the mouth direct by suction. The tube in this last case is elastic, but in general it is of glass, and thus, for example, a cheap and ready filter for the million can be made by fixing the carbon ball into the bottom of a common flower-pot by thrusting the tube through a cork, and fixing the cork into the orifice at the bottom of the pot. Any basin, pitcher, or other domestic vessel can then be used to receive the filtered water from the flower pot after it is filled. Carbon is believed to assist the oxygen or air in decomposing any organic matter in the water, and this is offered as an additional advantage, besides the usual operation of filtering.

WEDGWOOD MEMORIALS: AN AMERICAN SUGGESTION.—The *Scientific American*, observing that a difference of opinion prevails in this country as to the most fitting kind of memorial of Wedgwood, and considering the subject from an American point of view, makes the following excellent suggestion:—"Offer a high premium for a design combining elegance of form, harmony of colour, and grace of outline, which could be made into plates, dishes and saucers; and another that could be formed into pitchers; and a third that would form teacups, basins, and the like. Send a pattern to every pottery in the world, and let it be known as 'the memorial ware.' The colours must be few, for cheapness is the greatest consideration of all, in order that it might be widely diffused; and this, we think, would be of more real value to the world than any statue or local work, and would be perpetuating, in a higher degree, the work that Wedgwood in his life tried to further. Miserable abortions, in the way of form, are sold as crockery, and surround people from their earliest childhood with bad models, while the material in which they are produced is capable of graceful curves and truthful modelling. It may, to many, seem a small idea to perpetuate and honour a man in a tea or dinner service; but if that set of dishes, plates, jugs, and cups has but a tinge of influence for good that the willow pattern of England, or the dead-dirty-blaish-white of this country has had for evil upon the taste of mankind, then will it be a true and fitting tribute to a great man's name. Let the Staffordshire people think of this, and, giving up the statue, found an art school for the express purpose of improving the form, colour, and cheapness of the commonest crockery." We hope the Staffordshire people will think of this.

THE NORTHFLEET DOCKS.—An official inspection of the site of the proposed Docks at Northfleet, and of the extensive ship-building premises and engineering plant created by the Pitcher family, took place on Monday the 6th. We have been credibly informed that the result of this investigation, made on behalf of the Government with a view to increased dock accommodation for the navy, is considered to be satisfactory.

CROSBY HALL.—The names of many of the members of the classes in connection with this institution are found in the list of those who have obtained certificates at the examinations held by the Society of Arts. Crosby Hall has, we believe, carried more prizes and certificates from this society than any other institution in the kingdom, and it was a member of the Crosby Hall evening classes (Mr. E. G. Clarke, we are told), who headed the list last year as Associate of Arts at the Oxford middle class examinations. On Thursday last (9th) a reading was given at the Hall by a member of the elocution class, Mr. John Millard, the chair being taken by the Rev. C. Mackenzie, M.A. The subject chosen was Lord Macaulay's "Lays of Ancient Rome," which were read with much force and spirit.

PROPOSED BANQUET AND TESTIMONIAL TO MR. CHARLES KEAN, F.S.A.—A strong committee of gentlemen, educated at Eton, nearly all of them contemporary with Mr. Charles Kean, has been formed for the purpose of inviting this gentleman to a banquet, on the occasion of his retiring from the management of the Princess's Theatre, and of presenting him with a testimonial. Considering that the right of acknowledging Mr. Kean's services belongs to the nation at large, they are anxious that the public should unite with them in testifying their admiration for one who has so long and so successfully laboured to provide for their intellectual enjoyment. The dinner is fixed to take place at St. James's Hall, on Wednesday, July 20th. It seems to us a mistake to confine the committee to Etonians; and, if persevered in, will give a different character to the demonstration to that which it deserves, and ought to have.

MEDALS OF CITIES.—NUMISMATIC SOCIETY.—At a meeting of this society, on May 26th, Professor Donaldson read a paper "On the Neocor Medals of Cities," and more especially on those of Smyrna, Ephesus, Pergamum, and Parinthus, in which he gave an account of the original meaning of the title "Neocoros," and of its subsequent architectural adoption. In its first sense it no doubt means only "the cleanser or sweeper of a temple;" by degrees, however, this humble office became one of great importance, and the title was given as one of the highest honour, not only to individuals, but to communities. In the second sense it occurs in the well-known passage of the Acts of the Apostles, xix. 35; where, however, the Greek *νεωκόρος* is very inadequately translated by the English "worshipper." Many hundreds of coins exist, struck by Greek states during the Roman imperial times, on which this title occurs—in many instances, as on those alluded to above, in connection with the representations of temples, of which the people or cities are said to have been the *νεωκόροι*. There can be no doubt that, in these cases, the people were considered as the guardians of the sacred fane and of its treasures, as well as of its rites, festivals, colleges of priests, &c.

GRATITUDE OF THE POOR FOR BENEFITS CONFERRED.—Amongst the pioneers of sanitary improvement medical men stand pre-eminent. Their functions are such, as regards the poorer classes of society especially, that they come to be regarded as counsellors, and as little less than oracles in all that regards the health of the community. In the right exercise of such an influence, therefore, a deep responsibility rests upon them; and wherever such an officer of public health so endears himself to the poorer classes as to call forth special acts of gratitude, voluntarily manifesting themselves even peculiarly and substantially from such a quarter, we may depend upon it that there much sanitary good is being done, and that the esteemed object of the gratitude of the indigent is also a worthy object of the public regard, his gratuitous and persevering efforts for the public good well deserving to be brought into general notice. These reflections, in the present instance, have been suggested by an account, forwarded to us, of the presentation of a handsome testimonial, from many poor persons resident about the City-road, to Mr. R. R. World, surgeon, in acknowledgment of the gratuitous advice, by which they have long been benefited, at his surgery in that vicinity. The testimonial comprises an entire tea-service in silver. Such an offering is not only honourable to the receiver, but to the givers themselves.

CRYSTAL PALACE.—HANDEL FESTIVAL.—For this Great Musical Festival, the preparations for which have been in progress for the past three years, full rehearsal will be given this Saturday; the "Messiah," on Monday; Te Deum, &c. on Wednesday; and "Israel in Egypt," on Friday; with 8,000 performers. Madame Clara Novello, Mr. Sims Reeves, Miss Dolby, and Signor Belletti, will sing the solos; Mr. Costa, conducting.

RAILWAY OFFICIALS IN INDIA.—We find the following in the *Delhi Gazette* of the 16th April, just received:—"Did you hear that some sowars had got into the Ghazepore district, and placed a Mr. French, of the railway, under the necessity of running for his life?" It is to be hoped that such events are merely the subsiding sparks of a fire that is being thoroughly trampled out.

FILE-CUTTING MACHINE.—Messrs. Greenwood and Bailey, of Leeds, have recently imported a patent file-cutting machine from France. The file is placed upon a self-adjusting bed, capable of being turned in any direction, and the chisel or cutting instrument is fixed in a vertical slide, acted on by a spring, and giving about a thousand blows per minute. The machine is under the control of the workman, and occupies very little room: it is said that it produces better files than can be made by hand labour, and will do ten or twelve times as much work as an ordinary skilled workman. The machine is already in operation in France and Belgium.

UNIFORM MUSICAL PITCH.—A private meeting of a number of leading scientific men and those interested in music, both as professors and amateurs, was held at the house of the Society of Arts, on Friday, the 3rd instant, by invitation of the council of that society, for the purpose of discussing the propriety of adopting in this country a uniform musical pitch, as has been recently done in France. The Rev. Dr. Whewell, F.R.S. Master of Trinity College, Cambridge, presided, and among those present were the Earl of Cawdor, the Earl of Westmoreland, Sir George Smart, the Dean of Hereford, Lord Gerald Fitzgerald, the Rev. J. T. Cox, Rev. J. T. Driffild, Rev. T. A. Cooke, Dr. Arnott, Dr. Wylde; Messrs. J. Benedict, H. Blagrove, R. B. Bowles, H. P. Chorley, George Cooper, F. Davison, J. Ella, H. Griesbach, Hogarth, E. Hopkins, John Hullah, J. Kohler, H. J. Lincoln, H. C. Lunn, G. Metzler, A. Nicholson, W. Pole, Lindsay Sloper, C. A. Wornum, Otto and Madame Goldschmidt, &c.

REPORT ON NAVIGATION SCHOOLS.—Captain Ryder, R.N. by appointment of the Science and Art Department of the Committee of Council on Education, as a Commissioner of Inquiry on Navigation Schools, has given in a report on this subject, which has been printed by authority of their lordships of the Department. The reporter enters minutely into the state and prospects, and the chief desiderata of such schools. One of the main causes of decline in modern seamanship, it seems, is the progress of steam navigation, where no such fearless agility is requisite as in sailing vessels; nor are boys so desirable as they used to be. Another cause is the disinclination of parents to allow their sons to go to sea; and a third, in rather singular contrast with such a feeling as usually manifests itself, is the disinclination of boys themselves to go to sea. Such a feeling, it seems, prevails in some towns, but not in others. The establishment of a new order of schools, in close approximation to our shipping, and with facilities for the scholars amusing themselves therewith in seafaring tactics, is recommended by the reporter.

WORCESTER ARCHITECTURAL SOCIETY.—An excursion took place last week *via* Fladbury to Evesham, the party, about fifty in number, passing through various picturesque villages on the way. The rendezvous was at Fladbury, whence they proceeded by Wyre Piddle and Throckmorton, to Rouselench, where the church and monuments of the Rouse or Rufus family were visited. Sir Charles and Lady Rouse Boughton were present, and the *Worcester Chronicle* states that Sir Charles speaks of restoring the church. The next place visited was Churchleach. At Evesham a cold collation was served to the party, and the chairman and Archdeacon Thorpe addressed the meeting. Papers describing the various churches inspected had been read on the way by Mr. J. S. Walker and Mr. F. Preedy. The society now numbers 140 members, and is in a prosperous condition. At Wyre Piddle some enterprising churchwarden or other church-preserver, desirous to please the architectural visitors, had painted the ancient font, artistically touching its chevroned rim with a line of black to set it off!

AN ORCHESTRA AT BATH.—The new orchestra in the park was used by the Hanoverian Band for the first time on Saturday last. A rustic fence of fir poles is about to be placed at a little distance from the base, and the intervening space planted with creepers. The work was executed by Messrs. Matthews and Hewit, carpenters, from a design of Mr. Charles Phipps, architect, of Paragon-buildings.

THE FOURTEEN HOURS MOVEMENT.—SIR,—Is it not time that the builders' clerks—"wizny chaps in offices," as your correspondent "A Working Man" calls them—should cry out, when, according to a recent advertisement, they are required to work from 6 A.M. to 8 P.M.? If anything like this is to be the rule, the poor fellows may well look "wizny."—FAIR PLAY.

SOUTH KENSINGTON (BROMPTON) MUSEUM.—During the week ending 11th of June, 1859, the visitors have been as follows:—On Monday, Tuesday, and Saturday, free days, 2,906; on Monday, Tuesday, free evenings, 2,619. On the three Students' days (admission to the public 6d.), 958; one Student's evening (Wednesday), 108. Total, 6,591. From the opening of the Museum, 937,853. At the Museum of Patents:—Number of visitors for the week ending June 11th has been—mornings, 880; evenings, 890. Total, 1,770.

VALUE OF BUILDING LAND.—It does not appear that the continental war has at all affected the sale or value of land for building purposes. There has been recently a larger demand for plots on the various estates of the Conservative Land Society than for a considerable time past; and the society, under those circumstances, has recommended the allotment of new estates. Towards the end of the month the Weymouth estate, situated at the junction of the Great Western and South Western Railway stations, will be offered for sale in 301 plots—the highest priced lot being 1,671l. 6s. and the lowest 50l. 3s. making an aggregate of 17,200l.

AN AUCTIONEER'S LIMITS.—A quarrel about some houses at Norwood, decided before the Court of Exchequer on Saturday week, involved the question of the limits allowed to an auctioneer in describing property. It was settled that calling houses "semi-detached" when only separated by "a deep recess" was fraudulent, and invalidated the sale, although the usual clause was inserted, "that the foregoing description shall be held to be," &c. Also, that it is fraudulent to say a house is substantially built, when it is not substantially built: a valuable decision.

WYLD-COURT, DREY-LANE.—Our readers who remember the former condition of this place will be glad to learn that every room is let, and in fact the superintendent says that it is some time since he has had any empty. Notwithstanding the predictions of some that it would be impossible to keep the place in cleanly order or the people quiet, the best order is preserved, and also general good health. The superintendent says that, when any neglect of matters which is for the good of the lodgers is observed, a threat of obliging them to leave their rooms is generally sufficient to obtain a remedy.

STRIKES, &c.—A number of sawyers having struck for an advance of wages at Woolwich and other dockyards, the Admiralty have intimated that they have taken steps to "check the spirit of insubordination, by ordering that any men striking work shall be immediately discharged," and they are not, under any circumstances, to be re-admitted for employment in any of her Majesty's dockyards. The men were informed that if they have any reasonable ground of complaint, it will be fully and fairly considered, but that striking work cannot for a moment be tolerated.—During the last week, says Saturday's *Gateshead Observer*, the Sunderland shipwrights have been on strike for an advance of their wages from 4s. to 5s. per day; but the principal of their employers refused to accede to the demand. On Friday and Saturday in last week, upwards of 200 men left Sunderland for the royal dockyards; and during the last three months, from the ports of Whitby, Hartlepool, Sunderland, and the Tyne, upwards of 1,070 shipwrights have left their homes in the North of England, and are now all employed at good wages in Her Majesty's dockyards, at Portsmouth, Deptford, Woolwich, and Northfleet. The strike at Sunderland still continues.—The masons working for Mr. Thomas Winter, who has the contract for restoring the Durham Cathedral tower, and the building of a large hall, near Durham, have struck work because Mr. Winter employs a foreman who is what is called a "black-log."

MANCHESTER ASSIZE COURTS.—The authors of the design marked *Amor Patrie* deny that their design was an imitation of new "Hamburgh Town-hall." They say, "The character of our building was taken from the Cloth-hall at Ypres, the tower and angles being similarly treated; English Gothic detail, as pure as we could give it, being adopted throughout. The site of the Manchester Assize Courts being confined and forming part of a street, the breaking up of the elevations was deemed inconsistent, as also not adding dignity or repose. How far such an idea is correct, is a matter of opinion."

ROMAN REMAINS AT BATH.—Another tessellated pavement, says the *Bath Chronicle*, has been discovered on the site of the Blue-Coat School, Upper Borough Walls, where workmen are employed in digging the foundation of the new structure which is to replace the old one, now being demolished. About 15 feet below the surface the men came on the pavement. Every precaution was taken by Mr. Mann, the contractor, to preserve it.

YORK SCHOOL OF ART.—The 16th annual meeting of this school has just been held. Lord Teignmouth occupied the chair. In the course of his address (as reported in the local *Herald*) his lordship referred to architecture, observing that we possessed during the last century magnificent cathedrals, and a great number of splendid parish churches, which adorned the country; but could anything be more barbarous than the modern architecture which prevailed up to the commencement of the present century? That architecture might be justly termed, as he believed it was called, the churchwardens' architecture; and to what did they ascribe the revival which had taken place in such a remarkable degree during the present century? If they went from one obscure village to another they would see the taste which was exhibited in architecture, and which reflects great honour on the country. This was due to the general formation of taste, and it showed that they were getting rid of that indolent admiration of art, which had been the curse of the country, and which must lead to mischief rather than to good. The effect of institutions established for drawing had also been to produce a general taste for drawing through the country, and see the result. The report congratulated the subscribers that the number of students during the past year had exceeded that of any previous year. The monthly list showed an average of 134, whereas that for the last year had been 126, and that for the highest former year 131. Last year the committee had to mention that eight medals and 61 prizes had been given by the Government inspector at the annual examination of the school. This year, at his examination, on January 29th and February 4th, Mr. Wyld had awarded 13 medals and 75 prizes. For the first time, also, the National Medal had, during the year now elapsed, been gained by a student in this school. The Rev. Canon Robinson afterwards addressed the meeting, and the prizes were distributed.

TENDERS.

For works to be done in addition to premises, Cannon-street West, for Messrs. Hyam; Messrs. Tilhoit and Chamberlain, architects. Quantities supplied:—
Ashby and Sons £5,305 0 0
Laurence and Sons 6,240 0 0
Lucas, Brothers 5,233 0 0
Rider 5,300 0 0
Myers 5,178 0 0
Piper and Son 5,102 0 0
Nicholson and Son 4,982 0 0
Hill 4,982 0 0
Brass 4,963 0 0
Jay (accepted) 4,415 0 0

For repairing eighteen houses in Ramsey-street, Shore-ditch; Mr. Augustus H. Mount, architect:—
Carter £3,150 0 0
Ring and Stanger 1,570 0 0
Tyler 1,300 0 0
Forrest (too late) 1,294 0 0

For new warehouse, to be built in Milford-lane, Strand, for Mr. W. H. Smith, jun.; Mr. F. Groves, architect. The quantities supplied by Mr. G. Knott:—
Macey £1,818 0 0
Messrs. Lucas 1,800 0 0
Messrs. Wardle and Baker 1,750 0 0

For the alteration of the Episcopal Chapel, Lower Sydenham, including the erection of a new chancel. Quantities supplied. Messrs. Poulton and Woodman, architects:—
Wardle and Baker £1,285 0 0
Ring and Stanger 1,167 0 0
Kent 1,100 0 0
Davison 1,140 0 0
Barrett 987 0 0
Stevenson 985 0 0
Messenger and Porter (accepted) 795 0 0
[The old materials taken down to belong in addition to the contractor in each case.]

For erecting a house and offices at Buckhurst-hill, for Mr. John Chapman; Mr. W. D'Oyley, architect:—
Perry £93 0 0
Rivett 629 0 0
Page 896 0 0
Carter 579 0 0
Bull 857 0 0
Cushing 555 0 0
Estall 535 0 0

For works to the West London Synagogue, Margaret-street, Cavendish-square; Messrs. John Young and Son, architects:—

	Decorations.	Total, with Balcony and Organ-chamber.
Lea	347 0 0	859 0 0
Mansfield and Son	£300 0 0	742 0 0
Gall and Cotti	348 0 0	—
Shaw	245 0 0	—
Hackforth	390 0 0	—
Kuckuck	108 10 0	—

For works at Docking Hall, Norfolk, for Mr. H. J. Hare; Mr. Evan Christian, architect. Quantities supplied by Mr. T. M. Rickman:—

	For the whole of Works.	Allowed for Joinery, partly prepared.
Brooke, Norwich	£4,535 10 0	27 5 5
Darken, Holt	3,768 11 0	44 10 0
Smith, Dickleburgh	3,123 8 0	34 0 0
Curtis, Litcham	2,992 10 0	38 0 0
Bennett, Lynn (accepted)	2,788 0 0	69 0 0

For three new school-rooms and two teachers' houses, &c. at Newton-in-Makerfield, near Warrington, Lancashire; Mr. William Poulson, architect. Quantities supplied:—

Pennington, Hulme	£2,500 0 0
Pennington, Ashton	2,400 0 0
Stone, Newton (accepted)	2,135 0 0

For building the King's Arms, Titchfield-street, for Mr. Turnham; Messrs. Finch Hill and Paraire, architects.

Quantities supplied by S. B. Wilson and Son:—
Brown £2,249 0 0
Patrick 2,302 0 0
Elstar 2,161 0 0
Lawrence 2,129 0 0
McLennan and Birrie 2,109 0 0
Purkiss (accepted) 1,994 0 0

For St. John's National Schools, Middlesbrough, Yorkshire; Mr. John Norton, architect:—

Sharpe	£2,100 0 0
Anderson	2,066 0 0
Laws	2,060 0 0
Moore and Gowing	2,037 0 0
Peirson	1,997 0 0
Fidler and Ingram (accepted, subject to alterations)	1,995 0 0

For building St. Mary's National Schools, at Chatham, Mr. Street, architect:—

Stamp, Brompton	£1,856 0 0
Naylor, Rochester	1,820 0 0
Spicer, Strood	1,793 0 0
Wilkins, Chatham	1,593 0 0

For works at the New Refuge for the utterly Destitute, in connection with the Field-lane Ragged Schools. Mr. R. H. Moore, architect. Quantities supplied:—

Richardson	£1,246 0 0
Powler	1,178 0 0
Brown and Robinson	1,099 0 0
West	1,044 0 0
Axford and Co.	1,040 0 0
Brass and Co.	991 0 0
Wilson and Co.	991 0 0
Pritchard and Co. (accepted)	985 0 0
Wm. Laurence and Sons	982 0 0

TO CORRESPONDENTS.

WHITWATER ON BRICK.—SIR, The interior of the beautiful parish church at Whitwater, near Bristol, formerly the property of the abbot of Glastonbury, is to be cleaned and the stonework restored. The whole of the said stonework has been from time to time whitewashed, coloured, and daubed, until it is, first, half an inch thick in places. The external coats vary in colour from white, salmon, stone, to bright pink. These, again, without much trouble, but the inner, or first coat, defies all efforts of the workmen to remove it without at once breaking up partially the face of the stonework. Can any of your correspondents inform me if there is any other method of removing it by the application of any solution or otherwise? If so, I should esteem the favour of your pointing it to me in the highest degree, as much mischief will thereby be prevented.—PETER DRAY.

MESSRS. W. PURPHY (everything depends on the wording of the contract entered into. Take proper advice). J. W. & O. and L. F. W. W. P.—Mr. D. W. T.—Reader—W. F. P. and W. W. R.—J. W. L. M. T. H. C.—B. and S. P. G. S. H. (next week). J. B. (Glasgow).—Master Builder—A. T. & A. N. J.—D. A. Builder's Son.—N. B.—R. T. P.—J. B. N.

"BOOKS AND ADDRESS."—We are forced to decline pointing out books or finding addresses.

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

ADVERTISEMENTS.

TO TIMBER MERCHANTS, BUILDERS, PACKING CASE MAKERS, CABINETMAKERS, WHEELWRIGHTS, ENGINEERS, AND OTHERS.—MARBOROUGH-STREET, NEW-CUT, LAMBETH.
MR. PEAKE is directed to SELL by AUCTION, on the PREMISES, on WEDNESDAY, JUNE 22nd, 1859, at 11 O'CLOCK, (the 21st of the previous month) the STOCK IN TRADE of Mr. THOS. ANGLOR, comprising about twenty loads very superior kiln-dried, ten loads of oak, ten loads of beech planks, 1,500 squares dry prepared flooring, 50 lengths clean pine scantling, 5,000 feet of dry mahogany, 3,000 dry pine planks and deals, 1,000 feet super dry wale pine, 2,000 yellow and white deal sawn and squared, 100,000 feet of mouldings, spruce palings, carting, coach and cart felloes, &c.—May be viewed at the premises and PEAKE'S Office, 41, Tooley-street, Southwark.

TERMS OF THE POLICY: Compensation for Accidents, £3,000.
 PAYMENT OF PREMIUMS: Premiums are payable by the Company's
 Office, or at any Bank or Post Office, or by any other means.
 NO CHARGE FOR STAMP DUTY - (CAPITAL ONE MILLION).
 WILLIAM J. VIAN, Secretary.
 Railway Passengers' Assurance Company,
 10, 11, 12, 13, Old Broad Street, London, E.C. 4.

The Builder.

VOL. XVII.—No. 855.

Hospital Construction.—The Hospital of Lariboisière.



WE have reviewed the designs for the Ashton Infirmary at greater length than we should otherwise have done, in order to aid in impressing our views on hospital arrangement—views which we are glad to find have been already taken up by the majority of the profession, and will have an effect, it may be hoped, on all buildings hereafter erected for the purpose. A great desire for further information is manifested. Thus, one correspondent writes from Hulme:—

"As a constant reader of your Journal, I have been much interested in the endeavours you have so strenuously

made for the improvement of hospitals for the sick and wounded. It would seem that you have not laboured in vain; for example, in the morning papers I was surprised, not many days ago, to see announced, as nearly completed, a New Marine Infirmary at Woolwich. The paragraph says that 'the building consists of eight pavilions, connected by a corridor. The wards are each 60 feet in length, 24 in breadth, and 16 in height. There is also a handsome esplanade and terrace facing the north-west, commanding a view of the river and country for miles, and communicating directly with the wards.' Will you kindly favour your readers with a more detailed account of the plan, &c. of this new Marine Infirmary than is contained in the short paragraph in question?"

This we will seek to do; and, in the meantime, we lay before them the plan of the Hospital Lariboisière,* one of the best specimens of hospital construction in Paris, providing the three great requisites,—space, ventilation, and light. The references which accompany the plan will explain its distribution. It is necessary to remember that even in the pavilion arrangement there should be a distance between the pavilions equal to double the height of the walls.

Another correspondent, well able to form an opinion, and signing himself "M. D." writes:—

"I have to thank you for the very interesting criticism on the plans for the Ashton Infirmary. You, assuredly, have a great and important work in prospect if you will go on thus counselling and guiding our provincial architects with reference to the new hospitals now being, and about to be, erected. A large sum (30,000*l.* I believe) has recently been left to endow a new hospital for Macclesfield; and other populous towns, I have reason to think, are likely ere long to build infirmaries. Now, if these new institutions should be successful,—if it should be found that cold, pound fractures, extensive contusions, burns, scalds, and other kinds of severe injury, when carried thither, recover favourably—get well as speedily as happens when such cases are treated in a healthful private dwelling (and this, and nothing else than this, ought to satisfy), then a new era for hospitals will have been inaugurated. The old unwholesome hospitals, both in the metropolis and in the large provincial cities, will then lose favour, and in no long time will have to be moved into the country, where, on proper sites, they will

be constructed according to the rules of modern sanitary science. May the new era speedily come!"

To aid in bringing this about, the papers by Miss Florence Nightingale, read at the meeting of the Association for the Promotion of Social Science, held in Liverpool, have been published in a separate and inexpensive form, and we strongly advise all architects to obtain the volume, and master it.* Some papers from our own columns, at the request of the publishers, are included in the volume. Miss Nightingale does not speak with small experience: read what she says in reply to the Royal Commissioners appointed to inquire into the regulations affecting the sanitary condition of the army:—

"I have visited all the hospitals in London, Dublin, and Edinburgh, many county hospitals, some of the naval and military hospitals in England; all the hospitals in Paris, and studied with the *sœurs de charité*; the Institution of Protestant deaconesses at Kaiserswerth, on the Rhine, where I was twice in training as a nurse; the hospitals at Berlin, and many others in Germany, at Lyons, Rome, Alexandria, Constantinople, Brussels; also the war hospitals of the French and Sardinians."

Even greater experience, however, that lady obtained in the Crimean campaign. The results of evil sanitary arrangements on this occasion are set forth in a remarkable "Contribution to the Sanitary History of the British Army," attributed likewise to Miss Nightingale;† as well as in the Report of the sanitary commissioners who were sent to the Crimea, with which our readers are acquainted. And this leads us, whilst referring to sources of information, to point attention to a paper read by Mr. R. Rawlinson at the meeting of the Association held in Liverpool, and printed in the Transactions of the Association.‡ This contribution takes the shape of a set of maxims, to which the attention the writer has given to the subject and the experience he has had abroad give great weight. We now, however, return to our notice of the designs for an Infirmary at Ashton.

THE ASHTON INFIRMARY DESIGNS.§

The design marked "Sanitarium" would not have called for notice had it not, unaccountably, formed one of the first selection of five designs. The wards are on the old system,—in communication with one another, and with corridors—nearly half the number of beds being arranged against a dead wall. The Gothic of the design,—a combination, chiefly in red brick and stone, of Early English coupled windows, with pavilion flat-topped roofs, louvres, and lanterns,—is better than the plan.

Under the designation "Model Plan," and the motto "What an Infirmary ought to be," there are two designs in the collection. They are amongst those which make use of the articles in the *Builder* and of Miss Nightingale's statements, but not very intelligently. The report appropriates our very words with no acknowledgment. In "Design A" the wards, which in themselves are planned on the proper principle, though with eight beds in each ward, are grouped with the central buildings round two spaces, called airing grounds, 58 feet by 50, inclosed as courts, except for a break of 14 feet on the north side. Each of the principal wards on one of its sides is lighted from one of these courts. This plan is not so desirable as that of such designs as have each block disposed so that the first building or central block can be no obstacle to the sun's rays. One corner of the building, as shown in the block plan, would pass beyond the boundary of the ground to which competitors were restricted, the result of setting the building 45 feet back, desirable though that be. An alternative plan, which the author seems to prefer, removing the buildings much further back, would be inadmissible, we should think, from the cost of foundations. Otherwise the plan has a certain degree of merit. "Design B" puts the kitchen and other offices in the basement instead of on the ground-floor, and the form of the plan is that of the figure 11. The operating-room is placed in the middle of the central block, with an operation-ward on each side of it.

The author of a red brick and stone design,

marked "Palmyra," has evidently studied his elevations more than his plan; but neither are very good. His object in view, he says, was "to provide large and commodious wards, thoroughly free one from the other, thus affording perfect ventilation and good light." But he crowds his wards with beds, placing some down the middle of the room. In two of the wards we can find no fire-places, and heating by steam-pipes is spoken of. The wards open from corridors; and the bath-rooms and conveniences, disconnected from the ward, do so likewise.—One of two designs which there are under the motto "Non sibi sed Patriæ," by the same author, has the appearance of being a copy from some published work, illustrative of fifteenth-century Italian buildings. The wards open from an external gallery, round a large court, and would be lighted at the ends. They appear very small. The other design has the wards planned on a better principle; but still has not been sufficiently studied.

In the design "Utilitas," the plan of the wards is arranged as the figure 11.—the wards being at the extremities of the arms, or separated from one another by passages, staircases, convalescent day-rooms, and other apartments. They are not altogether on the best system of plan, but are lighted by opposite windows. The decorative design of red bricks, and Italian, is better in general masses than in details.

There is an economical character about the design "Avon;" but the conveniences could not possibly be made to answer, placed and ventilated as they would be according to the plan. Each ward, or rather pair of wards, with the extension, could be completely shut off from the centre building, but only at intervals of time, since the pavilions have not separate staircases; but the corridor of communication, having opposite windows, could be always well ventilated. The elevations are Italian, and common-place.—The author of the design "Light and Air" is not justified in his motto. He says his design is planned on the principle of the Great Hospital at Bordeaux. We find the plan anything but that which it is represented. True, he has the wards in great part isolated on plan, and altogether so in the upper part of their height; but he, nevertheless, has gone away from the principle we should adopt—if only because his windows are placed as dormers, and there could be no look-out. The results may be obvious to those who really understand the subject. He appears to have been led into the error by the desire to produce a certain effect of Gothic; but the details of his design are not good. The entrances to the wards, moreover, lead directly out from the corridor.

The design marked "Salutaris," is another of those for which our views are adduced in favour of the principles adopted. That is to say, the author gives the full width of the floor to each ward, has the windows facing each other, provides 2,000 cubic feet of space, and prefers heating by open fires (which he places at each end of the ward), because other modes of heating are favourable to decomposition of the noxious emanations, and produce a dry atmosphere. Also, he has separate eating-rooms for the convalescent. But whilst advocating one of these points of principle, practically he does not realize it, since the wards are not as detached buildings, but portions at right angles to one another of a general building,—there being a staircase at the angle from which the closets open out. There is, however, an ingenious contrivance in the closets, to remedy the inconvenience of their being so near the wards—the inconvenience of the entrance of the vitiated air by the opening and shutting of the doors. The contrivance is like that of one compartment of a turnstile. The author says,—it will be seen that "a person, on entering the closet, pushes one door before him, the other, placed at right angles to it, following him, and effectually preventing further ingress to others during its occupation; and, having driven out the air and reduced the cubic contents of its interior, on the doors being placed in their first position by coming out, it will be seen that a fresh supply of pure air is drawn from the external atmosphere through openings left in the wall for that purpose; and it therefore follows that the more the closets made on this plan are used, the more they are ventilated. Glass would be inserted in the doors to give light between." However ingenious this contrivance, the general plan appears defective. There is no scale to the drawings; but we apprehend there is no sufficient regard in the plan for the relative importance of dimensions and locations. The "contagion-rooms" are placed in the same part of the building as the dissecting-rooms, and the room for the dead. Convalescents are

* John W. Parker and Son, West Strand. 1859.

† Printed by Harrison and Sons, St. Martin's-lane.

‡ "Suggestions relative to Civil and Military Hospitals, and to some other Sanitary Questions." Page 483.

§ See p. 402, ante.

* See page 424.

understood. In the course of inquiry amongst a number of medical men, in various positions in the metropolis, we found some did not consider that diphtheria was anything more than a severe form of scarlet fever. This opinion, however, was held by those who had not met with cases of the disease. It is certain that diphtheria is a different disorder, so clearly marked from others by distinct symptoms, that it would be as unlikely to mistake it for scarlet fever as it would be to take cholera for anything else. Experience shows that we must admit that diphtheria is a new form of disease, which requires peculiar treatment, which, if used in time, is generally successful; but, if neglected beyond a certain point, the chance of recovery is small.

The symptoms and treatment of diphtheria are attracting the careful notice of some of the most eminent of the medical profession, and without doubt ere long any uncertainty which now exists on the matter will be removed. Besides the manner of treatment, it is most necessary to determine to what extent diphtheria depends upon sanitary conditions; and whether it can, like typhus fever, be attributed to bad drainage, want of cleanliness, overcrowding, and other evil arrangements prejudicial to health.

Dr. Ballard, the medical officer of health for the Islington district, has inquired into between sixty and seventy distinct cases, which have occurred in that neighbourhood; and it appears that about one-half of these took place in the families of persons in good positions, occupying houses in which no imperfection of drainage or other faults could be discovered by the sanitary inspector.

It must, however, be noticed that, at the rate of fifty per cent. the houses were in ill condition. In an inquiry of this nature several things should be borne in mind. In one house where a death from diphtheria occurred, in the first instance a woman was attacked by erysipelas, and nearly all in the house were in other respects ill. They were very clean people, and the drainage was not to be found fault with: there was, however, on one side, a wall saturated with damp, from an overflowing cistern next it. Was this the cause of the sickness in that house? In another case, where deadly consequences ensued, the house and drainage were good; but, on examination, it was found that the water-cistern was in a most foul condition—it had probably not been cleaned for several years; deep collection of mud was formed at the bottom, and a scum floated upon the surface. Was the state of this water the means of producing diphtheria? In a case which occurred in Camden-town, although no visible defect could be found in the drainage, bad smells were complained of; and the family, although they had in other situations been generally healthy, had been always ailing since their removal to this place. A practical man suggested that the mischief might have been caused by the neglect of trapping the drain at its point of communication with the sewer. It appears that this necessary provision is to a great extent neglected; so that, by want of proper attention to the sinks, &c. poisonous gases are admitted into the dwellings.

It is noticed of this disorder, that it has been most serious in the suburban and open neighbourhoods: it does not, however, in this respect differ from plague or cholera, which generally, like an invading army, skirms about the outskirts before it attacks the centre. In the City district, and in other populous parts, the number of cases of diphtheria has been very few. It is necessary to mention this in order that we may judge how much this complaint, in its present form, depends on malarious influences, and how much on sanitary derangements.

In considering the condition of those dwellings in which deaths from this cause have occurred, in houses seemingly of a good order, we should not lose sight of the surrounding evils. Are there back slums and fever nests close by, although hidden from the view? Are there pestilential ditches, or undrained lands near? Some of the French writers on this subject attribute this disease to malarial, arising from fens, stagnant water, cesspools, and other similar causes. The condition of Boulogne, where diphtheria has destroyed so much life, is sufficient to account on sanitary principles for the outbreak which has taken place.

Mr. Brown, one of the district surgeons of Clerkenwell parish, mentions that although no case of diphtheria has come under his notice in the northern part of that neighbourhood, he has recently had evidence of its ravages in a district on the borders of Wales. In Shropshire, at a village called Morton, the attack was of the most formidable description. In some houses five or

six persons were suddenly stricken with death: in others, two and three died. The condition of the inhabitants, and that of their houses, are not worse than those in other situations. Mr. Brown does not think that there is much overcrowding, but admits that there are pig-sties and other objectionable things which cause so much sickness in pleasant country-places. Moreover, this place was severely attacked by cholera at the time of its first visit, although it has escaped on the two more recent attacks.

Morton is situated on a lofty spot, backed in one direction by higher ground: in another there is a large pool of water, of about 200 acres in extent. The east winds blow for long without variation, and no doubt conveyed the malarious poison amongst the people.

If in this instance the danger is to be attributed to a cause at some distance, may not the unwholesome cow-sheds* spread disease even to houses which are well cared for?

It is important that we should discover the causes of the production of this disease, and it is only by the collection of facts that we can arrive at right conclusions: it is therefore necessary to mention some of the causes which, although generally overlooked, produce fatal effects. Many schools are so ill-attended to that they are nurseries for fever. One school might be mentioned so damp, that the ink runs on the copy-books on which the children write: to this school four fatal cases of diphtheria are to be traced.

It was a wise provision which appointed the medical supervision of metropolitan districts, for we have by this arrangement a staff of men who, with great intelligence and right feeling, study the conditions of the health of this great city, and who, each in his way, collects useful information connected with his own neighbourhood, and affords the means of arriving at proper conclusions by a comparison of notes.

In the case of diphtheria we hope soon, by the facts which will be laid before the public, to know—

1st. If this dangerous disease depend, to a large extent, on neglect of sanitary conditions.

2nd. If it be infectious, and can be transmitted from place to place.

3rd. If, by its progress in other countries, it is likely to be an epidemic here; and

4th. What means would best put persons out of danger of such an enemy.

We should also know the extent to which diphtheria has raged in the provinces. It would be useful if we could have, weekly, from the registrar-general, the bills of health for the whole nation laid before us in the same way as we have now those of the metropolis. It might not be possible, although we have such facilities for the transmission of intelligence by railways and the electric telegraph, to give the statement of the health of the country at a week's date; but it might be managed in a fortnight; and such a bill, by keeping the condition of various districts constantly under notice, would be the means of removing many evils which at present exist.

In Bordeaux, where diphtheria is now raging, the causes of this epidemic are generally stated to be a diminution of ozone in the atmosphere, miasmatic emanations, a total neglect on the part of the population of the most elementary principles of hygienics, and a low and insufficient diet.

THE JEWS' HOSPITAL COMPETITION.

The site for the new building intended to be erected by the committee of the Jews' Hospital is in the Mile-end-road, on the south side. The sum to be spent, according to the instructions, is 10,500*l.* exclusive of the value of the old materials on the grounds; and an addition of 1,500*l.* is provided for engineering works and railing. The designs sent in were submitted, as we have already mentioned, to Mr. David Mocatta and Mr. M. Digby Wyatt; and the following is the report of these gentlemen:—

"Having made the necessary arrangements on the day appointed for the receipt of designs, May 2nd, for the proposed hospital, we had the pleasure of receiving no less than thirty-three, which, on the two following days, we unpacked, and daily arranged, for examination, in a room, to which we have allowed no other persons access than ourselves and the surveyor, Mr. Wilson, who has attended us on one occasion.

We were gratified to find, on commencing our studies, that a very high average of excellence presented itself.

* These places are most dangerous. Take, as an example, one in the northern part of Islington, where, in a place wherein few people would fancy that they could be accommodated, between twenty-five and thirty cows are closely packed together. The refuse of these animals is kept in a pit, which is emptied into carts only twice or thrice a week. On such occasions the air is polluted to a long distance.

Our first task was to set aside, after cursory examination some half dozen sets of designs, evidently the work of inexperienced architects, and obviously beneath the general scale of excellence. We then proceeded to a careful study of the remainder of the series, making critical notes upon each set as we investigated its claims to attention. By the time we had gone through the whole, we were in a position to make a further rejection of nineteen, leaving eight as apparently eligible for reward.

Among the nineteen so rejected, there were many on which great labour and considerable ingenuity had been bestowed, and among them we would note, as meritorious, the designs, 'Build in Faith,' 'Simplex Manditis,' 'Having Faith in D. M. and M. D. W.,' 'Justitia,' 'Experientia Docet,' and 'A. Z.' The defects which caused our rejection of these designs comprised generally either extravagance, want of supervision, inconvenient arrangement, or defective construction or design.

We then reduced our selected series to six, by the rejection of '10,900,' a good and economical design, and of 'Only is Strength,' one not quite so good.

There then remained the following:—'Experientia,' 'Faith,' 'Alpha,' 'Celsus,' 'Economy,' 'Veritas,' from which we selected the three first mentioned, considering them as not only superior to the remaining three, but as likely to afford the best criterion of probable cost. We, accordingly, forwarded them, on the 10th of May, to your surveyor, Mr. S. B. Wilson, requesting him to furnish us with a report upon the plans which would be respectively requisite to carry them into execution. On the 2nd of June we received his report, which we enclose herewith. It appears that Mr. Wilson took out the quantities in detail of the design marked 'Experientia,' which the completeness of the drawings and specification, prepared by the author of that design, enabled him to do with great minuteness. These quantities, having been priced out by him, furnished data for the estimation of the remaining designs.

On the receipt of Mr. Wilson's report, we made an appointment with that gentleman; and with the drawings before us went carefully with him into the various questions suggested by that document, availing ourselves of his great experience which was unreservedly placed at our command. In this examination we verified the fact of the so-called abundance of the proportion of cubic area to accommodation presented by the design 'Experientia,' as compared with the remaining two, the latter having proposed a general average of about 12 feet 6 inches as the height of the respective stories, while that figured by 'Experientia' is equal to 15 feet. We thereupon instructed Mr. Wilson to re-investigate the relative cost of the three designs, on the basis of such a reduction in height, without any alteration in the arrangement of the various stories, as should bring the apartments shown by 'Experientia' upon a just footing for comparison with those shown by 'Faith' and 'Alpha.' The result, as shown in the second report by Mr. Wilson, dated June 7th, exhibits the relative cost of the three designs as:—

'Experientia'.....	£10,813 0 0
'Faith'.....	11,124 0 0
'Alpha'.....	11,478 0 0

We are clearly of opinion that 12 feet in height would be ample for the various rooms placed by 'Experientia' in its front buildings, while it certainly would be preferable to retain its 15 feet high school-rooms and dormitories, instead of the lower rooms contemplated by the authors of the designs marked 'Faith' and 'Alpha.' We accordingly inquired approximately the amount of extra cost which would be entailed by this retention, and find that it would not be likely to exceed 300*l.* The addition of such an amount to the sum stated by Mr. Wilson for the second report would still leave the design of 'Experientia' probably the most economical of the three, while it would give it a decided superiority in point of sanitary excellence. Taking into account the average variations of amount of leaders in competition or similar buildings, we saw no reason to positively reject any of the designs on the score of excessive expense, as we believe that, according to the designs of these designs, a building might be erected which should fulfil all the conditions we had made imperative upon the competitors. We have, therefore, in the selection, making our award as follows:—To the author of the design marked 'Experientia' we award the first premium, of 100*l.* To the author of the design marked 'Faith' we award the second premium, of 50*l.* And to the author of the design marked 'Alpha' we award the third premium, of 30*l.*

With respect to the special merits of these three designs, and of the remaining three of the six competitors, which we reduced the entire collection, we beg to remark that the design 'Experientia' will be found to afford the whole of the prescribed accommodation in a remarkably compact and consequently economical form; the arrangements for air, light, subdivision, supervision, freedom of communication, and convenience of communal household service, leave nothing to be desired; while, in the important point of so limiting the frontage as to admit a perfect circulation of air about the whole and its standard alone. The external appearance of this building, should it be carried into execution, will prove, we believe, avoiding all the very marked eccentricities of a particular style, and any extravagance of effect. It would be hard, and, as appropriate, and would be rather improve, than injured by the proposed diminution in height. The proportions of the air floor windows, and the roof over the angle pavilions, might be improved, by a little study and refinement.

The design marked 'Faith' is the work of a good practical architect, brought forth well planned and gracefully designed. It wants, however, the compactness of 'Experientia's' arrangement, and could not be so conveniently or economically administered. The boys' school-room and the large dormitories would be scarcely lofty enough for their area or plan. It is, however, upon the whole a highly meritorious design.

The design marked 'Alpha' is not of quite equal to the last-named, being defective in some of its lavatory arrangements and servants' bedrooms. In the grouping of the various buildings, as seen from the grounds of the establishment, it is superior to any other design of the whole series. The front is also well drawn, but is not quite consistently carried out in its leading features.

With regard to the remaining three designs, which deserve commendation, although not among the first-named, we desire to record, in the first place, our admiration of the picturesque arrangement adopted by the author of the design marked 'Celsus,' and of the merit of his plan, with one feature of which, the bringing forward to the front, in detached buildings, of the Master's House, and infirmary, we were much pleased. We could not, however, bring ourselves to believe that this picturesque

grouping and effect could be attained for the amount to which your contemplated outlay has been limited.

With respect to the designs marked 'Veritas,' No. 2, and 'Economy,' we would remark that in both a good compact, and utilitarian distribution on plan is combined with a sedulous endeavor to restrain expenditure within prudent limits. Had the designs we have selected for premiation been less excellent the authors of these designs might very fairly have been deemed worthy of reward.

In conclusion, we beg to report that we have given the most sedulous attention to the study of all the designs contributed, with the earnest desire to do strict justice to every competitor, and at the same time to consult the permanent interests of the charity. We have throughout our investigation arrived at independent but coincident conclusions, and, while we entirely concur in the award of the premiums, so we are absolutely agreed that the committee cannot do better than to realize the building proposed by 'Experientia,' with the specific reductions we have pointed out as advisable, and which in nowise invalidate the excellence or usefulness of the design. As we, however, consider that other qualities are essential to a good professional man than the power of producing a successful design in competition, we shall feel much pleasure in assisting the committee in determining to whom of the authors of the three premiated designs they may consider it expedient to entrust the care of the execution of the building. Either of the three designs might be realized with credit to the institution; but if all other things are equal, we consider the order in which it would be wise to proceed in the selection of the architect to realize his design would be the very same in which we have placed the designs in order of merit.

We would respectfully suggest, in justice to the competitors, whose efforts have been most praiseworthy, the expediency, if the committee see fit, of publicly exhibiting the whole of the designs, and shall willingly lend any aid in our power towards the realization of this recommendation."

The building, it should be mentioned, is for the reception and accommodation of 100 boys and 40 girls, the term hospital being used in its older sense, which had more connection with the Latin *hospitium* than we now give to it. It is to include, with dormitories and school-rooms, a dining-hall, to accommodate 150 persons; a synagogue, 37 feet by 24 feet; and a detached building for six aged males and six aged females.

As mentioned in our advertising columns last week, the authors of the selected design were found to be:—"Experientia," Messrs. Tillott and Chamberlaine, of Gresham-street, City; "Faith," Mr. Charles H. Cooke, of John-street, Bedford-row; "Alpha," Mr. T. P. Jones, of Cambridge-street, Warwick-square.

The design selected to be carried out ("Experientia") has a very ordinary dwelling-house exterior, but is compact and well-arranged in plan. Above the ground-floor it takes this shape [diagram]; and the dormitories being in the extended arms, have the advantage of windows on both sides. Below, the area within the two arms is included in the building; and here a passage, running from front to back, would seem but to have but little light. Design No. 2, "Faith," is Gothic in character. Design No. 3, "Alpha," has a bold elevation of mixed character, Italian and Lombard, so to speak. The central portion agrees but ill with the two sides. The front in this extends very much more than that of No. 1, and gives the impression of a building costing half as much more, though the surveyor finds this would not be the case, and so far certainly compliments Mr. T. P. Jones.

The design marked "Celsus" (by Mr. G. Morgan), one of the six retained by the referees, in an artistic point of view, is the cleverest design there, and would be an ornament to the neighbourhood.

"Veritas," another of the six, is by Mr. H. H. Collins, and a well-considered design: the author has set forth his intentions by eighteen drawings, referring to two projects.

One of the cleverest elevations is that of the design "Utile, dulce;" but the plan is straggling.

As amongst those named by the referees, we may say that the design marked "Having Faith in" Messrs. M. and W. is by Mr. J. H. Hovenden; "Justitia" is by Mr. H. E. Cooper; and "A. Z." is by Messrs. Nicks and Litch. "Unity is Strength," the eighth on the referees' first list, is by Mr. Louis de Ville.

Amongst the other competitors, who, in addition to those we have named, have since attached their names to designs, are Messrs. Finch Hill and Paraire ("London"); Mr. L. H. Isaac ("Pro Deo, Rege, et Patria"); Mr. W. Lee ("Utility"); Messrs. Parnell and Gompertz ("Honestas quam splendida"); Mr. Evans ("Monogram"); Mr. W. Hill ("Alpha"); Messrs. Holme and Stubbs; Messrs. Kelly and Crawley ("Alpha"), and others.

The designs have been open to the public during the week in what is known as Sussex Hall, in Leadenhall-street, now used as a literary institution for Jews, but which really is

The Hall of the Bricklayers and Tilers' Company.

The arms of the company, with its motto, "In God is all our trust," are set up in the front wall.

We should like to see this company, representing as it does important branches of industry, improve its position and increase its usefulness; there would be no occasion then to let its hall.

ENGINEERING EXPLORERS IN BRAZIL, SOUTH AMERICA.

ENGLISHMEN, in every country under the sun, are the pioneers of civilisation and science. It may not, perhaps, be without interest to hear of some of the difficulties and privations they have to encounter, and the following account is an extract from a private letter of a very youthful engineer, written to his brother in Bahia (Brazil) from the interior of the country, on an expedition conducted by Mr. Vivian, the geologist, in the service of the engineer of the Bahia railway (Mr. Vignoles), with a view to the further extension of the line inland to the upper part of the river St. Francisco, in the midst of the most productive country in the world (dated April 26th, Villa Nova de Rainha):—

"I wrote to you last from Aqua Fria (March 3rd). The country being in a bad state (from the unusual delay of the rainy season) you can imagine we do not live in a first-rate style. We moved from Aqua Fria to a fazenda, where we passed the night. Here a tremendous thunder-storm gave us a little rain, to our great joy. The next day we reached Serenhia. The road from Aqua Fria to this place is nearly a straight line, and the country from a slight distance appears perfectly level, but it is far from so, being undulating, and the road crossing a number of small valleys from 100 feet to 20 feet in depth. Road sandy, but in places passing over rock; catings, or brushwood, on each side, so that one cannot obtain a view of the country. One finds it tremendously hot on these roads when the sun is at its height; and the more so because the dry brushwood does not afford any shade, but keeps what little wind there is away from us. * * Since we left Bahia, we have had rain three times, which has filled the tanks with drinking water, but nothing more; so that, although 'report' says the country is much better a-head, we find it the same, with the exception of Serenhia. This place is situated on rising ground at the foot of a range of hills, built in the form of a quadrangle, contains a good but small church; houses all tiled, and a few well built; population about a thousand. I must not forget to mention that there is a body of eight soldiers here: some years ago the country around was infested by robbers.

The system on which we are doing the work, I may as well explain before going further. The latitude and longitude are of course taken by observation, and the road we survey by taking bearings, and noting the distances by time, which I put into a traverse table form, and work out. This is called the latitude and departure by account; at every place where Mr. Vivian takes the latitude and longitude by observation, we compare books. If I come within forty chains in a distance of twenty miles, it is very good, as by measuring distances by time, one is apt to get out by the animals altering their paces, &c.; although in distances of ten miles, we often scarcely differ by three chains. All the principal hills and valleys we level from the barometrical readings; of any prominent hill near our course, we take its height, and do a little geological observation. The latter we always do on the road; but the country is in such a bad state, that having to move from sixteen to twenty miles at a time (from want of water and pasture), the more minute examination must be made on our return.

We left Serenhia (on March 24), and passed over a distance of seven leagues to Coité, the country similar, but of a greater elevation above the sea; still the same monotonous, low brushwood, with a glimpse now and then of some distant volcanic-looking mountains on our left; the ground hilly, and in places stony. Coité is a hell upon earth, built upon a small hill slightly elevated above the surrounding plain, in the form of a large quadrangle; a church in the centre, and about sixty badly built houses; ground sandy; hardly any water fit to drink, mere mud that you would not wash your hands in; but there is no running water, and in some years they have been without rain for eleven months.

The people are a lazy set; the ground is only cultivated sufficiently for their wants, and yet the tobacco that is sent from here is considered the best that goes to the Feira St. Anna market. Here we enter the high road to Ivaizero (which I must say is a good road, and at a little expense

might be made first-rate), and traverse the wilderness of catings, only stopping occasionally at the Fazendas (a sort of roadside houses apparently). At some of these places they would not even sell us a goat, and, as for buying anything else, we could not; two or three times we have had a little milk given us. Here they breed cattle, most of which passes through Feira St. Anna and Cachera, commencing from Aqua Fria and upwards. We halted two days at a Fazenda called Lagoado, where a troop of twenty soldiers passed us: these, with their female companions (some twenty) helped to clear the country of what little was to be had. Near this Fazenda there is a very remarkable mountain, which has somewhat the appearance of an immense pile of stones, standing alone elevated some 500 feet above the plain. This we ascended, and reached the summit after a hard climb of two hours, when the bang of a revolver proclaimed to the plains below that an Englishman was there. I doubt if any man had been there before us (perhaps some Red Indian), for it is an ugly place to climb. Two leagues from here we came to the Rio de Peixoto; the water in it was stagnant; there may have been fish there once!

The next place is a small village called Quenendas, on the river Itapicuru, where we expected to find a good place, but we were woefully disappointed. Here three of our mules strayed away some five leagues in search of grass, which occasioned us a loss of two days. The river Itapicuru is about two chains wide, with a flood of some 20 to 25 feet. There was about sufficient water running (when we were there) to work a large mill. This was the first running water we had seen in a distance of about 140 miles. The price of farinha, Indian corn, &c. is something frightful, and it is necessary to buy it when we cannot find pasture for the animals. As regards ourselves, I will not say much, but explorers must expect hard fare.

On the 8th of April we left for the far-famed Serra de Itambe. We followed up the river Itapicuru, for two leagues, when we left it on our left. Road same as usual, but more ups and downs after leaving the river; also houses more frequent, and in one place we even got some milk. We arrived at the Pass of Itambe on the 9th, when we stopped at a small *engenho*. We here obtained any quantity of the best *capim* for our animals, who fared well during the week we were there. The Itambe mountains commence here, or a league farther south, and run nearly north across the river San Francisco, forming the falls of Paolo Alfonso, and terminate at the sea, near the town of Estancia, in the province of Itapige. We ascended one of the highest points near here, and found it to be about 2,700 feet above the sea. On the top of the range of mountains, there are many houses, and beautiful little valleys or basins, the land extremely fertile, and producing everything that grows in the Brasil. On the top of the mountains are stationed a body of twenty soldiers, for there have been many murders committed, and even while we were there, the commander of the troop was shot at, but escaped, the horse receiving part of the charge.

April 18th. The rain has come at last. Left for Bon Visto, after passing the Itambe mountains, which are about a league wide. The road is very bad crossing the mountains, though had it been altered by two leagues more to the west, they would have saved distance, and obtained a level road. Arrived at Villa Nova on the 20th. At this place, from accounts received on the road, we could obtain everything, but we have been again "sold;" however, if the rain continues, I have no doubt prices will fall very low. Mr. Vivian did intend to stop here some time, but we are obliged to push on, as it is so expensive living here, especially for our men: so all minute examination will be made on our return, when the country will be in a better condition, if the rain continue.

WALTER CROUDACE.

FASHION IN ARCHITECTURE.

TRANSITION is a word that may be constantly applied to architecture, and is suitable at no period of time more than the present. Everything mundane is in a continual state of change; and what is better evidence of this than are the fancies, whims, and subtleties of the human brain? One of its representatives, or agents—the eye—that organ which renders the world beautiful to us, is not satisfied with resting for any length of time upon one object, one form, one view, one class of vegetation, foliage, &c. but seeks diversity, alternating between excitement and tranquillity; there is, in fact, a restless, merging into an insatiable desire for change, and

change is sought going by the name of Fashion; and this in man ranges from the most trivial matter to that of the greatest import. What is more common than the expression "old-fashioned?" Some things that never possessed one element of true beauty are only now called "ugly" because "old fashioned." Fashion is the universal despot that rules, and will rule alike, over empires and "free and enlightened" constitutions.

Now, this constant desire for change is very clearly evinced in the multifarious attempts now made to educe a new style of architecture. From what? Not from the sticks and stones—the bare materials from old earth's depôts—but from the forms into which those sticks and stones have been wont to be embodied and vivified for centuries long gone by. If we examine the designs now submitted in our competitions, we shall find a jumble of what was done well years ago, with this difference;—what are now proposed to be mixed together in one building, were then component parts of many buildings in different ages and countries.

Not to go back very far, let us take the Ecclesiastical styles from Norman downwards: what is there but change? As soon as one style had been established, the old minds tired of repetitions; then came Transition, which gradually merged into a settled style, each style having its peculiar characteristics well known at the present day. Then comes the tiring, then the transition, then the fixed style, and so on.

Attempts have long ago been made to engraft one style upon another, failing always, and worse the nearer to our own day that it has been tried; but if fashion will it so, what then? What is the reason of this?—simply love of novelty. Some one goes to Greece: he writes upon Athenian architecture; so we adopt it,—it becomes fashionable. One voyages to Egypt with a more limited result: another goes to Granada, Alhambra becomes the rage. Then we have this tide of change affording trips to the Continent. The public eye is opened in that direction, and straightway "Continental Gothic" invades our shores, our drawing-boards, and thence our buildings, furniture, &c.

Now, all this, though really old, is new to us: all styles possess their beauties, which, being presented to us for the first time, strike us as better than what we have become used to: we desire to adopt one, it becomes fashionable. How little suitability is consulted in all this; how little regard for true comfort, so long as the eye is satisfied.

When the "complete revival" takes place, of what will it consist? What will be completely revived? We now think poorly of the man who "copies" a building in its entirety: shall we think much better of him who copies all its parts?—revives them, in fact? Surely the age will not allow it.

Some again argue for the immobility of architecture. Where has it shown signs of immobility? Where is the universal style that pleases everybody? Nay, rather let us look for constant change: the fashion of to-day will be the "ugly" of to-morrow, alike in the garb of our buildings and the dress of our persons.

These changes should also be improvements: we should profit by what has been done before. We cannot take the sticks and stones, and vivify them in a totally original manner; certain great principles must be continued; but we need not attempt to plant one style upon another, we should rather take their elements, and embody them in a consistent shape. There are plenty of forms of beauty yet to be applied to architecture: we have no need to revive ancient forms to please Queen Fashion: she is "not the fool you take her for," but is sensible enough to perceive what is really an improvement; and it is the duty of those having the true welfare of our profession at heart, to search for these new forms of beauty, to mould the unwhewn material to them, and to set a fashion which shall be duly appreciated, and which shall bear the triple impress of truth, elegance, and suitability.

THOMAS GOODCHILD.

LONDON IN THE YEAR 1419.—THE "LIBER ALBUS."

MIDDLESEX ARCHÆOLOGICAL SOCIETY.

A MEETING of this society was held on Tuesday the 14th in the Council-chamber, Guildhall, and was well attended. Several very agreeable papers were read; amongst them a sketch by the Rev. Thomas Hugo, conveying in an amusing form the information given in the "*Liber Albus*," recently edited, under the direction of the Master of the Rolls, by Mr. H. T. Riley, barrister-at-law; the pitch of which we print.*

The "*Liber Albus*" was written, as appears in the preface, in the year 1419, being finished in the November of that year, the civic reign, be it not forgotten, of the famous Sir Richard Whittington. It was compiled under the superintendence of John Carpenter, then town-clerk, of whom Mr. Brewer has furnished us with an interesting memoir. It is a large folio volume, in a rich leather binding, with bosses, which may be of the latter part of the sixteenth or the commencement of the following century. Although the numbering of the pages is incorrect, no part of the volume is wanting.

The period to which it refers dates from the early years of the reign of the first Edward to the middle of that of Richard II. say from 1285 to 1385, or about the space of a century; a period not sufficiently protracted to witness many changes in the regulations, customs, and usages of those slowly-advancing times. Of the faithfulness of the picture there cannot, from the nature of the testimony, be so much as a shadow of a doubt.

It is divided into four books, the third of which is subdivided into several parts. The three first books treat of the mayor, aldermen, and sheriffs, wagers of law, *inquisitiones post mortem*, the charters granted by various sovereigns, customs, observances of various trades (bakers, brewers, butchers, fishmongers), weights and measures, laws relating to the construction of houses, party-walls, to landlord and tenant, the conservancy of the Thames, and a multitude of other topics. The fourth book is a very valuable and interesting abstract or calendar of the then existing books and rolls in the corporation archives. The whole is a vast magazine of information on almost every topic connected with the London of the thirteenth and fourteenth centuries.

In the present case, the subject is London life and London usages in the reign of Edwards I. II. and III. Instead of taking these details under separate heads, I will endeavour to weave them into a consecutive narrative. I will imagine a stranger coming to town, living at a hostel for a few days, walking about the City, and, when he sees anything that strikes him, making a note of it.

Our friend has taken up his quarters in a hostel, situated on the banks of the Thames, from the windows of which he can inhale the sweet breeze, and watch the water-fowl which disported themselves in that then pellucid stream! His host was neither Portuguese nor German, but a freeman of the City, and well known to the authorities.

Our countryman is now in the street. The footpath on which he walks is about 7 feet in breadth in the wider thoroughfares. He has hardly gone a dozen yards before he passes under a long pole projecting from a house, supporting a bush or a bunch of leaves, and declaring truly that good wine may be drunk on those premises. An unhappy horseman has just knocked his head against a similar pole a few doors off, the frequent occurrence of which interesting fact will presently cause a stringent enactment against their projection beyond the line of the footway. The houses themselves next claim his attention. Most of them are one story only, the "solar," or upper room, being furnished with a gable, faced with plaster, and ordinarily whitewashed. The ground-floor rooms are usually from 8 to 9 feet high, over which the first-floor projects. Some few of the houses have two or even three stories; but these are not unfrequently in the possession of other parties than the citizens who occupy the ground and first floors, and are entered by stairs constructed on the outside. A nuisance at this point provokes his ire, and one, I regret to say, by no means confined to the period of our traveller,—a yawning abyss, leading, by means of a steep flight of steps, to a capacious undercroft. The hoarding, which surrounded this, forces him into the roadway, and when there, into a more close contact

with one of the privileged pigs of the renter of St. Antony's Hospital—whose swine, as belonging to the patron saint of that animal, were permitted to roam wheresoever they would,—than could be at all agreeable to any gentleman taking his morning stroll.

Shops are now on all sides of him. They consist merely of open rooms, windows without partitions, and shutters. Their tenants are required to keep them, and the spaces immediately before them unexceptionably clean, and on no account to place any filth before the doors or windows of their neighbours. Greater care is taken of sanitary matters than we may suppose, or give these times credit for. The Rakers, who were the scavengers of later ages, have been actively employed in removing all refuse to places without the walls. He now enters a market. It is that, probably, of Chepe or Cornhill, where there is abundance of bread and cheese, poultry, vegetables, and fruit; or of the space by St. Mary Woolchurch; or before the convent of Friars Minors at Newgate; or by the Grascirchre; or, if the purchaser need flesh or fish, then of "Stokkes" market, near the present Mansion-house; or of St. Nicholas Shambles, on the site of the present Newgate Market. Several of these localities were, during this period, roughly paved, and on the pavements the traders congregated and exposed their wares for sale.

As he walks along, he indulges himself with a few purchases. He is taken with the pattern of a pair of spurs, and gives the enormous sum of 12d. beyond which price none may be sold. He eats a pie, for which he pays one halfpenny. As he passes the fish-market, he sees as fine a display as any that has since made the vendors of that article famous. It is the ordinary food of the lower orders, and the fast-days of the church made its consumption general among all classes. Almost every kind of freshwater-fish have been caught either in the Thames or its tributaries; and of sea-fish the supply is ample. Not one shrimp, crab, or lobster, however, does he notice: the Londoners have yet to learn the existence of these delicacies. He is asked 6d. for a cod, 1½d. for a stock-fish, and could have purchased a thousand herrings for 6s. Then he goes to the great cattle-market in Smithfield. He might purchase an ox for 13s. 4d.; a cow for 10s.; a best pig for 4s.; and a best sheep for 2s. There are more pig than any other animals, and the same is a peculiarity of the meat-market. Londoners were then much addicted to pork. One regulation of the period deserves special mention. St. Nicholas's butchers were positively forbidden to transport the filth and offal of their business to the Thames, and it was imperatively enacted that no large cattle should be slaughtered within the walls of the City. The next market that he visits is the poultry-market, on the pavement at Newgate, before the convent of the Friars Minors. The lords and servants of the king have already completed their purchases, and he, one of the small fry, may now select his dinner. A goose will cost him 6d.; a hen, 6d.; a snipe and a woodcock—hear this, ye lovers of gentle cheer—the former, 1d.; the latter, 3d.; a partridge, 4d.; a pheasant, 12d.; a bittern, 18d.; four larks, 1d.; and a dozen pigeons, 6d. So far as the record informs us, our friend could see no English fruits, save apples and pears. Then, also, potatoes were unknown, and asparagus had yet to be turned to use. He might, indeed, have nicely discriminated between the allied flavours of onions, leeks, and garlic, and with this gustatory effort he must perforce have contented himself! There was, however, another delicacy in which he might have indulged—the luxury of butter. But when I am constrained to add that it was sold by liquid measure, his *penchant* would not appear to have derived from the dainty a very superlative gratification.

We should do injustice, however, to our friend's good taste, if we thought that he could leave the metropolis without paying a visit to his tailor. That personage and his art were of at least equal importance to that which they hold in our present estimation. Both the gentlemen and the ladies were indebted for their attire to the skill of this artificer; and, truth to say, he seems by his elaborate constructions to have done his best to please them. Our friend has bought, what his wife will call a perfectly lovely robe, garnished with silk, the making whereof has cost 18d.; and has also invested 2s. 6d. in a long dress, similarly garnished, for that lady at home. Motives of economy, which, as Mr. Riley says, "would seem to have been with some fashionable people at least the order of the day," have induced him to purchase in addition, at the cost of 4d. "a pair of sleeves for changing."

* All the proceedings of the meeting are fully reported in the *City Press*; and we take the opportunity of saying that this excellently conducted penny paper will be found interesting by many beyond the limits of the City and after the date of its publication. It is very well written, and conveys much antiquarian information.

INSTANTANEOUS PHOTOGRAPHS.—Mr. Skaife, it is said, has invented a photographic apparatus which can be carried in the hand, and which, working by means of a trigger, can be used with ease and certainty. He has denominated his instrument "the pistol-camera." The "weapon" is levelled at an object, and a microscopic photograph is "picked off" on the instant. It is much to be desired that this were the only sort of "pistols" in use.

A new coat, as everybody knows, necessitates the addition of sundry other novelties. Thus, ere he returns, a finely-embroidered pair of boots of cordwain have stood him in 3s. 6d.; and a pair of gloves, of the best sheep-skin, in 2d. I must not take you further into the inventory of his wardrobe, except simply to say that, what with his new hose, his embroidered girdle, and ornamented pouch or purse, his day's visit to London will be very conspicuously and gloriously notified to his country neighbours at home.

But our gentleman's walk is not quite concluded. He is very tired with his sight-seeing and marketing, but all of a sudden an object arrests him, which, if it has not special charms, is one that he will not soon forget. He is passing through Chepe, and amid a warm volley of jokes, an unfortunate baker is going on a journey with which his own will has not overmuch to do. He has been convicted of selling bread of undue weight and quality, and this is the result! There he is, drawn on a hurdle, through the very dirtiest part of the street, with his hands tied down by his side, and, by way of adding insult to injury, the loaf that is the cause of all his woes is hanging from his neck! He is on his way to the pillory, where he will have the satisfaction of standing for a not agreeable hour. Another victim follows, whose offence consisted in selling oats, good at the top, bad below; while proclamation, or what is called "a good hue-and-cry," is made not only of these, but of sundry other delinquents, by whom unsound articles, rotten meat, poultry, herrings, "false" breeches, girdles, gloves, caps, &c. have been attempted to be imposed on unwary customers.

Thus our friend has walked from place to place amid the many-coloured groups of London, and yet all along he has seen nothing that, so far as legislative enactments can provide, was calculated to amuse or disgust him. No thieves have packed his pocket which a mistake could have prevented, and have not cared to do so. No lepers have been suffered to meet him or to beg in the streets. Not so much as a dog has snarled at him, except one or two at the outside; and those, he remembers, were "*chiens gentils*," gentle dogs, beasts that belonged not to the mob, but to the great lords of the land. Our country friend turns into his hostelry with a due sense of the greatness of the scene in which he has been moving, of the few drawbacks and many real comforts of London life—of the security and abundance on every side; in short, of the manifold excellencies of his country's metropolis—qualities as conspicuous in the thirteenth and fourteenth centuries, if comparison be made with provincial districts during that period, as they are in our own age.

THE MANUFACTURE OF MALLEABLE IRON AND STEEL.

INSTITUTION OF CIVIL ENGINEERS.

ON May 21, the paper read was "On the Manufacture of Malleable Iron and Steel," by Mr. Henry Bessemer. It need not be a matter of surprise, that when Mr. Bessemer first proposed to convert crude pig-iron into malleable iron while in a fluid state, and to retain the fluidity of the metal for a sufficient time to admit of its being cast into moulds, without the employment of any fuel in the process, his proposition was looked upon by many as a chimera, or as the mere day-dream of an enthusiast; but it was, nevertheless, fully recognized and supported by many of the scientific men of the day. The same deep conviction of the truth on which the new process was based, and which led Mr. Bessemer to bring it before the British Association in 1856, had since determined him (in spite of the opinions then pronounced against the process) to pursue one undeviating course, until the present time, and to remain silent for years, under the expressed doubts of those who predicted its failure, rather than again bring forward the invention until it had been practically and commercially worked, and there had been produced by it both iron and steel, of a quality which could not be surpassed by any iron or steel made by the tedious and expensive processes now in general use.

In manufacturing tool steel of the highest quality, it was found preferable, for several reasons, to use the best Swedish pig-iron, and when converted into steel by the Bessemer process, to pour the fluid steel into water, and afterwards to remelt the shotted metal in a crucible, as at present practised in making blister-steel, whereby the small ingots required for this particular article were more perfectly and more readily made.

It was satisfactory to know, that there existed in this country, vast, and apparently inexhaustible, beds of the purest ores, fitted for the process. Of the Hematite alone, 970,000 tons were raised annually; and this quantity might be doubled, or trebled, whenever a demand arose. It was from the Hematite pig-iron, made at the Workington Iron Works, that most of the larger samples of iron and steel exhibited were made. About 1 ton 13 cwt. of ore, costing 10s. per ton, would yield 1 ton of pig metal, with 60 per cent. less lime, and 20 per cent. less fuel, than were generally consumed, when working inferior ores; while the furnaces using this ore alone yielded from 220 to 240 tons per week, instead of say 160 to 180 tons per week, when working with common iron stone. The Cleator Moor, the Weardale, and the Forest of Dean Iron Works, also produced an excellent metal for this purpose.

The form of converting vessel, which had been found most suitable, somewhat resembled the glass retort used by chemists for distillation. It was mounted on axes, and was lined with "Ganister" or road drift, which lasted during the conversion of thirty or forty charges of steel, and was then quickly and cheaply repaired, or renewed. The vessel was brought into an inclined position, to receive the charge of crude iron, during which time the tuyeres were above the surface of the metal. As soon as the whole charge was run in the vessel was moved on its axis, so as to bring the tuyeres below the level of the metal, when the process was at once brought into full activity, and twenty small, though powerful, jets of air, rising upwards through the fluid mass; the air, expanding in volume, divided itself into globules, or burst violently upwards, carrying with it a large quantity of the fluid metal, which again fell back into the boiling mass below. The oxygen of the air appeared, in this process, first to produce the combustion of the carbon contained in the iron, and at the same time to oxidize the silicon, producing the silicic acid, which, uniting with the oxide of iron, obtained by the combustion of a small quantity of metallic iron, thus produced a fluid silicate of the oxide of iron, or "cinder," which was retained in the vessel, and assisted in purifying the metal.

The amount of decarbonization of the metal was regulated, with great accuracy, by a meter, which indicated on a dial the number of cubic feet of air that had passed through the metal; so that steel of any quality or temper could be obtained with the greatest certainty. As soon as the metal had reached the desired point as indicated by the dial, the workmen moved the vessel, so as to pour out the malleable iron, or steel, into a founder's ladle, which was attached to the arm of a hydraulic crane, so as to be brought readily over the moulds. The ladle was provided with a fire-clay plug at the bottom, the raising of which, by a suitable lever, allowed the fluid metal to descend in a clear vertical stream into the moulds. When the first mould was filled the plug valve was depressed, and the metal was prevented from flowing until the casting ladle was moved over the next mould, when the raising of the plug allowed this to be filled in a similar manner, and so on, until all the moulds were filled.

The casting of large masses of a perfectly homogeneous malleable metal into any desired form rendered unnecessary the tedious, expensive, and uncertain operation of welding, now employed, whenever large masses were required. The extreme toughness and extensibility of the Bessemer iron was proved by the bending of cold bars of iron 3 inches square, under the hammer, into a close fold, without the smallest perceptible rupture of the metal at any part; the bar being extended on the outside of the bend from 12 inches to 16 inches, and being compressed, on the inside, from 12 inches to 7½ inches, making a difference in length of 9½ inches, between what, before bending, were the two parallel sides of a bar 3 inches square.

In the manufacture of plates for boilers and for ship building, the cost of production increased considerably with the increase of weight in the plate: for instance, the Low Moor Iron Company demanded 227. per ton, for plates weighing 2½ cwt. each, but if the weight exceeded 5 cwt. then the price rose from 227. to 377. per ton. Now with cast ingots, such as the one exhibited, and from which the sample plates were made, it was less troublesome, less expensive, and less wasteful of material, to make plates weighing from 10 to 20 cwt. than to produce smaller ones; and indeed there could be but little doubt, that large plates would eventually be made in preference, and that those who wanted small plates would have to cut them from the large ones. A moment's reflection

would, therefore, show the great economy of the new process, in this respect; and when it was remembered, that every riveted joint in a plate reduced the ultimate strength of each 100 lbs. to 70 lbs. the great value of long plates for girders and for ship building would be fully appreciated.

It would be interesting to those who were watching the advancement of the new process, to know that it was already rapidly extending itself over Europe. The firm of Daniel Elfsstrand and Co. of Edsken, who were the pioneers in Sweden, had now made several hundred tons of excellent steel, by the Bessemer process. Another large manufactory had since been started in their immediate neighbourhood, and three other companies were also making arrangements to use the process.

Belgium was not much behind her neighbours: the process was now being carried into operation at Liège, where excellent steel had been made from the native coke iron; while, in Sardinia, preparations were also being made for working the system. Russia had sent to London an engineer and a professor of chemistry to report on the process; and Professor Müller, of Vienna, and M. Damas and others, from Paris, had visited Sweden, to inspect and report on the working of the new system in that country.

The Bessemer process might therefore be now fairly considered an accomplished commercial fact.

THE HANDEL FESTIVAL IN THE CRYSTAL PALACE.

THOSE who have had the good fortune to be present at either of the three grand performances at the Crystal Palace, which, together with the public rehearsal, have constituted the great festival in celebration of the centenary anniversary of the death of the greatest composer of sacred music that ever the world produced, and which will this day (Friday) be brought to a termination, may congratulate themselves upon their good fortune at having assisted at the greatest musical congress, and, we may add, the greatest musical triumph of our time.

But the "success" of this magnificent celebration, taken in its ordinary acceptance as connected with enterprise and profit, sinks into insignificance as compared with the actual and ocular testimony it affords of a nation's progress and proficiency in the most civilizing and elevating of the sciences—that which was distinguished by the ancient Greeks themselves as "the science of the Muses."

Matters musical are greatly changed in this country since the great festival in 1784, held in Westminster Abbey, to celebrate the one-hundredth anniversary of the birth of the immortal genius of the chorus, when five performances from his works were given by an orchestra of 525 exponents; "a more numerous band" was never known to be collected in any country or upon any occasion. Still the good work went on, and still, as year after year rendered the presence of the great composer amongst us a period in musical history more and more distant, did his mighty masterpieces grow in public esteem, in an inverse ratio to the progressive remoteness of their production; until, in 1834, another great demonstration in his honour was held in the same sacred building, upon which occasion the performers had advanced in numbers to 600. Since that time the study and practice of vocal and instrumental music, in all parts of the kingdom, have advanced with strides that may be truly termed gigantic; and the vast area of the Crystal Palace affording accommodation for an orchestra and an audience of colossal proportions, the opportunity was embraced by the Sacred Harmonic Society, and the recent gigantic congress of 1857 was held as a rehearsal and preliminary to the still greater and more perfect one which is but now concluding, in celebration of the exact completion of one century since the death of the illustrious Handel.

Whatever may be our position amongst the great nations in the sister arts of painting, sculpture, and architecture, the place we hold as devoted followers of the science of music is a high one, and in the daily results of this national movement we can afford to treat with indifference any attempt to remove us from our pedestal. Music, like painting, has its pre-Raphaelites and its moderns, or rather it has schools of followers as divided in their predilections. But the old school of orthodoxy or obstinacy is broken up. The stiff and starchy frequenter of the Ancient Concerts who held the admirers of modern music generally as heretics, and would shun a patron of Verdi as he would an infidel, is a fanatic rarely to be met with now-a-

days. Toleration is the musical motto of the day, and the admirers of the piano-forte music of Bach and Beethoven, of Thalberg and De Meyer, meet together at Hanover-square, prepared alike to derive pleasure from merit in whatever shape conveyed.

But when the sublime oratorios of Handel are the theme, one unbroken unanimity of sentiment seems to actuate the hearers; and as his mighty inspirations are conveyed in plaintive melody, martial declamation, or overwhelming chorus, so are the pale cheek, the hushed whisper, the tearful eye, or the exultant smile, displayed throughout the length and breadth of an assembly, numbered by thousands, but united as one man.

So was it when an audience, numbering more than 19,000, assembled on Saturday to listen to the full rehearsal of a selection from the several works chosen for the three festival days.

As we contemplated the imposing array of 453 first-rate instrumentalists, and 2,800 vocalists, of equal excellence in their degree, who, with the conductor and the organist, formed a collective force of 3,255 performers, we thought how inadequate, under the present circumstances, would be the figure employed by Pope, some century and a quarter ago, to illustrate a "monster-band" of the period:—

"Strong in new arms, lo! giant Handel stands,
Like bold Brucius with his hundred hands."

But Handel's band and Pope's metaphor were, doubtless, considered fine enough at the time; for orchestras numbered by thousands, and audiences by tens of thousands, had not entered into the imagination of geniuses even such as they.

When we consider the state of the musical art when Handel appeared upon the scene, and then reflect upon the mighty works that emanated from his genius, we can appreciate the obligations the world is under to him. "Music," to borrow the words of one of the ablest critics of the day, "however extolled by the Greeks—however practised by the Early Christians—however elaborated in the age succeeding the invention of counterpoint—however common to all primitive tribes and nations—owes its development as a medium for the expression of each variety of passion, on deep-rooted natural principles, entirely to the last two-and-a-half centuries."

At the time when Handel and Bach first saw the light, music was but even then enunciating itself from the rules that had rendered it a subject for ingenious contrivance rather than a vehicle for the soul's expression. This peculiar state of the art may be traced through the church from the Greeks, whose love of complexity was as much exhibited in music as in philosophy, and who, in addition to six modes, had adopted the diatonic, chromatic, and enharmonic genera, in which the further division of the semitone has involved their music in a hopeless uncertainty, from which the mystified descriptions of Vitruvius and Plutarch have hitherto entirely failed to rescue us.

What writings have come down to us—from Aristoxenus to Boethius—present a mass of unintelligible jargon, that has taxed the learning of a Burney and the patience of a host of others to unravel, but which gives a double value to the rule of Fontenelle: "En écrivant, j'ai toujours tâché de m'entendre."

But our business now is not to indulge in speculations upon the music of the ancients, but to congratulate ourselves upon living in an age when musical science and resources have attained the perfection which will confer upon the Handel festival of 1859 a lasting reputation.

To the enlargement of the orchestra, and means adopted for concentrating the sound in the central portion of this vast building, we have already alluded; and we may now record that to a great degree, these judicious arrangements were successful, and that the effect produced greatly exceeded that of 1857 and 1858. Abstaining from critical investigation of what was wanting, however, we must say that the spectacle was so astonishing, the effect so imposing, and the enthusiasm so great, that the terms of ordinary criticism become inadequate for the task, and we accept the gigantic demonstration at once as a great, and in every way successful achievement, and an honour to the country which alone could organize it.

We can but cursorily allude to the music performed at the public rehearsal, as it was included in the programmes for the three festival days. We will, therefore, content ourselves with recording that the two choruses, "Hallelujah" and "Worthy is the Lamb," from *The Messiah*, the chorus "To thee Cherubim and Seraphim," and the introduction, "We praise Thee, O God," from the Dettingen "Te Deum," were the great events

of the day. Of the solos we saw no reason to modify our opinions of 1857, namely,—that solos, as a rule, lose much of their beauty in this vast building, pathetic and piano passages being almost inaudible at the further portion of the nave and transept. The lower notes, too, of both bases and contraltos lose much of their effect. On the other hand, high and sustained notes—as those of Madame Novello, in "Let the bright Seraphim," or of Mr. Sims Reeves, in "Sound an alarm"—clear articulation and loud declamation, tell with the greatest effect; and singers will do well to bear in mind that extra exertion must always be used when singing in a building of such vast area.

In the same way as the tourist at Chamouny,—at first so bewildered by the vast scale of the Alpine giants that surround him as to lose all notion of relative proportion between them and the ordinary objects of every-day occurrence—after a week's residence, recovers, to some extent, his powers of appreciation and judgment between real and apparent dimension; so does the spectator of a festival at the Crystal Palace, the first impression of astonishment over, become so familiarized with the vast scale of the building, and the living mass that seems to enrich every part of its area with a gorgeous covering of every conceivable hue and texture, that, ere an hour has elapsed, he surveys a concourse of from twenty to thirty thousand people with as much equanimity as a French or an Austrian general accustomed to the inspection of a whole *corps d'armée*.

The same rule will apply to our notions of sound; and, as on Monday, the first day of the festival—proper, we listened to the sublime strains of Handel's imperishable masterpiece,—*The Messiah*,—and as choruses after choruses made the building reverberate with the volumes of tone which burst from the dense ranks of trebles, altos, tenors, basses, and instrumentalists, in clear, broad, overpowering masses; and we saw the vast audience, mute, absorbed, and breathless; we felt that a new era had perhaps commenced in the history of music, and that in time we might become as accustomed to the tones of gigantic choruses as we are to the never-tiring wonders of the Crystal Palace itself.

We have not space to detail the points in Monday's performance which created the most marked effect. But there was one chorus that may be excepted as its culminating point, and that was, "For unto us a Child is born," encoored with an applause that might have drowned the thunders of the orchestra itself. It was the triumph of the day. The great master of counterpoint himself, could he have heard it, would have been satisfied; and while the cheek turned pale, and the tear quivered in the eye, we thought of Horace's well-known lines of triumph upon his own achievement, and how well they would apply to him who made "the oratorio" what it is:—

"Ecegi monumentum aere perennius,
Regiæque sita pyramidum altius:
Quod non imber edax, non aquilo impotens
Possit diruere aut inane habilis
Annorum series, et fuga temporum."

Thus, metrically translated:—

Lo! a monument I rear, whose life
Brass outlasts, and, towering, o'ertraps
Royal pyramids; no eating rain
It may shatter, nor intemperate gale,
Countless train of years, nor flight of time.

The effect of the "Hallelujah" and "Worthy is the Lamb," during both of which the audience remained standing, may be better imagined than described. In "How beautiful are the Feet" Madame Novello was perfect, and the same may be said of Miss Dolby in "He was despised." Mr. Weiss and Signor Bolletti divided the bass music between them, and exerted themselves most commendably; but for Mr. Sims Reeves it would be a difficult matter to find terms worthy of his consummate delivery of the sublime music of the "Passion"; but throughout the festival he has surpassed himself.

The "Te Deum," and the selections from Belshazzar, Saul, Samson, and Judas Macanbaas, on Wednesday, constituted a noble display of the inexhaustible treasures bequeathed to us by the great composer, whom all delight to honour; and the "Israel in Egypt," this day, will doubtless form a brilliant climax to a festival so auspiciously commenced, so efficiently carried out, and as we trust the result will prove—so satisfactorily concluded.

THE ARCHITECTURAL MUSEUM.—The Committee of the Museum are issuing cards for a Conversation at the Museum, Brompton, on Thursday, July 7th, when all the collections will be open to visitors exclusively.

A STANDARD OF PUBLIC HEALTH.

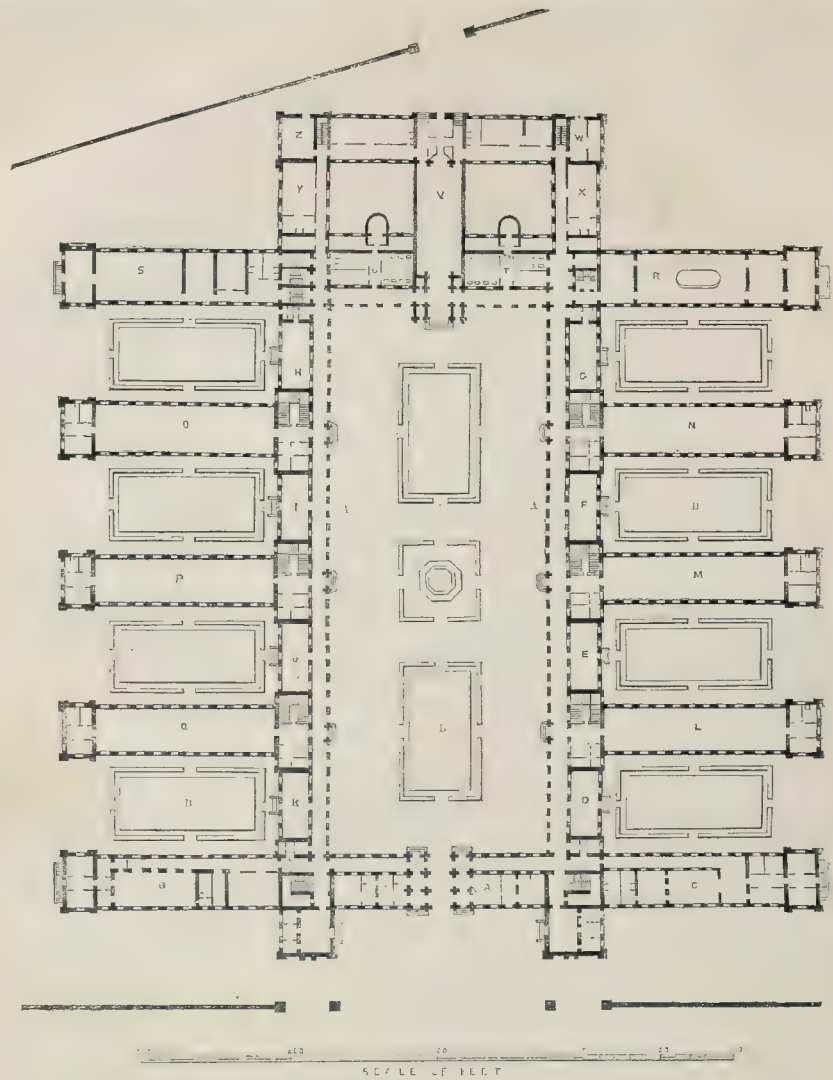
AN able and important paper, by Dr. Greenhow, "On a Standard of Public Health for England," has been reprinted from the Journal of the Statistical Society of London, June, 1859. Its purpose, as the author remarks, "is to supply a standard of the normal mortality produced by certain diseases in healthy places. It is, indeed, too probable that the standard of health presented by the thinly-peopled rural districts of Northumberland and Cumberland, of Surrey and Sussex, and of Devonshire and Cornwall, is at present unattainable for densely inhabited towns; unattainable because our acquaintance with the causes that modify the public health is still imperfect. On the other hand, a comparison of the death-rates of the several groups of districts with each other shows that conditions injurious to the public health must exist even in some of these healthy places. Why, for example, should the south-western group lose upwards of 200, and the southern group nearly 100, persons more by death annually, in proportion to their respective populations, than the northern group, unless conditions unfavourable to health exist in the two former from which the inhabitants of the latter are exempt? Hence even these standard districts, the public health of which is at present so eminently superior to the average condition of the public health in England, must be received as only comparative standards, and not as affording a correct illustration of the rate of mortality that would prevail if life were prolonged to its natural duration. The fact that some even of these healthy districts present a higher than the normal rate of mortality, does but afford additional encouragement for sanitary exertions, since a comparison of their death-rates with those of unhealthy places, or even of the country at large, demonstrates the great extent of the field which is open to such exertions."

It is Dr. Greenhow's opinion that sources of fallacy might be in a great measure obviated by selecting groups of contiguous healthy districts, comprising an extensive area of country, and containing a population sufficiently large to afford a considerable number of deaths. The description of these groups, and the results of the author's investigation into their mortality, form the subject of the paper.

STREET ARCHITECTURE IN BIRMINGHAM.

MESSRS. HYAM'S BUILDINGS.

IN some of our provincial towns, the Londoner visiting them for the first time, and unacquainted with the progress of events, is astonished at the size and costliness of many of the new buildings for commercial purposes. At Manchester and Liverpool this is particularly the case, and in our present impression we give a view of some business premises in Birmingham, calculated to produce a similar effect. The entire block extends 110 feet in length along New-street, runs 150 feet up Union-passage, and from street to ridge of roof is 100 feet high. A portion of the block will be let for shops and offices; but the centre and most important part will be occupied by Messrs. Hyam and Co. It is this portion only which we propose briefly to describe. It is divided into three departments—the basement, devoted entirely to the sale of workmen's clothing; the ground-floor or shop, for the sale of ready-made clothes of the ordinary description; and the first-floor, to be used for the "bespoke" department. The shop and the upper floor are arranged as galleries, so that a visitor, standing in the basement, looks right up through the shop and the upper floor to the great central lantern, 70 feet above him, which gives light to the interior of the whole building. All the floors are of equal width and breadth, namely, 80 feet long by 50 feet broad. The basement is 13 feet high, the shop 17 feet high, and the gallery or upper floor, 30 feet, or, including the measurement to the centre of the lantern, 40 feet high. The basement floor is divided by six massive iron columns which support the upper floor. The fittings on this floor are of oak. At the upper end of the basement a broad staircase leads to the shop, which is fitted up in dark oak, the shelves for the goods being here (as also in the gallery above), placed in arched recesses, decorated with enriched spandrels and cornices. In addition to the light derived from the lantern, the shop has a range of small windows to Union-passage, and two large windows to New-street, each composed of two panes of glass, measuring singly 13 feet by 8 feet. The columnar



THE HOSPITAL OF LARIBOISIÈRE, PARIS.—Six Hundred and Twelve Beds.*

* See p. 417, 1858.

References.

A. Offices.
B. Kitchen on the ground-floor; on the first-floor lodgings of the officers; on the second-floor dormitories for male attendants.
C. On the ground-floor, pharmacy; on the first-floor lodgings of the officers; on the second-floor rooms of the resident pupils.

D, E, F, G, H, I, J, K. Dining-rooms, &c. one story high.
L, M, N, O, P, Q. Buildings for the sick, three stories high.
R. Ground-floor washhouse; on the first-floor linen store; second-floor dormitories for female attendants.
S. Sisters' rooms.
T, U. Baths.

V. Chapel.
W. Stable and dead-house.
X, Y. Amphitheatre.
Z. Manège and stores.
a,a,a. Corridor one story high, with open terrace above, running round the buildings, and connecting them.
b,b,b. Gardens.

arrangement noticed in the basement is repeated in the shop, the pillars of which are of the Corinthian order, and made of iron. These pillars support the floor of the gallery, or upper shop, which is approached by a double staircase, of ample size, and with carved newels and balustrades, and is 80 feet long by 50 feet wide, and 40 feet high. The front is pierced by four broad and lofty windows overlooking New-street, and affording access to an ornamented balcony which runs the whole length of the building. The sides of the room are recessed to allow of the insertion of shelves for goods. A prominent feature in this room is the construction of twelve arches, 16 feet in diameter, springing longitudinally and transversely from Corinthian columns. The arches are profusely decorated with moulded enrichments. The woodwork of the upper floor is oak and walnut. As we ascend in the building, ornament is more and more freely employed.

In the front of the building, lighted by a range

of small semicircular-headed windows overlooking New-street, is one long, broad, and lofty room for tailors and sempstresses. Every room, in common with the rest of the building, is heated with warm water. The workrooms will accommodate about 200 persons. The design is mainly of the period of the Renaissance, with a free use of Italian detail. The front is divided into three stories, in addition to which there is a range of dormer windows, with consoles. The door and windows of the lowest story are divided by Corinthian coupled columns, above which is a handsome balcony, of light ironwork, supported by a bracket cornice. In the show-room story the broad and lofty semicircular-headed windows form an important feature: they are separated by coupled pilasters, and surmounted by a rich modillion cornice, loaded with ornament. The workroom story is divided by pilasters into four bays, each bay containing three arched windows. Above this line of windows runs a cornice decorated with

carved festoons hanging from sculptured masks. Above this cornice are placed the dormer windows (which are semicircular-headed) and enriched vases in blocking. The whole is crowned with an ogee roof, curved and corniced, and capped with an ornamental iron fret. All the chandeliers are worked in Florentine bronze. They are the production of Mr. Philip, of Caroline-street. The whole of the block of building (consisting of seven retail shops, professional offices, show-room, &c.), which will cost nearly 25,000*l.* has been erected by Mr. Jones, of Belmont-row, from the designs and under the superintendence of Mr. J. J. Bateman, of Cherry-street. The constructive ironwork was supplied by the Horsley Company; the ornamental ironwork and heating apparatus by Jeakes, of London; the plate-glass by the London and Manchester and the St. Helen's Companies; and the shop-windows and shutters by Clark, of London. Mr. Naden discharged the duty of clerk of the works.



STREET ARCHITECTURE IN BIRMINGHAM: MESSRS. HYAM'S PREMISES.—MR. J. J. BATEMAN, ARCHITECT.

OMNIBUS CITY TRAFFIC.

THE stoppages, collisions, and confusion, caused on the main route from St. Paul's by Cheapside, would appear, notwithstanding the precautions used by the City police, to be increasing every year. The most straitened parts of the line are, first, Ludgate-hill, as occasioned by the great traverse of Blackfriars; secondly, Cheapside and the Poultry, caused by the taking up and setting down of the two conflicting currents. The extraordinary improvement observable on London-bridge, through the police regulation of that incessant stream of vehicles, might, by an extension of their supervision, greatly alleviate the difficulties of the general thoroughfare; and seeing the deserted aspect of that fine modern causeway, Cannon-street, it does seem strange that no advantage is taken of its concurrent direction, in order to facilitate communication, and to liberate the ever-halting and lumbering train of vehicles.

The Lord Mayor is omnipotent "*intra muros*:"—all avenues are stopped on the day of his procession: occasional barriers are erected on festive occasions; and even Temple-bar is formally closed when her Majesty pays him a state visit: it is, therefore, within his province, and perfectly under his control, to obviate much of the conflict and delay which occur every minute of the hour on the great omnibus track.

What I would suggest, in the present state of London, and until some other continuous main line be opened from east to west, is, that Cannon-street should be made, by civic edict, the return way from London-bridge, and that no omnibus taking the whole range to the railway should be permitted to go and return by the same route. This would relieve Cheapside of nearly one-half its traffic, and leave, at the same time, more room for inward-going vehicles. If, again, the north side of St. Paul's were permanently open for a single file of Bank-going carriages, the way would be relieved immensely as far as Ludgate-hill; and at this point the vigilance and action of the City police might considerably ease off the pressure.

Every year adds 100,000 souls to the population of London—many millions sterling to its commerce. Let the thoroughfares only remain as they are, and our population must become stagnant—our commerce stricken with paralysis—through very plethora. QUONDAM.

PLANS OF CASTLES AND HOUSES DURING THE MIDDLE AGES.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting held in the Society's Rooms, Holywell, on Wednesday, June 15—

Mr. James Parker delivered a lecture upon "Plans of Castles and Houses during the Middle Ages." In a previous paper he had pointed out the mistake which he considered many persons made in considering the Gothic to be so essentially an ecclesiastical style as to be unsuited to the wants of domestic life. He had contended that a study of the existing remains of the dwellings of our ancestors would show that throughout the Middle Ages the Gothic style met the wants and requirements of each successive age to a remarkable degree. By way of illustration to this paper he proceeded to trace the gradual development which might be observed in the plans of domestic buildings from the times of the Normans to those of Queen Elizabeth, and to show, as far as time would allow, the chief causes which seem to have guided the several changes of plan. In referring to the buildings of the Romans in this country, he considered that, in spite of their number and extent, and probably at one time magnificence, they cannot be said to have influenced any succeeding buildings, either as to design or plan. They seem to have set a fashion rather than founded a style, which fashion died out when they left the country. After referring to the plans which the Romans probably copied from Italy, he observed that no connection could be found between them and the large square keep-towers which the Norman barons introduced. This was a type standing by itself, and from that one type all the successive varieties of the principal houses of the country might be said to be derived, each variety succeeding the former as circumstances necessitated, or change of custom and habit called forth. He considered, first, how far the Norman castle met the requirements of the Norman baron, chiefly with regard to his safety and protection, and afterwards his comfort and amusements. As a fortress, he showed that nothing could be more simple and perfect, and he then went on to show how the internal arrangements met the requirement of a domestic habitation. As, however, the number of retainers of the baron increased, as

in all probability they did, and the inconvenience and misery resulting from the close crowding together, not to say positive evil; we find at the dawn of the thirteenth century not only that the bailey which had surrounded the keep was enlarged, but that the walls were provided with towers and buildings which were capable of accommodating the baron, his family, or his guests. This extension of the bailey was the first step towards the future development. In order to exhibit more clearly the principle of development he referred to Kenilworth Castle as one amongst many examples, and by a series of plans to show the castle in its several stages. He explained how the moated bailey gave way to one surrounded by a wall, along which were arranged the principal chambers. This was the second stage. The third consisted in gathering together all these chambers into one group, the hall forming the centre. This principle of development would be found apparent in most of our castles if examined historically, and exhibited the history of the times. The first stage showed the domestic arrangements entirely subordinate to the military, in the second the domestic and military were combined, in the third the military were entirely subordinate to the domestic. The same principle was also exhibited in castles built from the ground where no buildings before existed. He then proceeded to show what changes had in the meanwhile taken place in the smaller buildings—the town houses and manor houses of the period. As examples of Norman town houses, he referred to the Jews' House at Lincoln, and Marye's Hall at Bury St. Edmund's; as Norman manor-houses, to Appleton and Boothby Pagnell. As houses of later date, he exhibited and described the plans of Sutton Courtyard and Wanswell Court. After describing the general plans of houses, both large and small, in the fifteenth century, he concluded by special reference to the large dining-hall, the decrease of which, in its proportion to the number, and extent of other rooms, was the chief feature to be observed in the change which took place towards the end of the fifteenth and during the sixteenth century. He briefly enumerated the various causes which led to this change. The College Hall he instanced as the nearest approach in form and arrangement, but the spirit of the old feudal hall was there wanting: that seemed to have passed away with the system which gave it birth.

THE ALLEGED ARCHITECTURAL MUTI-LATION OF YORK MINSTER.

Touching the observations in our columns and those of the *York Herald*, relating to the external restoration of York Minster, the Dean of York has written to the *Herald*, stating that a similar complaint had been made in November, by the Yorkshire Architectural Society. That inquiry had been instituted, and that it was his impression, as well as that of others, that a great deal had been made out of nothing. The editor of the *Herald*, however, re-affirms, as our correspondent does, that what was stated is substantially correct in every particular, and that the dean is altogether mistaken. Let us express a hope that what has been said will, without exciting any ill-feeling, lead to an improved mode of proceeding in the restoration of this noble building: we shall then have good reason to be pleased at having re-opened the discussion.

THE CENTRAL HALLS OF PARIS.

THE Prefect of the Seine has published an order for the opening of an inquiry as to the proposed additions to the *Halles Centrales*. The plans of the project have been deposited at the "Mairies," with the following instructions. The first book (*premier corps*) of the *Halles Centrales*, consisting of six pavilions, being entirely finished, the Government, before undertaking the construction of the second portion, thought proper to again examine the plans, with a view of ascertaining if the design approved of in 1854, and giving four pavilions additional to the first book, was sufficient for all exigencies. The Government has decided upon the inefficiency of these for the concentration in the *Halles Centrales* of all the supply for the town of Paris, and ordered the erection of two more in addition to those proposed; thus making six additional, and in all twelve.

Thus the extension of the outline of the *Halles* is proposed to the west side as far as the Halle du Blé, or corn-market, which will be thereby attached to it, and included in the building. The two newly proposed pavilions are to be raised on the site of the isolated plot separating the Rue du

Four from the Rue de Viarmes. In order to disengage completely the corn-market on the north and on the south, the Rue Oblin and the Rue de Sartine on one side, and the Rue de Varennes and the Rue Babille are to be demolished, and a space is to be left, on each of these two points of circulation, 40 metres wide: in fact, the Rue des Provenances will be augmented to 15 metres wide at that portion of its alignment. This is not enough, it seems, for the additions consequent upon making the *Halles Centrales* a *chef d'œuvre*: two new streets are to be formed. Fifteen days is the time allowed for the public to inspect the plans.

THE GREAT EASTERN.

THE funnels are up; three of the six masts in and rigged; the paddle-boxes in; the engines nearly finished; bulwarks and decks complete; and a whole army of workmen are busily engaged getting forward the internal fittings. The deck alone requires eighteen miles of five-inch planking to cover it. The paddle-boxes are of rolled iron: each contains 24,000 cubic feet, and is equal in size to a vessel of 600 tons.

The finishing of the vessel was given to Mr. Scott Russell. The contract was for 125,000*l.*, to be completed on the 4th of September, with a premium of 1,000*l.* a week for earlier completion, and a penalty of 10,000*l.* a week for each complete seven days beyond the allotted time. Of course, a contract so extensive is not all performed by Mr. Russell himself. Some of the sub-divisions are extensive contracts. The rigging will require 900 blocks, and no less than 70 tons of hemp rope, with 30 tons of mixed wire and hemp for the standing rigging. Her sails will consume nearly 12,000 square yards of canvas. She is to have 20 boats, fitted with masts and sails complete, exclusive of the two small screw-steamers, each 100 feet long by 16 feet wide, of 130 tons measurement, and 40-horse power. She is to carry upwards of a thousand fathoms of immense chain cables. Her anchors (Trotman's) are 16 in number, ranging from one ton to seven: the Admiralty anchor would or must have been 25 tons each. For running down other vessels in case of war, it was decided to strengthen still more her sharp powerful bows by laying down three complete iron decks forward, extending from the bows backward for 120 feet. These decks are entirely completed. They cover 8,000 square feet, and afford stowage for 1,400 tons of cargo space. They will be used for accommodating the crew of 300 or 400 men. With this large increase of strength forward, the *Great Eastern*, steaming full power, could cut in two the largest wooden line-of-battle ship that ever floated. The united efforts of both screw and paddle engines will drive the immense vessel through the water with a power of no less than 12,000 horses. What fleet could stand in the way of such a mass, weighing some 30,000 tons, and driven through the water by 12,000-horse power at the rate of 22 or 23 miles an hour? The probable consumption of coal when both engines are at full work will average 250 tons per day. The trial trip will probably take place about the end of next September.

ECCLESIOLOGICAL SOCIETY.

THE annual meeting of the members was held on Tuesday evening, in the Lecture Theatre of the Brompton Museum; the Venerable the Archdeacon of Bristol, in the chair.

The Rev. Mr. Webb read the report of the committee, with reference to the operations of the society during the past year.

Mr. A. Beresford Hope said it was perhaps unusual that the adoption of the report should be moved by one who was to some extent personally responsible for its contents, but he might be allowed to break through the etiquette and conventional modesty which regulated such matters, on an occasion like the present, being the twentieth anniversary of the society. Small as might be the space which that body occupied in the spectrum of society, it was, nevertheless, large to all those who were interested in the subject of ecclesiology; and its growth, rise, and various fortunes had not only occupied much of the thoughts, and called forth much exertion on the part of its members, but had been a source of great gratification to them all. However small might be their gathering that evening, a great work had been accomplished by its agency, not only for England, but for the Christian Church throughout the world. Remembering the condition in which church architecture was twenty-two years ago, he would not say that the praise

for the revival which had taken place was due exclusively, or even primarily, to that society, for there had been previously persons who were labouring to the same end; but they would now admit that the standard which was held up in extremely clever, biting, sarcastic articles in the "British Critic," that were known to have been written by Mr. Mosley, was almost as bad and miserable as the existing style of church architecture of that day which they so freely condemned. Before the organization of that society, the work of Sir Charles Anderson, full of excellence and of good feeling, had likewise appeared; and he would not deny how much they were indebted to the members of another communion,—nor what great advantages they had derived from the enthusiasm, and hearty, zealous feeling of Pugin. That man had been long enough in the grave for polemic feeling to have vanished away; and they could all press forward to do justice to an honest, a true, a loving, and lovable man. Whatever differences of opinion might have existed between them and Pugin, they ought not, in 1859, to shirk an acknowledgment of the truth. But with all these abatements which truth compelled him to make, he maintained that in the twenty years of their existence a great work had been done—a work that did not end in stone and mortar, but which went into absolute truth, to the deepest efforts, to the most practical actions of the Christian life, and Christian zeal,—to actions which must be responded to, and must help in the development of the material fabric. Indeed, he was afraid that if they had now any complaint to make, it was that they suffered from a plethora of success: they had really done so much, that the Society, when it claimed the credit of originating the good work, failed to command attention, because it seemed to be singing an old song, of the truth of which everybody was now assured. Look at parish churches in the present day. Why, the very worst parish church that was now built—even were it in the utmost spirit of suspicion or ignorance, of selfishness or of purse-pride—with the single exception, perhaps, of Mr. Tite's Church, which they saw in the Conduit-street Architectural Exhibition—could not fail to be superior to any of those which were proposed by members of that Society or by the good men who thought with them at the outset of the movement. Their architectural movement was started in 1839, and had to fight battles, not merely against opponents, but even against such respectable periodicals as the *Christian Remembrancer*, which, if his memory served him rightly, was one of their most strenuous, not to say bitter, opponents at that day. Look, however, at their cathedral movement. It was comparatively but a few years ago since they had ventured to say,—“Why not use the naves for purposes of worship? Surely they are not the verger's special property. Put chairs in them; sing the service in them; ay, and put a pulpit in them.” What had not been said against their fanaticism, their dreaminess, their utter want of the smallest knowledge of the requirements of the age? Yet now they saw all shades and all sections of Churchmen, high and low, broad and narrow, and whatever other nicknames they might go by in the world, crowding forward to use the naves of their cathedrals for service. Exeter and St. Paul's, Chichester and Westminster, one after another, they were following the example; and there were plenty of people to be found in the present day who claimed the credit for that of which, some ten or twelve years ago, the members of that Society, and those who thought with them, were the first and unrecognized apostles. See, also, what new cathedrals had been built. From the Colonies there was cheering intelligence, and in Scotland new cathedrals had been erected at Perth and at Cumbernauld; even in the Established Church of Ireland a church had been built on the strictest ecclesiastical principles in the diocese of Kilmore,—a thing which would have been thought impossible some twenty years ago. He would not wear or insult his auditors by detailing what their principle had accomplished in parish churches—their monuments were conspicuous in churches built and restored. Then, too, their hymnal movement had prevailed; and with regard to their efforts in the matter of church plate, there was not a silversmith in the present day that did not more or less conform to the Ecclesiastical model. Therefore he maintained that the career of the society, during its existence of twenty years, had been a great and signal success, the earnest and proof of which was to be found in the fact that many of those who had started the movement were now distanced in the race. Those who originated anything had never yet in this world received their due share of

credit; but the future historian of the Church would, some 200 or 300 years hence, render justice to the ecclesiastical movement. After some further observations, Mr. Hope concluded by moving the adoption of the report.

The Rev. G. Lyall seconded the motion, which passed unanimously.

The Chairman entered into a statement of the reasons which had led him to the determination of retiring from the chair of the Society; and Mr. Beresford Hope was elected to the office.

CATHEDRAL ARRANGEMENTS.

The transaction of the foregoing and other business occupied until past ten o'clock. It had been arranged that on this occasion, instead of the ordinary course of reading papers, a discussion should be taken on the subject of "Cathedral Arrangements, with a view to the Special Services in the Nave of our Cathedrals."

A member wished to inquire whether the kind of French chairs known as *prie-dieu* chairs might not be used with advantage. The description of seat at present employed in Westminster Abbey was extremely awkward for kneeling purposes.

The Rev. W. Scott said this very subject had been for a long time under consideration. He presumed the only way in which chairs of this kind could be used satisfactorily was either by turning them on the worshipper round. Now, from whatever cause it might arise, the British animal—and, owing to modern custom, more especially the female—was extremely difficult to turn; and as to turning the chairs, that would be productive, not only of a dreadful scraping, but of extreme confusion. The first practical difficulty that suggested itself. Then with regard to kneeling, he found that the British people, whether worshippers or not, found it very hard to assume a kneeling posture; but when once they did so, they would as soon kneel on the ground as not. For that purpose cocoa-matting was much less expensive, and more accessible. Kneeling on a chair—half-cock? kneeling, so to speak—he regarded as a mistake. He was of opinion that an improvement might be made in the seats of the chairs, and that objections on the score of want of cleanliness would be removed if, instead of being covered with rushes, the seats were covered with some woven stuff.

Mr. Street said, while on the subject of chairs, he wished to call attention to a grievance which some of his professional brethren, no doubt, had felt equally with him; he alluded to the difficulty of the question raised on the subject of accommodation, by the opposition of the Church Building Society, which would give no grant to any church in which they found chairs in the body of the building, though they had made exception in some cases, and which they had been introduced into the galleries. It appeared to him, therefore, that the Society might interfere most beneficially in its corporate capacity, by drawing up a memorial, stating briefly and simply the arguments in favour of chairs, and presenting it to the Incorporated Society. The commissioners would, no doubt, be influenced in time if architects were to persist in sending in plans of which the chair arrangement formed part, though they knew that they would be rejected; but he in addition to being a troublesome process, placed the architect in a sad position with his client.

The Chairman said that it was intolerable that the Incorporated Society should interfere in the manner stated with the sitting accommodation in churches; and he was glad to say that the efforts of Mr. Hubbard and other members of the Diocesan Society had broken down that restriction so far as it was concerned some time ago. He had been very glad to try the experiment with regard to chairs in All Saints' Church, but he looked upon it as an experiment; for he was fully aware that the question raised by the Rev. Mr. Scott had several sides. There was one advantage attaching to chairs which he must confess had led him to the determination of employing them rather than benches in All Saints' Church, and that was, their economy. He had laid out a great deal of money in other ways, and when he came to calculate the relative cost, he found that benches would have cost him between 200*l.* and 300*l.* while he had been able to obtain as many chairs as he required for 50*l.*

Mr. White, Archdeacon Thorpe, and others having spoken on the subject,

Mr. John Walker gave a detailed account of the arrangements which had been made at Worcester Cathedral for the special services that had been going on there for the last year or two. He also read a portion of some correspondence that had taken place between the dean and himself on the subject. With regard to chairs when used in cathedrals, he suggested that in all cases in which the floor was not covered with rushes, the bottoms of the legs should be tipped with leather or vulcanized indiarubber, with a view of avoiding the awkward noise that was made by their being scraped along. He also stated, that the difficulty with regard to kneeling might be obviated by having some kind of stool or resting-place, which, when not in use, would turn up and lie quite flat against the chair.

Archdeacon Thorpe did not see the wisdom of having all the service gone through both morning and evening on the occasion of the special services. He was of opinion that it might be better to give the full service on the morning, and a sermon, after the manner which was pursued at St. Paul's-cross in the olden time. In this way they might get rid of a great deal of the kneeling which occasioned the difficulty. For his part, he did not see the advantage of kneeling: standing was an ancient attitude of prayer, and could be resorted to in such cases as this with advantage.

The Rev. Mr. Jebb said he had been in the hope of hearing the great principle of cathedral architecture discussed. In the two great metropolitan churches (St. Paul's and Westminster) those who had the arrangement of the special services resorted to have lost sight of the great ecclesiastical principles on which these edifices were erected. The name, even, appeared to him a complete ecclesiastical misnomer, for he denied that it was ever intended to have special services in the nave of a cathedral, distinct from the choir. These popular services for large congregations were, it was true, in a certain sense choral; but with one choral element essentially neglected, the choir was not in the choir, and he maintained it to be a violation of the principle to place the choir anywhere but in the place allotted to it.

In reply to further observations, The Chairman said he was quite willing to state what was in contemplation: he believed there was no secret in

the matter. A certain sum had been raised for the purpose of carrying out the alterations connected with the special services; and the committee, of which he was a member, had been appointed to superintend its expenditure. They found that they had a balance of about 2,000*l.* in hand, which they had determined to expend on purely decorative, æsthetic work, shirking any alteration whatever. Nothing was thought of but beautifying the interior, and he had not heard of any intention of dealing with the organ.

The Rev. Mr. Webb said, in the remarks which had been made relating to St. Paul's Cathedral, the fact had not been mentioned that the altar did not occupy its proper position. There the altar stood in the eastern end of the choir, instead of towards the eastern end of the great central dome, as at St. Peter's, and in the two churches at Florence.

The Rev. Mr. Jenner said, the practice in cathedrals on the Continent, and more especially in Spain, was for the women to sit on the ground, and for the men to stand during the service, which it was never supposed they were not quite competent to do. Referring to the suggestion that had been made of paving the floor of a cathedral with wooden bricks, the rev. gentleman said he had been anxious that the flooring of All Saints Church, Margaret-street, should have been of costly woods instead of costly tiles; and he believed that if the church were a cathedral with wooden bricks, the wood would have been ensured. The summary of the arguments in favour of seats might, he believed, be thus summed up: it would be best, he thought, to have no seats at all: the next thing would be to have chairs, and the worst of all would be to have benches.

ARCHITECTURAL ASSOCIATION.

CLASS OF DESIGN.

At a meeting on June 17, the president of the class (Mr. R. Druce), in the chair, the minutes of the last meeting were confirmed. Some sketches were contributed for an organ-case, the subject for the evening, which were examined and discussed by the class. This being the closing meeting of the class for the session, the class then proceeded to elect their officers for the ensuing session, when Mr. Randall Druce was proposed as president, and Messrs. C. H. F. Lewes and A. Sheldrick, as hon. secretaries and curators, and were unanimously elected.

The selection of subjects for the sketches for the ensuing session then took place, and the following list was decided upon:—

Stained-glass window; ceiling for a drawing-room, 22 by 15; factory chimney; iron church for the colonies; drinking fountain; group of allegorical sculpture, to celebrate a national event, with pedestal; town-hall; ornamental brick front to a London dwelling-house, of 20 feet frontage; clock tower; bay window; interior of a music-hall; draper's shop-front; group of drawing-room furniture; memorial column; temporary triumphal arch; elevation of a London warehouse; wrought-iron grille for the head of a semicircular archway, 10 feet in width; lectern; parsonage house; bench end.

It was also announced that four papers would be read to the class, in the course of the ensuing session, by Messrs. Druce, Lewes, Ough, and Rogers.

GAS.

The report of the select committee on gas lighting in the metropolis has been issued. The report itself, however, only occupies a few lines, the committee having left the public to form its own opinion from 130 pages of evidence. In the appendix a set of tables is included, showing the cost, &c. of street lighting. The price paid for each public light per annum varies in different parishes, ranging from 65*s.* to 135*s.* Some lamp-posts belong to the vestry, and some to the gas company. The number of hours per annum during which the lamps are burning is 4,804 in town parishes; less in the country and suburban ones. The number of cubic feet per hour burnt is in most cases five, though less in some few instances.—A singular bequest has been made by Mr. William Kensett, a well-known Marylebone Reformer. He requests that his body be given up to one of the medical schools of the metropolis for dissection, and that his bones and remains be then handed over to the Imperial Gas Company, to which company, on condition that they consume them in one of their retorts, he is stated to have bequeathed the sum of 10*l.*—The directors of the Plymouth and Stonehouse Gas-Light and Coke Company, in their usual annual report, congratulate the shareholders on the continuous prosperity of the company; and, after announcing a satisfactory dividend, and that 2,000*l.* out of the profits of the past year had been added to the reserved fund, and 900*l.* appropriated to wear and tear of plant, leaving 2,000*l.* as a disposable balance, they add that "the increase in the consumption of gas which has taken place during the past year, has so fully realized their expectations, that they are now enabled to announce their intention to reduce the price to 3*s.* 9*d.* per 1,000 cubic feet; and fully anticipate, at no very distant period, that the affairs of the company will be in a position to justify them in announcing a further reduction." The annual

reports of this company thus continue to show that its affairs are well managed both for its own interests and for those of the public, and that we were right in maintaining, as we did while agitating for cheap and good gas, that these twofold interests were really identical, and that liberal reductions, in price, from the old standard, were certain to produce increased consumption and enlarged dividends.—The Galashiels Gas Company have just concluded a contract for the erection of a new gasometer with Messrs. Hooper and Miller, of Kelso, who are said to have erected nearly every one in the county of Roxburgh, as well as a considerable number in all parts of Scotland. The diameter of the new tank will measure about 60 feet.

THE KAFFRE AZZAYAT BRIDGE ACROSS THE NILE.

This important malleable iron girder-beam bridge across the river Nile, on the Egyptian railway near to Alexandria, was opened to the public on the 25th of last month by the Pasha of Egypt. The structure is nearly 1,400 feet long, there being eleven openings, two of which are 104 feet each, and spanned by the swing beam. The centre of the swing rests upon a foundation-pier, composed of six pillars of 10 feet diameter each, and the remaining eleven foundation-piers are of two piers, each 10 feet diameter.

These twenty-eight foundation-piers were sunk by compressed air, on Mr. John Hughes's principle, to an average depth of nearly 60 feet below the bed of the river, and to 85 feet below High Nile; the internal pressure in the caissons while sinking, ranging from 20lbs. up to 34lbs. on the square inch, in accordance with the depth in the ground and height of the Nile.

The time occupied in sinking these twenty-eight caissons was less than twelve months, and the aggregate length of that portion of them sunk below the bed of the river exceeded 1,500 feet.

The extreme width of bridge is 42 feet, comprising a single line of rail in centre, and a camel track on each side. The works have been in hands about two years and a half, and have been expedited by at least sixteen or seventeen months.

Mr. Robert Stephenson, M.P. designed the bridge: Mr. Edward Price, of London, was the contractor; and Mr. John McLaren, resident engineer.

MEMORIALS AND STATUES.

The Rutland Memorial at Neumarket.—This personage is now completed. It is a substantial and commodious dwelling, says the *Cambridge Chronicle*, and in a peculiar style, well suited for its primary purpose of a memorial to the late Duke of Rutland. Several improvements have been made upon the original design, at a considerable additional expense.

The Attwood Statue at Birmingham.—The ceremony of unveiling to public view the statue erected by the people of Birmingham to the memory of their political leader, Thomas Attwood, took place on Tuesday in last week. The site of the monument is in Stephenson-place.

The Monument to Sir Robert Peel at Glasgow.—Workmen have been busy in the erection of the pedestal upon which is to be placed the bronze statue of the late Sir Robert Peel, subscribed for some years ago by a number of Glasgow gentlemen. The site of the monument is the north-west corner of George-square. The statue, which has been cast in bronze from a model by Mr. John Mossman, sculptor, Glasgow, is 9 feet in height, and represents Sir Robert addressing the House of Commons, with a scroll of paper in his hand. The pedestal will be 12 feet high, of dressed granite.

The Statue of Hugh Miller for Cromarty.—Mr. Handyside Ritchie has all but completed the statue of the late Hugh Miller, which is to be set up at Cromarty. The statue is of colossal dimensions. The sculptor, it is said, has, on the whole, been successful in transferring to the stone the stalwart form and intellectual lineaments of the late literary, editorial, and geological quarryman.

The Wallace Monument for Stirling.—The time for receiving the designs for the Wallace Monument, says the *Stirling Journal*, has expired. We understand, however, that artists who had not completed theirs have had a few days of grace extended to them. The elements of confusion are thus again introduced after it was thought that they had been successfully eliminated. "This bungled affair," says the *Scotsman*, "is again before the public; something like a row having commenced about extending the time for

receiving designs for the second competition. It appears, on reference to documents, that what should have been clearly expressed is shrouded in ambiguity. One of the resolutions adopted at the Glasgow meeting, in March last, states that 'the period for receiving designs be extended to the first week of June; while the circular—signed by 'Charles Rogers, LL.D. acting secretary'—setting forth the 'general details submitted to competing architects,' distinctly announces that 'competitors must lodge their designs, plans, or models,' &c. 'on or before the first day of June, 1859.' This confusion would be remarkable were it not connected with this unfortunate monument business, which is already notorious for its blunders."

The Wellington Testimonial for Dublin.—*Saunders's News Letter*, in a notice of that portion of the decoration of the Wellington Testimonial which has been entrusted to Mr. Farrell, sculptor, says,—"The justice and propriety of employing Irish artists for public works in Ireland could not be better vindicated, so far, than in the employment of Mr. Farrell to execute one of the Wellington Testimonials in the Phoenix-park. The northern side fell to Mr. Farrell's portion, where the want of strong light will be greatly felt upon a work of the kind; but he has wisely and artistically counterbalanced this by bringing out his figures in the most prominent relief; and, if one may hazard a conjecture, it will not be the least effective of the three. The artist has selected the fearful passage in the fight at Waterloo when the then Earl of Uxbridge—the late Marquis of Anglesea—had his leg shot off. The earl is prostrate, the cavalry in full charge, and the French guards opposing a stern front to the headlong rush of the British cavalry. There is a vigour and energy of the most awakening character in the scene. The model is complete, and will be sent without delay to Woolwich to be cast in bronze. The figures are life-size. This may be supposed from the size of the tablet, thirty-five feet in length, and nearly seven feet in height."

Miscellaneous.—The subscriptions for a statue to John Hunter, the celebrated surgeon, already exceed 1,000*l.*—The inauguration of the statue of Handel, at Halle, in honour of the centenary of his death, takes place on the 1st of July.—The Prussian Government is going to erect a monument on the battle-field of Rosbach. It is to consist of a colossal stone cube, surmounted by a cross, and with the Prussian eagle in a niche. The sculptor, Herr Stürmer, of Berlin, has been entrusted with the execution of this monument.—The statue of Venus, recently discovered at Rome, has, we are informed, been bought by the Emperor of Russia for 3,000*l.*—Three Canadians have visited St. Alphege Church, Greenwich, for the purpose of placing on General Wolfe's tomb a wreath of laurel gathered from the spot where he fell. It is proposed to erect a statue in the centre of Greenwich to his memory.

ELECTRO-TELEGRAPHIC PROGRESS.

It now appears that we are at last to have an independent telegraphic line, or series of lines, to India. The necessity of being dependent either on French, Austrian, or other lines, is about to be obviated by arrangements which the Government have recently entered into for laying down as speedily as possible, a telegraph cable direct from Falmouth to Gibraltar—a distance of 1,100 nautical miles. Tenders will shortly be invited for the manufacture of the requisite length of cable. The engineers charged with the carrying out of this important Government undertaking are Mr. Gisborne and his associates. In the existing arrangement the cable will contain only one wire. Although the line is at present to be carried only to Gibraltar, its ultimate extension to Malta and Alexandria, there to form a junction with the wires to India, is believed to be certain and not remote.

The prospectus is now issued of the new company, to be called the British Transatlantic Telegraph Company, in progress of formation under the auspices of Mr. Whitehouse, the original electrician of the Transatlantic Telegraph Company. The contractors undertake to make and lay the wire at their own risk, and to hand it over to the company in perfect order, payment to be made only in case of a successful issue. It is proposed to start from the Land's-end, and carry the wire to the island of Blanc Sablon, in the Gulf of St. Lawrence. The cable will be a light one. The conducting-wire would be of the same size as that used in the Red Sea. For the deep water the cable will be as light as possible, but in shoal

water, where the wear and tear would be so much greater, the wire will be secured in the strongest manner by a mixture of iron and hemp, known by the name of Wright's patent cable. Another feature in the new company is, that the scientific officers are to have seats at the board, and will thus obtain a potential voice in the management. The company is already registered, and five gentlemen have consented to act as directors provisionally. The company, says the *Times*, "propose to use a cable of the very lightest description. Its lightness, in fact, is made its strength, and the outer covering of wire is entirely done away with. The conductor is to be composed of seven copper wires having about twice the sectional area of that used by the old Atlantic Company. It will be coated with a combination of gutta percha, with manifold insulators, the outer portion being wound round with a textile fabric in a peculiar manner, so as to perfect and strengthen the rope and its insulation to the utmost. The outer covering of all will be of hemp, interwoven longitudinally, so as to be without either turn or stretch. This outer covering, before being used, will, no doubt, be passed through a solution of either india-rubber or gutta percha. The rope afterwards being compressed under a steel die will insure a uniform gauge and the solution penetrating to the very utmost. The diameter of the gutta percha insulator will be about double that used in the rope of the old company, and the diameter of the whole cable about two-thirds of an inch. The weight is less than 8 cwt. per mile, the breaking strain about two tons, or equal to supporting nearly six miles of its own weight in air, and no less than twenty-five miles of its own weight in sea-water. The cost of the whole cable will be about half of that which was lately lost by the old company." It is to be hoped that correct calculations have been made as to the time of sinking, and the strain of continued sinking after laying if the progress of reaching the bottom be slow from the lightness of the line; for one can conceive the possibility of a lightness even beyond that which is certainly desirable. A large proportion of the requisite capital of the new company has already been subscribed.

There was another meeting of scientific gentlemen at the Silverton Cautchouc Telegraphic Insular Works, North Woolwich, lately, for the purpose of discussing the merits of india-rubber as a medium of insulation. Mr. Mills, M.P. took the chair, and among those present were Professor Wheatstone, Mr. Fairbairn, of Manchester, and various other persons of note. Mr. West addressed the meeting on the subject in question, and produced a letter from the authorities at Portsmouth Dockyard, testifying that a telegraphic wire insulated with india-rubber had been in use across the harbour ever since 1846, and that the insulation was still quite perfect. Mr. West explained the difficulties attendant on the manipulation of india-rubber, which had prevented its keeping its position in the face of the more easily handled gutta percha, and the peculiarities of treatment by means of which the spiral twist was now rendered quite homogeneous and perfectly solid. Moist heat was the agent used. India-rubber even still cannot be drawn on the wire like maccaroni, in the way that gutta-percha, from its plasticity at a low temperature, is managed. In course of the discussion which followed, it was generally admitted that gutta-percha had been a failure both by land and sea. By land, Mr. Woollaston said it had failed far and wide. According to Mr. Whitehouse's statistics india-rubber retains ten times as much electricity for a given period as gutta-percha. Thus, then, our recommendation to have further experiments made with india-rubber has been justified by the result.

It is intended to lay down another cable between Calais and Dover,—one of six wires.

The manufacture of the cable which is about to be laid by the Submarine Telegraph Company between Folkestone and Boulogne has made considerable progress. This cable will be of unusual thickness, its weight being ten tons to the mile. The object is to secure immunity from the effects of such accidents as the dragging of a ship's anchor. There will be a doubled coating of gutta percha and patent composition for insulation. A bed for the iron wires is provided in the shape of hemp, saturated in Stockholm tar.

Except about forty miles, the same company's cable destined to connect Norfolk with Tunning, in Denmark, is now manufactured. When completed, it will be coiled on board the *Cory*, and the work of submersion will commence.

The Electric and International Telegraph Company have made arrangements, it is said, for the

transmission of messages to the principal towns in Australia, *via* Marseilles and Suez, and thence by steamer to Adelaide.

A pamphlet on a curious patent connected with electro-telegraphy, by Mr. S. Beardmore, C.E., has been published by Stanford, of Charing-cross. It is titled "The Globe Telegraph: an Essay on the Use of the Earth for the Transmission of Electric Signals." The idea (and it is said the fact) upon which the patent alluded to is based, is, that plates of positive and negative metal, placed in the earth, at each extremity of, and connected with, a single line of wire running between them, will themselves evolve sufficient electricity for the transmission of messages. Not only so; but that the size of plates required is astonishingly small. Thus it is believed, that "all the surface required for telegraphic purposes between St. John's (Newfoundland) and Valentia (in Ireland), can be contained in three boxes at each station, respectively, twelve inches long by twelve inches broad, and six inches deep." This would be almost as surprising as Mr. Lindsay's telegraph without a connecting wire.

PARISH BOARDS AND PARISH DUTIES.

WHEN we consider the important functions which devolve on boards of guardians—that in their care are left sanitary arrangements, the treatment of the poor, the unfortunate, and the insane,—the education and rearing of pauper children, and other matters on which the welfare of districts to a considerable extent depends; it is to be regretted that there is mostly so little interest shown by the bulk of the inhabitants in the election of these local representatives, who have so much in their power. As an instance, it appears, from statements in a local paper, that in ward No. 1, of Clerkenwell (the parish is divided into five wards), there are about 1,160 houses, each occupier being entitled to a vote, yet that the vestrymen were elected by the following number of votes:—11, 10, 10, and 1. This is not the amount of a majority, but the actual number of parishioners in the ward who voted. In ward No. 2, which contains about 1,160 voters, the number who voted was not much larger. In ward No. 3, with 1,033 rated houses, the voters were, 12, 12, 8, 22. In ward No. 4, where the voters amount to 1,343, the voters were 30, 23, 18, 16. In ward No. 5, with 857, the numbers were large in comparison with the other wards, and the vestrymen, after the greatest exertion had been made to get the election to the ballot, were 126, 123, 121, 107. The result of these elections shows that the five vestrymen who were at the head of each of the five wards were returned by 201 votes, in a parish which contains about 5,550 voters. This is not right.

GLASGOW NUISANCES.

ABOUT ten or twelve years since we paid a brief visit to Glasgow; and at that time efforts were being made to amend the shocking state of the wynds and closes; but it appears, from the local *Gazette* of last week, that they are in precisely the same state as ever. A correspondent of this paper says—

"A Scottish medical gentleman of high position, residing in one of the largest towns in England, who has paid great attention to sanitary matters, both in this country and on the Continent, writes as follows to a friend in this city:—'I hope you will be able sometimes to attack the "closes" and "wynds" in your luxurious city. When in Glasgow last autumn I renewed my acquaintance with a number of the closes in High-street, Saltmarket, Bridgegate, and Goosebush, and found a state of things far worse than I had anticipated. There are no such habitations as you have in these closes anywhere else in the world. The lowest Hol-tentot would turn up his nose at them. Moreover, every close, nearly, was literally paved with filth! You talk in Glasgow in a very pious way of "churches" for the wynds, &c.; in my opinion it would be more sense to talk of a *besom* for them; but in England we should shut up such vile dens in a month; no English municipal body would tolerate such abominations."

Short of "the besom of destruction," to sweep them away, in some such shape as that of a few extensive fires, with due notice to quit, so as without other fatality to sweep them out of existence altogether, we fear that little else is to be hoped for; but in the mean time, and *minus* the fire, what say the citizens to the fire-engines? Another great nuisance at Glasgow is one much like our own master-evil, the flames; it is the Clyde, of which great complaint is also at this moment being made. "The river itself," says the

Gazette—"we mean from the old jail bridge down to the Broomielaw bridge, properly so called, at Jamaica-street, is one stream of pollution." So is it, or almost so, with the once sweet Kelvin, whose groves are celebrated in song. "The very cesspools of the West-end-park are issued into it."

PROFESSIONAL RESPONSIBILITY.

THE issue of the action brought against the Polytechnic Institution, on Saturday,* at Westminster Hall, suggests some thoughts on "professional responsibility," and the desirability of showing its distinction from "warranty," or "pecuniary" liability.

It would not be proper to abate in the least the importance of the former; but it should have its legitimate bounds; and whether to the architect, engineer, or builder, or their employers, it is most desirable that it should be well understood.

In the first place, there is an undue and obviously unjust practice of referring to the original author of a building all that may occur to it for years afterwards, as if he had a retaining stipend to watch over it for all time.

Buildings or engines are subject to great wear and tear. Alterations are made to suit occasional wants; and, independent of these, they are frequently subject not only to use, but great abuse.

In the next place, it would stifle the ingenuity or skill of every professional man if, when he has done his best to meet a difficulty, every event which may follow in point of date is to be twisted and referred to his agency.

On the other hand, it ought to be borne in mind that the architect or engineer is not only bound to consider well the work he is engaged upon as a matter of propriety, security, and expense, but also to see that respectable builders or contractors are employed to carry it out: this, however, brings us to another point of serious consideration, viz.:—What constitutes a respectable builder? Does it depend upon his being a well-to-do tradesman, *i.e.* of good money credit, and paying large sums weekly for labour? By no means. That may and ought to be the accompaniment but it is no means the proof. The respectable builder, in its proper sense, is the man who, though he may keep but few hands, attends to their *morale*;—men who not only know what is right, but are diligent to do it.

How frequently have we known that the omission of a web to a screw-bolt, or the absence of a wedge to the strap-tie, rendered completely abortive the best piece of constructive carpentry that could be invented; and, where there is a long series of such framings, scarcely any one but the individual workmen engaged upon it can be aware of its omission.

We all know that brickwork should be properly bonded, but who, except the journeymen, can attend to every brick in a wall?

The *morale*, or honesty of purpose, in our workmen, becomes therefore an ingredient in the art of building either houses or engines; and we can only promote that object by employing contractors who keep hands that can be relied upon; and it may be surely maintained, that an architect or engineer who first well considers the work before him, and employs respectable hands to execute it, superintending the leading features of that work from time to time, has done his duty.

To attempt to throw a greater responsibility than this is to make use of the professional man as an "insurance office," without affording him even the emoluments. AN ARCHITECT.

BISHOP'S STORTFORD CONGREGATIONAL CHAPEL.

PLAINING WITH BUILDERS.

Sir,—If you will kindly insert the following, I shall esteem it a great favour.

In April last Messrs. Poulton and Woodman, architects, Reading, advertised in your paper for contracts for the above chapel, as also for the erection of a temporary building, the price of quantities was supplied at 25 per cent. on the following terms—

"In order to facilitate the calculations of the various contractors, the architects have been directed by the committee to prepare a bill of quantities of the several works. The successful contractor will have to pay 10 per cent. the cost of taking off the quantities. The quantities have been prepared with great care; but it must be distinctly understood that neither the architects nor the committee are to be held in any way responsible for their accuracy; the contractor will therefore be required to satisfy himself that the quantities are sufficiently correct before signing the contract."

I do not generally tender for works advertised to the public; but being a resident of the town, and one of the congregation, I departed from my usual practice, and in this instance gave an estimate. The amount of the materials being the lowest, the drawings and quantities were given me to test the quantities. I did so, and found

a deficiency in the new chapel of 10 rods of brickwork, 380 feet cube of stone work, besides other items of a minor character; and in the temporary building, a deficiency of 2½ squares of roofing, being one-half the roof, 19 squares of 2 rough boarding, and 27 squares of asphalted felt.

I informed the architects of these errors, and upon a very short time in testing their quantities by Mr. Poulton, he admitted, nearly all the mistakes I have named, and offered to compromise the matter with me by reducing the thickness of the brick walls, and leaving out a portion of the stonework, to which I objected without the sanction of the committee. I therefore informed the committee of the architects' mistakes, and asked for an increased amount for the omissions, which they would have given; but Mr. Poulton, to evade his own mistakes, offered to find a builder who would not only be satisfied with his quantities, but undertake to execute the work at less than my estimate.

The committee, acting upon the advice of the architects, gave those gentlemen three weeks to find this builder; and after going through the force of inviting builders to tender, they have succeeded, Messrs. Young and Co. of Oxford, being the contractors, at 2,473l.

Now, sir, permit me to ask the following questions:—Have the architects acted in this instance in a straightforward, business-like way, or the reverse? Is it usual for architects to charge for quantities and throw the responsibility of their own mistakes upon the contractor?

Cannot I claim compensation from the architects for loss of time in testing their quantities? Will you be the favour to answer these questions I shall feel greatly obliged.

Bishop's Stortford.

JOHN L. GLASSCOCK.

TANTON: ST. MARY'S TOWER.

IN last year's volume, p. 137, there was printed a curious communication respecting the doubts as to who was the architect of this tower.

Having lately met with a note made some years since, but to which I find that I have not appended the authority, but believe it to be some history of Bristol, I forward it for the benefit of those more interested in the subject than myself; as perhaps, after some research into the point put forward, a connecting clue may be obtained, by which the date, if not builder, will be discovered. The note is, that "the same architect who erected the tower of St. Mary Magdalen at Tanton is supposed to have erected that of Dundry Church, built 1482; and of St. Stephen's Church, Bristol, built 1470. The parapets on the tower of Thornbury Church, Gloucestershire, are almost similar in design to those on the latter building."

W. P.

Correspondence.

THE NINE-HOURS MOVEMENT.

Sir,—In justice to the Nine-hours Movement and the industrial classes of England generally—who have been so heartlessly calumniated by the correspondent of the *Builder*, T. L. Donaldson—we request your insertion of this our answer to his unwarrantable assumptions and statements, and trust that the intelligent public whom he has endeavoured to prejudice by his fallacies will be able to discern that we are not the dissatisfied and senseless disturbers he would represent us to be; and that the change, which we are chosen by our fellow-workmen to advocate, is necessary to save our trades from the same miseries and degradations which have crushed so many others of the artisan classes. First, then, before we proceed to analyze the effusion of our assailant, allow us to state what it is we seek, why we seek it, and what results we anticipate from the attainment of our desires. We seek a reduction of the present working day from ten hours to nine, and the abolition of systematic overtime. We have been induced to solicit this change because, by the introduction of machinery into our trades, and the establishment of a system of unrestricted competition, thousands are thrown unwillingly idle upon the world, a misery in themselves, and a burden on the public. We do not stand up as the antagonists of machinery, for we believe that every power which raises man of physical toil, if fairly used, is a benefit to the human race; but we complain of the monopoly and misdirection of that power to our detriment, and the provision of no equivalent. As no period in our industrial history have the working-classes, through the severity of the toil exacted from them, had so little opportunity for mental cultivation and moral elevation as at the present time; and though we have an unquenchable desire for the sweets of learning and the strength of knowledge, yet we do not advocate this change for the purpose of removing a little labour from the shoulders of those fortunate enough to be employed, so much as for the nobler purpose of giving the thousands, who are now hungering in unwilling idleness, an opportunity of feeding themselves and families, and of ending the miseries of their miseries. We

* Mentioned in another page.

desire the abolition of systematic overtime, because it is a selfish and unjust custom which over-employs a few to the detriment of many, and affords no fair remuneration to the employer. Through this custom, which is altogether inexpedient, thousands of the best and most deserving mechanics walk the streets in idleness, and their families are steeped in misery, who might, if they were abolished, be supporting themselves in comfort, and benefiting the public by the disbursement of their earnings. We may fairly estimate, according to the census of 1851, that there are 50,000 building operatives in London. Of these our experience teaches us that one-third are generally in the market out of employ. The alteration in the hours of labour which we seek, would open the means of employment to 5,000 of this surplus; and, undoubtedly, of conferring great advantages on the class of shopkeepers who prosper by the outlay of the mechanic's wages. It is a sorry thing to find so much ignorance existing in the public mind concerning the condition of the building operatives, and indeed of the industrial population generally; and it is discreditable to those persons who pretend to know, that they do not stop to thoroughly investigate before they condemn our attempts to remedy evils of which they are ignorant, but which, by painful experience, we too well understand. Had Mr. Donaldson pursued such a common-sense course, he would have saved himself a little "credit wasted," and us a very disagreeable duty. He very generously advances a statement on our account which nothing said on our parts, or any action of ours, warrants him in doing, namely, that a crisis is fast approaching. That a gentleman of his standing should have been duped by the statements contained in the letter signed "A Working Man," which appeared in the *Builder* of the 11th instant, is somewhat surprising, because his means of information must have enabled him to know that they were not true. The learned gentleman asks, have we read the life of George Stephenson? What working man has not read the life of that noble of our order, and, while reading of his privations and struggles, admired his perseverance, and gloried in his unconquerable determination; but, at the same time, lamented that the unjust burthens placed on labour should have raised such almost insurmountable obstacles in the way of his genius and progress? He asks, "Would not George Stephenson have scouted the nine-hours movement?" How can Mr. Donaldson form a conception of the feelings and ideas of the noble-hearted and large-minded George Stephenson? Would he have scouted our movement? We believe not: we believe that, having had the bitter experience of suffering, he would have been one of our staunchest friends and most energetic supporters. We have read "The Pursuit of Knowledge under Difficulties," and are well acquainted with the efforts—almost superhuman—of many men of our order to surmount the difficulties which surround the hill-top of knowledge; and we are convinced that thousands of others would ascend the same proud eminence, did not the dead weights of excessive toil, want, and corroding poverty, weigh them down. The example of Mr. Thomas Cubitt: why, what is it worth? Allowing it to be as pure as Mr. Donaldson would represent it, it would only be a chance that could be the prize of one in a hundred thousand. That Mr. Thomas Cubitt gained his immense wealth by his own unaided exertions is a fallacy which hundreds of working men in this metropolis, who knew him through the whole of his career, are in a position to prove. Another assertion is that it is our intention, should we gain our present aim, to immediately commence an agitation for eight hours. Neither Mr. Donaldson, nor any person of his acquaintance, ever received such an intimation from us; and, as a gentleman, we think he should have withheld a statement for which he has no warrant. We are able and do appreciate properly every attempt made by our employers to alleviate our toils and confer benefits on our class, and gratefully render those who are so considerate our thanks, and every return in "our power, for such kindness—when it occurs; but we must emphatically deny that our employers, as a body, have ever given us cause to show such gratitude. Whatever we have gained has been wrung from them to suit their convenience; and with regard to the two or three hours of a Saturday, it simply amounts to one and a half, and was gained, with one or two exceptions, by striking. We do say, that we ask the reduction of one hour for the purpose of affording employment to those out of work. Such is our disinterested object; but we cannot, neither would Mr. Donald-

son himself, if a working man, see the justice of permitting the unemployed taking work at any rate of wages the enmity of the masters might please to offer. What would be our condition under such an unrestricted tyranny of capital? Why, the same horrible degradation which has plunged others of our order into a slavery which is the disgrace of the empire. Why do not the Institute of Architects allow the less fortunate members of their profession to practise at a less percentage, for the purpose of increasing their connection? Why do its members make so determined a stand against any one in the profession attempting to lower their standard price? Political economy with men of Mr. Donaldson's stamp, is a word void of sense. True political economy will show the expediency and justness of our demands; and we would advise our learned antagonist to read Mill and other writers of eminence, for the enlightenment of his mind. We have not conspired—we have done what we have a right to do, and what self-preservation demands of us. All other classes unite for the purpose of conserving their interests, and we conceive that we are justified in doing the same. Whatever difficulties may arise, depend on it they will not result from any indiscretion on our parts. We cannot believe that the opinions of the architects of London are represented by Mr. Donaldson; and we think that the clause, which he says he has inserted in his arrangements of contracts, if true, is an impudent interference with the interests of those employing him, not warranted by any conduct of ours, and proves him to be subject to the misfortune of being frightened by phantasies of his own imagining. The cowardly and libellous statement, that few of us give a fair day's work in return for the wages we receive, requires no other answer than a reference to the fact, that our employers grow richer every day, and that no employer or foreman will keep a man one moment longer than he earns sufficient profit to satisfy his expectations. He tells us that in some trades, the work done is inferior to that done twenty or thirty years ago. Undoubtedly it is; but is this the fault of the workman? Is it not rather the fault of that rapaciousness which demands six times the amount of labour now that was required then?—of an over-anxious desire on the part of the builder to grow suddenly rich?—and of a dishonest discharge of the duties of the architect and surveyor? Mr. Donaldson seems to entertain strange notions of the duties of Governments and Parliaments; and being himself impressed with the idea that the working-classes are only created as slaves to the other classes, supposes that the Executive and Legislature are imbued with the same notions. But allow us to tell him, that any Government or Parliament will pause before it attempts to interfere with the just and peaceable fraternization of the mechanics of England.

We are, on behalf of the united trades,

R. W. GREY, Mason,
JAMES BROWN, Bricklayer,
EDWIN FREEMAN, Plasterer,
THOS. GRANT FACEY, Painter,
GEO. POTTER (Joiner), Secretary.*

THE "FOURTEEN-HOURS" MOVEMENT.

SIR,—“Is it not time,” asks “Fair-Play,” “that builders’ clerks should cry out, when, according to a recent advertisement, they are requested to work from six a.m. to eight p.m.?” Is it not time? The query is, why do they not cry out? The fact is, sir, that they are too gentlemanly to join in “Hyde-park or Exeter-hall demonstrations,” too fagged to have time to excite popular sympathy on their behalf, and too ill-paid to allow them to pay “delegates with the gift of the gab,” or to allow them to strike. We must cry out now, however: the time has come, so here goes.

Fourteen hours! If ten hours are too much for the working man who gives his hand, surely eight hours are sufficient for the man who works not mechanically, but who gives his head. Fourteen hours! And will they daunt and blast every desire that may lurk or be kindled in the breast of their employed, for self-improvement? “Ah, ah, ah!” the employers say, “let others sing with the gale, let others catch pleasure as it flies, life shall be a wilderness to you. Fourteen hours for you: we’ll lock you in the prisons, keep you in your boxes, and turn the key in the door; so scribble away, ye scribbles, scribble away! Play makes Jack a dull boy, so work, work, work; let idleness go to—

* We have also received a letter to a similar effect signed “On behalf of the Executive Committee of Amalgamated Trades,” but cannot find space for both.

the Turk: you can have pleasure to the full when your work is done.” When? I have a brother, poor “wizeney chap,”—I like him, though, “for a’ that,”—and he works like a Briton, and like a brick, too, all the day long (I was going to say all the night too), from seven a.m. to nine p.m. Employer! do you see that young man, struck from head to foot with the stern finger of pale disease? You remember him: he was in your service—it was his first place: he was then a lad from the country, fresh-faced and fair-headed. See him now! Illness has crept stealthily, yet surely, upon his young frame: he will soon be cold and dead in the grave. Will his widowed mother point to you as having first sown the seeds which has landed him so soon upon the shoreless expanse of eternity? Employers, it is time we spoke out! When we do speak we will speak with a voice which shall make itself heard. I ask, Mr. Editor, the same kind courtesy which you have granted to the working classes, and that you will insert this letter in your next impression. G. H. J.

SIR,—We are really much obliged to you for taking up this subject for us. Here are myself and colleagues sticking to the desk just fourteen hours per day, working away like slaves on a West Indian plantation, in an atmosphere about as healthy as the west coast of Africa. Well, when the fourteen hours’ work is over what are we to do? We are too tired to take active recreation to keep us in bodily health, and our over-worked brains will not allow us to pursue any studies to make us better qualified for our profession. This is pretty generally the case in all builders’ offices, and the result is, that a middle-aged man is a rarity. We die like dogs after five or six years’ toil, murdered by the slavery we are forced to submit to. Now, sir, your “master” readers will at once say that they work as long or longer than we do. But this is false, as they do not deduct the two or three hours they appropriate to dinner, and, perhaps, an hour each for breakfast and tea. Then, during their walks, acquaintances are met with, and a pleasant conversation entered into with each,—all tending to shorten the day’s toil, and every summer there is the month spent at the sea-side. So that it is quite unfair to draw a comparison between the masters and clerks. The building trades are demanding nine hours for a fair day’s work. The coach-builders and bakers demand ten hours. Then why should clerks toil for fourteen hours? What would George Potter and his associates say if any master should merely hint at employing them for a day and a half for one day’s pay? Why it would cause a revolution at once: it would bring back the days of Wat Tyler and Oliver Cromwell. I will not trespass further on your space, but call on my fellow-sufferers to lift up their voices against their wrongs, and agitate until released from this slavery.

A WIZENY CHAP.

Books Received.

Black’s Picturesque Tourist of Scotland. Fourteenth Edition. Edinburgh: Adam and Charles Black. 1859.

At a season when the habit of running abroad in search of the picturesque is giving place to a desire for better acquaintance with the natural and architectural beauties of our own fair native land, the appearance of a new edition of so excellent a guide to the varied and interesting scenery of Scotland is well timed, and likely to be highly profitable to the publishers, as well as useful to the public. A fourteenth edition of a book needs no commendatory exordium from any one. All we require to do is to bring the fact that such an edition, thoroughly revised and corrected, and prepared with the greatest care, as the publishers state, has now been issued. There is one great merit in this Guide-book, however, which we cannot refrain from commending: the measure of admiration with which choice localities should be contemplated, is not prescribed; tourists are left to their own taste in such matters; and the requisite space is more usefully occupied. The work is profusely illustrated, and contains a great mass of information interesting and important to tourists.

ROCK-BORING MACHINERY.—Messrs. Schwartzkopf and Philippon, of Berlin, have patented some improvements in machinery for boring holes in rocks. A beam or girder is mounted in a bed or carriage in such a manner as to be capable of assuming an inclined position, corresponding with the direction in which it is desired that the hole should be bored.

Miscellanea.

STATE OF THE THAMES.—In a report to the Metropolitan Board of Works, Professor Miller, of King's College, draws attention to the fact, with which our readers are already acquainted, that since the summer set in there is a marked change for the worse in the state of the Thames; and he advises recourse to the plan, adopted last year, of mixing the sewage with lime at the mouths of the principal sewers. Failing this method, as the summer advances he suggests that more powerful deodorizers ought to be employed, and states that he is at present engaged with some experiments on the subject, the result of which he will report to the board.

ASYLUM FOR DRUNKARDS.—In your paper is an account of an institution of this kind in the United States. The same reformatories are much needed here for "*Drunken Lunatics*," and would, if properly and judiciously worked, effect an immense amount of good. The field is an ample one, and would benefit the whole community, who at present are content to contemplate this enormous evil without possessing any adequate means of grappling with so fearful a vice. In fact, it is simply a measure of self-defence, and would greatly relieve our "criminal courts."—*CATE.*

THE TIMBER TRADE OF BRISTOL.—Messrs. Barnes and Sons, in their monthly circular for June, say:—"The business of the month past has been of a dull, unsatisfactory character, entirely free from speculation, buyers having only supplied themselves for immediate requirements. We attribute this to the unsettled state of continental affairs; but it may be hoped that when Parliament meets, confidence will again be restored. The arrivals for the past month have been 11 vessels, 4,989 tons register (against 7 vessels, 2,539 tons, for the corresponding month last year), and consist of three from New Brunswick, 2,319 tons; three from Dantzic, Memel, and Stettin, 873 tons; four from Norway, 1,075 tons; and one from the United States, 722 tons, showing an increase of four vessels, 2,450 tons register, over the corresponding month last year."

THE TRYING OF CHAIN CABLES.—A circular has been addressed by Mr. C. Blake, of Gateshead, on behalf of the operative chain-makers of England, Scotland, and Wales, to the directors of marine insurance associations, merchants, ship-owners, captains, &c. pointing attention to the frequent evasion of proper tests for chains, and to the absolute necessity that in all large ports a public test should be erected, and a duly qualified inspector appointed to take charge of the machine. Considering the many and serious casualties attributable to the giving way of chain cables, this is a very important subject, which well merits the attention of the Government and the public.

SURREY ARCHEOLOGICAL SOCIETY.—This society will hold a meeting at Richmond, on Tuesday, 5th July, under the presidency of Lord Abinger, when the following papers will be read:—1. "Notices of the Family of Cobham, of Starborough Castle, Lingfield, Surrey," by Mr. John Wickham Flower. 2. "Notes from the Parish Registers of Richmond," by Mr. William Henry Hart, F.S.A. and 3. "On the Antiquities of Richmond," by Mr. William Chapman. The meeting will then adjourn to the parish church, where some remarks upon the ancient monuments will be offered by the Rev. William Bashall, M.A. A temporary local museum has been formed in the lecture-hall of the Cavalry College, Richmond-green. Tickets may be had of Mr. George Bish Webb, honorary secretary, at 6, Southampton-street, Covent-garden.

DRAINAGE OF CAMBRIDGE.—Sir: In your paper of the 18th inst. I read an account of a recent storm at Cambridge, and the consequent flooding of a number of basements; such basements having been, according to the report of the surveyor, excavated since the laying in of the sewers. The Public Health Act, 1848, provides in section 53, that no house shall be built or rebuilt without due notice in writing accompanied by the intended levels of the cellars or lowest floors having been given to the local Board of Health, and their approval first had and obtained. I wish to know under what circumstances the cellars or basements in Cambridge were allowed to be built. Certainly if the local authorities were acting under the *Public Health Act*, they or their surveyor, or both, are much to blame in allowing such a contravention of the said Act. If not, it is a pity that one of our principal seats of learning should be deprived of the power of preventing such catastrophes as the one above alluded to.

J. T. L.

SOUTH KENSINGTON (BROMPTON) MUSEUM.—During the week ending June 18th the visitors have been as follows:—morning, 9,197; evening, 5,315;—total, 14,512. From the opening of the Museum, 952,365.

THE ACCIDENT AT THE POLYTECHNIC INSTITUTION.—In one of the various actions against the directors which have been brought by persons injured by the falling of the stairs at the Polytechnic, the Lord Chief Baron of the Court of Exchequer, in addressing the jury, said that, from the evidence of Mr. Nelson, the accident occurred from an original defect in the stone, not visible on the surface, and which no one could detect. It would be their duty to return a verdict for the defendants, and he hoped the directors would not be harassed with other actions of a similar kind. Verdict for the defendants.

ACCIDENT BY A MAN-HOLE.—An action was brought in the Court of Queen's Bench on the part of a child between six and seven years old for damages against Messrs. Houghton and Ley, builders and contractors, for leaving a man-hole, in Gravel-lane, Limehouse, open, whereby the child fell into it and received injuries requiring surgical attendance. Evidence was led on the part of the defendants to show that a man was stationed at the man-hole to warn people off, and that the child's protector was warned, but that the child ran in, not seeing the hole for steam issuing from it. A lantern also was placed beside the hole. The jury found a verdict for the plaintiff, damages 40s.; but the judge refused to certify for costs.

APPREHENDED DESTRUCTION OF A NEW CHURCH.—About twelve months ago, an early English church was built near Malton, at a great cost, to replace an old Norman structure which had gone to decay. During the erection of the new building a high wind blew down the whole of the west end of the tower, destroying the ancient bells. It is now found necessary to suspend public worship, owing to the walls of the nave being pushed outward by the timbers of the roof. The church contains many painted windows. It is feared the destruction of the building is inevitable.

A NOVELTY IN ADVERTISING.—A novel mode of advertising, as we mentioned some time ago, is about to be introduced in London by some of the large music publishers. The medium is to consist of an octagonal pillar or column, of from 14 to 16 feet in height. The base is to be constructed so as to form a letter-box. The column itself will have its corners gilded. The sides will be of glass, on which, within borders, will be written the announcements. On the top of the column will be a clock which will indicate the year, the day of the month, the day of the week, and of course the hours of the day. The clocks for several will be placed on them gratuitously by clockmakers. The clock will be surmounted by a lamp. The interior of the column will be illuminated with seventeen burners, so as to show the announcements by night as well as by day. The first is to be erected in Cornhill; the clock of which, it is said, is to be by Dent. Another is to be placed near Apsley House;—and one near the Polytechnic in Regent-street. Forty spaces have already been obtained from the authorities for the placing of the columns.

RAISING SUNKEN VESSELS.—A curious and interesting experiment was performed in the river, near Blackwall, last week, illustrating practically the use and power of the floating derrick in raising sunken vessels. A Norwegian vessel of 300 tons, weighing about 250 tons, was moored alongside the derrick. Three chains were rapidly passed under the bottom, and connected with the lifts of the derrick. When all was secure the machinery was set in motion, and the vessel rapidly and steadily lifted from the water at the rate of about a foot per minute. When raised 20 feet a small steamer of 60 tons was fastened beneath her, and both vessels were raised high into the air, presenting a most singular appearance. There was scarcely any oscillation as the two vessels hung, and the weight of both, with a counterbalancing weight of water pumped into the derrick on the other side, only brought her down about 13 inches lower in the water. The derrick is also provided with locomotive steam-power, which enables her to move with any vessel she has raised, at the rate of three or four miles an hour. This iron derrick is equal to raising a weight of 1,000 tons from the water, but only six of her ten steam purchases were used. Derricks have been long used in the United States with immense profit to their owners, and their introduction to this country is likely to be equally successful.

ELEVATION OF THE PROFESSION!—We find in the *Times* the following novel advertisement (in which we have simply changed the name):—"Now is the time to have Designs for Alterations, to be carried out in the slack season.—Mr. Paidone, architect, will supply a good sketch for one guinea. Address, Essex-street, Strand, W.C." Walk up, ladies and gentlemen! walk up! Now's your time! *Eheu!*

THE MEMORIAL TOWER AT PENTLOW RECTORY.—This tower, says the *Chelmsford Chronicle*, has now been completed. It is octagonal in form, 90 feet high, in the Tudor style of architecture, built of red bricks and black headers, with ornamental white dressings and quoins. String courses of white moulded bricks are introduced. The cap is formed of white moulded bricks, variegated with black, and surmounted by a Caen stone embattlement, having a lead flat and seats at the top, flag-staff, &c. The tower is ascended by a spiral staircase of 114 steps, lighted by windows placed at intervals in the thick walls. It is erected in the grounds at the rear of the house, the lower part being shaded by the surrounding trees. Over the entrance-door is placed a tablet of Portland stone, bearing the following inscription:—

"Erected to the Memory of his honoured Parents, the Rev. John Bull, M.A. and Margaret, his Wife, on a spot they loved so well, by Edward Bull, M.A. 1859."

"Pietas erga Parentes prima est omnium virtutum."

Over this tablet, higher up, are the family arms, cut in Caen stone by Mr. Walter Sillitoe, of Sudbury.

TENDERS.

For New Fire-proof Offices, Spring-gardens, for the Metropolitan Board of Works. Quantities supplied by Messrs. Meakin and Lansdown:—

		Supplementary.
Dales	£18,490	£1,970
Parriss	17,893	1,654
Fisk	17,453	1,735
Heath	17,064	1,838
Hill	16,998	1,754
Lavers	16,988	1,762
Mathews	16,959	1,760
Thurst	16,670	1,700
Holland	16,477	1,700
South	16,400	1,720
Mansfield	16,300	1,790
Brass	16,250	1,895
Messenger	16,228	
Patman and Co.	16,160	1,739
Moxon	16,150	2,100
Hecken	15,937	1,675
Ayers and Co.	15,930	1,790
Pritchard	15,065	1,734
Nicholson	15,640	1,857
Jackson and Shaw	15,625	1,780
Thompson	15,550	1,725
Batterbury	15,512	1,683
Jay	15,480	1,695
Colls and Co.	15,475	1,875
Downs	14,990	1,893
Huges	14,916	1,720
Wilson	14,889	1,837
McLennan and Co.	14,864	1,920
Myers (accepted)	14,829	1,759

For works at the Deanery, Chichester, for the Very Rev. the Dean. Messrs. Waring and Blake, architects:—

Johnston, Chichester	£2,064 0 0
Keyes and Head, London	1,779 0 0
Gammie, London	1,757 0 0
Ellis, Chichester	1,754 0 0

For building a Dwelling-house, Shop, and Warehouses, at Tamworth. Mr. Robt. Jennings, architect, Atherstone:—

Starkie and Clarson	£1,410 0 0
J. and J. Lilley	1,369 12 0
Clarson	1,357 10 0
Potter	1,198 0 0
Fox and Brothers	1,183 0 0
Orchard	1,149 0 0
Spencer (accepted)	1,060 0 0

For alterations to Premises in Trinity-street, Borough, for Messrs. Lazenby and Sons. Mr. D. A. Cobbett, architect:—

Newman and Mann	£1,300 0 0
Hedges	1,297 0 0
Rivett	1,181 0 0
Ashby and Horner	1,137 0 0
Wilson	1,058 0 0

For the rebuilding of Premises, No. 9, Bow-lane, for Mr. E. Girdham. Mr. A. E. Taylor, architect. Quantities supplied by Mr. Reddall:—

Tarrant	£1,265 0 0
Blackburn	1,225 0 0
Brass	1,278 0 0
Marsland	1,263 0 0
Batterbury	1,195 0 0
Brownie and Robinson	1,194 0 0

For Vicarage House and Offices, at Worlaby, Lincolnshire. Mr. W. Botterell, Hull, architect:—

J. T. Robt. Wilson	£1,293 0 0
F. Chapman, Hull	1,165 0 0
Reynolds and Otter, Winterringham	992 17 0
J. Walker, Worlaby	958 2 6
S. Johnson, Grimsby	930 0 0
J. Ro lison, Kirton	891 10 0
A. Stamp, Barton (accepted)	861 2 0

* Mr. Farrar writes us to say that by mistake the supplementary sum, in his estimate, is here also included in the large sum, which he gives us as 16,164.

The Builder.

Vol. XVII.—No. 856.

The Amendment of Hospital Plans.—The Blackburn Infirmary.

Our first extended notice of the designs for the Ashton Infirmary, we spoke of the building at Blackburn, as the model plan which the majority of the competitors had had in mind, and which some of them had copied. It appeared to us so important in the present state of the subject of hospital construction, to learn exactly the nature of the works in progress at Blackburn, that we have taken means to obtain the fullest knowledge of them.

It is quite clear that a large amount of work in hospital-building, should be at once undertaken throughout the country. The effect of hospitals as they are, is to kill rather than to cure: a patient suffering from an easily curable ailment, is admitted to an hospital of the ordinary form of plan; the case shortly becomes dangerous, the patient having contracted a new illness from the hospital atmosphere: there might be still a chance were removal to pure air possible; but death ensues, with the full knowledge of the medical man that the cause of death was comprised in the means taken towards recovery. Recently built hospitals there are, besides that in progress at Netley, which repeat errors of the old construction. The Lying-in Hospital, in Quay-street, Manchester, we are told, is one of the number; and far better advised would have been the charitable supporters of the institution had they provided at the homes of the poor patients, the medical attendance, nursing, and comforts, which are alone advantageous, but set against terrific odds in hospitals as they are. At Macclesfield, where there are 30,000, to be expended on an infirmary, we may expect, since the town has made itself in many ways remarkable for attention to sanitary improvement, that the old errors of arrangement will be avoided, and that improvements even will be effected on the plan adopted for Ashton, or the far better plan which it is our purpose to describe.

The more the question of infectious disorders is examined, the more it is perceived that the infection or non-infection is a matter of the ventilation. The amount of ventilation and air required in hospitals is immense, from the volume of the agencies of pollution, and it is on this account that we have perseveringly advocated the principle of arrangement where each ward is so detached from other parts of the plan, that it might be regarded as a distinct hospital. The architect may at first ask whether he is to give up, when he is planning an hospital, a principle, namely, concentration, which he has been in the habit of supposing was one needed for all good planning,—his judgment having been called for mainly in the right selection of the keynote, or the object and focus to which all others should be subordinate or made to tend. He may suppose that in the plan of an hospital, the kitchen or the washhouse should have this primary importance; and we have already shown that we should have felt the pertinence of the question, as regards one or other of these departments of the administration of an hospital. We now, however, answer distinctly, that concentration should be made to yield

rather to diffusion of the parts, as principle: for, so paramount is the object of isolation of the wards, and planning the communications from one ward to another, so as not to be the means of conducting infection, that even the inconvenience of distance from the offices, must be accepted, although in the case of a building in which the kitchen might appear to be a first element in the plan. We entirely agree with Mr. Robertson (perhaps we have quoted the words already) that,—

"Until the architect will consent to give his organ of smell a few minutes' practical training, about six or seven o'clock in the morning, in a crowded surgical ward, he can never realize the importance of a truth, which can hardly be enunciated with too great emphasis, that not merely must a ward, if it is to be kept sweet, be ventilated in the ordinary sense of that term, but it must be so ventilated as to secure for it the constant renewal of the contained air—the displacement of the fetid effluvia ever being omitted from the sick and wounded, and the substitution instead, of air, not drawn from cellars, corridors, and passages, but admitted direct from the store of the unpolluted heavens."

The Blackburn Infirmary now building, and the principal designs for the Ashton Infirmary, are practical admissions of the correctness of such views so far as the form and lighting, and ventilation of each ward, and of its own immediate accessories, are concerned. But, fully to attain the objects, it is necessary that the line of corridor or covered way for passing from one ward to another, should be separated from the wards by a lobby, for the same reasons that the closets, at the other end of the ward, are separated from the ward by a lobby independently ventilated.

The plan of the Blackburn Infirmary (of which the general formation was spoken of in a recent number), as we supposed was the case, is only a vast improvement upon the old plans in this country, and not a complete illustration of the "pavilion principle." Some, indeed, of the most eminent surgeons of the London hospitals, Mr. Robertson states, "go so far as to say that the placing of the blocks on opposite sides of a lofty, well-ventilated corridor," as in the Blackburn plan, is "superior to the Bourdeaux plan, which has blocks side by side. I am not sure as to the correctness of this notion."* Mr. Robertson's opinion is as to the very great merit which there is in the wards themselves, and in some other important features of the whole, as compared with plans where, throughout, the wards open from both sides, or from one side of a closed corridor, and beds are placed against dead wall; and where by the arrangement of the windows of a ward on one side of it only, there is no structural possibility of due ventilation, and the admission of desired light; and he has expressed no approval of the selected plan for the Ashton building, as contrasted with other designs, though a report has been circulated to such effect. He has pointed out improvements required in that selected design; but has never seen the drawings with which Mr. Lindley's design was in competition.

The building of the Blackburn Infirmary is the result of a subscription which, in August last, had amounted to 15,883*l.* 9*s.* 7*d.* of which 1,127*l.* 6*s.* 3*d.* were subscribed by the working classes. Mr. Wm. Pilkington, the mayor, to whom we believe is due the origination of the work, contributed very largely. The amount allotted to the building-fund, it appears, was 12,872*l.* 1*s.* 9*d.*

The site selected, whereon the carcass of the building is now advanced to the level of the joists of the one-pair story, is eight acres of elevated ground, south-west of the town, on the road to Over Darwen, and distant about three-quarters of a mile from the Town-hall, and perhaps a quarter of a mile from the outskirts. Though thus not far distant from factories, and such as appear to have no apparatus for the consumption of smoke, the Infirmary will be favourably situated in regard to the greater number of the factories and to the prevailing winds. The soil is a thin bed of

dry stony clay and shale, two to three feet thick, over the rock, which in some cases had to be excavated. Concrete was specified at first, but ultimately was deemed not necessary. The plan eventually may comprise besides the central group, several wards arranged as separate blocks, with intervals of 20 feet, on opposite sides of a 10-feet corridor, as explained with sufficient clearness by the diagram (enlarged as compared with the actual relative dimensions) in a previous number. There may be four or five blocks erected at the distances on each side of the central block; but the present works are for only two of the blocks for wards, besides the wards near the operating-room, which are in the transeptal parts of the block, at the back, as shown in the figure.

But temporarily wards will be formed in that portion of the centre which is parallel with the other blocks; and, as a central passage-way is required from the front entrance to the entrance at the back, it follows that these wards will not be disposed on the approved principles of hospital arrangement. As we have said, the arrangement is a temporary one; the partitions, the architect tells us, are not to be carried up to the ceiling; and each space, 27 feet 4½ inches by 12 feet 6 inches, will hardly allow beds to be placed against the partitions. But we shall look anxiously for the completion of the original project, and regret that any erroneous arrangement should be adopted even temporarily, in a plan which will be the subject of so much attention. On the erection of the remaining ward-blocks, the whole of the space we have spoken of, will be required for nurses' bedrooms and purposes of the administration. The very most that we can make of the accommodation for patients to be immediately provided, is as shown in the following table:—

In the two wards of the projecting wing-blocks, eight beds in each.—the space on the ground-story in their case being devoted to the matron's and surgeon's rooms in one block; and to a board-room, a library, and a secretary's retiring-room, in the other.....	16 beds.
In the two wards for patients, after operations.....	8 "
Temporarily arranged as described, say at most.....	8 "
Total.....	32 beds.

This is a very small amount of provision for a large town with a population much subject to casualties; and we had supposed that twice the number of beds were to be provided at once, for the expenditure of a smaller sum of money. We do not hint that there is the slightest blame to one who, of course, had something to learn from this his first work of the kind: on the contrary, it would have been accordant with our views that the Ashton committee should have sought for an architect who was in the position of the architect to the Blackburn Infirmary, rather than have announced a competition, and decided upon a plan at all hastily. Equally, the desire on the part of the committee at Blackburn to do their work well, decoratively as well as structurally, has our full approval. We must say, however, that in every point of view there would have been advantage in planning the wards for a larger number of beds. We have already adverted to Miss Nightingale's opinion in favour of a number of beds, twenty to thirty-two, given chiefly under the conviction that large, rather than small wards, were favourable to the circulation of air; and the Blackburn building, besides what is obvious in the necessities of accommodation, would have utilized more economically the ground and money spent, through an arrangement providing for considerably more than eight beds in a ward. Twelve patients, the architect informs us, he has found could be attended to by a single nurse; and Mr. Robertson, we believe, inclines to the number fourteen or thereabouts; but Miss Nightingale says, wards of a small size are "decidedly objectionable, because unfavourable to discipline;" a head-nurse, one to each ward, "is essential to discipline, and a sufficient number of such nurses

* "Extract from a letter dated July 6, 1858, to the secretary of the Blackburn Infirmary," printed at Blackburn, with list of donations.

cannot be allotted in smaller wards. One head-nurse can easily overlook forty patients in one large ward. In four small ones it is almost impossible. In the event of a death taking place in the ward, the survivors, whom there are few in number, are far more likely to be affected by it than a larger number.* Wards of 15 to 17 feet in height, planned for twenty to thirty-two sick, are better for the purposes of ventilation than wards half the size; and are less subject to a hospital atmosphere than wards of double the size, though the latter size may be perfectly healthy if the height be increased so as to be in proportion to the width. But with all the short-comings of the Blackburn plan, as compared with the French plan (two examples of which we have published), it is only necessary to draw consideration to them; and the arrangement is, as we have said, an important step in advance. We proceed with our description.

The building, generally, will consist of two stories above an elevated basement; and there is an attic story in the first portion of the central block, giving importance to the centre, and providing increased space for servants' apartments. The advancing centre and wings which form the design, from the principal point of view, are appropriated,—the centre, to the entrance-hall, over which is the chapel; and the wings, to the wards on the first floor; and the apartments under them, which we have already described. In the recesses, between the centre and the wings, are on the ground-floor the house-dining-room and the students' room of one story only, so that there is a small terrace-stage over, where convalescents might take the air, and the through-ventilation by windows to the corridor of communication on the one-pair story is not interfered with. There is no distinct nurse's room to each ward, and, as we have said, no intervening lobby at the entrance, but that arrangement was adopted by many of the competitors in the Ashton case. At the farther end of the ward from the door, leading out of the corridor, is a bath-room and a ward-scuttery, with a shoot into the basement, for bandages and dirty linen. A lobby also leads into a space for two closets, which forms a projection at the end of the wing, and has openings in the returns, to get a through-current at right angles to the lobby. A large window in the centre lights the lobby, and forms a chief feature in the decorative design. On the opposite side of the corridor of communication, in line with the wards each, are the staircases; and corresponding parts, opposite the wards, in the extension of the plan, will be appropriated to reading-rooms and dining-rooms for convalescents. The staircases are not ill planned, in comparison with staircases in London or in Lancashire. In the latter locality, indeed, the stairs are not unfrequently dangerous, from excessive height of the risers. But for hospitals, stairs should be specially planned, and with risers of less than six inches. At the ends of the corridor of communication are balconies, over doors in the ground story, which lead into gardens.

The wards will measure 39 feet by 23 feet, and will be 16 feet 3 inches in height. Thus each of these principal wards will afford very nearly 2,000 cubic feet of air space to each of the eight patients. The ward, with its accessories, will be lighted by six windows on each side, each measuring 3 feet in the opening of brickwork, and 9 feet to the crown of the arch in height, 2 feet 7 inches being the height of the sill from the floor, and the distance of the crown, from the ceiling, being about 4 feet 9 inches. Over the windows, however, are openings for ventilation, each in dimension 3 feet by 1 foot 3 inches. These will be filled with perforated zinc. The piers between the windows are from 5 to 4 feet in width. The ward will be heated by two open fire-places, one at each end, of which the openings will be 5 feet in height. Some of the arrangements for ventilation have, perhaps, still to be decided upon. The flooring of the ward will be of pitch pine, waxed and polished, carried by joists and girders, all of wood. Fire-proof construction appears to be employed only in the staircases and corridors, and in the ground story arching over the basement. The walls and ceilings will be finished in Parian cement. With reference to the important question of aspect, and of the direction of the axis of the wards each, we may say that the front of the building appears to face the north-west; that is, the axis of each ward would point north-west and south-east, and not north and south, as advised by

one of the competitors at Ashton. Mr. Robertson, as we gather, has a feeling that the front should face the sun at one o'clock, but does not feel satisfied to put forward a positive opinion; and he suggests that there may be an argument for having the front so that it would be impinged upon by prevailing winds, although not in the case of an hospital to leeward of any smoky town.

In the central block of the plan there will be on the ground story, entrance-halls, one at the front, and another at the back, and reached from the latter, and from a separate road. There will be in the transeptal portions of the plan an accidents' receiving-room, and a dispensary. Adjoining the latter, in the same story, will be an out-patients' waiting-hall, of considerable dimensions, and the remainder of the central part of the plan is devoted to the surgeons' consulting-rooms, the matron's store-room, the surgery, washing-closet, and the porter's bed-room. There is a mezzanine over part of the plan, which is to be used as a drug store. We have explained the appropriation of the wings in the front, and of the one-pair story generally; but may mention that, attached to the operation-room and wards in the transeptal parts of the plan, will be a surgical instruments room, and the required bath-rooms, and closets, and nurses' rooms. The whole area of the basement in the portion of the building now erecting will be given up to the kitchen and offices. The kitchen will be close to the position on plan of the grand corridor, hoists being contrived for coals and articles of food. In the rear will be the wash-house, laundry, scullery, and laboratory. An under-ground way is provided, externally, to the site which is intended for a dead-house.

The decorative design, as may have been understood already, has been altered since the first drawings were made. The object, that of giving to the building increased decorative character, so that it might be in all respects an honour to the town, and towards which the members of the committee came forward nobly with contributions, is one such as cannot but have our warm sympathy. It is well, however, that we should not allow the idea to prevail that increased effect is to be obtained merely by the increased expenditure of money; and the present case is one where we believe the architect has not much improved upon his original conception by the fresh means allotted to him. The decorative and the useful, so called, both are important; but, in the present case, considering the objects, and without abatement of the skill exhibited, as without abatement of our views of the value of decoration, we would rather have seen any available amount appropriated to the perfection of the plan. Besides, it is to be logically inferred that an architect does not necessarily improve upon his original conception by alterations; second thoughts are not always best, and especially so where the thoughts do not form the original foundation, but take up the project when it has been already commenced, and its character to some extent confirmed. In an entirely new building the case would be different, and the architect would utilize, without detracting, the full experience he had gained.

The general character of the design we must describe, for want of more precise phrase, as French Italian, or as that Palladian in which the superimposed orders are used, to which are added the high-pitched roofs to pavilions. This character, however, is chiefly exhibited in the prominent parts of the building and plan, where masonry is employed. A considerable portion of the building is of red brick, with white stone in bands across the piers,—the archivolts and consoles, and the entablatures, and the whole of the basement story which has small square windows above ground, being of stone. The bricks are made partly on the ground, and partly on ground closely adjoining. The cost of their making, with that of the clay, is 19s. a thousand for the common bricks, and 26s. for bricks for the facing, which are pressed. There is good character in the front—though the mouldings are in some cases much too minute, to contribute, as they should, to the effect from a distance. The porch, at the principal entrance, with its side windows, forms a group carried up in two stories, and has salient columns in the upper story. The parts breaking forward at the ends of the wards are likewise emphasized by the treatment of the pilasters and four-feet window-openings; and the friezes, in these parts, are enriched with scroll-work. The angles of the wards are decorated with rusticated coupled pilasters, Ionic in the upper story, forming piers, with ornament in the frieze; and chimneys are carried at the angles. The ordinary windows have archivolts rising from impost-mouldings, and consoles triglyphed on the

face. Ornaments, similar in character to these last, occur at regular distances in the frieze.

The drainage from the Infirmary will pass into the river Darwen. There are two principal streams at Blackburn, but of very moderate size; and their present condition would serve as accurate illustration to the description and remarks we have before printed, on the lamentable state of the drainage of the manufacturing towns of Lancashire. We have evidence, however, that the question as regards Blackburn is receiving some attention. The drainage of the town is now being altered, and is to be carried to a point on the Darwen, about two miles from the Townhall.

The original contract for the infirmary was taken by Messrs. Benjamin Abbott, and John Hacking,—the former for the carpenter's, plasterer's, plumber's, glazier's and painter's works; and the latter for the mason's, pavior's, bricklayer's, and slater's. The manner in which the work is done so far, is certainly creditable to the contractors; and the materials are of excellent quality. The whole amount at present involved in the contract may be stated as very nearly 10,000.—The Infirmary committee, however, supplying the bricks. The principal stone used is from the Butler delph, or quarry, in the township of Pleasington. It seems an excellent material for durability, save that it is occasionally spoiled by black, clayey spots and streaks, which may enter for some depth into the stone. When good, it is better in appearance, and we should suppose is cheaper to work, than the more crystalline stone used in the south of Lancashire. The Longridge stone, which is more generally used in North Lancashire, has also been used in this building; it is marked by yellow streaks, and is not considered so good as the other stone mentioned. Cullifite stone is used in the steps; and the corridors will be paved with flags similar to Yorkshire flags, but brought from Haslingden. The brick arches over the basement are carried on wrought-and-riveted iron girders, having a bearing of 19 feet or 23 feet. Skew-back bricks are moulded specially to fit into the sides of the girders for the springing of the arches, which have a span of 6 feet 4 inches to 6 feet 6 inches. The centering was in great part suspended from the girders by iron hangers, or stirrups. The general walling is built with a cavity of 3 inches, and two brick lengths, to amount to a thickness of 21 inches. In executing the work, openings are left at the floor-line of each story, in order that the cavity may be properly cleared out before the work is left. The quantity of the stone on bed, and bond with the brickwork, would be remarkable to any one judging after experience chiefly of London buildings. The balconies and deer-cases to the ends of the corridors, which, like the principal doorway, have considerable decorative character, are not permanently fixed, but placed so as to be removable easily when the extension can be proceeded with. Mr. John Simpson is the architect's clerk of the works. The credit of the design was first ascribed to Messrs. Smith and James Turnbull; the latter of these, however, who made the design, is now the architect. The effort made in this hospital already reflects great credit upon Mr. Pilkington and the town of Blackburn; and we hope that the completion of the work will be satisfactory to all the parties concerned. Certainly every care should be taken, and we have no doubt is intended to be taken, in what will form an important precedent for one part of the country at least. There are many details which we have not looked into. The manner of glazing and opening the windows is one of them.

CARVED FITTINGS FOR ST. MICHAEL'S CHURCH, CORNHILL.

THESE fittings, executed, as we have already mentioned, by Mr. Rogers, under the direction of Messrs. Scott and Herbert Williams, the architects, display a considerable amount of invention as well as skill.

The pulpit is hexagonal in form, and will stand on a dwarf column of Portland stone, with the hand-rail supported by ornamental brass-work. On the angles are twisted pillars: each pillar has twelve hollows filled with various designs, and they support a cornice filled in with branches of the hawthorn. The light elegance of this foliage is remarkable. The panels have each a different diaper pattern, with boldly carved symbols of the four Evangelists in roundels.

The reading-desk is raised one step from the floor: it has two double arches and ten pilasters. The centre pillars are round, resting on square bases. On each of the angles are heads of the dragon, in reference to the prowess of the patron

* "Evidence given before the Royal Commission on the Sanitary State of the Army,"—reprinted, with some Alterations, with "Notes on Hospitals," J. W. Parker. 1859.

saint. The perforated friezes in the screens behind the choir-seats in the chancel are of foliated scroll-work, interspersed with sacred fruits and emblematical flowers—such as the passion-flower, trefoil, pomegranate, lily, figs, and olives.

Sixteen panels have been carved for the chancel-gates; one-half taken from the Old Testament and the other half from the New. The former consist of Moses in the Bulrushes; the Tablets of the Law, with the sword of Justice; the Star of Bethlehem; the Gospel of Peace, over which is a dove; the Brazen Serpent in the Wilderness; the Seven Golden Candlesticks; emblems of the Sacrament (wheat and grapes); chalice and paten. The subjects from the New Testament are,—Solomon's Glory, represented by three crowns rising out of three full-blown lilies; the Crown of Victory; emblems of the passion-flower; the Resurrection, emblemized by a butterfly issuing from a chrysalis; Light out of Darkness, the Snowdrop; Faith, Hope, and Charity; the Trinity in Unity.

Throughout the whole of these works the freedom, yet crisp sharpness, of the foliage, and the ingenuity of its application, deserve much praise. The first seat south of the chancel is a representation of the Agony in the Garden. The cup is enclosed in foliage at the top, and at the back is a branch of olives copied from one gathered by E. T. Rogers, vice-consul of Caiffa, Palestine, in the garden of Gethsemane: around the outer edge of this bench-end are the words, "Not my will, but Thine be done." Other inscriptions of a similar description are used in parts.

The fronts and backs of the seats have a double row of variously enriched panelling, 180 in number, the upper row being alternately relieved by sprigs or branches of sacred flowers bound with labels, and having suitable inscriptions in raised letters, such as "In the midst of judgment He remembers mercy," "Look upon the rainbow, and praise Him," &c. &c.

At the chancel end of the centre aisle there are seven seats set apart for special purposes. On the right is the royal pew, with an enriched double shield surmounted by the crown, V.R. and the motto "*Dies et nox drol.*" On the inside is carved, in very bold letters, her Majesty's monogram, Victoria, in the form of a Greek cross, enclosed in foliage and flowers, the rose, thistle, and shamrock—the monogram suggested by the one in the Charlemagne Bible of the ninth century, now in the British Museum, and cunningly devised; the diocesan pew, with ecclesiastical shield with crozier, mitre, and the crossed swords representing the martyrdom of St. Paul; the corporation pew, with the City arms and representation of St. George, &c.; the pew of the Worshipful Company of Drapers, with enriched shield, date, and motto of the company, "Unto God only be honour and glory," surmounted by the triple crown issuing from clouds, with rays of light: on the inside, a triple branch of lilies, the emblem of the Virgin, the patroness of the company, the shield of Fitzalwin, the first mayor of London, and other devices, attract attention. On the pew of the Merchant Tailors' Company is the shield, &c. of the company, and in one part is introduced an illustration of a text from St. Augustine's 19th chapter of St. John,—"God is all to thee: if thou be hungry, He is bread: if thou be thirsty, He is water: if in darkness, He is light; and, if naked, He is a robe of immortality." In this instance Mr. Rogers has figured the star of light, the bread, chalice, and the robe, in a manner which describes the text. We must pass over with brief notice the ornamentation of pews of the Clothworkers' Company, and the rector's pew: on the former the tessal is conspicuous, and on the latter the monogram of the Rev. T. W. Wrench, surmounted by a branch of olives.

All the bench-ends in this aisle have a shield, which will be emblazoned on the outside, enclosed by Greek foliage: on the inside there are various fruits and flowers, such as the gourd of Jonah, Syrian dates, nut fruit, oak and acorns, chestnuts, wheat ears, mulberry, pine fruit, the Rose of Sharon, olives, figs, &c.

The carvings on the benches for the north aisle are well treated. Amongst them are a female figure of Charity, seated in an ecclesiastical chair, supported by pelicans: she is feeding and protecting three children. The idea, Mr. Rogers tells us, in a catalogue of these works which he has published, was taken from an early sculpture in Valterra marble. On other seats are the pelican in her piety; the fall of man represented by the serpent coiling round the forbidden tree. On the back is the lily of the valley. The sage plant

of Palestine is combined with the primrose of England, the stork of the wilderness, &c.

There are about twenty benches belonging to the south aisle: on some of these are the sage-plant of the East (which is well adapted to sculptural purposes), combined with a branch of oak; the ivy and the anemone, and the common flowers of the East; clusters of pomegranates and bell-flowers, Aaron's rod, a triple branch of lily rising out of a bulbous root, which is given in the form of a heart. We must not omit to mention the device of a Latin cross, on which is suspended the passion-flower, the leaves and tendrils of which are creeping over and binding it to the cross; the carving of the scape-goat wandering in the wilderness, with the mark of the High Priest on his forehead: in the background is forked lightning, indicating the wrath of God. On the back of this standard is a crown of thorns.—"On Him was laid the iniquity of us all."

In the designing of these numerous carvings Mr. Rogers has been assisted by his son, Mr. W. H. Rogers. The list we have given will show that mental power has been employed as well as skilled hand-work.

VENTILATION AND WARMING OF HOSPITALS, &c.

THE VAN HECKE SYSTEM.

GREAT attention is still being given to the improvement of hospital ventilation in France. The latest system there introduced, and which is conceived to be better than even those previously reported favourably on, as in use at some of the public hospitals, is the system of Dr. Van Hecke, which appears to have been previously brought into operation at Brussels for the Belgian Government. Of the application of Van Hecke's plan to one of the pavilions of the Hospital Beaujon, and a highly favourable report by a Government commission on the subject, we had sometime since heard, and were favoured, by Mr. J. Bonomi, with a special translation of an elaborate paper by the reporter on that commission, Dr. Grassi, who had instituted an experimental investigation of the system for his own satisfaction, after the commission of which he was the reporter had favourably reported on it to the French Government. Of this translation we propose now making some use; the more especially as we find that Van Hecke's mode of ventilation continues to be preferred to all others in new French hospitals, to which it has since been applied.*

Dr. Grassi, in the outset of his Dissertation, after some allusion to the modes of ventilation and warming long in use at the Hospitals Neckar and Beaujon, and to the commission appointed to examine the new system of Dr. Van Hecke which had been tried in the Pavilion No. 4 of the Hospital Beaujon, thus proceeds to describe that system:—

"The warming of the Pavilion No. 4 of the Hospital Beaujon is performed by means of a calorifere-stove situated in the cellar-floor. Air is conveyed to this stove by a cylindrical channel of zinc, 75 centimetres (2 ft. 5½ in.) in diameter, which, after running horizontally through the vault, is received into a vertical shaft of masonry opening out in the garden at about 2 metres (about 6 ft. 7 in.) above its surface: from this source the air is derived.

After the air has passed through the tubes of the calorifere and become warmed, it enters a large pipe, to be distributed by it in the three wards (one above another): before, however, reaching them, it passes over a pan of water to supply it with a suitable quantity of moisture. By this arrangement the air transmitted to the wards is derived exclusively from the garden, and not allowed to mix with the air of the vault.

Instead of permitting the air to circulate in the calorifere it may be sent to the wards in a direct course, which bears the same relation to the channel of the calorifere that the chord does to its arc. At the commencement of the calorifere tube there is a movable register for the purpose of giving such a direction to the air as may be required, either for warming it, or allowing its use at its natural temperature. The register, when partly opened, may even permit a mixture of the two at different degrees of temperature, and moderate the warmth of a ward for the moment become overheated.

* A pamphlet titled "Remarks on Ventilation, with Extracts from Official Reports, on the Combination of Ventilation and Warming;—System Van Hecke." By Wilton Weatherly Phipson, C.E." (printed by H. M. Polett, 35, Aldermanbury) has recently been forwarded to us, which contains many allusions to the favourable results obtained by means of Dr. Van Hecke's system, but no particular description of the plan itself.

The air conduit (or pipe) enters the ground-floor ward in its centre at the floor level, through the middle of a cast-iron drum of four vertical sides, furnished with perforated doors for admitting the air into the ward. The tambour or drum incloses some wire shelves, on which linen may be placed, and drinks for the patients to be warmed.

The air-pipe debouches on the floor-level through an opening of 75 centimetres (2 feet 5½ in.) diameter, in which is inserted a vertical tube of 60 centimetres (1 ft. 11½ in.) diameter, rising to the first floor: between these two tubes there exists an annular space, permitting a portion of the air to be arrested on the ground-floor. Thus the air introduced is divided into two portions; one admitted to the ground-floor, the other continuing upwards for the use of the upper floors. A register, regulated by a quadrant, permits the reduction of the section of the tube, and of varying the volume of air for each of the floors. If the register is entirely closed, the whole of the air would be arrested on the ground-floor: by opening it, more or less, the air for the two upper floors is increased at pleasure.

On the first floor there is an arrangement like that on the ground-floor,—a register for stopping a certain volume of air, and for allowing the rest to rise to the second floor, where the second column terminates, and a tambour only exists, in every respect resembling those of the lower floors. Thus fresh air, serving both for warming and ventilating, is admitted into the centre of the wards, entering through wide openings, so as not to acquire a great velocity and produce disagreeable currents.

The air which has been harboured (*séjourné*) in the wards escapes from them through four evacuating channels in their corners or angles,—a number too limited, in my opinion; but the pavilion being already built where the system of ventilation was adapted to it, a greater number would have occasioned a considerable outlay for cutting chases in the walls, or for placing the channels on the wall surfaces with a very disagreeable appearance.

The three channels at each angle,* and which correspond with the three wards, rise side by side vertically to reach the loft, where they are received into a horizontal zinc pipe, one at each of the four corners, which unite in the centre of the loft in a tambour, capped with an evacuating cylinder of zinc, 75 centimetres (2 ft. 5½ in.) in diameter. At the intersections of the air-escape channels from the wards with the receiving channels of the loft, registers are fixed, by which the openings may be regulated, and, consequently, the draft or extraction from each of the wards.

The air from the wards has, besides the evacuating channels above named, an exit for escape through the water-closets by an opening in the ceiling, which also communicates with the channel in the loft. The air from the ward, entering into the water-closets through an opening in the lower part of the door, rises towards the evacuating opening in the water-closet ceiling, sweeping through and carrying away in its course all smell. The ventilation is not effected through the water-closet basins, as at La Riboisière, the seats being closed, and the ventilation acting exclusively upon the atmosphere within the water-closet: it is quite sufficient, and in no hospital have I found the water-closets so completely rid of smell as in the Hospital Beaujon.

By way of concluding what refers to the introduction and exit of air, I must mention a source of pure air considered as accessory, which, however, is not unimportant.

On the ground-floor at the entrance to the cellaring, is placed a small steam-engine, of which I shall presently speak. The smoke-flue from its furnace, united to that from the calorifere-stove, is surrounded by a concentric inclosure, the lower end of which is open to the outer pure air, and draws it in through its orifice in the garden. This air circulates in the annular space round the smoke-pipe, in contact with which it becomes warm as it rises to the top of the building. This air-flue is situated in the thickness of the wall separating the staircase from the wards: at the level of each story it presents three openings, one into the ward, one towards the stairs, and the third into the two-bedded room.

These openings afford a passage for the warm air during winter: in the summer season it is allowed to rise to the upper part of the building, where it disperses itself; but Mr. Van Hecke was desirous to turn this warm air to account, by

* It seems needless to add here, "of the upper ward." TRANS.

causing it to enter the loft used as a drying-chamber.

When the upper orifice of this air-funnel is closed, as is the case in winter, the warm air diffuses itself in the wards, and in the staircase, of which it keeps up the warmth. In summer, when the upper orifice is entirely open, the smoke-flue draws upon the air within the wards, and thus produces an increase of ventilation.

Such is the channel-system for the passage of the air derived from the garden, and finally escaping through the common flue. Now let us consider the moving power.

I have before mentioned the small steam-engine at the entrance to the cellaring; it is intended to keep in motion a ventilator, which, in the first instance, Mr. Van Hecke had placed in the upper part of the tubing within the flue or chimney of the loft. A band or strap transmits the movement from the ground-floor to the loft: the ventilator then produces a suction-draft from the air of the wards. The apparatus of Mr. Van Hecke produced ventilation by (*appel*) suction by mechanical agency. Since it was fixed, an important addition has been made to it. Mr. Van Hecke has placed a second ventilator, identical with the first, in the lower draught channel, where the column of air takes its rise within the vault. On connecting this ventilator with the machine, it drives into the wards the air which it inspires from without, and thus produces a ventilation by injection analogous to that produced by the apparatus of Messrs. Thomas and Laurens, at the Hospital La Riboisière.

In this manner the apparatus is arranged to allow of ventilation by suction, on putting the upper ventilator in motion, or by injection when the engine is in connection with the ventilator situated in the lower part of the building; the change being effected simply by the band which transmits the motion, an operation requiring but a few minutes.

The ventilator of Mr. Van Hecke is composed of two (*palettes*) fans or blades, fixed to stems, which are inserted perpendicularly on the axis of rotation, and inclined from fifty to sixty degrees. A peculiarity distinguishing this ventilator is, that the inclination of the fans is not constant, but varying with the speed of the rotary movement.

The boiler of the engine warms the office on the ground-floor, in which are arranged pans for poultices, and a warm-linen closet. A portion of the steam, after giving motion to the engine, is sent to the upper floors, where it heats the water required by the patients; but the greater portion, which might be usefully employed, is for the present wasted.

Dr. Grasi then proceeds to show how the effects of the system are indicated by anemometer, connected with a contrivance of M. Van Hecke's. He then adds:—

"In order to complete the description of this system of warming and ventilating, I have to notice an apparatus not yet fixed, but which is now being constructed by M. Van Hecke, and to be placed within the stone-built channel, which from the cellar leads into the garden for air. This apparatus is intended to cool the air in summer, on its way to the wards. It consists of two cylinders placed horizontally one above the other, at 1m.50s. (4ft.11½ in.) apart. On the axis of the upper cylinder is a pulley to receive the movement of the axle-tree. The under cylinder is plunged into a trough of water, which may be obtained of the temperature of well-water, or be cooled artificially by pieces of ice, should it be requisite. Endless bands pass from one to the other of these cylinders, which revolve simultaneously. The air circulating in the channel is forced to pass over these constantly moist bands, and thus acquires a much lower temperature."

An elaborate series of experiments are then described, and the result of the whole inquiry is summed up in his

Conclusion.

"The apparatus established by Dr. Van Hecke, in the Pavilion No. 4 of the Beaujon hospital, fulfils perfectly the conditions imposed by the note of instruction.

1. It is capable of maintaining the temperature of the wards at 16 degrees (60½ deg. Far.).

2. When acting without strain in an even, regular manner, his engine can supply 60 cube metres of air for each patient per hour. The various parts of the apparatus are so arranged as to graduate the results which it is wished to produce, to measure them exactly, and to ventilate at will by suction or by injection.

3. The experiments detailed in this account

have proved that ventilation by injection is to be preferred.

4. When it acts by suction, the apparatus of Mr. Van Hecke is also preferable to others that are known to us, because it is established on better conditions; and, as a consequence, the volume of air admitted accidentally through the door and window joints (not producing any useful effect) is considerably lessened.

The sisters of the Beaujon hospital, who go into the wards at all times, agree in saying that the pavilion of Mr. Van Hecke is the best ventilated of the establishment. I have myself observed it also during the prolonged visits I was obliged to make at the Hospital Beaujon. The water-closets are particularly remarkable for the complete absence of all smell. This fact it is the more important to note, as I have never met with such perfect disinfection.

5. In its actual conditions of installation, with the entire waste of the steam, this system reduces the cost of ventilation to 2½ centimes per day for each patient.

6. The warming and ventilation combined are not more expensive than the warming alone of the Pavilion No. 3 adjoining it, and not differing as to conditions.

7. In turning to account, as it would be easy to do, the waste steam, for the purpose of heating the bath water or the water for the pharmacy, this apparatus would effect a considerable economy in the expenses of these two departments.

I am thus brought, with reference to this system of warming and ventilating, to the general conclusion which I stated on closing my account of the apparatus at the Riboisière hospital. Ventilation by injection, produced mechanically, should always be preferred to ventilation by suction, and particularly in cases where there is the opportunity of turning to account, for various warming processes, the steam that has served to give motion to the engine, and this may always be done in hospitals."

The use of steam-power, we may add, is only requisite to Van Hecke's system on a large scale. In ships and elsewhere, where manual labour can be easily or economically applied, or is sufficient for the purpose in view, no steam-power is necessary to ventilation on this plan; and in dwelling-houses the ventilator has even been put in action by clockwork and weights. A French admiralty report speaks favourably of the system as applied on shipboard, where one man works it at a time. French government reports speak strongly in its favour, as adopted at the Hospital Necker, for ventilation, heating, and cooling. The Hospital L'Asile Impériale de Vesinet, near Paris, has had Van Hecke's apparatus applied to it, and it has been brought into use in other hospitals and public buildings in France and elsewhere, and is ordered for hospitals now in course of erection at Chartres, Lyons, &c.

Str.—Your articles on "Hospital Construction" will be productive of great good to those most in need,—the poor and the sick,—by calling the attention of all classes to a great want in England, viz. of a sound knowledge of the best modes of affording the relief which the charitable and wealthy are disposed to accord to them.

To the poor man his sole wealth. Accident or disease befalls him, his family pine in penury, and he becomes the inmate of a hospital. Until public attention became roused by the terrible evidence produced before the commission on the sanitary condition of the army, the hospitals for his reception were (and with few exceptions still are) "dark, unventilated spaces"—(see the Right Hon. Sidney Herbert's paper in the *Westminster Review* of January, 1859)—wherein, with all the care of medical science, it was a hard matter for nature to triumph over disease.

In the "Blue Book" upon that commission the hospital Lariboisière, in Paris, was frequently brought forward as a specimen of what an hospital should be. You have rendered to the public a real service in giving a plan of it in your admirable journal.

But there is progress in this age, and in the matter of hospitals progress has been striving in France.

The French Government, *L'Assistance Publique*, has improved upon the Hospital Lariboisière in one most important matter, that of ventilation. In their two hospitals erected since the completion of Lariboisière, the hospital Necker and L'Asile Impériale de Vesinet, in my opinion the most perfect hospital now existing, the system of ventilation discovered by Dr. Van Hecke is adopted, superior in effect, and far more economical in cost, than those of Monsieur Duvoir and of Messrs. Thomas and Laurens, and employed at Lariboisière.

Subjoined is a table of the cost and maintenance of the different systems, as given by the Government commission.

Cost.	
Hospital Necker; system, Van Hecke	256fr.
Hospital Lariboisière; system, Duvoir	480
Hospital Lariboisière; system, Thomas and Laurens	908
Maintenance.	
Hospital Necker; system, Van Hecke	3,325
cube feet per hour	25fr. 57c.
Hospital Lariboisière; system, Duvoir	1,050
cube feet per hour	54 30
Hospital Lariboisière; system, Thomas and Co.	3,150
cube feet per hour	101 18 p.

CONCRETE BUILDING.

BÊTONS AGGLOMÉRÉS.

At a recent meeting of the Institution of Civil Engineers of France, a paper was read by M. Coignet, "On the use of Agglomerated Concrete," having a base of lime, and moulded into the wall itself, forming mason-work in a monolithic state of any description, of whatever object, form, capacity, or mass, and without regard to the place where it be laid, whether above or below the surface of the ground.

In this paper, as reported in the *Engineer*, M. Coignet gave an account of the applications he had made of this kind of construction, and the results he had obtained. He said,—

The question of the resistance to weather, that which chiefly concerns the *bêtons* with a base of lime, has remained without practical solution until now; and, furthermore, these *bêtons* cast in moulds had a considerable shrinkage, which materially compromised the stability of such structures. In consequence of numerous failures, the attempts to employ *bêtons* with a base of lime as a material for the erection of structures above the surface of the ground, and exposed to the weather, have been generally abandoned, and attention has been confined to the use of cements, of which the apparent durability and the rapid set have given more satisfactory results. Even with these inconveniences have been so multiplied that at last builders have abandoned the use, in the open air, of *bêtons* of cements, just as they had abandoned those having a base of lime.

For several years, my practice has had for its object to prove that *bêtons*, with a base of lime, and lime too of a most ordinary quality, could be compounded, prepared, and used in a manner to produce a masonry much more economical than any other, and capable of resisting, in the open air, all causes of destruction. This result has been at length completely attained.

Until now, and without exception, the *bêtons* have been moulded and not agglomerated; they have been always employed in the state of a soft paste, a pulp more or less liquid, hardening finally in the mould or upon the ground by the simple "set" (*prise molaire*) of the lime. In this state of soft paste, the *bêtons* with a base of lime or of cement, contain an excess of water, which separates the particles of the lime and diminishes the rapidity of its set.

But this excess of water is physically opposed to agglomeration. If, for instance, we endeavour to solidify the ordinary *bêtons* by stamping, that which is too soft slips under the shock of the hammer; it will not bind; and soon the water which is in excess separates from the *bêton*, filling the empty spaces, and floating upon the surface, in such manner that the hammer acts only on a liquid incompressible mass, and whereby masonry thus composed becomes, when the water has evaporated, a light, porous, spongy, absorbent, and friable substance, inasmuch as the presence of an excess of water, by its evaporation, leaves innumerable pores, giving easy access to all the elements of destruction.

It is in vain that the constructor seeks for materials of the best quality: it is in vain that he increases the quantity of lime employed; in vain his recourse to chemical science: the result is always the same. All *bêton* moulded and exposed to the air is a spongy and friable stuff, doomed to early destruction.

But if, instead of moulding the *bêtons*, we obtain them in a state of pulverulent paste, so firm that they shall not elude the shock of the hammer, then, by the agglomeration effected by the repeated blows of a hard and heavy body, the particles of the *bêton* become bound and settled so as to occupy a considerably less volume, the particles of the lime are brought in contact, the set is more rapid and intense, and, in short, we have a *bêton* heavy, compact, dense, and impermeable, and capable, in a short time, of resisting all weathers, even to the severest frosts. This result is the more important, inasmuch as there is attained at the same time a considerable economy; for, in order to render agglomeration possible, it is necessary to reduce the quantity of lime to a strict minimum: the presence of lime in excess gives to the *bêton* a mobility, a viscosity, whereby it slips under the hammer and its agglomeration is prevented.

The effect of agglomeration is such, that with such limes as, by the ordinary processes, give a *bêton* of only tolerable quality, requiring, before taking a passable set, weeks and even months, I obtain by the fact of agglomeration a *bêton* as hard as good stone, and this in a few days, and often in a few hours. Indeed, in case of necessity,

and when the season is unfavourable, I can at will produce masonry of this kind which shall in twenty-four hours be hard and strong enough to brave the severest frosts. I have made this year some most conclusive experiments upon this point.

After this explanation of the theory which has guided my practice, I will state the practical applications which I have successfully made of this mode of building.

It is now two years since I mentioned before the members of this Institution the house of the station-master at Suresnes, on the Versailles Railway. I had been ordered to build that house by M. E. Flachet, your eminent colleague, who, from the first, recognised the justice of the theory of agglomeration as applied to the composition of *bétons* with a base of lime, and who has experimented with them upon an extensive scale. This house, constructed entirely of agglomerated *béton*, is a complete monolith from the summit to the foundations: cellars, vaults, slabs, walls, floors, roof (in form of a dome), cornices, ornaments, all are in agglomerated *béton*, without joints of any other material. The exterior has all the appearance of rough stone. Without shelter of any kind, it has withstood all weathers for four years, without showing any symptoms of deterioration. This house is the first of its kind which has been made, and it merits, therefore, the careful attention of men of art.

During the last two years I have constructed a great number of slabs and sidewalks, having a durability very much superior to that of asphalt. I have made cisterns also; and, among dwellings, one at St. Denis, Route des Poissonniers—a house similar to that at Suresnes, that is to say, with floors and dome in *béton*, but of larger dimensions. The dome which covers the house at St. Denis is 14 mètres in length by 8 mètres in width. The thickness of its sides is 0m. 40 at the bottom by 0m. 25 at the crown. It has withstood three winters without any deterioration.

I have followed with equal care the application of agglomerated *bétons* to the construction of terraced roofs, with which I have at length obtained the most complete and decisive success. I have this year constructed a terraced roof of 0m. 30 (12 inches) thickness, and covering a building 22 mètres (72 feet) long by 15 mètres (49 feet) wide, being a total surface of 330 square mètres. This roof, this slab of 330 mètres, is supported in its middle only by a single wall, which divides it longitudinally, so that each half of the slab has a part, 22 mètres by 7 mètres, without bearing points and without vaults, its surface being horizontal above and below. The roof has become thoroughly dry in the open air.

Following an examination, the emperor conceived the idea of the application of this *béton* to sea-walls. Means have been placed at my disposal, and trials have been made at Saint Jean-de-Luz, the success of which can be determined only by time.

M. Coignet explained that the process was the result of a series of manual operations (*tours de main*), for which some experience was required, and their success depended upon the pulverulent state of the materials, their previous intimate mixture in exact proportions, using a very moderate quantity of water; and, above all, upon light and repeated blows acting successively upon small portions as they were brought together into the mass.

FRANCE.

THE fountain of the Place Louvois, which was taken down some time ago, has been covered with a copper coating by the galvanoplastic process, which was tried with such success on the fountains of the Champs Elysées last year, also for the decorations of the pontifical railway carriage (see *Builder*, p. 814). This graceful monument is one of the best works of the late Visconti.

The church of St. Eugene has been lately purchased by the town of Paris, by a contract entered into at the end of last April, which declares that the Abbé Fusaux and M. Coquand, curate of St. Eugene, have sold to the municipal authorities the following items:—1. The edifice, occupying a superficies of about 1,400 mètres 13 centimètres; the sacristies; the chapel of catechism; the wood-work and presses, and all fixtures on the premises. 2. All objects of furniture, of whatever description, at present in the said church. The price fixed upon is 1,200,000 francs.

A curious trial took place last month about the gas-supply in the well-known Mabilles Gardens. In that establishment for balls and *fêtes* there are numerous tenants, exercising games of all sorts; and one of these, M. Trachitzky, applied

to magistrates for redress under the following circumstances:—The contractor for the supply of gas was in the habit of using a quantity of "benzine"—the well-known very volatile preparation from gas tar—in order to (as he says) increase its brilliancy; but M. T. applied to prove, that instead of the gas burning brighter, the reverse was the case, so much so that all his sporting customers had deserted his tables, evidently not bent upon staking their money in the dark. M. Vaudoré, the inventor of the improved process, attended, and offered to repair the fittings. M. Potier pleaded for M. Mabilles, and urged his right to the surveillance of the system and its modifications. The president accepted both offers, and the proceedings terminated.

The works of constructing the abutment of the new Pont au Change, on the right bank of the Seine, advance rapidly, as also the rebuilding of the Quai de l'Horloge, between the Marché des Fleurs and the Rue d'Harlay. In order to facilitate the clearing away of the mass of stones round the piers of the old bridge, which has been interrupted for the last few days by floods in the river, an immense dam has been thrown into the current obliquely, so as to direct the force of the floods to the middle. As soon as the water lowers, the rest of the piers will soon disappear.

Vast improvements are taking place at the watering-place of Plombières. The new establishment of baths, commenced last year, is so far advanced, that one can judge of the magnificent accommodation it will afford. It is situated at the entrance of a vast park extending between two mountains, along the road from Plombières to Vesoul. The French emperor is determined to render it as charming as possible. A new church has been built, and excellent roads are carried over the picturesque mountains of Vosges. When the plans, as proposed by his Majesty, are fully carried out, Plombières will be agreeable to its visitors as it is now beneficial in a sanitary point of view.

A bronze statue of the Emperor Napoleon I. has just been inaugurated at Brienne, the work of M. Louis Rochet. He is represented as an "Eufant de Brienne" (as he used to style himself), leaving the *école* on the examination day. One hand is placed on his breast in the graceful attitude of a young student, receiving his honours; and the other holds a volume of Plutarch's Lives, which formed his favourite study.

The organisation of the Châlons Camp proceeds rapidly. It is said that Marshal Pelissier (Duc de Malakoff) has prohibited the transport of troops by railway to the camp.

The tribunal of commerce of Avignon has resolved to offer a premium of 5,000 francs on the 1st October next for the best memorial which will indicate in a secure and easy manner the means of detecting, in red dye (*garance*) and in different products from which it is obtained, every class of adulteration or fraudulent mixture.

At Havre, the magnificent summer palace of iron, built by the firm of Cennovière, of Havre, for the Viceroy of Egypt, has been just shipped on board the "*Ricardo el Negro*." The structure weighs from 700 to 800 tons, and figured in the Paris Universal Exhibition of 1855.

Horace Vernet has set out for the seat of war in Italy, and in order to have a correct depiction of the Battle of Montebello has proceeded to the battle-field to sketch the ground on which he will group the various incidents of the fight.

THE ORGAN AT ALL SAINTS', MARGARET-STREET.

THIS organ is a divided, or more properly, a double one, equal portions being placed in the north and south chancel aisles. Although divided organs are by no means uncommon in modern churches, where the plan is often resorted to, to preserve a view of a west window, the disposition of the above instrument possesses novel features which it may be worth while describing. The object aimed at was the construction of an organ more particularly adapted to the requirements of "antiphonal" singing, or the alternate response of the choir in chanting, &c.; an ancient usage of the church. The custom, although always prevalent in cathedral choirs, has rarely been carried out in its integrity, owing to the difficulty experienced by the congregation in following the responsive order as led by the choir. In order to meet this difficulty, it was suggested by the Rev. T. Helmore, of her Majesty's Chapel Royal, to the builders, that instead of placing the organ on one side of the choir, it should be divided into separate parts, each part being, in point of fact, a

separate organ; but both assimilating in power, though diverse in quality of tone.

By the separation of the two organs, it is believed that no difficulty will be experienced by those in the body of the church from at once following the lead of the sound as it proceeds from the alternate sides of the church.

From experiments already tried, it is stated that though each organ has its individuality of tone, when combined the effect is one of perfect unity, so that it is not possible for an auditor in the body of the church to detect any disruption of the volume of sound.

To effect the arrangement was, however, attended with difficulties of no slight nature. The unprecedented distance of the organs apart necessitated a great amount of horizontal action with its accompanying friction and inertia. This was, however, overcome by the use of a plan of suspending the trackers, and the use of the pneumatic lever, so that the south organ, though played on the north side, at a distance requiring 80 feet of vertical and horizontal action to a note, answers as promptly to the touch of the organist as that of the organ immediately behind him. Upwards of two miles of tracker are consumed in the action of the south organ, most of which traverses the vaults under the chancel, which receive, also, the wind trunks and stop action connecting that organ with the manuals. The pneumatic principle has been adopted also for drawing the stops of the latter organ, the great distance and consequent weight of the rods rendering the ordinary plan impracticable.

The "great" and "choir" organs are placed on the north side, and the "swell" and a second "choir" on the south. There is also a pedal 16-foot stop on either side.

The bellows are distributed within both organs; the feeders, however, being placed entirely on the south side.

The metal of the pipes contains equal portions of tin and lead.

All the stops extend throughout the manuals.

The following is the list of stops:—

NORTH ORGAN.

Third Manual (Great Organ).

1 Double Diapason	16 feet
2 Open Diapason	8
3 Stopped Diapason	8
4 Octave	4
5 Wald Flute	4
6 Twelfth	3
7 Fifteenth	2
8 Full Mixture	3 ranks.
9 Posanne	8 feet.

Second Manual (Choir Organ).

1 Gamba	8 feet.
2 Stopped Diapason	8
3 Octave	4
4 Nasal Flute	4
5 Vox Humana	8

Pedal CCC to F.

1 Sub Bass	16 feet.
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SOUTH ORGAN.

Fourth Manual (Swell Organ).

1 Bourdon	16 feet.
2 Open Diapason	8
3 Stopped Diapason	8
4 Octave	4
5 Twelfth	3
6 Fifteenth	2
7 Mixture	2 ranks.
8 Cornopean	8
9 Oboe	8

First Manual (Choir Organ).

1 Dulciana	8 feet.
2 Stopped Diapason	8
3 Octave	4
4 Snake Flute	4
5 Cornopean	8

Pedal CCC to F.

1 Open Metal	16 feet.
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Complers.

- 1 North to South Choir.
- 2 Swell to Great.
- 3 Great to Pedal.
- 4 Swell to Pedal.
- 5 North Choir to Pedal.
- 6 South Choir to Pedal.
- 5 Composition Pedals.

The organ was built by Mr. Hill, of Euston-road.

PORTABLE SAW MILL.—There has been for some time past a mill of the above description in active operation in the woods adjoining Ballinsloe. The mill is driven by a portable steam engine, of about eight-horse power, and nothing can equal the steadiness and ease with which it performs its duty—cutting up timber of a considerable thickness in a perfect manner and with great rapidity. The engine is made by Messrs. Clayton, Shuttleworth, and Co. of the Stamp End Ironworks, Lincoln; and the mill by Messrs. Young, Ballinsloe, Kierriemuir.

THE HANDEL FESTIVAL AT THE CRYSTAL PALACE.

WE spoke of the recent festival at such length last week that we must now content ourselves with recording the complete and most extraordinary success of the closing oratorio, "Israel in Egypt," the performance of which will not soon be forgotten by those who heard and saw it. It is supposed that the receipts will amount to nearly 30,000*l.* Allowing 15,000*l.* (a very large sum) for expenditure, there remains a surplus of the same amount, which, in accordance with the agreement entered into by the two bodies, 1856, will give to the Crystal Palace Company a net profit of about 10,000*l.*, besides the value of the orchestra and fittings; and to the Sacred Harmonic Society the sum of 5,000*l.* in addition to the large stock of books of the music, &c. provided for the purposes of the Festival. To this is to be added the sum of 2,000*l.* to be equally divided between the Company and the Society, reserved as a guarantee fund from the Festival of 1857.

It will have been noticed that, although the decorations of the orchestra and velarium were not carried out to the extent we spoke of as probable at one time, the decoration of the organ and of the upper part of the orchestra, under the velarium, had a good effect; and we are glad to mention, in connection with these, the name of Mr. Thomas Hayes, the superintendent of the "Fine Art Department" of the Crystal Palace, by whom the work was designed and carried out. Let us add, that Mr. Alfred Novello* has published, in one volume, the whole of the music performed at this festival, in vocal score, with a separate accompaniment for the pianoforte, by Vincent Novello. It is well done, and very cheap.

THE INSTITUTIONS AND ADVANCE OF THE COUNTRY.

SOCIETY OF ARTS' DINNER.

AT the annual dinner of the Society of Arts, held on Tuesday last, Lord Napier made a very excellent speech in proposing the main toast. In the course of it he said,—Allied with the Government of England, or sanctioned by our laws, you find many institutions of a corporate character, which, though not designed for the encouragement of arts, must yet, in an intelligent and critical age, by their opulence and associations, become powerful vehicles in fostering the principles of good taste. The Church of England has been a main instrument in the correct and discriminating revival of the Mediaeval styles. The Universities in repairing and enlarging their venerable establishments must have greatly contributed to the same result. Every cathedral should be a seminary for musical, architectural, and sculptural training, and we have seen at Canterbury, Norwich, Ely, and elsewhere, how Chapters even may become profitable guardians and stewards of the structures and revenues committed to their charge. The Temple and Lincoln's Inn illustrate the munificence and ability of the legal bodies, while many buildings belonging to banks, municipalities, and railways, prove by their beauty how far our citizens and commercial companies are removed from a sordid economy, and afford a proper theatre for the introduction of new materials and forms, as well as for mechanical adaptations of an ingenious and unprecedented character. Next in order might be enumerated an array of Institutes, founded and supported for the direct promotion of the sciences, the arts, and manufacturing industry. Foremost in antiquity and glory stand the Royal Society, the Royal Academy, the Arundel Society, the Society of Antiquaries, the Art Union, the Institute of Civil Engineers, and a score of others, which have all their zealous adherents and proper spheres of activity, deserving the highest commendation for the value of their inquiries or the beauty of their records. The society which is assembled round this table may, without disparagement to others, assert peculiar and unexampled features of honour and utility. On the 105th anniversary of its existence it may reflect with pride on its long stability; it can claim as its president the first subject of the realm, by his august position, and second to none in earnestness and knowledge; many illustrious names and titles have been written on its rolls; but, while it is invested with the dignity of the past, it acts with the enthusiasm of the future; it has cast open its gates to the people, and become the central figure and the animating spirit of a great industrial confederacy numbering more than 300 members. Finally, gentlemen, it is

certain that neither governments, nor corporations, nor societies can be profitable agents without a generous, responsive, and critical public. History shows how academies may go on preaching and prating amidst general sterility. There will not be intelligent producers without intelligent purchasers. But the industry of England is nourished from a thousand silent and spontaneous sources. Our treasures are not only laid up in museums, like grain in warehouses; they are also scattered in our homes, like good seed in pleasant and fruitful places. Many do not worship in the public temple who have built domestic altars to the arts. Consult those quiet habitations of the beautiful and good,—how many modest deeds and gentle voices attest the prevalence of a beneficent culture. Such multitudinous though insensible influences are ever conspiring with your disciplined efforts to diffuse a better education below, an education which shall regulate the strong intellect and exalt the quick invention, and fix the bewildered taste, and rear up in England a working class capable of ministering to refined delights,—capable, too, of labouring with consciousness and understanding, of sharing a divine satisfaction in beholding and approving their accomplished work.

STATUES AND MONUMENTS.

STOOD an almost standing title as that of "Statues and Monuments," or "Monuments and Memorials," has now become, was, within the last year or two, much seldomer required than now to indicate the news of the request on this particular branch of art. As in the case of drinking fountains, a desire for statues and monuments appears to be becoming very general throughout the country, although not yet quite so prevalent as the desire for drinking-fountains has become.

A bronze statue of Lord Clive, the hero of Plassey, by Marochetti, has been placed temporarily in the Privy Gardens, Whitehall. It is not distinguished by any marked character, nor is the likeness thought to be very happy.

The Birmingham Society of Artists are taking the initiative in a movement for providing a monument in memory of the late Mr. David Cox, the artist. It is proposed to place the memorial in Harborne Church. A committee is about to adopt the necessary measures for carrying out the object in view.

The monument raised by public subscription as a memorial to the natives of Leeds who fell in the Crimean war, has been erected in the Leeds parish church. The monument is placed at the north-east entrance, in the place until recently occupied by the statue of the late Mr. M. T. Sadler, which has been removed to the opposite side. The monument consists of a pedestal, enclosing a panel of white statuary marble, with a Gothic canopy. Upon the pedestal is placed a sculptured group, consisting of two life-sized figures—a dying soldier with the angel of Victory placing upon his head a wreath. The rocky ground appears strewn with the wreck and spoil of war. The canopy over the tablet, on which is inscribed the names, consists of a groined and foliated series of trefoiled flying arches, the cusps of which have angels recording in open books the acts of the heroes. On the pilasters are inscribed the Crimean victories, entwined with laurel. The composition is surmounted by the standards of the 68th regiment. The height of the monument is 14 feet, and it has taken about 15 tons of material for its construction, and has been designed and executed by Messrs. Dennis Lee and Welsh, of Leeds. The cost is about 300 guineas, and about half the amount has yet to be obtained.

The designs for the Wallace monument are being exhibited to the public in the Golden Lion Hotel, Stirling. They are in number seventy-six, and exhibit great variety of taste, it is said, but very little originality of design. A good many of the artists, says an Edinburgh paper, have not hesitated in copying pretty plainly Scott's monument in Edinburgh, and the Wallace Tower in Ayr. There is a profusion of ornament and display of architectural decoration about most of the designs. The monument which is wanted, it adds, is one which will, by its plain, massive, but at the same time chaste design, strike the eye, and produce by its commanding appearance [on the Scottish hero "drawing the sword against the Southrons." Another "looks more like an English Cathedral than anything else." A third represents the Scottish lion couchant, and is intended to be built of rough white quartz, as a colossus, with a spacious hall in the interior for relics, and a spiral staircase leading to the lion's mane. The

height of the monument is fixed at 60 feet; length, 120 feet; cost, 5,000*l.* There are also obelisks and towers among the designs; but on the whole, says the *Scottish Press*, "the present exhibition, like the last, is a complete failure, and only proves to us what we were somewhat suspicious of before—how few real men of merit have entered the lists."

The Prussian Government is going to erect a monument on the battle-field of Rossbach. It is to consist of a colossal stone cube, surmounted by a cross, and with the Prussian Eagle in a niche. The sculptor is Herr Stirmer, of Berlin.

A St. Petersburg letter says:—The preparations for the inauguration of the monument to the memory of the Emperor Nicholas are being carried on with great activity; and, as to the monument itself, workmen are engaged night and day in order that it may be completed in time. The pedestal, which is of white marble, is completely finished. The bronze horse, which will bear the statue of the late emperor, has been removed from the foundry to the place of its destination. The ceremony remains fixed for the 7th of July.

A statue of the celebrated Pfeffel has just been erected at Colmar, on the Rhine, the work of Frederich, and presented by him to that town in the most handsome manner. He has executed many important works, including the monument of Turenne, the statue of Wernherr, the gravedigger of Baden, &c. The statue is chiselled out of a block of the same rose-coloured stone of which the Strasbourg Cathedral is built.

Pfeffel, the poet, blind at twenty-two years of age, founded in 1773 at Colmar, in a small street which bears his name, the celebrated military academy, the nursery of many distinguished heroes, among whom we may cite the names of Lords Dalhousie and Elphinstone, the Tittofs of Moscow, Emmanuel, Orelli, Merian, Salis Saglio, Fellinberg, Bernoulli, &c. His poetic fables are as popular in Germany as La Fontaine's are in France.

ENGINEERING WORKS ABROAD.

THE junction line from the Vincennes railway to the Chemin de Fer de Ceinture consists of a quadrant or quarter circle, 197'70 long of 175 metres radius, branching off at the right of the Paris and Vincennes line between the exterior Boulevard de Picpus and the Belt railway. This line crosses by a bridge the Rue Montempoivre, and joins the Belt line at the lane near the church, on the lands to the south of St. Mandé. Thus, the town and square of Vincennes will be put in immediate communication with all the railways which radiate from Paris to the extremities of the Empire, and to all the European Continent.

The inauguration of the line from Marseilles to Toulon took place on the 28th ult. Great crowds were present at both termini; the usual solemnities were gone through, and banquets of course wound up the affair. Owing to the line having been for some time exclusively used by the French Government for warlike purposes, in the transport of war materials, &c., this opening will be a boon to the shareholders who were obliged to suffer the transport of military stores and soldiers at reduced rates.

On the 28th ult. the excavations for the foundation of the first great abutment of the Rhine bridge, between Strasbourg and Kehl, attained the depth of 23 metres. So far have they succeeded at the first trial of a perfectly new system. This success will create a revolution, it is said, in hydraulic works, and as soon as details arrive we will lay the process before our readers. Nothing remains to be done but to run the concrete into the iron cylinders, and to commence the masonry upon it. The blocks are of stone of the best description, hard granite, and trimmed with the first workmanship.

On the German side the railway works advance rapidly. The line, continued from the Kehl station to the German Custom-house, will cross two rivers, the Kinzig and the Schutter, which run parallel at a short distance from each other, and separated only by a dyke. The stone bridge across the Schutter is nearly finished: the parapets are in course of completion. It is described in the German papers as a solid and elegant construction. On the Kinzig there will be a very large bridge, necessitated less by the size of the river than by its caprices, it being a torrent which sometimes increases frightfully in a few hours. To bar its progress would be imprudent, so it has to be honoured with a noble bridge, which will afford ample passage for the angry floods as they hasten forward to hurl themselves into the old Rhine

* D. au. street.

bed. The bridge will be of three flat spans, two piers in the river, and two abutments. The girders alone remain to be placed.

The inauguration of the Seville and Cordova Railway, retarded since the 25th of May last, on account of some difficulties opposed to its progress by the local administration, took place, by order of the minister of public works, on the 2nd of June last. The service consists of two passenger-trains up and down each day, and one for goods.

The first days of the working of the Madrid and Saragossa line, on the first section from Madrid to Guadalajara, have given results confirming the hopes expressed by the company. The products vary from 7,000 to 14,000 reals a day. The receipts augment certainly, as well, by the great number of travellers who, during the summer season, will visit the bathing establishments of Sandon and Teille, as by those who travel by Saragossa to various points of the kingdom from Madrid. The official inauguration took place on the 2nd of June: the ministers of Hacienda, of Gobernacion, and of Fomento, the civil governor, the Marquess de la Vega de Armijo, a great number of senators and deputies, the representatives of France, England, Naples, Sardinia, and many persons of literary distinction, were present. The guests filled three trains. At the Guadalajara station all the engineers and employees were in attendance to witness the ceremony, which was short but imposing.

The Gazette of Madrid publishes the promulgation of a law authorizing the Government to create the necessary quantity of state "obligations," payable to the bearer, in order to cover the amount of the subventions granted, up to the present, to railway companies to whom concessions have been given; and it further advertises for tenders for the concession of the line from Albalade to Carthagena—a first-class line.

The Spanish Government has paid to the company a sum of 10,000,000 reals towards the subvention granted for the Madrid and Saragossa Railway. This sum will be applied to the works of the portion comprised between Alcazar and Manzanares, the first section of the line from Alcazar to Ciudad-real.

ADVERTISING ARCHITECTS.

SIR,—As you have thought fit, in your last number to allude to an advertisement of mine, I beg to say that it simply proposed to adopt a course followed by me on a former occasion, in which case a party being about to alter his premises, I made a sketch showing the elevation of the old building, together with the proposed new frontage, which was subsequently carried out by myself in the usual way, to the satisfaction of the party making the alteration, who thereby materially improved his business. Such sketch I offer by my advertisement to supply for one guinea, which offer, with this explanation, will no longer, perhaps, appear derogatory to the profession or any one else. If, however, you can point out to me any more satisfactory mode of seeking compensation for twenty years or more spent in a profession almost entirely without remuneration, and without securing a present or future provision for my family or self, I shall be greatly indebted. I consider that I have a right and a duty to adopt any course fairly open to me to obtain business. Your concluding *Eheu* might be better applied to the professors than the profession, the dignity of which has not been hitherto of much service, at all events, to myself. I have no objection to this letter being published.—S. P.

THE THAMES AND ITS NEIGHBOURHOOD. DEODORIZING.

FROM inquiries we have recently made along the shores of the Thames, as far as Blackwall, Greenwich, and Deptford, we learn that, without doubt, the condition of the Thames has at times this year been even worse than it was during any part of the last. Landing at the steam-packet wharf close to Greenwich Hospital, and wandering thence near the Thames bank westward, past the gas-works to Deptford-creek, we learnt that, although the banks of the river in the neighbourhood of sewers throw off a most offensive smell, it is the body of the water of the Thames which causes the greatest reason for complaint. The watermen do not remember at the same season such a long continuance of east winds as we have had: this prevented the water from passing as it would otherwise have done to the sea. The small amount of rain by reducing the quantity of inland water had also an injurious effect, and a body of putrid liquid, which daily was becoming more and more

intense, was kept floating between Woolwich and Chelsea.

Deptford-creek, the outlet of the river Ravensbourne, has gradually become of less bulk; and the want of a sufficient strength of back-water has caused an accumulation of mud which has almost choked the mouth of the stream. It is instructive to notice at low water the manner of the accumulation which is here to be seen: the dwindled river flows like a small line through the deep mass of filthy mud, until we come to that part where the struggle between the tide and the "back-water" takes place. Here is a raised ridge of materials which, except for artificial means, would, in a short time, as is the case with the rivers of the East, stop the passage. Into the Ravensbourne, from different directions, flow open ditches, which drain various neighbourhoods: into some of these runs the pestilential refuse of manure, and other unwholesome works, which are thickly planted near this once pleasant stream; and in such a condition has this river become that, when the tide is out, it is difficult to imagine anything worse than the effluvia which arises: this, together with open ditches, and other sanitary defects to which we will presently refer, fills the air with an extent of malaria which cannot be breathed with impunity. Crossing the iron-bridge, and bearing to the left hand, there is an open space towards the old church, on which are planted rows of houses, some of recent date, but others of nearly two centuries old. Elsewhere there is a large manufactory of manure and other matters, not pleasant. Let us, however, take the first of those clumps of dwellings which come to view. At the first house we found neither drainage nor water supply; and, standing with the back against this place, southward, is a row of small houses, with a cesspool in each garden, and without any provision for the carrying away of even the surface drainage. In most instances, a narrow channel formed in the soil carries the waste water of all kinds through the garden to the ground beyond. From each cesspool flows a black stream, which forms one of a larger extent, passing to a lower level, close to the house we have just mentioned, and then stagnating in a pool of the most poisonous refuse. Here pigs roam about without interruption. Near this picturesque accumulation of nuisances shown in our sketch, there is a school, in which there are generally upwards of 200 children in attendance. This school has been founded, and is in a great measure supported, by the owner of one of the neighbouring manufactories. So that out of a sanitary evil in this instance has arisen good; for the master of the school seems to be a man of perseverance, who appears to understand the manner of dealing with the people whom he wishes to benefit. He searches all around, and does not let the parents rest while there is a chance of getting the children to come to school. He rightly says, with the great bulk of the population here but little good is to be done: with the children it is different, for they can be worked into a better race. One of the chief difficulties is the migratory nature of those who dwell around. During a short time a very large number of children have entered the school, and have continued but a short time, when the parents, in order to be near to their work, remove elsewhere. The teacher of this school, looking towards the houses opposite, remarked that a drain had been passed under the road, but that it had not yet been made use of. In the continuation of this line the houses are of larger size, of brick, with a well-fashioned doorways of about Queen Anne's days. Here the cesspools are placed close to the back-doors and close to the water-supply. Besides, the antiquity of these places makes them the more unhealthy, for it is the practice when the cesspools overflow to empty them and bury the contents, at little depth, in the gardens: of course the soil will, year after year, become more and more impregnated with poisonous materials. As regards the water-supply, there seems to have been a great improvement made since the last outbreak of cholera; nevertheless, fever is a well-known and fatal visitor here. How can it be otherwise when the people have no opportunity of dealing with their refuse than throwing it just outside to pollute the air which ventilates their dwellings? One spot here, which has been nearly dried up by the heat of the summer sun, is in wet weather a large pool, into which are collected various impurities. It is plain that the bad gases which have arisen here have been passed over the neighbourhood. Walking along the high street, towards Old King-street, the indications of the want of drainage is evident, and the common remark is, "We have no drains here, and yet we pay high

enough for the support of them." Near Old King-street is New-street, where, at the time of the last attack of cholera, eighty-five cases occurred within a circuit of 150 yards. Nor is this to be wondered at: the place is more enclosed than that just mentioned, and the rooms are thickly inhabited. There is no drainage but into cesspools, and the people have no other means of disposing of their refuse water than to throw it into the street or into the yard behind. Here are underground kitchens or cellars, in which but a small quantity of light is admitted: these are fortunately not now inhabited; but require to be carefully seen after, for they become receptacles for filth. In this street the people made woful complaints of the smell, which they said was enough to poison them all. Undoubtedly the air is loaded with poison, and still there are those who would advocate the continuance of such a state of affairs. In other parts of this district the state is equally bad, and in the meadows the open ditches are in such a condition that it is difficult to give an idea of them. Some of these are close to Greenwich. In front of one row of houses, which have not long been built, is a large collection of putrid water, made worse by numerous dead dogs and other animals being mixed with it. Here little children were playing on the margin of the stagnant pool, from which the gases were rising all over the surface in large globules. Women and others were taking the air close by, as our second sketch shows!

There is a curious note in connection with the paving of this part of Deptford above the old-fashioned gateway near the Almshouses:—

"In consideration of 55*l*. which the corporation of Trinity House paid in 1693, for paving the whole length and breadth of the street fronting these almshouses, within and without the bars, the parish of Deptford obliged them, by an order dated the 16th of August, 1693, to indemnify the said corporation for ever from all further expense." Inside the gateway, in large Roman letters, is painted, "No beggars or dogs are admitted." This inscription is getting rather faint, and we trust it will not be renewed in the same words. The Trinity Almshouses consist of fifty-six houses, which are occupied by old captains of the Merchant Service.

The conservators of the Thames, in a recent report, direct attention to the enormous quantities of deleterious matter which are passed into the river through canals and sewers. It is certain that until this introduction of the most poisonous materials into Bow, Barking, Deptford, and other creeks, can be prevented, the interception by the main sewage will fail to purify the Thames. Along the banks of these streams are manufactories of chemicals, catgut, glue, artificial manure, the latter formed from putrid fish and other dangerous and most offensive matters: the gas-works, bone-boiling, and other works add to the evil. The foul state of the river, and apprehension for the public health, caused the conservators to prosecute the proprietors of several chemical and gas works for allowing certain refuse to be passed directly into the Thames. It was found, however, that the present state of the law prevented interference with those tributary streams which flowed into the river.

This subject, we admit, is beset with difficulties. A large amount of capital and important interests are at stake. In many instances, those manufacturing take up the most poisonous refuse of the metropolis, and convert it into valuable materials. As the population of London increases, and chemical knowledge extends, these unpleasant manufactories will multiply, and the streams on which they are placed will become more pestilential and dangerous than they are at present. While acknowledging the value of most of these works, and also considering the large sums which have been expended in their erection, it must be admitted that the care of health and human life is of the first importance, and that means should be devised to prevent this contamination of our waters by the placing of such works in improper positions.

In former times the "Laystalls," or spots for the reception of the refuse of London, were situated at Blackfriars, not far from where the gasworks now are; near Gray's-inn-lane, where a street still preserves the memory of the site by its name; and in some other neighbourhoods. These have been surrounded by buildings, and such receptacles driven from time to time to short distances away. From the banks of the Fleet, the boilings, slaughtering, &c. have been moved to Belle Island, and they must, before long, take a march to a farther distance.

It is said, in connection with the manufactories complained of, that it is necessary to have them

DEPTFORD AND THE THAMES.

*Garden Stagnants at Deptford.**On the Margin of sad dirty Water!**Whitewashing the Thames.*

close to the population, as it would not pay to remove the refuse to any great distance; and we have heard all manner of objections made to changes which, except to those concerned, seemed evidently beneficial. In the course of several inquiries in the neighbourhood of Maiden-lane, St. Pancras, we were told by dust collectors that it was quite impossible to effect the speedy and systematic sorting of the dust, &c. and so prevent the accumulation of those huge mountains which caused the surprise of most passengers. When, however, it was found necessary to do so, the dust, &c., as it was brought in daily, was sorted, and the parts likely to putrify sent away to a distance in barges; and notwithstanding that by this means a great benefit has been conferred on all living near, we do not hear that the contractors complain of being out of pocket by the change. Other instances might be mentioned to show how necessary it is for the general good to deal firmly with difficulties.

In various parts of the metropolis, at Charing-

cross, Farringdon-street, and elsewhere, wooden stations have been erected for diluting the lime, and passing it in a liquid state into the sewers for the purpose of deodorizing the Thames. The apparatus in use is simple, and is worked by four men, as shown in our sketch. One is engaged in throwing the lime into two tanks, into which the water rushes. Two men are kept constantly stirring this with long sticks: another man turns a sort of puddling-engine in a third tank, into which the lime-water passes, and thence it runs down the sewer. At the station at Charing-cross forty bushels of lime, we are told, are dissolved and let into the sewer every tide.

The City officer of Health, in his last report to his Commissioners, denies that the lime will have the least protective influence; for, though it may check putrefaction for a time by fixing the organic matter in an insoluble form, yet the precipitate which is thus produced will be cast upon the foreshores of the river, and will there pass into a state of active decomposition. At Leicester and Tot-

tenham, where the process of defecation is carried on, the greatest care is taken to prevent the organic precipitate from flowing into the rivers; because experience has proved that lime will not prevent putrefaction, but will merely hinder it, and that the precipitate which it forms with the organic matter of sewage will soon take in the most disgusting kind of decomposition.

He urges, very rightly, as we have done, the prosecution of some more radical remedy than the mere palliative influence of lime, which may, perhaps, in the end, be worse than useless.

THE CHAPEL OF EXETER COLLEGE, OXFORD.

The chapel of Exeter College, as it existed till within the last few years, though, in appearance, a poor work, of the close of the fifteenth, or the beginning of the sixteenth century, dated in reality (like many others of the Oxford buildings) only from the seventeenth century. It was a short structure, of two spans, and internally more resembled a very indifferent city church than a college chapel. As it had of late years shown considerable indications of failure, and was hardly considered safe, the college determined upon its re-construction, and commenced the raising of funds for the purpose. The insufficiency of the site, and the difficulty of finding a more extended one, caused a delay of several years. Many plans were thought of and tried, but at length it was determined to rebuild, on another site, the rector's house, which divided with the old chapel the north side of the main quadrangle, and to devote the whole of that side to the new chapel.

Mr. Scott had, for some time previous to this determination, been appointed architect to the work, and had prepared several designs. That carried into execution differs in two important particulars from the usual type (or types) of college chapels at Oxford: it is both apsidal, and is vaulted with stone. These two conditions of necessity give it a little the external effect of the Sainte Chapelle, at Paris, not that that building has been necessarily its model, but simply that it is a typical example of an apsidal and vaulted chapel, of about the same size. The chapel is internally about 90 feet by 30 feet, a very frequent size among ancient chapels. It consists of five bays, and an apse of five sides, the former containing windows of three, the latter of two lights. The entrance is in the south side of the westernmost bay.

The west end abutting against other buildings could not contain any window at a lower level than the springing of the vaulting, and has, consequently, only a rose window above that height. The remainder of its height is occupied by an organ-gallery of stone, and a lofty arcade, the object of which is to obtain deep recesses, to give more room for the organ. The vaulting is about 50 feet in height.

The westernmost bay is to be screened off at the antechapel by an open screen of stone, with double shafts of marble, which is the gift of the undergraduates; as is also to be the case with the organ. The three next bays will contain the stalls for the Fellows, and the seats for the undergraduates.

The treatment of the design is throughout rather bold and massive than elaborate. The use of stone vaulting necessitates that of massive buttresses, which contribute very much to this solidity of effect, and the details have been made large—to our minds somewhat too much so, as we said in our recent article on Oxford—to harmonize with the construction. There is little use of constructive polychromy, the Fellows of the college rather objecting to it; but in the filling in of the vaulting two colours of stone (Bath stone and a browner variety of oolite from Temple Guiting) have been used with excellent effect. The bell-turret is of timber, covered with lead, and is a very excellent piece of workmanship, though here, as elsewhere, the mouldings strike us as being somewhat clumsy. The work has been exceedingly well carried out by Mr. Symm, of Oxford. The woodwork executed by him is particularly good. The stone carving is executed by Mr. Philip, of London. The cost has been about 10,000*l*. The interior will be enriched with a great number of shafts of marble and serpentine from Devon and Cornwall, the two counties with which the college claims more intimate connection. The other buildings executed by Mr. Scott, in connection with this college, are the library, the rector's house (an excellent design, previously referred to), the completion of the Broad-street front, with a new gateway, and the formation of a small quadrangle in connection with the same.



THE CHAPEL OF EXETER COLLEGE, OXFORD. - MR. G. G. SCOTT, A.R.A. ARCHT.

A FREE EXHIBITION.

AMONGST the peculiar features of the modern London streets there are few more striking than the range of buildings displayed on the line of road from Euston-square for some distance westward. Here are curious illustrations of London progress, and also remarkable examples of modern sculptural art. We know nothing in the metropolis or in provincial towns which is so peculiar as the appearance here presented. Over a distance of from thirty to forty feet the gardens have been covered by temporary buildings of the most miscellaneous description: zinc works with chimneys of various shapes and sizes, photographs, shops, warehouses, large workshops, are year after year assuming a more substantial appearance and regular style of architecture. As a thoroughfare the traffic is constantly increasing, and when looking at these changes one cannot but regret that the space now being covered up should not have been preserved for the public use at a time when the land might have been purchased at a small cost. This opportunity has, however, been lost, and without further complaint we will look at the works of art which form a sort of sculptural exhibition in this neighbourhood. Here, arranged in most singular manner, are busts of Lord Byron, Milton, and other worthies; royal arms of different sizes and designs, heraldic crests, lions, stags, eagles in numbers, figures of fortune, justice, and birds, fishes, &c. The life-size effigy of the dwarf Sir Jeffrey Hudson ranges with casts and models of Grecian statues; and there are also examples of Gothic statues, Joan of Arc, the woodman with his hatchet and pipe, and others.

The most striking objects are the colossal lions, evidently modelled with great care from nature. There is a stag very true to nature and of artistic execution. The fountains and other garden statuary of a varied description are worthy of notice. Here is Neptune with his trident, dolphins, river gods, &c. which are suggestive. The figure of Father Thames, cast from that at Somerset House, would not be a bad idea for one of the proposed Metropolitan fountains.

Besides these are numerous examples of monumental art, some of which are simple and appropriate, though the majority are very bad.

A LIBRARY AT ALDERSHOTT.

The Prince Consort is about to present the nucleus of a library to the camp at Aldershot, and beyond that is about to erect there an edifice to contain it, and serve as a reading-room. Captain Fowke, by the Prince's direction, has prepared the drawings, for the execution of which tenders are about to be invited from a limited number of leading builders.

THE IRON CROWN OF LOMBARDY.

THIS, the most ancient regal crown in existence, has been kept carefully stored, in the midst of the troubles that now beset Italy, in the famous basilica of St. John the Baptist, in the city of Monza, about twelve miles from Milan. This church was founded by Flavia Theodelinda, the queen, first of Anstark, and secondly of Agilulf, Kings of Lombardy. This lady, about the middle of the sixth century, presented the crown, together with other relics, to this church; and, since then, so many rich gifts have been added by kings, queens, and other personages, that the contents of this treasury, says Mr. Burgoe, is sufficient to illustrate the progress of goldsmiths from the days of Queen Theodelinda to the present day.

The only iron used in the construction of this far-famed crown is a narrow rim fixed in the gold of the interior. This is said to have been one of the nails of the cross used at the crucifixion of our Saviour. The most ancient crowns were simply chaplets of plants or flowers, or a circlet of gold or metal. The ancient crown of Lombardy is a circlet of gold richly inlaid with precious stones of considerable size. For centuries this relic was used by the kings of Lombardy, and with it Charlemagne was crowned previously to his coronation at Rome. Napoleon I. placed it on his head, and who can say on what other important occasion this badge of authority, which is almost looked upon as a sacred object by the Italians, may be again used?

The crown of the Emperor Charlemagne, now in the possession of the Austrian Government, is less ornamented, but less simple in form than the iron crown. It has something of a helmet shape, and is adapted for setting forth the countenance with advantage.

WHAT CAN WE DO FOR THE BLIND?

A SOCIETY growing out of the operations of a Blind Class at Camberwell, is being established with the excellent view of improving the social condition of the blind,—unfortunately a very large body. A working committee has been formed, who intend to train the blind in classes or at their own dwellings, to remunerative manual labour, mental study, or the discharge of household duties (as the latter tend so much to their domestic comfort) and to open legitimate channels for disposing of the fruit of their industry. A prospectus will shortly be issued, showing wherein the society differs in its aim from any society that has preceded it. One important point is, that they purpose training the blind from infancy, whilst in other institutions the blind are not admitted before the age of twelve; and with the endeavour to render them more independent, the committee also mean to use every effort that may tend to the improvement of health and physical strength. They are particularly anxious that the mental powers of the blind should be fully cultivated, thus providing them with resources for maintaining themselves besides those of mere mechanical labour, and enabling them to find home pursuits, which will greatly conduce to their domestic happiness. The committee may, hereafter, too, wisely turn their serious attention to devising some cheaper mode of providing books for them.

The Association does not intend to limit its operation to any particular locality, but to diffuse its principles throughout the country; and therefore appeals to the public in general, and more especially, to the friends of the blind, to assist them in their philanthropic and arduous undertaking. Mr. Alexander Mitchell, of 6, Wellington-road, Camberwell, is acting as honorary secretary, and will gladly receive suggestions and contributions.

SHALL THE POLYTECHNIC INSTITUTION SINK?

THE fate of the Polytechnic is sealed. It had been doing well up to the occurrence of the lamentable accident in January last, when the losses incurred in the way of compensating the sufferers, above fifty in number, and in litigating certain cases of extravagant demand, swallowed up its available resources, and popular philosophy became insolvent. In the person of the Polytechnic science and reasonable amusement for the people are declared bankrupt, and that without a dividend. A property which cost 35,000*l.* and which is still thought worth 20,000*l.* for the purposes of a Polytechnic, may be had for less than half the latter sum, and yet there are no bidders. The directors of the old Society, who are best acquainted with its capabilities and prospects in a commercial point of view, subscribe about 1,000*l.* in new shares, with a view to create a new company, and two liberal gentlemen in the City offer another 1,000*l.*; and at this total at present the enterprise stands. In another week it will be too late to save from sacrifice and ruin piecemeal the most deservedly popular, useful, and morally unobjectionable place of public amusement in this metropolis. Shall it be said of London that its vanity or profligacy can better support a thousand saloons than one Polytechnic?—that vice and folly prosper where science and morality fail? Where are the Christian play-grounds of London? They can subscribe for parks, play-grounds, drinking-fountains, and other out-of-door summer recreations for the people, to draw them away from the unwholesome excitement of the gin-palace, beer-shop, or casino; but some thought should be given for in-door winter entertainments. Shall the failure of the Polytechnic discourage every similar effort to elevate the moral taste and intellectual tone of the popular mind? A grave responsibility rests somewhere, and that of the most gratuitous character; as we are credibly informed that 10,000*l.* would set the good old bark afloat again, with the certainty, under right direction, of a return of at least five per cent. upon the reasonable amount of capital required to work the concern, when relieved of its present incumbrances.

SAVE THE POLYTECHNIC!

A PENNY SUBSCRIPTION.

It is stated that this most valuable institution is about to perish for the want of 10,000*l.* to cover the loss attendant on the late accident. Surely the working men of Great Britain will not allow this. Let them come to the rescue by a Penny Subscription. Let a person in each workshop collect these pence, and pay them over to the treasurer of the Company, and in a week the amount will be raised, and the Polytechnic will

again be the most popular institution of the working classes. I would also suggest that to those workmen who subscribe a shilling, two orders of admission should be granted in the course of the year, which would allow them and their wives to see what a ship they had helped to save.

A WORKING MAN.

THE "BUILDER'S" LAW NOTES.

Income-Tax.—An estate was contracted to be sold, and to be conveyed upon the terms that part of the purchase-money should be paid down, and the residue by half-yearly instalments, with interest extended over a period of thirty years. This was held not to be "annuities, yearly interest of money, or other annual payments," within the meaning of the Income-Tax Act, and therefore not chargeable with income-tax.—*Foley v. Fletcher.*

Friendly Society.—A member of a friendly society was expelled for non-payment of arrears, and was afterwards sued by the society for the arrears due while he was a member. The action succeeded, the judge holding that, although the society was voluntary, the rules formed a contract, and although the member in default was expelled, that did not deprive the society, after he was expelled, of the right of suing him for the subscriptions which were due while he was a member.—*Houghton v. Leaf.*

Friendly Societies.—Plaintiffs, trustees of a friendly society, sued the landlord of an inn, in which the society had met, for certain banners, &c. in his possession. It was held that he was bound to give them up, as he had never made any stipulation for rent, but had agreed to accept of the amount spent in refreshment as sufficient remuneration for the use of his room.—*Fitcher and Cork v. Girling.*

Carriers.—Plaintiff delivered cattle at Leominster, to be carried by rail to Rugby, and told his servant at Rugby to receive them. The servant attended; but as the company had not sent any note, he was refused possession of the cattle, and did not get them for twenty-four hours. It was held that the company was bound to make good the loss sustained by the cattle not being in good condition for the fair of the next day, as they had been so long without food.—*Clarmardine v. Shrewsbury Railway Company.*

Falling of a Floor.—A tenant of premises, which he had hired for the purpose of storing goods therein, placed on the floor a heavier amount of goods than from his previous knowledge of the building he ought to have done, and the floor gave way in consequence. He sued the landlord for the expense he was put to for a new warehouse; but it was held that he could not recover, as the accident had resulted from his own fault.—*Barnby v. Blake.*

Action for Wages.—Plaintiff was engaged by the defendant as a general farm servant, and took his meals and slept in defendant's house. No specific time of hiring was named. The plaintiff left the defendant's service before the expiration of a year from the time of hiring, without giving him warning, and without his consent. It was held that the plaintiff was a menial or domestic servant, and not merely a husbandry servant, and was therefore entitled to wages as such, with the exception of the forfeiture of one month's wages in lieu of warning.—*Smith v. Jefforth.*

CHIPS FROM IRELAND.

PUBLIC works under the War Department promise to be unusually numerous this season, and plans have been already prepared at the Commanding Royal Engineer's Office, Dublin, for the following—as well as for many others of lesser importance—viz. alterations and additions to guard-house and cells at the old barracks, Fermoy; new kitchens, waterclosets, &c. to officers' quarters, at Newbridge Barracks, county Kildare, Curragh district, where also a new chapel-school is being erected, Mr. Harford, builder; additional accommodation at Tralee barracks, and a breakwater round Magilligan Tower, Lough Foyle. Tenders for the above are being received.

A new church—for which a site was presented by the proprietor of the soil, Mr. Robert Warren—has been recently completed, from designs by Mr. S. Symes, architect, in the picturesque locality of Killiney, county Dublin, and on the north side of the obelisk. It is capable of containing about 250 persons, and has a gallery, tower, and spire at south-west angle, open-timber roof stained and varnished, and a projecting chancel. Mr. Moyers, builder. Cost about 1,500*l.*

The contract for Mr. Argo's new buildings at

Rathfarnham, according to the newly-arranged plans, Mr. J. J. McCarthy, architect, has been given to Mr. Meade, builder, at 13,200*l*. The structure will comprise two long buildings—front and flank—200 feet and 218 feet respectively, and forming two sides of a square, hereafter intended, as we are informed, to be filled up. The style is very plain, being almost entirely devoid of ornament, both internally and externally, and can scarcely be designated as of any particular character. The arrangements comprise—on ground-floor, a central entrance-hall, thorough corridors, reception-rooms, parlours, almonry, &c. in front building; and in flank ditto is a large refectory, with culinary offices, &c. &c. in proximity. On the other floors are library, novitiates' and community rooms, &c. together with seventy cells.

The church of Drumconrath, county Meath, is to be refitted by the Ecclesiastical Commissioners. Alterations and enlargements are to be made to the County Court-house at Longford, and a new entrance-ledge built to the county gaol.

Messrs. Turner and Gibson, of Hammersmith, Dublin, are the contractors for the new patent rolling balance-bridge—Mr. Michael Kenny, patentee—now erecting over the entrance to St. George's Dock, at Dublin; as also for the iron roofing, &c. of Kilmainham new gaol buildings, of which Mr. John McCurdy is the architect.

The contract for Zion Church, Rathgar, county Dublin, is disposed of for 12,000*l*. to Messrs. Cockburn and Son, builders. We believe Mr. Raffies Brown is the architect.

A new Scotch church is to be erected in the city of Cork, by subscription.

The new Bank of Ireland at Roscrea has been completed, under the direction of Mr. S. Symes, architect, by Mr. Bagnall, contractor. Cost, 2,500*l*. The style is somewhat Italian, and the interior comprises the usual arrangements of cash-offices, agents' and sub-agents' offices, and apartments.

COOKERY A QUESTION OF SOCIAL SCIENCE.

A VISIT to the school of cookery seems to show its utility. Under a professor, who has tact in teaching, classes are formed for instruction in the higher branches of cookery, including soups, entrees, ices, confectionary, and every requisite for cooks and housekeepers. To this ladies may send their servants, or young persons in whom they may feel an interest, at a moderate cost. There are other classes for a plainer description of cookery, which cannot fail to be useful. One great advantage of this school is, that the pupils not only see the various matters done, but also are made to do them. The chemistry of cooking is familiarly explained, and dishes prepared which are pleasant both to the sight and the taste. The power of cooking a neck of mutton, so as to make a delicacy of this ordinary joint, would be useful in thousands of homes. Many will say, that they would not be able to afford to cook in the best manner; but it is a fact that it is an actual saving. By skilful cooking the whole of the nutritious portions of the food is preserved, and nothing wasted. Many would feel surprise at the good appearance of some of the dishes which are here made, and their small actual cost. The fear is, that the establishment will not meet with the appreciation of those whom we should chiefly wish to see benefited; and it should be known that one of its objects is to give instruction to the girls from the National Schools of the district in plain cooking and house-cleaning; and a few boarders are received into this class at 7*s*. per week. We have before noticed the precarious nature of the employments which are followed by large numbers of the daughters of the working classes of the metropolis; such as needlework, artificial-flower making, &c.; and it would be worth while to consider if it would not be a benefit to many of these girls to educate and fit them for respectable service, where, even in rather humble positions, they are well fed, clothed, and sheltered. If they have education which will enable them to keep simple accounts, a knowledge of cookery, and a good household management, with right conduct, they are almost certain to fall into situations which will ensure present comfort, and, with care, a provision for after years. If, however, this is not needed, the cost and trouble will have been well bestowed, by the utility of the knowledge here gained when applied at their own homes, or in case they become mothers of families.

It is every day a more common practice to examine persons as to their fitness to undertake particular situations. The mates and

captains of ships; the various grades of government clerks; the officers of the army and navy, are all now obliged to obtain certificates. Would it be useful if, in addition to other matters of household economy, maidens of a certain position were required, before obtaining a marriage certificate, to be able properly to cook a dinner. If this were made the law, what a "run" there would be upon the range!

THE DRINKING-FOUNTAIN MOVEMENT.

In consequence of an unavoidable delay having arisen in the erection of drinking-fountains for Bristol, the committee of the Local Board of Health, appointed to carry out the wishes of the citizens in regard to the matter, have determined upon erecting some temporary fountains. Two have accordingly been fixed, one at the corner of Prince's-street, near the bridge, and the other on the Welsh Back. They are both formed of cast-iron, painted to represent Scotch granite. At a convenient height is placed a bowl, into which flows, from the mouth of a lion, a small stream of clear water, and at the side is an iron ladle. A second bowl is placed near the bottom, from which dogs or other animals may drink. Similar fountains will be erected in other parts of the city. At the corner of St. Augustine's-churchyard a fountain, the gift of Mr. Jose, is in course of erection. The design is Gothic, the bowl being of marble; and the whole will be surmounted by a stone canopy. Mr. Lang has fixed upon a site nearly opposite to the Blind Asylum for the fountain he intends presenting to the city.—Works are in progress in the Arboretum, at Nottingham, for the erection of a fountain at the expense of Mr. and Mrs. Enfield. The design includes a cascade and drinking-fountain.—Mr. C. M. Campbell is about to present to the town of Stoke three drinking-fountains which will be erected at points commanding the three principal entrances to the town.

The fountain which the inhabitants of Am-Street, Birmingham, propose to erect in commemoration of her Majesty's visit to this town in June last, has been inaugurated. The fountain, which is from a design by Mr. E. J. Payne, was originally intended to be executed in low relief in stone, but the committee determined to carry it out, though at an increased cost, in high relief, and in a more durable material. They accordingly entered into arrangements with the Coalbrookdale Company, who undertook to execute an iron cast on very low terms, in consideration of being allowed to retain the copyright, which they valued at 25*l*. An enriched wreath surrounds a deep circular recess, in which is placed the basin, formed of a marine bivalve shell, backed by rushes and water-plants. Above is an angel bearing a Bible, inscribed with the words of our Saviour to the woman of Samaria—"Whosoever drinketh of this water shall thirst again; but whosoever drinketh of the water that I shall give him shall never thirst." The fountain is to be placed near the entrance to Christ Church. Below the fountain is placed a small drinking-trough for dogs. Mrs. Ryland, the proprietor of the Islington Building Estate, has also erected a drinking-fountain with a dog-trough, which has been opened for public use, adjacent to the Five Ways Tavern, Islington. The design is by Mr. A. B. Phipson, of Birmingham, architect. The Ladywood locality is about to be provided with a number of drinking-fountains, which will be erected at the sole expense of the lady named.—The first public drinking-fountain in Bolton has been erected. It is an octagon pillar, with two small troughs at the foot for dogs. The sites for seventeen fountains have been approved, as has also a design for a fountain and cattle-trough for the Market-square. Six granite fountains from Aberdeen have arrived and will be at once erected.—A fountain in memory of the late Mr. William Mawdsley, founder of teetotalism in Southport, is in course of erection there, on the plot of ground fronting the Exchange buildings.—One of the fountains presented to the inhabitants of Newcastle-upon-Tyne, by Messrs. W. A. Dunn and Co. is in course of erection in Grey-street. The site selected is the north side of Earl Grey's monument, a portion of the railing at the base having been removed for the purpose. The stone portion of the work is polished Peterhead granite from works at Aberdeen.—Six drinking-fountains are to be erected at Kilmarnock.—The fountain movement flows far northward. Miss Campbell, of Kilravock Castle, has arranged for the erection, at her own expense, of a fountain and cattle-trough at the potato-market in Inverness.—The fountain which has been for some time in the course of erection on the Belfast quay, opposite Queen's-square, says the local

News Letter, to commemorate the name of Captain Calder, and contribute to the benevolent work in which he laboured, is now almost completed. The water has been supplied for cattle.

The Drinking-Fountains Competition.—Sir: I can vouch for the correctness of what you stated as to the management of this competition, and, in the interest of honesty and art, wish to ask the committee a question. Did not the very parties to whom they have awarded the first prize send designs after the date fixed by the advertisement? They have been working with the officers of the society some time, and are the authors of the absurdity on Snow-hill. I sent in solely because I had faith in Mr. Hawes as a man of honour, and I invite him to reply to my question. COMPETITOR.

Water in the Zoological Gardens.—May I be allowed, through your columns, to call the attention of the public to the fountains in the Zoological Gardens, Regent's-park? The classic elegance and simplicity of the design, the ease with which the water can be turned on and off, and the beautiful contour of the drinking amphore, are worthy of the admiration of every visitor of taste! If I were to hint a fault—but let your readers go and look at the beauties themselves. W. H. B.

THE HORSE-SHOE ARCH.

In Mr. Hayter Lewis's paper on "Saracenic Architecture," read by him at the Architectural Exhibition on April 12th, he says, I am uncertain of the origin of the horse-shoe arch, &c.; and concludes that the form is structurally bad. I have been for some considerable time past of opinion, that the use of the horse-shoe arch arose out of good construction, and have made several experiments with ribs of that form, both of wood and iron, on a limited scale, and find that with a rib containing from 230 to 240 degrees of a circle, with depth of section of rib equal to a quarter of an inch to each foot of span of arch,—the ends of the rib being placed on upright pieces of timber, representing walls, the ribs loaded with weight greater in proportion to the span than roofs are usually required to carry,—no lateral strain or thrust takes place, either outwardly or inwardly; but that, by the sweep of the curve being prolonged down below the line of the semi-circle, it has the effect of neutralizing the outward thrust of the rib at that line. May not this have been the origin of that form of arch in good construction of timber, and afterwards copied in stone of bad construction? I can see no reason why roofs of this construction, in timber of laminated ribs, may not be executed of any span that is ever likely to be required, as there is no difficulty in improving their strength by principal rafters, springing out of the curved ribs, and meeting at the apex in a metal saddle-box, with an iron bolt let down through the same, and properly fixed to the crown of the rib, and struts being fixed from there to support the principal rafter between the apex and the springing from the rib, thus making the crown of the rib the strongest part of the roof instead of its frequently being the weakest. A. P.

CHURCH-BUILDING NEWS.

Lincoln.—The restoration of Russell's chapel, at the south-east angle of the cathedral, says the local *Chronicle*, is now being proceeded with, necessarily slowly from the minute care and delicacy which have to be observed in the manipulation of the work. The carving is deep and elaborate, yet not a whit too much so. The restoration is being carried forward under the superintendence of Mr. Sandall, the master mason. Longland's Chapel, which has been recently restored, is now (it is added) becoming invested with that softness of expression which time and weather can alone give, and the same harmonizing influences may be observed making progress upon the restored niche statues over and to the right of Russell's Chapel. This portion of the cathedral is rich in adornments, and when the restorations present in progress are completed, some idea of the beauty of the grand old edifice in its pristine glory will be capable of realization.

Southampton.—The tenders received for the painting and decorating the church of All Saints were,—Messrs. Gray and Sons, London, 237*l*.; Josiah Puntis, Southampton, 285*l*.; Dowdell, Southampton, 295*l*.; and Buchan, Southampton, 390*l*. The tender of Mr. Puntis was accepted. The decorations will be carried out under the superintendence of Messrs. Guillaume, Parmenter,

and Guillaume, of Southampton, architects. The ceiling of the church will be decorated in blue and gold, and the chancel ornamented. In Genoa and Sienna marblings.

Vednesfield (Staffordshire).—The foundation-stone of a new Wesleyan chapel has been laid at Vednesfield Heath. The building will be executed almost entirely in brick, this material being made cheaply on the ground; and the funds placed at the architect's disposal being very limited, stone will be but sparingly used. The walls generally will be built of red, the plinths, strings, bands, and a portion of the arches, in blue brick, and the quoins in white. The style, says a local paper, if it can at all be classified, may be said to be Norman, but it is rather an adaptation of local material in giving a character to the building, while fitting it for its future requirement at an economical outlay, and which nearer assimilates to that of the architecture of the eleventh century than any other, though a freedom of treatment has been adopted in preference to any particular style being followed. The plan is cruciform in outline, though the transepts have but a slight projection beyond the side walls. At the front, in the angle adjoining the point where the two roads forming the boundary of the site meet, a turret is introduced. The roof will be open, framed and ceiled between the rafters, all the carpenters and joiners' work throughout being stained and varnished. The arrangement of the seating is central. The chapel will accommodate about 400, of which 150 sittings will be free. Mr. Bidlake, of Wolverhampton, is the architect, and the contract has been taken by Mr. Palmer, builder, at a cost of 1,333l. 10s.

Warwick.—The foundation-stone of a new Roman Catholic church has been laid at Warwick. The new edifice, which is situated in West-street, and dedicated to the Virgin, will be built from the design of Mr. Pugin. The style will be decorative, and the material Bath stone and red brick. The building will consist of a nave, two aisles, and a chancel, and its length from east to west will be 86 feet; its width from aisle to aisle 5 feet. Mr. Gascoyne, of Leamington, has the building contract.

Ystradgynlais.—The contract for the new church here has been let to Mr. John Gabe, builder and contractor, &c. Merthyr Tydfil, for 1,450l. The ground for the foundation has been dug, by the labouring portion of the neighbourhood, gratuitously.

Melbourne (Derbyshire).—The rapidly increasing size of the town of Melbourne, and the consequent increase in the number of interments, made the present burial-grounds much too crowded, and somewhere about a year ago it was determined that ground should be purchased for a new cemetery, and chapels built. The burial-ground, although called the "Melbourne Cemetery," lies at a short distance from King's Newton. The cemetery chapels constitute one building, which is of stone, in the Gothic style. In the centre is an open ornamental arch surmounted by a spiral bell turret. On the south side of the arch is situated the chapel for Dissenters, on the north that for the Churchmen. The lodge at the entrance to the burial-ground is of brick, faced with stone. The ground is to be laid out in an ornamental manner. The plans for the chapels and lodge, as well as the grounds, were furnished by Mr. B. Wilson, of Alfreton, architect, and the buildings were erected by Mr. Edwin Cooper, of Ashby-de-la-Zouch. The cemetery grounds are contracted for, but not yet completed.

A vigorous effort, it is said, is about to be made to restore the old parish church of St. Michael, Melbourne. The church has been standing for a period of about 800 years. The style of architecture is the Anglo-Norman. It has, however, suffered so much, from long neglect, that it has become necessary to take steps for its preservation. An appeal to the parishioners realized the sum of 1,000l., and the committee engaged Mr. Scott to examine the edifice, which he characterises as one of uncommon interest, and expresses an opinion that its distinctive features, though in some measure obliterated, are capable of being exhibited to far greater advantage than at present, by even a partial restoration. Mr. Scott, however, adds:—"I fear that these repairs must be extensive, as not only has the stone-work been most recklessly mutilated, but the church appears at some early period to have suffered from fire, and the surface of the stone-work, in the lower parts, is consequently much injured." In addition to the repairs, and works of architectural interest, which Mr. Scott recommends, the committee are desirous of providing church accommodation suitable for a population which has almost doubled

within the last fifty years, and now amounts to near 3,000 souls. At present, from the bad arrangement of the pews, not more than 300 can be seated, of which only about thirty sittings are free and unappropriated, while, by the plan Mr. Scott proposes, there will be room for 670. The cost of these works is estimated at 2,000l.

Manchester.—The foundation stone of a new church, to be called St. Peter's, Oldham-road, Manchester, was to be laid on Saturday. The site of the new church is at the bottom of Spittall-street, out of Oldham-road. The design is by Messrs. Isaac Holden and Son, of Manchester. It is in the Lombardic style, and, according to the local *Courier*, will be unlike any other church in the city. It is to be built of brick, and consists of nave, with north and south aisles, and a semi-circular apse at the east end. The tower, which partakes of the character of the Italian campanile, stands at the north-west angle: it will be surmounted by an ornamental lantern. The church will have seats to accommodate 1,350 adults, 500 free. Some progress has already been made with the building. The cost of the contracts for every part of the works, including heating, lighting, commission for architects and others, is 3,900l. Messrs. Clarke and Jones, and Rutherford and Lamb, are the contractors.

Westly (Blackpool).—The foundation-stone of the Roman Catholic Chapel of St. Ann, Westly, has been laid. The site of the building, and of a residence for the pastor, embracing together about two acres of ground, has been presented by Miss Dalton, of Thurnham. It is situated a little below Westly Mill, on the Blackpool road. The estimated cost of the edifice is about 2,000l. Mr. Catterall, of Kirkham, is the contractor. It will be in the Tudoresque and Gothic style, standing north and south, with a turreted belfry over the southern entrance. At the north, where the altar is situate, the building assumes the form of an apse, and diverges to the west, to communicate with the residence of the pastor.

Cleckheaton.—The new Congregational chapel at Cleckheaton has been opened. It has been erected from designs by Messrs. Lockwood and Mawson, of Bradford, and has cost between 7,000l. and 8,000l. (towards which upwards of 5,000l. have been already subscribed). It is in the Italian style. The foundation stone was laid on the 17th July, 1857, by Mr. F. Crossley, M.P. and it has been completed without any accident. It will seat about 1,500 people. The frontage is 66 feet towards the principal street, and the depth 140 feet. The edifice is approached by a flight of ten steps, extending within the pedestal at each end the whole width of the front. Upon the highest of them rest six columns of the Corinthian order, supporting arches between rusticated piers, which form the angles of the portico. The building is crowned by a pediment, the apex of which rises to the height of 55 feet from the ground. The tympanum is filled in by a circular panel bearing an inscription. The chapel is a parallelogram of 90 feet by 60 feet, and 38 feet in height. The interior is simple. It is lighted in the evening by three sun-lights. The galleries are supported upon ornamental cast-iron columns. A semi-circular recess, covered with a panelled and ornamented semi-vault at the end of the chapel, is filled in by the organ, and in front of it, within the communion pew, is the large platform for the minister. Beneath the chapel there is a school-room, 54 feet in length, 60 feet in breadth, and 14 feet in height; a lecture-room, capable of containing 150 persons; three class-rooms, a minister's vestry, and an apartment for tea meetings. In the basement story is a chapel-keeper's house, and the apparatus for heating the chapel.

SCHOOL-BUILDING NEWS.

Milton.—The foundation-stone of the new schools about to be erected for the accommodation of the children attending the parish church of Milton has been laid by the Mayor of Gravesend. The building is from the designs of Mr. R. J. Jones, of Milton, architect, and will be in the style of the fourteenth century. It is to be constructed of white bricks, with ornamental bands of red brick, the voussours of the arches over the windows and doors being alternately of red bricks and Caen stone. The school-room will be 40 feet long by 18 feet wide. It will be divided by a thick curtain. The porches and lobbies, as also the hearths to the fireplaces, will be laid with red and black tiles, from the Poole Architectural Company. The roof will be slated with a red tile ridge, and crowned in the centre by a wooden bell-cot, with a spire of oak shingles, the whole surmounted by

an iron cross. Mr. William Everest, of Gravesend, is the contractor.

Great Bridge.—The Wesleyan New School Committee at Great Bridge, being about to erect larger and more commodious schools, have selected the plans designed by Mr. Edward Holmes, of Birmingham, which were submitted in limited competition.

Barnsley.—The new Roman Catholic schools, the foundation-stone of which was laid at Barnsley some months ago, by Mr. Locke, M.P., and which have been erected at a cost of nearly 3,500l., have been formally opened. The buildings comprise three large schools, residence for schoolmaster, class rooms, play-ground, &c. They are designed in the early decorated style of architecture. The boys' and girls' schools are each 60 feet long by 20 feet broad, while the infant school is 40 feet by 20 feet, in addition to two class rooms 30 feet by 20 feet. They are of stone, and accommodate 600 scholars. The residence of the master is situate in the play-ground, which is half an acre in area. The cost of the building is provided by subscription (the Rev. H. J. Cooke having subscribed 1,000l.) aided by the usual Privy Council grants. The architects were Messrs. Weightman, Hadfield, and Goldie, of Sheffield. The masonry work was done by Messrs. Robinson and Sons; joiners' work by Mr. Harrison; plasterers' by Messrs. M'Mahon. Mr. Maskell was the clerk of the works.

Leeds.—On Whit-Tuesday the foundation-stone of the New National Schools at St. Stephen's, Burmantofts, was laid. The architects are Messrs. Dobson and Chorley, and the cost will probably be 1,600l. towards which about 500l. has been contributed, and about 700l. or 800l. expected from public grants.

WARWICKSHIRE BLUE LIAS LIME.

WE are told that we have injured a good material, by saying in our account of the works to be done in the construction of the southern high level sewer, that—"the lime is to be blue lias, as Barrow or Abertaw," whereas the specification says the lime is to be Barrow, Abertaw, or other approved blue lias lime mortar. Our expression, it will be seen, was strictly correct, but we willingly give the statement in other words, the more so as we think well of Mr. Greaves's blue lias. It is one of the facts learnt in journalism, that the merits of a man or a material may be set forth a great many times without being of so much advantage as to lead to any expression of opinion; whereas the mere omission of the name of the man or the material does such an immense amount of injury that the delinquent editor is sure to hear of it!

A word or two about the Warwickshire blue lias may not be out of place. In 1756, Smeaton, being engaged in the construction of the Eddystone Light-house, found it necessary to have a cement capable of hardening under water, and his experiments led him to the use of blue lias lime. Yet twenty years ago this article was little known, and less understood, in London, most likely owing to its costliness, when Mr. Greaves, who owned large quarries in Warwickshire, where this lime had been known and used for many years, determined to take a wider range; and, being possessed of considerable capital and enterprise, he took advantage of a reduction in the rates of tonnage on the canals, and brought it into London at 100 per cent. less price; thus making it available for all ordinary purposes, which was speedily taken advantage of by those connected with the building trade, who found it an article at a very moderate cost, more suitable than they had hitherto been able to get for all hydraulic works.

Blue lias limestone, most of our readers know, is found at Lyme Regis, in Dorsetshire, stretching away in a north-easterly direction to Whitby, in Yorkshire, and varies much in its hydraulic properties; but, after severe tests, none, we believe, is found more valuable than that produced in Warwickshire, and many thousands tons of the lime are annually sent to London.

As showing how hard and compact blue lias lime will become, it was lately found necessary, we are told, to have recourse to blasting, to remove some concrete which had been put in twelve months, at the large railway and dock works now being constructed at Brentford, by the Messrs. Tredwells, to enable them to make a deviation in the work.

Our own experience of Mr. Greaves's blue lias lime, we have no hesitation in saying, is exceedingly satisfactory.

ARCHITECTS' BILLS OF QUANTITIES.

BISHOP'S STORTFORD CONGREGATIONAL CHAPEL.

Sir,—I am sure that the thanks of the trade are due to Mr. Glasscock, for the manly and straightforward course he adopted in exposing this matter, and for refusing to tender again under the circumstances detailed.

The charge for the quantities being very much higher than the usual professional fees, should at least have been guaranteed accuracy, or what plea existed for the charge at all, if the builder was compelled to take the trouble to take them out again, or employ a surveyor to do so at his own expense, for the purpose of checking work that the architects had already been so highly remunerated for performing? The proper course should have been for the parties to have taken out quantities for themselves in the first instance. I always refuse to tender for works of any extent, unless the builders are allowed to appoint a surveyor on their behalf, to prepare the quantities in concert with the architect or the surveyor appointed by him. This course avoids complaints, for the architect and builder are each represented, and in case of omissions, the surveyor is held responsible, and the charge of 14 per cent. is found sufficient for such liability. The only deviation from this precedent that I remember, was in the case of the Norwich Union, where quantities were furnished by the architects alone, and although the builders appointed a surveyor on their behalf, their right to take this course was denied: those who tendered were compelled to do so from quantities so prepared, or not at all.

The case of an architect supplying quantities for his own works without allowing the privilege to contractors of also naming a surveyor, is extremely rare. This mode of procedure has, I know, been deprecated by the editor of the *Builder*, whose impartiality is admitted, and should the communications on this subject succeed in again eliciting his opinion, I am confident it would be greatly esteemed by the trade, and would materially assist any settlement of the question.

Mr. Glasscock is certainly in equity entitled to compensation for loss of time.

The proposal to reduce the walls and stonework to cover such palpable blunders was most extraordinary.

A LONDON BUILDER.

* * We have received from the architects of the Bishop's Stortford Congregational Chapel a paper on "The Quantities Question," commencing with a reply to Mr. Glasscock's letter. We cannot give consideration to the whole at this moment, but insert what relates to the matter in question. We are compelled to add, that it does not seem to us any reply at all, but that here the matter must stop so far as we are concerned. Mr. Glasscock would seem to have a case against the committee which they might find difficult to combat —

"Your space is too valuable for mere personal discussion. We simply remark that the tender of a respectable firm offering to execute the works at the sum quoted, taking on themselves all the responsibility of the quantities after having had full opportunity for testing them, is proof sufficient to any impartial person of the general accuracy of the quantities referred to; and the fact of two out of three of the contractors who first estimated having again tendered, and the committee (of which your correspondent is a member) having, ultimately, without, we believe, an opposing vote, decided to accept the tender of Messrs. Young and Co. is an equally convincing proof that everything has been conducted in a straightforward manner, both on the part of the committee and their architects."

We merely add, to make the matter more clear, that to the best of our knowledge each of the four last competing contractors was made aware of the peculiarity of the case before the tenders were received; and further, that your correspondent himself cleared the way for the committee to act by stating to them that, after the architects' intimation that a more extended competition would have secured lower estimates, he would withdraw, and not stand in the way of their procuring further tenders.

POULTON AND WOODMAN."

MANUFACTURERS' COMMISSIONS TO ARCHITECTS.

Sir,—I send you herewith, for publication, copies of two letters received from a gentleman following the profession of an architect.

The first runs thus:—"Gentlemen,—Having been from home some time, I could not attend to your account sooner. Having always a commission on such work, I should like you to say what you generally allow in such cases.—Yours, respectfully,

On hearing that the desired commission could not be allowed, he writes —

"Gentlemen,—Herewith I beg to hand you a cheque for the balance of your account * * * and request your acknowledgment by return of post. In future I shall give my orders to ——— and Co.—Yours, &c."

The letters speak for themselves: ——— and Co. evidently allow the commission. This is not merely an exceptional case, as regards the custom of architects. The letters imply such a state of venality on the part of builders and manufacturers with whom they have to do, that for the credit of the profession, and protection of honest tradespeople, it should be exposed in every possible way.

It would be absurd to occupy your space with arguments in condemnation of a system which must present itself to every reader as thinking man as being morally wrong. But I wish to draw the attention of your readers to the

great extent to which it exists: scarcely a week passes but that we receive applications for our "prices and commission to architects."

I believe that many look upon this commission quite as a "matter of course," and in every way as regular as their professional remuneration; so that it becomes a question as to whether the architect will be outbid by his client or the tradesman whose work he is superintending. The Institute of British architects have made one of the conditions of membership dependent on the candidate having no interest in the execution of the works he is superintending.

There are, however, many honourable men that do not belong to the Institute for the protection of whose reputation and standing the system of "commissions" should be exposed. Surely, the great body of the profession are opposed to such practices, and the only way to discontinue it is to refuse to have any dealings with builders and manufacturers who are known to allow commissions to professional men. If this were done with determination, it would soon become a losing game; but whilst it is followed by many of our leading manufacturers there is no other way of uprooting this growing evil.

If manufacturers would but take a broad view of the question, they would see that, for the sake of securing a stray order here and there, they are laying a permanent tax on their productions. They must charge in some way or other for these commissions in the price of their goods, and with the increased cost to the public proportionally limit the employment of their manufacturers.

WAT TYLER.

BUILDERS' RESPONSIBILITIES.

The writer would be glad to be informed what would be the proper course to pursue in the following case. He was engaged as architect to design and superintend the erection of an elaborate and highly decorated shop-front, at a cost of about £500, and, in order to insure good work, specified ornaments of a certain well-known manufacturer. These ornaments began to crumble away within twelve months or so of their being fixed, and have since that time been dropping down piece by piece. The ornaments were ordered through the builder, and not by the architect. The builder now endeavours to screen himself in consequence of acting under the architect's instruction, and the manufacturer (strange to say) denies his own responsibility, stating that he never warrants the durability of his ornamental work when used externally, though it frequently stands for twenty years or more, and he uses it for external decoration to a considerable extent himself, as "its durability depends upon a variety of contingencies, such as exposure to sun and frost, and insufficient painting, in the first instance, and so on."

The ornaments are of composite, and were secured by the manufacturer himself to the wooden tabulature of the shop-front on the builder's premises.

It should be mentioned that there was no denial of responsibility on the part of the manufacturer at the time the work was executed.

OLD BROAD STREET.

SURVEYORS' ACTIONS.

THE LANDSCAPE GARDENER AND THE VOCALIST.
FOREST R. GASSIER.

At Brompton County Court, before Mr. Moody (Deputy Judge).—The plaintiff is a landscape surveyor, residing at Palmerston-terrace, Camberwell; and Madame Gassier, the defendant, is the well-known operatic singer, residing at Michael's-grove, Brompton.

Mr. Forrest.—I claim 5*l.* of this lady, balance of 8*l.* for a survey and plan of Madame Gassier's garden, and —

Madame Gassier.—I never had anything to do with him. I have a gardener who contracts with me. This gardener employed the surveyor. I do not know him at all. He brings me a plan. I say not suit at all. I pay him 2*l.* to settle the plan. I had to make a new plan myself. I am a foreigner. Englishman not know how to make a pretty plan for a house or a garden; no, no.

The Judge.—Stay, Madame Gassier, it is not your turn yet: it is part of our English plans to hear the plaintiff first.

Mr. Forrest.—It was her gardener who instructed me to make the plan for her lawn; and surveyors, when they receive instructions from persons in authority, like this gardener, never think it necessary to see the principal first. I have the gardener here as my witness.

Madame Gassier.—He should be my witness. Call him for me.

The Gardener.—Madame Gassier gave me orders to get the plan made. It was a very good plan. I advised the lady to settle it. She gave him 2*l.* I considered 3*l.* 10*s.* or 5*l.* more a very fair thing, and nothing should be taken off.

Madame Gassier.—I live in two parishes. I pay this man 4*l.* for twenty trees. Pretty fine, eh?

The Judge.—Your voice is better than mine, but I must be compelled to make you hear my voice.

Madame Gassier.—Most happy to hear you, Mr. Judge. Tell this surveyor to go about his business. I have got twenty witnesses that surveyors no use, no use. My witnesses are not here, but, Mr. Judge, call upon them, and they will tell you surveyors should not be paid for bad plans.

The Judge.—I am always happy, Madame Gassier, to hear your voice elsewhere, but you are breaking your contract with me to hear you in

your proper turn. I must be heard last; and I am bound to tell you that, as you gave the order by your own witness, you must pay this gentleman and his witness.

Madame Gassier.—Never pay; no, no. I will have last word, then.

Verdict for the plaintiff, with costs.

ACTION FOR INFRINGEMENT OF PATENT FOR SMOKE CONSUMPTION.

Doulton v. Stiff.—In the Court of Queen's Bench, 25th June, the plaintiff, Mr. Henry Doulton, of the Lambeth Pottery Works, claimed damages for the infringement of a patent taken out by him in 1854, for improvements in kiln-furnaces. The defendant, Mr. Stiff, is likewise the owner of extensive pottery works in Lambeth. The object of Mr. Doulton's invention was an arrangement of the fire-places or furnaces of these kilns to prevent smoke.

The specification stated that, for the purpose in view, over each furnace a fire-tile, or thick plate, perforated with numerous holes, was fixed; and over that again a chamber was formed to receive air, there being a slide or other means of regulating the flow of air into the chamber. By that arrangement the tile or plate became highly heated by the fire below, and the draught of the fire being inward to the kiln, the air would pass downwards through the perforations, and become still more highly heated than when in the chamber above: at the same time the air in the chamber might become heated by passing in contact therewith. By such means of obtaining a supply of heated air to this class of fires, the fuel would be better burned and the evolution of smoke into the atmosphere prevented.

On the conclusion of the plaintiff's case Mr. Knowles submitted that the plaintiff must be nonsuited, as his specification was insufficient.

Mr. Stiff should not stop the case, but would give the defendant leave to move to enter a nonsuit.

Mr. Knowles then addressed the jury on behalf of the defendant, and urged that Doulton's patent was not a new invention, and that not only was its principle well known, but it had been frequently applied.

A great number of witnesses (including Mr. Carpmel, the patent agent, and others) were called to prove that the plan adopted by Mr. Stiff, on the one hand, was novel and original. On the other hand, a number of witnesses gave their evidence to the effect that it was a combination of several things, since the pottery district of Staffordshire, in what was known as Green's patent, Williams's patent, and Ferguson's patent. The plaintiff, it was urged, had laid great stress on the air being heated by passing over the hot tiles, and using passageway through the perforations: now, a feature was wanting in the arrangement carried out by the defendant.

The Judge, in summing up, said there were two points for the consideration of the jury—firstly, whether the defendant had infringed the plaintiff's patent; and, secondly, whether the plaintiff's invention was new. Both of these questions would require to be answered by the jury. The first question, in fact, involved the second. The plaintiff's patent was not for one machine, or a single arrangement, but for a combination. There was no doubt that the defendant had not used all the combination put forward by the plaintiff, but it was alleged by the plaintiff that the defendant had used a portion of the combination, and he had to tell them that, in point of law, that might be the case if the part of the combination was new and material. If the defendant had used an immaterial part of the combination, then the defendant had not infringed the patent; and if he had used that which was not new it was no infringement of the patent. The jury must be satisfied that the defendant had used a part of the combination which was invented by the plaintiff, and which was new and material. Mr. Carpmel had stated that in his opinion it was impossible for the old Staffordshire kilns to consume the smoke, and yet there were three witnesses who had tried the experiment, and they positively swore that it did consume the smoke. That was a fact against scientific opinion. The plaintiff appeared to put great stress on the perforated tiles, and these the defendant had not used.

The jury did not for some time, and then said the defendant had infringed the patent, but that the combinations used by the defendant were not new.

Verdict for defendant.

PROVINCIAL NEWS.

Gainsborough.—The tender of Mr. Young, of Lincoln, builder, has been accepted for the erection of the lock-up house at Gainsborough. The amount of the contract is 1,740*l.*: the architect's estimate was 1,310*l.* Three other Lincoln builders, Messrs. Fox, Squires, and Jackson, sent in tenders.

Banbury.—The work which has been temporarily suspended at the building of Banbury Cross, according to the local *Guardian*, has again commenced, the second stage being now completed. Upon the panels it is intended to suspend from branches twelve shields, representing armorial bearings, monograms, or devices of royal or distinguished persons who have been connected with the history of the town.

Aldermaston (Berks).—About eighteen months ago, the large flour-mills at Aldermaston were burnt down. Mr. R. Sisley, of Godalming, has since had a new building erected, from the plans and under the superintendence of Mr. Charles Smith, of Reading, architect. The completion of the mill, says the *Reading Mercury*, was celebrated last week by a dinner, given in the building.

Ryde.—The new pier is gradually emerging from the Steam Ferry Works. The piles are of iron, which fits into a screw, like the bottom of a gimblet, and is turned into the soil to the depth of 8 feet: they are placed 15 feet apart across

and 20 feet apart, to the distance of 1,000 feet. It is to have a carriage-road of 18 feet, with a footway on each side of it of 6 feet.

Bath.—The architects of the new mineral hot-water hospital, the laying of the foundation-stone of which was noticed by us on the 18th inst. are Messrs. G. P. Manners, and J. E. Gill; and the clerk of works Mr. Wm. Mellish.

Leominster.—The New Corn Exchange here has been opened. It was built by Mr. Hardwick, of Birmingham, after a design by Mr. Cranston of the same place. The site forms one side of Corn-square, extending between Corn-street and "the Narrows." The main entrance faces Corn-square, and leads into a hall and staircase, through which the Exchange is reached. It is an irregularly shaped room, measuring at its widest parts 68 by 64 feet, the centre (to the width of 26 feet and of the whole length) being open to the roof and 36 feet high, while the sides are arranged under the reading-room and library. The central roof is nearly all covered with thick plate glass, by which, with four large windows in the side walls and still larger windows in the end walls, every part is lighted. The reading-room and library, each 26 by 19 feet, on the two sides of the building, are approached by the main staircase. The Exchange has been ventilated by the use of three of Muir's patent four-point ventilators, and the lighting of the building was entrusted to Mr. Thomas Brawn, the designs for both works being prepared by the architect. The architectural character of the erection is Gothic, with pierced parapets and columnar windows, somewhat Continental in general outline, but worked out with English detail. The materials employed are red bricks and Bath stone, with occasional relief from Staffordshire blue bricks, and with bands of black and red tiles in the panels over the shop windows.

Birkenhead.—Plans of the new graving docks at Birkenhead have been laid before the Mersey dock board. The works will be proceeded with when the Great Float is run dry. The estimated cost is 200,000.

Correspondence.

THE NINE-HOURS MOVEMENT.

SIR,—I have been well pleased to see the reply of Messrs. Grey, Brown, Freeman, Facey, and Potter (secretary), to my letter of the 18th inst. It is an evidence of conscious weakness, and at once shows the fallacy of the arguments by which they seek to impose upon the credulity of their fellow-workmen, and to justify their own proceedings. I pass over the harsh terms they apply to myself, and the motives they are pleased to impute to me. The use of such weakens their own position, and ill supplies the place of reasons. I have no ill-feeling for the working-classes, but, on the contrary, the fullest sympathy and regard, and I seek only to disabuse them in respect of the unholy confederacy in which they are involved, with possible ruin to themselves and all engaged in building operations, myself as much as they. These gentlemen say that "they do not stand up as the antagonists of machinery," but, in effect they seek to cripple its operations and nullify its use, when they complain of, what they call, the monopoly and misdirection of that power to their detriment, and the provision of no equivalent. In fact, they would restrict its application and use. Would this be a wise proceeding? What says an article in the *Times* of the 18th of June:—

"Formerly the lace trade at Nottingham was attached to a great extent in private shops, by hand labour. Steam, however, revolutionized it. The population has doubled in forty years, the production of lace is more than twenty-fold what it was, and large factories have taken the place of small shops." This will show the advantage resulting to the operatives from the introduction of machinery into a manufacture. But how many of the building operatives are being affected by the use of machinery for building purposes? Are the bricklayers, masons, plumbers, painters, glaziers, plasterers, smiths, or labourers, interfered with by it? Not at all! It is only the joiners and sawyers, and very slightly the marble masons.

My respondents say, "at no period of industrial history have the working-classes, through the severity of the toil exacted from them, had so little opportunity for mental cultivation and moral elevation as the present." What proofs do they advance of this startling proposition? Do they compare the wages of the building artisan, or labourer, with those at the present time? Do they state the wages given formerly, say, thirty

years ago, with those now paid? What were the circumstances of those halcyon days, that rendered the building workman richer, freer from toil, better informed, and more intelligent, than our poor unhappy workmen of the present time. I venture to assert that they were never better paid, better fed, better clothed, less worked (Messrs. Grey and Co. say six times more worked), nor more intelligent, than they have been for the last thirty years. Never have they been more cared for, more sympathized with, never greater attention paid to their mental improvement—as witness the establishment of the mechanics' institutes by the higher classes, yet which, unfortunately, languish for the want of the efficient support of the workmen, who will contribute rather to the union for a doubtful good, a certain evil, than to maintain institutions which benefit them in the highest degree by the instruction they afford, and the healthful employment of their faculties that they offer.

My respondents take credit for disinterestedness in "asking a reduction of one hour of their own work for the purpose of affording employment to those out of work." Such a misinterpretation of the word "disinterested" I have never met with. If the men were unemployed from slackness of work, and were unwillingly obliged to suffer with their families pinching poverty and all its consequent ills, I should have indeed admired the disinterestedness of the union, if they had gone to their employers and said, "We have full work and fair wages: we are in ease and comfort; but many of our fellow-operatives are starving. Let us work one hour in the day less, and receive corresponding wages, and take on our suffering companions to make up the difference, and enable them honestly and honourably to gain their bread for themselves, their wives, and little ones." What a noble sight would this have been! But how stands the question? There are thousands out of work. But why? It is because they may not take the wages which the builders can alone afford to give them: they may not work at a job if they or any others are not of the union: they may not work if their master even, who may not happen to be a unionist, dares to take a trowel in his hand and lay bricks at his own job, or help to remove materials. No! they may not do this; and, staying out of work, they have a pauper's charity from their own companions doled out to them, and they must stay out of work, for the unionists compel them. And, to maintain this tyranny over the men and masters, the unionists disinterestedly say to the masters,—You shall reduce our day's work one hour: we shall enjoy our ease and comfort; and you masters shall pay the piper!

Can we then wonder that only the first-rate builders can still fight their way on; that all are hampered by these slavish conditions; and that so many of the lower and middling builders have so little work, or have been driven into the *Gazette*?

THOS. L. DONALDSON.

Books Received.

Ancient Mineralogy; or, An Inquiry respecting Mineral Substances mentioned by the Ancients: with occasional Remarks on the Uses to which they were applied. By N. F. MOORE, LL.D. Second Edition. London: Low and Co. Ludgate-hill. 1859.

This is a learned and interesting volume. The first edition was issued twenty-four years ago, while the author was professor of Greek and Latin in Columbia College, New York. The work is now considerably improved.

Although the ancients, at least within the limits of history and tradition, possessed no systematic or classified science of mineralogy, the extent of their knowledge of minerals is shown, by this author's very diligent and successful researches, to have been really surprising beyond what is ordinarily conceived. "Much-laboured iron" and excellent steel were well known in times of great antiquity. Zinc was known as a metal as well as tin, and both were from time immemorial combined with copper into brass and bronze. There even seems reason, we think, to believe that the newly discovered aluminium bronze, which forges like steel, and has thrice the tenacity of ordinary bronze, must have been known to the ancients: at all events, they possessed bronze implements far superior to anything of the kind which we have till recently known anything of. The extent of the knowledge of the ancient chymists may be judged of from the following fact, which we state from our own knowledge, the present author

not having pursued his researches into such a source, although it might have been of considerable service to him in his other and more popular and classical investigations. The old chymists, such as St. Dunstan and others, in speaking of a certain chymical composition, state, that its base *must be metallic*, but that egg-shell forms a highly fixative base, which is even preferable to anything else for the purpose in view. Now the substance of egg-shell is lime, and the base of lime is calcium, a *metallic* substance, so that it would seem from this that St. Dunstan, and other ancient chymists, perfectly well knew that lime was essentially metallic in its nature,—a fact which only became known to modern chymists in Sir Humphrey Davy's time, previously to which lime was always regarded as the very reverse of metallic, and of the earth altogether earthy. But even oxygen was well known to the old chymists. Thus Van Helmont says that when lead is burnt in the fire, the fire itself, in fact, becomes fixed in the lead, and can again be expelled; so that the lead is not destroyed by the fire, but can be recovered from it. This, in truth, means nothing less than that Van Helmont was quite well acquainted with oxygen, only he called it "fire." Other old chymists called it the "stony crassitude," a most significant and correct phrase, also, as regards one of the most prominent effects of oxygen, in the conversion of metalloids and metals into stony substances.

These few reminiscences of old researches have been noted down just as they have been suggested to us by a perusal of Dr. Moore's very learned and curious volume; and, indeed, it is both suggestive and amusing. There are interesting sections on the ancient knowledge of metallic and earthy pigments, and of marbles and other mineral substances employed in building, statuary, &c.; also of gems, saline substances, and many other minerals.

GUIDE BOOKS.

Practical Guide for Italy, north and central. By an ENGLISHMAN Abroad. 1859. London: Longman and Co.

A Guide to the Town of Berne. By a CANTAB. London: Longman and Co. 1859.

THE first of these two guides is intended to indicate, at the small charge of half-a-crown, all that is really essential, and to exclude all that is not so essential. It is not intended to rival Mr. Murray's excellent and exhaustive Hand-books, which are chiefly designed for those who have more time at their disposal than is requisite for the rapid scamper through the country to which alone the present skeleton Guide is best adapted.

It contains "the routes from London by France and Switzerland, Savoy, Piedmont, the Swiss Italian lakes, States of Nice, Monaco, Genoa, Lombardy, Venice, Parma, Piacenza, Modena, Carrara, Lucca, parts of the Papal States, and Tuscany; with practical maps, plans, illustrations, and every necessary advice; hotels, posts, steamers, tariffs, rails; to see all that ought to be seen, in the shortest period, and at the least expense." Though not perhaps so likely to be useful to Englishmen in a time of war abroad, it is to be hoped a time of peace is not far off, when Italian guides will be in greater demand. The seat of war has been, meantime, specially kept in view by the "Englishman Abroad."

The second Guide is on a more enlarged scale, though a smaller book, referring, as it does, merely to a single town. Berne is now the capital of Switzerland, and the seat of the Federal Swiss Government, and has its chronicles, antiquities, arts, architecture, social, literary, scientific, and charitable institutions, &c. all of which are here noted, together with various other subjects of interest, for behoof of the English tourist, or temporary resident in Berne.

Miscellaneous.

THE ARCHITECTURAL MUSEUM.—We mentioned last week, as to the *conversazione* which is to be held on Thursday, July 7th, that, in addition to the interesting meeting usually held in the Theatre, the whole of the South Kensington Museum will be open to the visitors exclusively. About 3,000 cards have been issued, and it may be hoped that many who are not yet aware of the value and extent of the Architectural Museum collections may, upon paying a visit, aid in carrying out its objects by becoming subscribers. The renewed efforts of the committee to enlarge the means, and extend the usefulness, of the Museum, deserve this response.

DESTRUCTION BY FIRE OF RAILWAY STATION AT READING.—The station of the South-Eastern Railway Company at Reading has been completely destroyed by fire. It was a wooden erection, and was set on fire by lightning.

The works on the Russian railways (*Grande Société des Chemins de Fer Russes*) are pushed forward with such activity, that there are at present employed nearly 140,000 workmen.

THE DUTIES OF ACCOUNTANTS AND AUDITORS.—In a tract published by Ridgway, of Piccadilly, Messrs. Alison and Waddell draw the public attention briefly to the duties of accountants and auditors, and suggest certain rules for the right auditing of the accounts, books, and vouchers, of public companies. These suggestions are offered for the consideration of traders, directors, and shareholders, and they appear to merit attention.

ST. ALBAN'S ARCHITECTURAL SOCIETY.—The fourteenth anniversary meeting of this society was held on the 17th ult. in the Assembly-room, at the Town Hall. The Earl of Verulam presided. There was a very numerous attendance. The Rev. J. G. Hale read the report; after which Professor Donaldson gave a description of the Old Clock Tower of St. Alban's, and exhibited the drawings and plans for its restoration, executed by him. Mr. Sergeant Woolrych read a paper on "Boundaries and Fences."

SANITARY CONDITION OF NEATH.—The condition of the town of Neath is complained of by the *Cambrian*. There are whole blocks of houses, in some instances as many as twenty-six and twenty-seven, it says, without a single convenience! There are scores and scores of houses, both in blocks and singly, without them. A large number of summonses are being daily issued, however, requiring owners of property to comply with the provisions of the Act of Parliament in this respect.

PURIFICATION OF THE THAMES.—In the House of Commons, on Wednesday, Mr. T. Duncombe presented a petition from Mr. Horace Jones, of Furnival's-inn, architect, suggesting a cheap, easy, and expeditious mode of correcting the evils arising from the putrescent state of the Thames; viz. by the erection of two temporary weirs or dams, one at London and the other at Vauxhall-bridge, the estimated cost of each being from 30,000l. to 40,000l. and they could be completed within one month; and praying, that as time presses and the pestilence approaches, a committee may be forthwith appointed to inquire into the feasibility of the scheme.

VALUE OF LAND IN WALES.—A sale of copyhold estates, under an order from the Court of Chancery, was held by Mr. Marsh, of London, at the Cardiff Arms, Cardiff, on Saturday last, when, after a spirited competition, the result of the sale was as follows:—Lot 1, comprising about 36 acres, and producing 35l. per annum, realized 1,700l. or nearly fifty years' purchase. Lot 2, eight acres, let at 8l. 10s. per annum, 350l. or about forty years' purchase. Lot 3, producing 11. 10s. per annum 110l. or about seventy-three years' purchase.

DWELLINGS OF THE WORKING CLASSES AT HERTFORD.—A meeting of noblemen, gentlemen, clergy, and other persons connected with the town and county of Hertford, was held at the Town-hall there on the 25th ult. to form a building company to improve and erect dwellings for the working classes. Amongst those present were Viscount Raynham, M.P. the Right Hon. W. F. Cowper, M.P. Mr. Abel Smith, M.P. Sir Culling Eardley, bart. and various others. Mr. Abel Smith proposed the main resolution, to the effect that it is advisable to establish a company in Hertford, to be called the Hertford Building Company (Limited), for the purpose of improving and erecting dwellings for the labouring classes, in the county and town of Hertford, with a capital of 5,000l. in 1,000 shares of 5l. each. The resolution was unanimously agreed to, after various gentlemen had spoken on the subject, and shares were taken by Lord Raynham, Mr. Abel Smith, Mr. C. J. Dimsdale, Mr. R. Dimsdale, the High Sheriff, Sir Culling Eardley, Mr. W. R. Baker, Mr. E. H. Hoskins, Mr. J. W. Cheshire, the Hon. and Rev. Godolphin Hastings, and the Rev. G. Yeats. The *Hertford Mercury* gives a full report of the whole proceedings.

FOUNTAINS FOR THE PARK.—At the Grosvenor-gate Lodge, Hyde-park, is a lion's head and empty stone basin. Where is the water? I recollect, as a small boy, watching the bubbling element issuing from the lion's mouth. In this hot weather why not turn it on again? "There's no ladle," says one old grumbler. Then, get one, and you will have the thanks of many a

THIRSTY SOUL.

THE GALLERY OF ILLUSTRATION.—Mr. and Mrs. German Reed have produced an entirely new entertainment in two parts, called "Our Home Circuit," and "Sea-side Studies," in which they display to advantage their very varied accomplishments. Mr. Reed has composed some very good songs and duets, in which Mrs. Reed sings admirably, especially "Let us all speak our minds if we die for it," and the "Bravura," at the close; while Messrs. Grieve and Telbin have painted a charming interior, varied by a sea-view, for back-ground, in the second part. It is a safe evening's amusement, with which no one can be disappointed.

REPAINTING THE NAMES OF THE METROPOLITAN STREETS.—Numerous workmen are engaged in various parts of the metropolis repainting the names of the various streets, with the addition of the initials of the postal district in which they are placed. The letters are painted black upon a white ground, and a bold, legible character has been chosen.

LONG-SPOKE PUMP.—Mr. L. B. Schafer, Baltimore, Maryland, has patented an improvement in pumps, which consists in the application of the "lazy tongs" principle to the raising of the piston-rod of pumps. The end of the handle, instead of being fixed directly to the piston-rod, is attached to one link of the lazy tongs, and the end of the piston-rod to the link furthest from the body of the pump. Of course, the difference between the distance travelled over by the handle and by the piston varies according to the number of links in the tongs.

THE ROMAN PAVEMENT DISCOVERED AT BATH.—While the workmen, as we have already noticed, were digging on the site of the extension of the Bath Mineral Water Hospital, they discovered, 15 feet from the surface, a tessellated pavement. This pavement is now entirely uncovered. It is several yards in length. The pattern is described as the well-known Etruscan key, worked out in white and blue tesserae, cut from Water-bourne stone and the lias of this neighbourhood. The specimen, though not one of the most elaborate, is interesting from its completeness. The outlines of the building to which it belonged are also easily traced, some courses of the masonry still being complete. The pavement, which has been carefully treated, will remain in its position until a permanent place shall have been made for it within the edifice about to be erected.

INHABITED HOUSES.—It appears by a parliamentary return, just issued, that the total number of inhabited houses in counties and parliamentary divisions of counties in England and Wales in 1851 (when the last census was taken) was 2,552,637, and in cities and boroughs 1,225,402, making a total of 3,778,039; inhabited by 17,927,609 persons. The number of houses rated to the relief of the poor in the metropolis at Lady-day in 1856, was as follows:—London (City), 16,682; Finsbury, 38,298; Marylebone, 42,726; Tower Hamlets, 85,513; and Westminster, 29,987.

EAST KENT RAILWAY.—The directors of this company report that the works throughout the whole length of the line are now in course of construction, and that all the arrangements have been made for the completion of the whole by the 1st of October, 1860. Messrs. Peto, Betts, and Crampton, are, pushing on the works of the Western Extension. This portion of the line will be completed by the summer of 1860. Between Faversham and Canterbury the works are proceeding. The line is expected to be open for traffic to Canterbury before the end of the present year. Mr. Crampton, the contractor, is pushing on the works between Canterbury and Dover. It has been thought advisable to apply to Parliament for power to change the name of the company to the "London, Chatham, and Dover Railway Company."

FRIENDLY SOCIETIES.—In a recent lecture, Mr. James Fidd Pratt said,—"Since 1793, 26,000 benefit societies had been enrolled in England and Wales, which was at the rate of 400 a year. Of these 7,000 had ceased to exist, being at the average of 100 a year, or two every week." This number was greatly on the increase; at present there were 20,000 societies, numbering 2,500,000 members in England and Wales. The failure of many societies arose from the false rate at which the contributions were calculated. The capital of societies now enrolled amounted to 10,000,000l. and the annual payments for sickness, superannuation, and death-money, exceeded 1,500,000l.—a fact which proved that the working classes were not wanting in those habits of foresight, forethought, and prudence, so essentially necessary for their happiness.

RELICS IN A WEATHER-COCK.—It is stated that a box has been placed in the new weather-cock on the spire of Notre Dame, containing relics of the true cross, of the holy crown of thorns of our Lord Jesus Christ, of St. Denis, the first bishop of Paris, and a martyr, and of the virgin St. Genevieve, the patron saint of Paris.

SPON-END VIADUCT.—The erection of a viaduct at Spon-end, on the Nuneaton railway, in place of the one which fell in some two years past, has been commenced. The contractors are Messrs. Dunkley, of Blisworth, and the amount 11,000l. The embankment is to be continued as far as the Sherbourne, where a stone arch, 20 feet span, will be erected over the river. There will be a stone arch 40 feet span over the road at Spon-end. The intermediate arches will be of blue bricks, faced with stone.

ESSEX ARCHEOLOGICAL SOCIETY.—A meeting of this society was held on Tuesday in last week, at Barking, for the purpose of examining the ruins of its abbey and other relics, and thereby illustrating the history of the parish. The proceedings opened at the town-hall, a building of the Elizabethan era, it is said. The hall was quite filled. The vicar of Barking took the chair. The walls of the hall were hung with rubbings, and the tables strewn with other objects of interest. A paper on Barking Manor, by Mr. E. Sage, was read by Mr. Clutterbuck; another, on the Parish Registers of Barking, by the Rev. A. F. Smith, was read by Mr. King; and a third on William the Conqueror, by a member of the society, was read by Mr. Cutts.

SHAKESPEARE'S HOUSE.—A case in the Court of Chancery will have peculiar interest for the antiquarian world and the lovers of Shakespeare. A namesake of the great bard bequeathed by will 2,500l. for the formation of a museum in Shakespeare's house, at Stratford-on-Avon, and charged his landed estate with an annuity of 60l. for the support of a custodian of the house and museum, whose duty it would be to show visitors through them, and to keep a visitors' book for remarks in prose or verse. The trustees conceiving that the gift of 2,500l. might be contested on the ground of uncertainty, have declined, according to the *Bulletin*, to pay the legacy without the direction of the court, and hence has arisen the litigation.

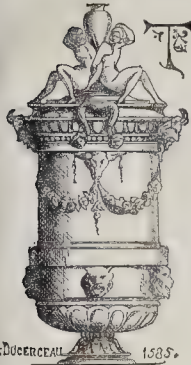
ACCIDENTS TO PERSON AND PROPERTY.—The foundations of a house in Gregson-terrace, Everton, Liverpool, have given way, and a large portion of the gable has fallen. The house was left by the tenant on the previous morning, Mr. Hunter, from the surveyor's office, after a survey of the premises, deemed it unsafe to attempt to temporarily strengthen it, as the walls have given way in several places, and any attempt to give them strength by "propping" might bring down the entire of the building upon the parties operating.—At the Ebbw Vale Works, in order to relieve the traffic over what is known as the Great Bridge, a second one is in course of construction. As a train, drawn by horses, reached the bridge, it fell in, the horses, carriages, and men being carried down to a depth of many yards. Two men were killed, and another was buried beneath such a mass of stones and rubbish that it took nearly an hour to dig him out. He had received severe injuries. The bridge was about 35 feet long, and during the passing of a train the strain on the railway was equal to about forty tons.

A REMARKABLE SOLVENT.—It is now discovered, it appears, that if a piece of copper be dissolved in ammonia a solvent will be obtained, not only for lignine, the most important principle of all woody fibre, such as cotton, flax, paper, &c. but also for substances derived from the animal kingdom, such as wool and silk. By the solution of any one of these, an excellent cement and waterproof is said to be formed; and, what is equally important, if cotton fabrics be saturated with the solution of wool, they will be enabled to take the dye—such as the lac dye and cochineal—hitherto suited to woollen goods only. Hydriodic acid, ammonia, we may also observe, was not long since discovered to be an equally remarkable solvent of the most refractory, or, at least, insoluble, mineral substances. Now it is an interesting circumstance that ammonia, according to Van Helmont, and other old chymists and alchymists, was one of the requisite materials in the formation of the "alkalhest," or "universal solvent," of the ancient sages! In the cupride of ammonium (if we may so call the solvent here first spoken of), we seem to have the solvent of silk which we lately desiderated in our remarks on the insulation of submarine telegraphic wires.

The Builder.

VOL. XVII.—No. 857.

The New Harbour: Holyhead.



THE necessity for imparting the fullest information as to works in the provinces grows upon us. That which is self-evident of national and of engineering works, is true respecting the area of the influence of art, and of the mutuality between town and country. Every year increases the necessity of inter-communication of thought whilst it provides mechanical facilities for it; and we shall probably, henceforward, have pressing upon us with no diminished force, the claims of architecture and its collateral sciences as practised in the country, to have their complete reflection in our pages. Pursuing the course which we have long followed, we hope with general advantage, we are about to describe the works of the harbour and breakwater at Holyhead, the latter portion of the undertaking being far advanced to completion.*

The whole work is a national one of the utmost importance. It now affords an area of 267 acres as a harbour of refuge, and a sheltered roadstead, in addition, of 400 acres of deep water; and when complete, it will provide piers for packets of 350 feet length to lie alongside; the lines of the railway being carried to the ends. The value of the breakwater was felt after a very short interval from its commencement; and as the work has gone on more and more vessels have found shelter. As many as 300 vessels have been counted in the new harbour and roadstead at one time. The works yet to be executed are every day becoming more urgently demanded for the wants of the communication with Ireland, and from the construction of a class of steamers of the magnitude as stated, by which it is hoped that the duration of the passage of sixty-two statute miles may be reduced to three and a half hours. Indeed, so urgently is accommodation for packets needed, beyond what the old piers afford, that a timber staging, which, though called temporary, is of very strong construction, has been commenced, and this is now nearly ready for its purpose.

Notwithstanding experience, and the prospect further, of the value of the harbour, the present character of the design has been much undervalued upon, and not always fairly. It is therefore desirable that we should precede our description with some historic particulars of the undertaking, now comprising a period of at least fifteen years. The map which we have engraved, will assist in the explanation. It shows the present position of the breakwater, with reference to the town and the bay of Holyhead, as well as some of the different propositions by engineers and nautical men, at the year 1844, or earlier; and it also shows the old harbour with the piers constructed by Mr. Rennie.

The town of Holyhead is situated to the north of an area, of about six miles by four miles, of land, which at high water becomes an island, though connected with the island of Anglesea (part of which appears at the right of the map) by the causeway of the Holyhead-road and the railway. Our map being based upon the Admiralty chart, does not show the whole of the railway: the latter may, however, be understood as following a

line generally parallel with that of the road. The two islands, so considered, are joined at low water, by the Truthy-y-grubyn, or Stanley Sands, across which the small river Alaw flows from the island of Anglesea. On the position of these sands on the map, we have marked by the letters L S, and figures, the difference between the lines of the sand in 1816 and 1840, which illustrate a geological question of considerable interest, thought to have some connection with the subject which is before us. The old harbour is dry at low water. The western coast of the island is rocky and dangerous; and at one part of the sea, the flow of the tide, called the Race, is of such character that vessels are compelled to sound the entrance to the port at considerable distance. Vessels have been lost hereabouts. Others have been driven on the Pibco rocks, marked on a different part of our map, through having missed the entrance to the old harbour; and it may be well to bear this fact in mind. The locality for a harbour for the Irish Channel has, however, the advantages of excellent landmarks,—both in the lighthouses, the North Stack, and the South Stack, and others; and in the bold headland, called Pen-Caer-Gybi, or Holyhead Mountain, which rises to a height of 709 feet, and has furnished, or with very trifling exceptions, the whole of the material used in that breakwater, which is in course of completion. The availability of the material was an element of great importance in the selection of site. Assuming the material to be suitable for foundations, and greater part of the superstructure, the millions of tons wanted could be had for the labour of quarrying. In the sectional form and the construction, therefore, the breakwater differs completely from that of the Dover Harbour, which we lately illustrated and described. But we shall come to the particulars and points of principle of the structure in another number.

The perfection of rapid means of communication with Ireland, we hardly need say, had, prior to 1844, for many years been a constant subject before Parliament and the Government. One of the finest roads in the world was formed by Telford, requiring in its course the construction of the Menai and Conway suspension-bridges, and of the causeway across the Stanley sands—all now to some extent superseded by the line of railway and the tubular bridges. The improvement of the harbour of Holyhead, and the formation of a railway, were under consideration about the same time; and the importance of a communication unbroken by the Menai Strait, was so great, that a doubt seems to have arisen as to the advantages of Holyhead as compared with some other site; and in 1844, a committee of noblemen and gentlemen interested in the matter, with the Earl of Powis at their head, procured reports from Sir John Rennie and Mr. Page, with reference to the merits of a plan for a harbour at Holyhead, shown by dotted lines A A, on our map, and a plan for a harbour at Porth-dyn-Llaen, both by Mr. Walker; and to the comparative advantages as sites, of Holyhead and Porth-dyn-Llaen,—the latter place being on the south shore of Caernarvon Bay. We find the reports, as ordered to be printed for the House of Lords, in June of the same year, together with a letter by the chairman of a meeting of shipowners respecting the navigation of the Menai Strait and the effect thereupon of a fixed bridge, and with reports by the late Mr. Rendel and Capt. Beechey, R.N. relative to Holyhead, and to plans which are marked on our map with the others. Sir John Rennie and Mr. Page were unfavourable to the plan of Mr. Walker for Holyhead; and they each evinced a preference for Porth-dyn-Llaen. They were led to the preference not merely because the difficulty of the bridge appeared to be got over, but because in their opinion the situation of Porth-dyn-Llaen with reference to prevailing winds and tidal influences of the kind we have alluded to, was more favourable than the site of Holyhead to the combined purposes of the harbour of refuge and the station for the packets, and would counterbalance any advantages of Holyhead in point of its

shorter distance from Ireland. There was also a supposed advantage in Porth-dyn-Llaen, arising from materials at hand. Sir John Rennie, who considered it "very doubtful" whether "an extra capital of nearly a million" (that is for the limited area of Mr. Walker's plan) should be sunk by adopting Holyhead, observed:—

"The principal difficulty as regards cost arises from there being no stone in the vicinity of Holyhead adapted for building. The rocks, for the most part, are composed of what is termed the chlorite schist formation, which, although apparently it looks well, yet, when it comes to be quarried, cannot be obtained in such large masses as would be necessary for forming an outer breakwater opposed to such a heavy sea as that proposed by Mr. Walker, without great waste, and consequent extra cost, and when deposited loose in the sea would become so broken by the waves in the process of consolidating the mass requisite to form a breakwater, that an additional quantity would be required, and the surface must be pitched or paved as the work proceeds, which would entail a heavy extra expense." He goes on to say that the late Mr. Rennie estimated the large rubble at 8s. per cubic yard; and he evidently contemplates that the chief work should be executed of squared masonry; the stone (grey limestone or marble) to be brought from Redwharf Bay, twenty-eight miles distant, as in the case of the chief portion of the superstructure of the old or present packet-pier. The reasoning, as regards the material, our further account will probably show, must have been erroneous. At least, ponderous masses of the stone which Sir John Rennie considered inapplicable have been quarried, and with the aid of machinery have been economically conveyed and deposited, and there is every reason to believe with success in the result.

Before detailing further the arguments which were used, and which eventually were got rid of by Mr. Rendel, it may be well to look into the conditions which are important ordinarily in works like these which are before us. The successful result from the undertaking of a harbour, of course depends upon the particular construction in the breakwaters and jetties, and upon the proper choice of site. The latter question, however, is one on which probably more depends than in any other class of building or engineering work; for, even the form and structure of a breakwater, as at Dover, may be regulated by what are the materials, in things affecting the stability and the cost of repairation. But what generally are the points to be regarded in the selection of site? The conditions are not necessarily identical in the case of a harbour of refuge, and that of a station for packets; and nature of a coast would be less important for steamers than for ordinary vessels. Let that pass by. A harbour would be wanted wherever called for by commerce and the previous location of a port; or in the case of a harbour of refuge, wherever there might be a portion of the coast dangerous from the absence of such provision, or from other reasons. But in selection of the exact spot, knowledge is called for both of ordinary engineering and of nautical matters. It would be useless to provide a harbour where it could not be entered without danger, or where there would not be both depth of water and good holding-ground for ships after they had safely entered. The prevalent winds, the circumstances of the tides and currents, the bearings, landmarks, and distances, and the atmospheric conditions regarding absence of fogs, should be favourable, in order that the vessel in seeking the haven should not miss the harbour, and be driven or drawn on shore. It is desirable also that the locality should possess beaching-ground available for any vessels unsuccessful in making the entrance of the harbour. Supposing these objects to be obtainable, and those of adequate area, depth, and holding-ground, it would be useless to provide a harbour, where from drift of shingle, or that deposition which often arises from the plan of the harbour itself, the depth would eventually become insufficient. The geographical and the geological formation of the coast, as well as the outline or elevation,

* See p. 446.

therefore have to be considered. Besides the cost of materials which may modify the choice of site in the plan of the harbour there are two considerations which it is very difficult to satisfy at one and the same time. Projection into the sea and sufficient width of entrance are desirable, so that vessels may easily get within the harbour, and obtain shelter from the waves: on the other hand, shelter from the wind may be wanted as well as the sea; and if the mouth of the harbour be not carefully arranged as to width and form, vessels will be lost, as at Kingstown, in the harbour itself. The objections brought against the plan of Mr. Walker for the harbour of Holyhead were chiefly as regards the entrance, and it does not seem that the plan was considered a material improvement upon the old harbour, unless merely by the larger area which it would have afforded. It carried the entrance farther to leeward than that of the old harbour, and increased the danger to any vessel which had missed the narrow entrance of being driven on the Pibee rocks. As regards silting-up, Sir John Rennie points to a feature in the old harbour carefully retained by the late Mr. Rennie, the absence of which in the plan of Mr. Walker was considered a defect. Northward of the old harbour our map shows what appears to be a peninsula, but is in reality a small island. It is called Ynys Gybi, or Salt Island, and will be seen to have formed part of each of the plans which are indicated by our dotted lines. The narrow water-way, which, since it is bridged over, our map could hardly indicate, Mr. Rennie carefully left. The question how far such a provision is or is not necessary in all harbours we will not touch, but ought to mention that no such provision has been thought necessary in the harbour actually executed. Mr. Calver lately thought he had detected in this new harbour evidence of silting, but it is right to say that something of the kind might arise necessarily in the process of throwing into the sea the millions of tons of stone of which the new works are formed; and Mr. Hawkshaw says that when the work of depositing stone "shall cease, the water in Holyhead Bay is sufficiently clear to leave little room for apprehension." He admits, however, that questions of silting should be in no locality lost sight of: "in turbid waters they are most serious matters for consideration;" and even in situations like that at Holyhead, having regard to long periods of time, they cannot well be overlooked. "Whenever water holds, as it always must do more or less along shore, matter in suspension heavier in however small a degree than itself, it must deposit that matter wherever it continues at rest for a sufficient space of time." With a given amount of motion some of the matter would be taken out of the harbour by the ebbing tide. It is, therefore, not desirable in a harbour to seek more shelter than is absolutely necessary, or to aim at absolute stillness, which would tend to the formation of shallows.

Salt Island has at present upon it the buildings of the dock-yard, and others. The principal pier of the old harbour projects at right angles, and beyond it is marked by the letter E; the new timber jetty we have before spoken of. Mr. Hawkshaw has doubtless estimated, more carefully than we can estimate, any objections to this temporary work, of a similar character to those brought against Mr. Walker's extension, which might suggest themselves. The objections to Mr. Walker's plan, that the entrance was too far to leeward, and that the projection in that direction would favour silting up, by interfering with counter-currents which prevented accumulation of alluvial matter along the shores, were also felt to the design of Captain Beechey; though it was considered better than the other, from the greater width and the plan of the entrance, as well as from the area which it would have enclosed—somewhat more nearly commensurate with the growing wants of the packet service and of the harbour of refuge. These were not the only plans for a harbour before the adoption of Mr. Rendel's design: a plan was brought forward by the harbour-master, Captain Evans; but all, we believe, agreed in principle, and in defects—if such, rightly regarded, there were in the projection leeward or eastward. Mr. Page, however, proposed the plan of a breakwater, with the requisite openings, from Ynys Gybi to Cliperia Point, having, we suppose, not omitted to consider any disadvantage from the *detritus* of the little river Alaw; though he states that the value of the proposition, or of any other, would depend upon the result of a geological investigation of the sands. Another plan was sketched out by him more nearly accordant with what was afterwards the design of Mr. Rendel: the holding-ground, he feared, would not be good; but the site would be free from drift; and altogether, in the event of

forming a new harbour at Holyhead, the site should be as shown by him, or westward of the old harbour, "to prevent the liability of ships being wind-bound, as they now are, in the bay." It is evident, however, that Mr. Page accorded with what we have stated as the opinion of Sir John Rennie as to the materials available; and was influenced in favour of Porth-dyn-Llaen accordingly. It was reserved for Mr. Rendel to indicate what was probably the best means of forming the harbour, by thoroughly utilizing the material of the locality, and adopting an entirely new site.

At this place, in our account of the progress of the undertaking, it may be well to set down what are some of the advantages of Holyhead. The land projects into the channel, and is not far from the main track of vessels; it is not generally obscured by fogs, although at times it is so; it is both well defined and well lighted; and it has deep water. Whilst the channels are not clear of rocks and shoals, these are well known. On the other hand, there is but little of what can be called beaching-ground; but, the chief objection which has been preferred, was that brought against the plan of Mr. Rendel, in a pamphlet by Mr. Wm. Bald, civil engineer, who contrived to discover that the whole of the bottom of the new harbour was covered by rocks, or that there was absolutely no anchorage. Sir John Rennie seems to have been almost of the same opinion; and Mr. Page says,—"The whole coast being rock, with rocks protruding under low-water, the anchorage available must be the result of drift, and not a natural formation." &c. The chief of these objections of course are set aside by the facts which we have specified as to the number of vessels that have found shelter.

In Captain Beechey's plan the entrance was purposely left wide for easy ingress, the space being protected by the eastern shore of the bay, a mile distant. Captain Beechey's plan included besides an outer breakwater and a packet-pier, which are shown; an intermediate pier eastward from Ynys Gybi, with head, to cover the position of some rocks called the Inner Platters.

We now come to the report by Mr. Rendel to the Secretary of the Admiralty, and dated 24th April, 1844. Having considered some of the questions submitted to him, and which were relative to the crossing of the Dee at Chester by the railway; and the possibility of forming the line without encroaching on the bank of the Dee, the beach and the bank of the Menai, and on the harbour at Holyhead; and to any possible interference with navigation of the Forth and the Conway, Mr. Rendel answers the question whether Captain Beechey's plan for Holyhead Harbour possesses any advantages over Mr. Walker's plan, and states his opinion, which had been called for, on the best position for the harbour.

Passing by an opinion in favour of perpendicular stone walls in a particular spot on the railway, as preferable to paved slopes, we notice the opinion that both Mr. Walker's plan and Captain Beechey's for Holyhead Harbour, are inadequate to the demands. The wider entrance which could be had in Captain Beechey's plan, 1,000 feet as contrasted with 350 feet, and, owing to the greater size of the harbour, without proportionately increasing the injurious disturbance, was a merit; whilst the terminating kant of the north breakwater of Captain Beechey's plan, was so placed, with reference to the head of his south pier, as to occasion less broken water across the entrance,—all these reasons making the harbour more accessible to the wind from the bad weather points, the northward and westward, which, considering how close both entrances would be to a rocky lee-shore, made a wide and easy access most important. Captain Beechey's plan also brought into use the old harbour. Both plans appeared to be deficient in affording the shelter for the packet-steamers in gales from the north-west; and it would be necessary to provide a deep-water wharf along the east side of Ynys Gybi. Mr. Rendel therefore proposed a plan of his own, in the main corresponding with that defined by the form of the north breakwater, D, in our map, up to the point d, and by the dotted lines D D, showing a proposed eastern breakwater of peculiar form; and a packet pier, D'D'. The latter we need not much further mention, as it was never commenced, and was abandoned early in the progress of the works.

It should now be explained that there are within the area, which is at present that of the new harbour, certain rocks called the Outer Platters, just covered by water. They are now marked by buoys. Mr. Rendel rejected the idea of blasting, as too considerable an operation, and proposed to form the eastern breakwater so as to cover

these rocks. At the extremity of one arm of his eastern breakwater, he proposed a landing stage. Thus the railway train, arrived at its destination on the pier, would have stood at right angles to the line of the landing stage and of the vessel, and therefore not quite conveniently for transport of passengers and goods from one to the other. The north breakwater was to commence from Soldier's Point, much as it has been executed since. By Mr. Rendel's plan, a harbour of upwards of 300 acres would be formed, having its entrance *windward* of the entrance of the other proposed plans, nearly three quarters of a mile, and in six fathoms and a half water. The whole space was reported by Commander Kains, and others, to be excellent holding-ground, and free from rocks. Shelter would be obtained from the mountains, and there would be greater facility for getting the stone. The entrance was intended to be about 800 feet in width; and the head of the breakwater (at the point d) covering the entrance from northerly gales, was so disposed as to prevent broken water from being thrown across the entrance; whilst the aspect, though sheltered, would admit of vessels running in and out free with any wind between north-east, and northward to north-west. Mr. Rendel estimated the total cost of his own plan as 50,000*l.* more than the cost of Captain Beechey's plan, and 200,000*l.* more than Mr. Walker's: but, the cost per acre, of whatever depth of water, he found would be greatly less, as half, or a third.

The common opinion of Mr. Rendel's plan was, that it was on too large a scale; and had the engineer proposed to enclose any greater area, there is no doubt his plan would have been rejected by the Admiralty. After the northern breakwater had been advanced to the point d, however, enlargement was deemed necessary; and Mr. Rendel proposed to effect it by extension from the point named, in a north easterly direction. The substructure of that extension was therefore formed, and was far advanced at the time of Mr. Rendel's death. The result of the change of plan is that which has been so often referred to as a defect in the harbour. If, however, it be correct, as the resident engineer believes, that a kind of beach is forming in the angle next the sea, there is little more danger of serious injury to stability at the point referred to than at any other. The extension, however, had to do with the change as to the design for the eastern breakwater which we shall further speak of, as made by Mr. Hawkshaw.

THE THAMES AND THE SEWERS.

LONDON DRAINAGE.

NOTHING is being done for the relief of the metropolitan low-lands, or, in other words, for the relief of the Thames from the filth of London and Westminster, and of Lambeth and the Borough; and it is a grave question whether what is doing in respect of the higher levels is proper to be done alone. Mr. Locke, the member for Southwark, evidently thinks not,—judging from the notice which he has given in the House of Commons as to the tendency of the works in hand.

Meanwhile,—that is to say, while the Metropolitan Board, like Mr. Micawber, is waiting for something to turn up that may help them over the Whitehall and Adelphi mud-banks,—there seems to be no mode of getting schemes, how well fathered soever, which might be practicable and available in the case, authoritatively investigated and properly considered. Last year, at the instance of the Minister of Public Works, &c. Parliament relieved the Metropolitan Board of Works of his authority and control, and consequently of all power on the part of himself or his successor in office to question its proceedings; and it can hardly be expected that the Board, having committed itself to a certain course of proceeding, will, willingly, stultify itself and its advisers by entertaining questions and suggestions having necessarily that tendency, and possibly more than that effect.

These observations have been induced by the perusal of a communication which Professor Hosking has recently made to the Chief Commissioner of Her Majesty's Works and Public Buildings,—the minister referred to, and of the correspondence which followed upon it.

It appears that Mr. Hosking (well known to our readers) became a metropolitan commissioner of sewers in 1852, at the request of the Minister to whom he has addressed himself in 1859; and he says that in perusing and considering the defective scheme for the main drainage then—in 1852—before the commission of which he

had so become a member, he formed a design for effecting the operation in a manner wholly different from the plan which exhibited it, and different, therefore, from the plan since adopted by the Metropolitan Board, which is said to be identical in principle with that of 1852, and not largely different from it in detail.

This design of his, Mr. Hosking now informs the Chief Commissioner of Works, he did not produce at the time because he was conscious that the requisite operations to give it effect would be costly far beyond what either Government, Parliament, or the public was then prepared to consider; that he had waited until that difficulty was removed by ample means being provided for even more expensive operations to the same effect; and further, until the authority created to administer the provided means have been brought to a stand-still, as it regards the all-important low-levels, for want of an efficient and practicable plan. Mr. Hosking says that he has now matured his design, and is prepared to show that it is capable of being carried out irrespective of any operation, except the operations necessary to itself,—that is to say, with or without embankment of the shores of the river—readily and rapidly—and at no greater cost at the utmost,—and he believes at less cost, than the works now pending are estimated to cost. It is further asserted, that the whole body of the sewage received into the contemplated system will pass through it without emitting effluvia of any kind, the process of transmission being such that none can be evolved; whilst, it is alleged, the converse must be the case with the works resulting from the scheme now in the hands of the Metropolitan Board, whose intercepting sewers must be windy, and the emanations, as certainly, foul.

With a project in respect of which he makes such and similar pretensions, Mr. Hosking asked the Minister of that department of the state to which, if to any, such a question is referable, to allow him to submit it to the Government for inquiry, suggesting that it should be made by three or four experienced officers of the corps of Royal Engineers, naming at the same time several distinguished men within the category, some of whom had been themselves metropolitan commissioners of sewers, and in the same commission with himself, and others otherwise employed in the civil service of the public, as well as in their military capacity. But the Minister of Public Works informs Mr. Hosking (and he could not, perhaps, as matters stand, do otherwise) that any communication on the subject ought, for the reason above stated, to be addressed to the Metropolitan Board, and not to the Commissioners of her Majesty's Works, &c. This, for reasons which he assigns, Mr. Hosking declines to do. He declines also to make public his device, lest he be deprived of the credit of the scheme, should credit be derivable from it, and, indeed, of the substantial reward that he thinks ought to attend a valuable public service, which Mr. Hosking asserts that he is prepared to render.

In the meantime, as we have said, nothing is doing; the stench of the river increases day by day, and there is no authority competent and at liberty to inquire into means purporting to be such as the case requires, available to stay the plague. It does not appear that the project in question has at any time come, in any form, before the public heretofore; and it will probably take the consequence of its author's reticence, and of the indifference of our public departments, to anything out of their stereotyped course, though it is just possible that between the two the public may lose a material benefit,—and surely this ought not to be possible.

THE DESIGNS FOR THE BLACKBURN WORKHOUSE.

THE report on the designs sent in competition for the workhouse, made by Mr. John Withers, C.E. who had been employed to examine them, was mentioned by us in a former number, and his selection of three designs, bearing the mottoes, "Utilis," "Candour," and "Charlton good, Blackburn better." Having now seen the designs, we must say that the only satisfactory feature in the case was the evidence of care taken for the guardians to arrive at a proper decision. The printed instructions were defective, as such documents usually are, in a manner, tending to frustrate their objects. We pass over the stipulation for "plans" to be "finished in lines, or shaded in sepia only, no other colour being used," which is usually worded, leaves competitors in doubt whether explanatory colour will be allowed in plans,

for a class of building requiring the distinction, a doubt which is anything but favourable to those competitors who feel themselves interdicted from means of showing what is their method of classification. But the guardians also reserved to themselves the right to appoint an architect to superintend the erection of the proposed workhouse, and coupled with this intimation, one to the effect that they approved generally of the interior arrangement of the workhouse at Charlton, near Manchester, and would wish the plan of the new structure to assimilate as nearly as practicable thereto. The result might have been expected, and the guardians are no doubt by this time aware that their premium of 50*l.* was not itself any sufficient inducement. Architects are beginning to find out the worth of Will-o'-the-Wisp invitations which are offered them. There were about sixty applications for the particulars.

We are writing without the opportunity of looking at any plan of the Charlton building; but not only is there resemblance which was to be expected between the plans of the competitors for the Blackburn building, but there are defects always to be looked for from a system of copying. We may instance the infirmary arrangements in many of the designs, in singular contradiction to the fact of the improvement in hospital construction which is being made at Blackburn,—though we do not mean to say that these defects will be found in any plan that the Committee of the Workhouse may carry into effect. In their published information to architects, there was, however, one feature deserving of imitation. We allude to the complete illustration of the levels of the ground by contour lines on their plan.

The levels in the site proposed, which is about one mile and a half south-east of the Town-hall, presented great difficulties: there were 59 feet 7 inches of difference between the north-east and south-west corners, and considerable variations generally. Extraordinary skill thus was required in placing the building; and we see no reason to question the opinion of the referee that only one of the competitors, "Utilis," grappled with the difficulty. Several of the competitors quite disregarded the site and levels, and placed their building, and designed their plan and elevations for level ground.

Nine designs only were received, besides a clever design for the Medway Union Workhouse. The majority we found undeserving of any detailed notice. The corridors we might say universally, were lighted either by borrowed lights, or scarcely lighted at all—a radical error in a building where the prevention of accumulation of dirt should be a principle guiding every part of the plan.

In the design "Utilis," the aspect of the principal buildings was placed north-west, in order to overcome the difficulty of the levels, and get the least difference of height. The principal building formed a block on the transverse axis of the area, with wings at right angles to it; a range of lavatories in front of each wing; and the buildings for vagrants still further in advance, or close to the front road. The schools, and rooms for imbeciles, were placed in buildings at one end of the ground, with the washing-department in the basement beneath; and the infirmary was placed in a corresponding block at the opposite end. The infirmary building was not on the pavilion principle, though with closely-set windows; but the fever-wards had opposite windows, though at the ends of the wards. The dimensions of the wards would not give the cubic feet of air which are deemed necessary. In the main buildings of the workhouse, the males and females were not to be in separate wings; though the buildings were so arranged that each class of inmates would be separate from the other classes. The style generally was Gothic, but with gables of Elizabethan character; and the design was suitable to the materials of the locality—these including good stone. Mullions were used only in the windows of the dining-hall, and similar parts. The estimate with this design was 12,000*l.*; but Mr. Willis made it 16,159*l.* exclusive of the tower and cistern, 500*l.* extra; whilst Mr. Wm. Stones, builder, to whom the question of cost was referred, has made the estimate 15,596*l.* 17*s.* or 17*l.* 7*s.* 11*d.* per superficial yard, the area of flooring provided in the design being 11,163 yards. The amount intended to be expended was 12,000*l.* The guardians have since allotted the premium to this design, which has been found to be by Messrs. Taylor and Forgett, of Blackburn; but do not pledge themselves to adopt the plan for building. Indeed, it is intimated to us that they have now fixed on a fresh

plot of ground, which may not involve so many difficulties in levels.

In the design marked "Candour," the difficulty of the levels was sought to be overcome chiefly through the construction of a basement, to the north, for work-rooms and wash-houses. The plan was arranged without corridors on the upper floors—a great number of staircases being substituted. The infirmary arrangements were defective. The estimates by Mr. Withers and Mr. Stones, as in the former case, exceeded the estimate of the author: Mr. Stones made the amount of superficial yards 10,030, and the cost per yard 17*l.* 9*s.* 0*d.* The design, decoratively, was Gothic in character.

"Charlton good, Blackburn better," though placed third in the list, had been designed for level ground. Considerable attention had, however, been given to the internal arrangements in this design; and the infirmary was better in point of plan than in other cases. The vagrants' wards and the lodges were to the front of the ground; the principal workhouse-building formed the next range; the kitchen and the dining-hall were behind, or about the centre of the ground, flanked by workshops; and the infirmary was in the rear, with fever-wards again in a building detached. The author's estimate in this case also was considered insufficient. Mr. Stones set the cost per superficial yard at 17*l.* 18*s.* 7*d.*—the area provided being 8,274 yards; but, were the site level, or in other words, could the building be as it was designed, the cost per superficial yard would have been 17*l.* 14*s.* 5*d.*

We need not describe the remainder of the designs. They have had justice done to them by Mr. Withers, in most points. The exception is, as to the planning of the infirmaries. The referee speaks of an objectionable arrangement of two infirmaries at different angles of the ground in the design marked "Fores," though the author of this design, whatever may be the defects otherwise, seems to be almost the only competitor who had thoroughly appreciated the requirements of hospital arrangement.

Nevertheless, were there as much attention to the merits of designs, in other competitions, proportionately to the number of the designs, as there has been in this case, given by a qualified judge, we should have little reason for the complaints which we are so often obliged to advance against committees, and those who act as judges.

SANITARY TEACHERS AND TEACHINGS. "CAUTION AND PREVENTION OF DISEASE."

We have been requested to publish the following letter:—

SIR,—It was only on my return to England, a few days since, that I had an opportunity of perusing your remarks on a work recently published by me, and although some weeks have elapsed since that article was written (April, 1859), I rely on your sense of justice to insert this reply. When an individual writes a work, he must, of course, expect that his opinions should be discussed, combated, and controverted; but, then, he does not expect that his opinions should be misrepresented, or his facts misquoted, as has been the case in the article referred to.

The reviewer states that, while pretending to be a "strong advocate for sanitary reform," I am "a defender of dirt, bad drainage, pestiferous manufactories, overcrowding, intramural burial, the retention of putrescent matter among the living," &c. &c. Now, I defy any one to produce a single passage in my work to prove either of these assertions. On the contrary, I have not only stated what is a matter of common notoriety, that some of the products of putrefaction are not only injurious, *per se*, and highly deleterious when introduced into the animal frame, but I have also detailed the properties and effects of each of these substances. All that I contend for is, that these products are not the real and efficient causes of disease; and that the removal of putrescent matter, on the surface, will not prevent the supervision of fever, cholera, or any other specific and ordinary disease; and that opinion I am ready to defend against all comers. As to my being an advocate of bad drainage, it is precisely to the disadaptation of condition of these that I attribute in a great measure the prevalence of disease in a large town, although I differ with modern sanitary writers as to the source whence these emanations are derived. Then, again, I have put down drainage, in the ordinary sense of the term, as one of the agents to be employed in the prevention of disease.

As to the conclusion that "the congregation of men and animals in a limited space, as in a town, cannot be productive of disease," I have, while maintaining that opinion, as regards all ordinary and specific diseases, entered into the theory of ventilation, in order to show under what circumstances the admission of the external air is beneficial, and under what circumstances it is injurious. Although inferring—and it is a conclusion that admits of no dispute,—that population increases the insalubrity of a town like Rome, I have at the same time recommended the formation of new streets in London, and extending from one extremity of the town to the other, east, west, north, and south.

In conclusion, allow me to add that I am not only a strong advocate for sanitary reform, and for the reasons stated in my work,—that the social and physical condition of the lower orders is intimately connected with this measure,—but, what is more, I should carry out this reform to a much greater extent than those pseudo-reformers who, while they cry down every individual that ventures to differ with them in opinion, are likely to leave

untouched and unremoved the real and efficient causes of disease. It is for this reason that I shall, contrary to the advice of your reviewer, endeavour to make known, to the best of my power, the conclusions at which I have arrived on this important subject.—I am, &c.

J. PARKIN.

Dr. Parkin says he is a strong advocate for sanitary reform, but has most certainly published a book which may supply its opponents with (not arguments, but) the authority of one entitled to write M.D. after his name.

The writer defies any one to produce a single passage from his book to prove that he is, as we said, the defender of dirt, overcrowding, intramural burial, &c. The truth is, the whole book is a defence of these and a scoff directed against those who are striving to show the nature of these evils, so much so that the Board of Health refused to advise its publication. At page 5 statements are made to show that putrescent matter is not injurious to man except under very particular circumstances; at page 9, that animal exhalations are innocuous. He combats the notion that the burial of the dead amongst the living is injurious (p. 16); and asserts that the products of vegetable decomposition are innocuous (p. 24); that the exhalations from drains and cesspools are not hurtful (p. 32); that the congregation of men in a limited space cannot be productive of disease (p. 47); that impurity of water is of very little consequence (p. 57); and in the appendix advises the powers that be to cease giving attention to "cesspools and sewers, and all that nonsense" (p. 187).

If the writer be indeed a sanitary reformer, as he asserts he is, he should at once withdraw this mischievous and erroneous book from the chance of circulation.

ON THE ARCHITECTURE AND GENIUS OF SIR CHRISTOPHER WREN.*

THE creative, as the most essential attribute of genius, was Wren's in a marvellous degree; and, in respect to the universality of his attainments and powers, it may be emphatically remarked, that, had he never been known as an architect, he would have been by so much the more known as a man of scholastic literature, philosophy, and science. Before he comes before us as an architect, he brings the highest credentials from the classic professors of Isis, the mathematicians of Cam, the astronomers, chemists, and scientific members of the Royal Society, and from the mechanic in all his then known means of operation.

All that Vitruvius requires of an architect was Wren's, without any especial architectural intent; but, as Allan Cunningham observes, "his mathematical acquirements gave him extensive command over the very principles out of which true architecture arises." Perhaps we should rather say, he found in his mathematical erudition the chief (or one of the chief) of its principles; for in the varieties of physical science lie others also of great suggestiveness, and the architecture of Wren arose out of his varied knowledge—his knowledge of all things necessary to its development, as the issue not more of geometrical beauty than of material science and constructive perfection. In short, the genius of Wren had induced the acquirement of every accomplishment as an operative builder, before he was called upon to cultivate the artist. He had inherited from his father a peculiar feeling for architecture as a fine art, though for many years it had occasioned little more than the external observation by which he had naturally imbibed an ever-increasing sense of the beautiful, awaiting only the occasion for his analysis of its just principles; and, when the occasion came, a comparatively brief appliance of his acute perception, acquisitional capability, and thoroughly informed invention, was necessary to the result finally exhibited in the august amplitude of St. Paul's cathedral.

And whence came his ability as an artist? Certainly not from academical or official instruction, for, until the age of twenty-nine, when he was suddenly called upon to assist Sir J. Denham as Assistant Surveyor-General, we hear nothing of him even as an architectural amateur. So immediate, however, was the manifestation of his ability as a practical architect, that at the age of thirty-one he erected his first building, the Sheldon Theatre, at Oxford. The truth is, he was at that time, more than any other man in the kingdom, equal to anything of national importance that might be required; being indeed the "admirable

Crichton" of mind in its all-applicable power and comprehensive acquirements. The leading mathematicians of Europe had visited England to see the famous Wren: a distinguished classic had spoken of his poetical accomplishments as raising him above Ben Jonson as a translator of Horace; and, when Newton was a tyro, Wren, with Boyle and Hooke, was opening the way for the former with "the greatest contributions to science ever yet produced." The love for architecture, therefore, was only a part of his sympathy for everything that could address a man of genius; and had there been no mathematician of eminence besides himself, nor any remarkable poet, painter, sculptor, astronomer, chemist, optician, or mechanic, Wren would have been all or any of these, as the necessity of the time might have required; but Inigo Jones was dead, and there was no architect. Who, then, could be called upon when the Great Fire of London had left the City with no architecture? Who, save Wren? He had not, like Jones, visited Italy to study its ancient and Palian buildings, though he did make "a trip to Paris," where he thought he saw inimitable things, unconscious, in his modesty, how greatly he was to surpass them. He read his Vitruvius; speedily gathered what knowledge was available, immediately anticipating the results which come to others by slow degrees; and in three years from his first operations as an amateur architect, he had "concentrated all his powers on his new study, to the diversion of his mind from its former pursuits." The true character of his genius, as an architect, is strikingly shown in his having adopted no mannerism from his teachers, or from the examples that had addressed him. Having mastered with readiest facility all the details of Classic design, he obeyed the sole promptings of his native imagination, fancy, and independent (though educated) taste, in the production of models which, to reverse his own expression, "Bernini might have been willing to give his skin for," though, of course, we now allude to the greater and more select examples on which his fame is grounded. * * *

The time prescribed the style to be adopted. The approval awarded to Inigo Jones's application of a Corinthian portico to a Gothic cathedral left it a matter of certainty that the European taste for Classic art had no exception in England. While Wren was being rocked in his cradle, the church of St. Peter at Rome was being completed; and in Paris the old cathedral of Notre Dame had no more influence than Westminster Abbey in London, to preserve any feeling whatever for Gothic design. The Louvre and the church of the Invalids, in the French capital, arose in obedience to the same common impulse which produced the Whitehall banquetting-room and the cathedral of St. Paul in the British metropolis. As we have seen, however, Wren obeyed not the dictation of fashion only, but has left on record his practical reasons for selecting the "Roman manner of building" as most fitting for the permanent glories of architecture. The time, therefore, was rather favourable to the development of his personal ideas than imperative in governing them, and he adopted at once, without any essential change in detail, the style presented to him by his immediate predecessors and contemporaries. The new cathedral was to be, and Wren's genius was at hand that it might be in perfection; subject only to one most injurious impediment, viz. the unhappy meddling of the papist party (then in power), whose leader (the Duke of York) was determinate in the re-employment of the old cathedral form or plan, which grievously militated against the admirable originality of our architect's independent conceptions. * * *

If the architecture of Wren, as illustrated by St. Paul's, be judged with generous allowance for compulsory restriction, the result can be nothing less than deferential admiration.

And now a few words on the thoughtless cavils that have been raised on the subject of the double dome (we might as well say the triple dome) of St. Paul's.

The dome of the Pantheon at Rome, having nothing but itself to support, is a simple vault of masonry, so low in proportion, and so immensely buttressed, as to be prepared for an earthquake.

The dome of the Florentine cathedral is so highly pointed as to approximate towards the cone, and it is, therefore, the more fitted to bear the stone lantern at the top.

The dome of the Baptistery at Pisa is formed of a lofty internal cone, supporting the outer vault or hemispherical covering.

The non-appliance of constructive knowledge in the dome of St. Peter's at Rome was felt before it was finished. The lantern was made less than

originally intended; but still it proved too heavy for the great vault that could hardly find safety for itself alone, and it has only been preserved to our wonder by hoops of iron,—the means taken by Wren to secure the safety of Salisbury spire.

Our scientific architect had marked the failure of the Gothic architects in their deficient regard for lateral thrust. He had observed how fearful might be vertical pressure on a domical vault. Whether he was acquainted with the Florentine and Pisan examples we know not; but if not, he had intuitively the knowledge they would have afforded him.

He had to place upon the top of his dome a stone lantern, with its ball and cross measuring some 90 feet in height. He therefore adopted the principle of the Pisan Baptistery. He constructed his inner brick cupola of the form and altitude he considered best for internal effect. Over this he built a cone, just free from pressing on his cupola, and he carried it upward till it met the required width for the base of his lantern; finishing his cone with a domed top, as at Pisa. This being determined, the attic story of his tambour arose to press down upon the common springing of cupola and cone; and, not to remedy a defect, but, "to make assurance doubly sure," he applied his hooping-chains of iron. To protect the cone a roof was necessary, as that which covers the vaulting of his nave and aisles, and of the same material, i.e. wood and lead; the purpose of protection and endurance being precisely the same in both cases. Apart from what Roman design requires—apart from the majesty of the hemispherical form,—is there a man breathing who would cover a circular cell and its cupola-vault with anything but a hemispherical roof, as the best for affording the particular weight of leaded timber upon the buttress of the cone, with means for effectively confining from bulging, either in or out, the masonry of that cone? The high Gothic dome of Florence is not admissible in pure Roman design; but a lantern, ponderous as that at Florence, is required. The simple hemispherical dome will not safely support such a lantern. The Pisan mode of construction suggests the mode of security. So much for mere construction.

Now for the matter of taste. Is there any reason for such scrupulous honesty, as shall shrink at the idea that the beholder may be deceived in thinking that the ceiling he sees within the building is the mere inside of the shell he sees without? May he not separately think of what is beautiful without and within; and contemplate distinctly the perfection of both, with a comfortable conscience as to the filling of the intervening space, especially when he knows that concealed work is necessary to his admiring in safety? If the spectator, amazed at the dignity of bulk and altitude without, gives to the expanse within the credit of equal size and altitude, is it not better than well? Is it not a fair illustration of the *ars est celare artem*? There is surely no need to be argumentative on this absurd question any longer. In every sense, artistic as well as scientific, the dome of St. Paul's (so far as the architect is concerned) is the transcendent example of perfection in its kind. Its cupola is the firmamental beauty of the cathedral's interior: its dome is the glory of its extern, and the fitting crown of the metropolis of England. It will be time enough to insist upon it that a church dome shall be simply an inverted cup of masonry, when all the remainder of the building shall have no roof but the vaulting which forms its ceiling.

The steeple of St. Bride's Church alone does not assert the strength of his genius, nor the play of his fancy, so much as his judgment and taste, in producing an elegant arrangement of simple and resembling geometrical forms, within an outline of unimprovable grace. In certain other examples, we observe the free pencil of the artist tracing fluent lines of beauty: in this, we see how the rule and compasses of the geometrician have rather been in operation, though to a result leaving us to wish for nothing else in its stead. The gradual increase of open-work and decoration, in the ascent of its elevation from the base to the crowning obelisk, is charmingly effected; and, though this spire, like a Chinese pagoda, is little else than a repetition of octagonal chambers successively diminishing in their rise still the retention of their vertical lines, in concentric progression, so far unites them into an unbroken whole, as to correct the objection which might be (critically) taken to a pile of distinct (though resembling) parts. Let us grant Wren has here aimed at what can only be thoroughly perfected in a Gothic spire: it is enough that the beauty accomplished is proved compatible with Italian detail. There is, moreover, this to be said of the Italian

* From an Essay by Mr. G. Wightwick, architect, to which a medal was awarded by the Royal Institute of British Architects.

steeple, that it admits of a distinct variety peculiar to itself; i.e. not only a difference but a distinction, as marked as in things of separate kinds. Even when the general outlines of two Italian spires may much resemble each other, this distinction may be preserved, so as to "tell" no less in a distant than in a near view; and the advantage of this (pictorially speaking) in a city of many spires must be obvious—to the painter's eye, at least.

The steeple of Bow Church, Cheapside, is little short of perfection, as an adaptation of Classic detail to a general form, whose vital principle is that continuous verticality which can only be fully carried out in the Pointed style; and it may be truly affirmed, that this principle is displayed with more completeness in the spire of St. Mary-le-Bow, than in many Gothic examples of distinguished celebrity, wherein we see a connection of tower and spire, without that combination which, by artistic management, renders the united two a single entirety. Where a steeple has more than one great part, the gradation necessary to complex beauty requires at least three components; and, as in the case of Bow Church, it will be better to have four or five. As in other of Wren's works, the graces of this steeple grow out of, and, as with natural luxuriance, overspread the form perfected by constructive science. The section shows why the elevation is what it is; and the successive plans of each story as truthfully superimpose one above the other, as the ascending parts of the human frame. Not a feature is eccentric: each stage rises from out of its inferior and into its superior, as thought from and thought in the eloquence of a perfect orator. It is true the whole may be taken to pieces; i.e. the pieces are separable; but no portion has, distinctively, one-fiftieth part of the beauty of the five collectively,—the basement, the bell-chamber, the circular peristyle, the rectangular composition next above, and the crowning obelisk. These, in their individual and relative forms and proportions, are the felicitous results of as many fresh thoughts co-operating in the development of one idea.

Though Wren's Pointed architecture cannot (either critically or opprobriously) be called Gothic, we may yet refer to three or four examples having, in their nondescript character, a merit of their own. There is a picturesqueness in the bulk and form of the bell-tower of Christ Church College, Oxford, which we should be loth to change for anything more justified by Gothic precedent; and, in the tower of St. Michael's, Cornhill, we recognize a successful aim at effectiveness, and a feeling for masculine beauty, which are scarcely the less noticeable because expressed in very indifferently grammatical or uncertain language; but it is to the steeple of St. Dunstan's-in-the-East that we would especially allude as an example of supreme grace. In the bodily form of its combined features little improvement can be suggested. Supplant the little cappings above the flying buttresses by small pinnacles: apply engaged pinnacles where the square diagonal buttresses of the tower resolve themselves into the angle octagons; then Gothicism the square panellings of the minor horizontal compartments of the tower, and the old example of St. Nicholas, at Newcastle, will be the more favoured by noncomparison; for, even as it is, the venerable "legitimate" would show but indifferently beside his bastard successor.

In St. Dunstan's, as in the steeple of St. Mary-le-Bow, beauty is the result of taste operating on constructive perfection; nor has the former example any existing rival in simple and elegant delicacy, combined with such an expression of enduring strength. Considered Gothically, this beautiful design has some minor defects, which, however, as Gothic feeling pervades, are injuriously important. Let but the true Gothic artist, by the minimum of required excision and addition, correct these defects, and we should probably have an example of what Wren would have done as a Goth of our present day. The circumstances of particular times will influence the mode in which genius displays itself; but whatever be the mode, the display should be obvious; and we can only lament the bluntness of the perception which cannot pierce through a partially defective manner, to rest with due admiration on the material excellence that nevertheless exists.

It has been the purpose of this essay, first, to show that Sir Christopher Wren was a man of genius in the full sense of the word, namely, that talent which would have rendered his name famous though he had achieved no architectural celebrity whatever. Secondly, to do justice to the man, by considering his architecture under all the circumstances of its production; his lack of especial preparatory study; the sudden call upon

him for so vast an amount of occupation, with its ever-attendant responsibilities, and its too frequent mortifying vexations, particularly in the case of the one great building, which is, therefore, the monument of his skill under difficulties, but not the just representative of his unshackled artist feeling. Thirdly, to do justice to his architecture, without reference to any consideration but that of the unchanging principles on which everything in art that is lasting (and therefore true) is philosophically founded.

It is admitted that Wren's fame as an architect would not be exalted by a strictly critical estimate of all the buildings not particularised in the foregoing pages; though there be some, and parts of others, which have merit balancing the absence of it in the rest. But the examples we have noticed sufficiently attest his power on great occasions, the mastery by which he gave importance to those of less import, and the ingenuity with which he made artistic taste and feeling combine with science in certain others which exhibit more especial originality.

Had we an account of all the circumstances attending the erection of each building, we should probably have rather to sympathize with the architect's vexations than to arraign his taste; but Wren thought too modestly of his own works and too humbly of himself, to care for more than the exercise of his best efforts, under the favourable or unfavourable auspices affecting them; content to abide, without any defensive explanations on his part, the judgment which discriminating criticism would pass on his works as a whole.

Doubtless the genius of this great architect was influenced by the moral goodness of his character, by its philosophic gravity, and, more than all, by its religious equanimity; nor can we but delight in thinking upon Christopher Wren as the supreme exemplar of the Vitruvian model; worthy, in every sense, of his own self-erected mausoleum, and of the noble epitaph by which his son confirmed its dedication.

ON VESTIBULES.

SOMETHING is to be learnt in looking at the front of a building and its approaches by an avenue of trees, or through an arch or arcades; and also by walking round it, and surveying the objects surrounding and contiguous to it, before entering them for their internal examination. To observe how the area or quadrangle, before it, is paved; the dignity and elevation that a gradual ascent to the first stair of the edifice gives to it; or a statue, an obelisk, or a fountain placed in the centre of that court, and approached, on both sides, by a curved walk forming a verdant arch; or that architectural hemicycle, such as Bernini designed, as a zone of beauty and of grandeur to St. Peter's, at Rome; to observe these features, when they are nicely balanced and serve as points of comparison to the building presented to our eyes, are things that certainly are not unimportant, but should attract our first attention. There are other minor objects which demand a little study on the part of the architect, because, if they are trivial, they still contribute to the effect of the whole. Trifles, well managed, and brought into service in the work, make its perfection; and the small accessories to buildings, like the *avant couriers*, or advance guard which lead a royal or imperial procession, tend to set off and aggrandize, and announce, the magnificent edifice, taken both in its exterior and interior, with whose appearance we hope to be gratified. If there are railings at the extreme end of the court, in which the façade of the building is placed, they should be lofty, on a strong and well-moulded stone plinth, and ornamented with that light and open kind of ornament, well known, which intercepts nothing from the eye, in glancing through it, and passing by it. The iron standards should receive more decoration, scroll lines mixed with flowers, and raised from between one and two feet above the series of the common upright rails, spear-pointed, and their tops gilded. The principal and leading lines of the standard railings, at proper intervals, should receive more, or rather a choice quantity, of gilding, to set their graceful forms off to advantage. The plinth should be at least 1 foot 6 inches high, and the railing from 11 feet to 13 feet 6 inches high. This is the measure of the beautiful railings round the *Jardin des Plantes*, and the gardens of the Louvre, Paris: those opposite the principal elevation of Buckingham Palace, mansions in the parks, and our British Museum, tally with its description. The candelabra for gas, and the *bournes*, or limit stones, to the carriage-gates, should be both of elegant form; the one tall

enough, in relation to the height of the railings, and to that of the gates and entrance-doors; the latter, to the gates, of iron; to the foot of the jambs of the doors, conical stones cut short, about, in general, 2 feet 9 inches high, capped with a semicircular top, and the *tains*, inclining on the sides exposed to wear and tear, or to a collision from the wheels a little more than on the protected side. In large buildings or castles they should be larger and stronger. The candelabra should be of bronze. To the gates of the barriers in France (or turnpikes with us), the limit or guard stones are of larger dimensions, and covered and strengthened with iron. If iron coverings occur over man-holes to drains, they should be made ornamental in iron on the surface, and firmly fixed in their flange or rabbit, so as not to move in the least by the head or feet.* Scrapers, with brushes on each side of them, knockers, bell-pulls, good nosings to the steps, should receive the care of design, the durability and taste which such, though small, things require. Every traveller in Italy has admired the lampholders to some of the celebrated palaces.

We will now enter the vestibule. Blondel, the French architect (not François, the eminent mathematician, architect, and field-marshal, but Jacques F. Blondel), says, in his "Architecture Française," that there are about six sorts of vestibules. The first are named simple, because they are without any projection from the body of the building, being only decorated with pilasters and arcades in their compass, as in that of the Tuileries. The second are called projecting, because in their plan they are composed of parts jutting out from, or receding in, their parts; such is that, he instances, of the Château de Maisons. The third are called *tetrazytes*, because they have four isolated columns, to others which are opposed to them: that of the Invalides is of this sort. The fourth have the name of circular *octostyles*, because they are flanked by eight columns, as that of the Luxembourg Palace, or isolated like that of the Hôtel de Beauvais. The fifth has received the appellation of *winged*, because, independent of the passage (*guichet*), in the middle, for carriages, they have two others, separated by columns: such is that of the great pavilion of the Louvre. The sixth kind is called peristyle vestibule, as we see in that of the Palace of Versailles, above which was the ancient apartment of the king.

The general form of vestibules,† when they are neither square nor round, but rectangular, is to be rather barlong than oblong, avoiding, nevertheless, giving them too much depth in respect to their length, this form being reserved for the peristyles, the galleries, &c. The ornamentation of vestibules is ordinarily executed with hard stone, being mostly close to stairs, which are constructed with the same material, when they are treated as a whole.

Vestibules ought to be ornamented in such a manner and of such a size that they enable us to judge of the grandeur, of the beauty, and of the magnificence of the interior. In some churches, extraordinary for their large dimensions, the interior of their vestibules is of a great height, and ornamented with three stories of architecture, so that it might more properly be called an entrance nave,—a sort of church itself rather than a vestibule. It is a preparation for the splendour with which we may expect to be dazzled. The *atrium*, very common in the large primitive churches and basilicas, and which we still see at St. Ambrose, at Milan, formed upon a quadrilateral plan, was left free and open to the intermediate space of the sky. The vestibule of the church of the abbey of Cluny, whose ruins are twelve miles from Mâcon (it having been destroyed at the epoch of the French revolution), offered the same example. It had 110 feet of length, 81 feet of width, and was divided into a principal nave and two collateral. The date of the building of this church is the commencement of the eleventh century. The construction, the surface worked in relief, and the sculpture, were excellent, and exhibited great skill and variety for that age: there was an incoherent mixture of styles, pilasters of Roman capitals, and the

* One of the great nuisances and causes of slipping and sliding, in the city of Bath, is the looseness and bad adjustment of the coverings in the streets and roads to their drains, that is to say, for drivers and horsemen.

† From the Latin *vestis*, a robe, and *ambulans*, to walk: this place being in a considerable building, there is an entry or hall to it, in which one hangs up his upper garment, or some part of clothing, for visits of ceremony. *Martinus* derives this word from *Vesta stibulum*, because, among the ancients, the vestibules were consecrated to the goddess Vesta. In the round temple of Vesta, in Rome, now perverted to a very profane use, her altar was placed in the centre of it.

circular arch in contrast with pointed and curved forms partaking of the Gothic. But the Gothic met with in some monuments of this period was but an accident. It had not yet become the expression or development of a system: the Gothic style did not yet exist. The whole edifice, near the river Grosne, rested upon piles. The church of Cluny belongs to what it is convenient to call, at this day, in France, Romanesque architecture,—that is, to say, to that architecture which, on one side, taking its point of departure at the time of the completion of the arts of the lower empire, is prolonged, on the other, until the Gothic epoch. It is difficult not to err with respect to different systems upon this intermediate or transition state of architecture; and there is hardly found to-day agreement upon its principal divisions, and upon the prominent characters which separate one from the other.

The orders of architecture often form the decoration, principally when they are open, on the side of the entrance, by a wider interval between the columns, like that of the *Hôtel du Clermont*. Then the interior order ought to be the same as the exterior; but the entablature may be reduced to a fifth of the height of the order, instead of the fourth; and even you may substitute for it an architrave cornice, or adapt only an architrave, but not introduce in these portions of the fabric cornices of too light a kind, and composed of frivolous ornaments, which ought not to be tolerated in architecture except in wooden cornices which adorn small apartments, but which are not sufficient to crown a decoration where the orders preside. It is yet essential not to diffuse too much richness in the order of the decoration of these vestibules, because it is a law of convenience that, from the building to the interior parts, most distinguished and most studied, a gradation of richness and of magnificence be made relative to the use of every apartment.

F. LUSH.

ANTIQUITIES OF SURREY.

THE SURREY ARCHEOLOGICAL SOCIETY.

THE sixth annual general meeting of the members of this society was held at Richmond, on Tuesday last.

The members and visitors assembled at the National Schools, Eton-street, at eleven o'clock, and shortly after that hour the chair was taken by the president, the Right Hon. Lord Abinger.

The noble Chairman, in opening the business of the day, said there were in the ancient town in which they were now then assembled, abundant objects of interest to serve for reflection until their next meeting. He hoped they would find among those objects of interest, some traces of Edward III. and his illustrious son. It would raise their admiration of the feudal princes, to think that even in those remote days they could raise so large a number of men superior to the French, and the recollection of their success in that respect might make us regret that, in our own day, we could not raise in a year as large an army as the King of England could in six weeks 500 years ago. It was well known that Richard II. on the occasion of the invasion of Scotland, got together within six weeks, 60,000 archers and 7,000 horsemen. The French were informed of this mighty array, and thinking it was but an excuse to frighten them, asked to see it, and their agents were brought to a spot near Berwick, where they saw defile through a pass a body of armed men, consisting of 60,000 archers and 7,000 horsemen. They then declared it would be impossible to defeat the King of England. This was the effect of the feudal system, and in that army it was recorded that the Earl of Hereford, alone, brought 3,000 men into the field. We might not, perhaps, wish to return to the feudal system, but if we could unite it with our modern civilization, we might possibly be enabled to raise a body of riflemen quite sufficient to keep us safe from either French or Russians.

M. G. B. Webb (honorary secretary) then read the annual report of the council, which stated that the progress of the society was most satisfactory; that the two meetings held last year had been attended by 600 members and visitors, and that a steady increase of the former was maintained. The report also referred to a scheme for illustrating to a greater extent than the means of the society now afforded, its publications, and expressed a hope that members approving of the object would assist with subscriptions. The auditors' report, which was subsequently read, as also a supplemental statement brought down to last month, testified that the society was in a healthy condi-

tion in the important matter of funds—that it owed comparatively nothing, while it had about 400*l.* invested in Bank Stock, in addition to other property which might be described as "personalty."

The report was received and adopted, and routine business having been transacted,

The Chairman called upon Mr. John Wickham Flower to read his paper, entitled "Notes of the Family of Cobham, of Starborough Castle, Lingfield, Surrey."

Mr. Flower observed that the ancient family of Cobham, remarkable for the extent of their possessions and their alliances, some of them even royal, contributed much material to romantic history, although they seemed to have died out, and "gone without their fame." In the second year of the reign of Edward III. Lord Cobham was employed in many high offices. He was distinguished in the wars of the Low Countries, and fought at Cressy and Poitiers, at the latter of which he saved the life of John, king of France, who would otherwise have perished through the ignorance of his captors. He was rewarded with various grants and honours: was made a Knight of the Garter, Lord High Admiral of England, obtained a pension of 500*l.* a year (an enormous sum at that time), and was called to the House of Lords. In the year 1360, he died of a plague, which carried off a great number of distinguished persons. Strange that nothing should be known of the burial-place of so remarkable a person, but on reading the will of his son, it was found that he directed that his body should be buried behind that of his honoured lord and father, in the chancel of Lingfield church, in the county of Surrey. Mr. Flower stated, that on searching for the tomb, as described in the will, he found it, and that on the left by the effigy of the knight, were still to be traced the remains of the garter, in coloured enamel. The second Lord Cobham left a son, Reginald, and a daughter, Isabella. Reginald was but thirteen years of age when his father died. He fought, like his father, in the wars of France, and in the forty-fourth year of the reign of Henry III. he was summoned to Parliament. He married twice, his second wife being his own first cousin. His tomb remained at Lingfield church in good preservation, bearing the effigy of a knight, at full length, attired in chain and plate armour. He died in the year 1403, but not before he had largely increased the family possessions, not only by his alliances, but by the acquisitions of a great number of manors, exclusive of those left him by his father. He was succeeded by another Reginald, who, in the tenth year of the reign of Henry IV. applied for, and obtained, a special licence to travel abroad. He also married twice. He endowed the church of Lingfield, with lands, and founded a religious house, all traces of which were now lost. He died in the year 1446, and was buried in Lingfield, where an alabaster monument was raised to his memory. The tomb stands in the chancel of the church, and by his side is a full-length effigy of his second wife. He was succeeded by a son, who left no issue, and the vast possessions of the family, which were extended not only over Surrey and Kent, but also over several other counties, became distributed amid collateral families. The wills made by the Lords of Cobham, which were still in existence, proved them to have been devout Catholics, if not good Christians. The will of Reginald, dated 8th September, 1400, directed that his body should be buried in Lingfield church, behind that of his very honoured lord and father. He bequeathed 100*l.* to the church of Lingfield for masses to be said for the repose of his soul, besides other sums of money for the repair and ornament of the fabric, and he likewise directed that 100 marks should be paid for the repose of the soul of his godmother Philippa, queen of England. This will, and indeed ninety-nine wills out of every hundred wills made before the Reformation, showed with what anxiety dying persons provided for the necessary masses to be said for the repose of their souls. The great majority of them, also, contained specific bequests to the church for the purposes of ornamentation, while in many instances very large sums were bequeathed for endowments and the erection of new buildings.

Mr. W. H. Hart, F.S.A. next read a paper on the parish registers of Richmond, Kingston, and Petersham. Mr. Hart stated that he had originally intended to confine his notes to the parish register of Richmond; but that from the interest of the subject he had been subsequently induced to extend it to those of Kingston and Petersham. Parish registers, which were now regarded as documentary evidence of a most important and often conclusive description, were established in

the thirty-first year of the reign of Henry VIII. and a penalty of 3*d.* (then a much larger sum than at present) attached in all cases when the clerk or the clergyman neglected to keep the register in the manner prescribed by law. In ancient registers many events were noted besides births, marriages, and deaths,—floods, tempests, the rebuilding or repair of the church. Sudden deaths in the parish were also considered note-worthy circumstances, for in those days there was no *Morning Post* or *Court Circular* to preserve a record of remarkable events. The first entry in the parish register of Richmond was in 1588. In 1596 a witch was burned by the public executioner at Richmond. The register contained evidence of the custom which prevailed in ancient times to bury the heart or bowels of deceased persons in one place and the body in another. This was done in the case of many kings and princes. Under the date November 12th, 1599, it was noted that Mrs. Elizabeth Radcliffe, a maid of honour to the queen, had died, and that her bowels were buried in the church. The Lady Powlett, the wife of Sir A. Powlett (whose shoes were shown in the local museum), also died at Richmond, and her bowels were buried in the church. Among other entries, were those of the burial of "prism children," that was, of children who had died after baptism, but before the churching of the mother. This term was used from the "prism," or white cloth, in which the priest wrapped the child at baptism (a custom still preserved in the Roman Catholic church). An entry in August, 1653, showed that the civil magistrates were at that time empowered to, and did, occasionally, perform the ceremony of marriage between persons anxious to enter the holy state of matrimony. The register at Kingston church, commenced in the second year of the reign of Elizabeth, and was still in very good preservation. In June, 1570, there was an entry that John Jenkins, who had obtained a "brief," or rather a license, to beg of whom he pleased, and who had been robbed on the sea by the Spaniards, had been relieved. Two women, mother and daughter, out of Ireland, obtained 1*s.* 6*d.* as alms. In December, 1509, an entry was made of a pond having been constructed in the horse-market; and in 1572 it was recorded that a new ducking-stool, for the special use and service of scolds, had been erected, at an expense to the parish of 1*l.* 3*s.* 4*d.* On the 19th of August, 1572, a Miss Downing wasset on the stool and ducked three times, "because she was a common scold and fighter." In the register at Petersham Church, entries occurred showing that certificates were produced that certain bodies were buried in woollen cloth, there being at the time a penalty of 5*s.* for using any grave-clothes but those manufactured of wool. Strangers were here described as "wanderers," and the act of burial was described as "laid in the ground." Mr. Hart stated in conclusion, that the extracts which he had made were intended as the commencement of a collection of the most interesting entries in the registers of the parish churches in Surrey.

Mr. William Chapman, one of the local honorary secretaries, then read an interesting paper on the antiquities of Richmond. Little, he said, remained of the seats of the ancient kings, the many religious houses, and the great Carthusian abbey. Not even a brick remained of the palace of East Sheen, although the name still survives. The early history of Richmond was involved in total obscurity. It was neither city, borough, nor market-town; and lying out of the track of the great high-roads, it had not been the scene of any important military operations. Previously to the time of Henry VII. the name of Richmond did not exist, neither was it to be found in Doomsday Book, although Sheen was mentioned there. The manor of Sheen had originally rights of fishing and warren attached. The "Silver Thames" was then a fine salmon river, and its value in Catholic times to a great monastic establishment was of course considerable. The manor subsequently came into the hands of the Crown, who dated royal instruments from it. Kings and queens in later times lived and died in it. Down to the reign of Henry IV. the manor was desolate, but his successor founded the Carthusian Monastery, and it gradually grew in importance. The manor was afterwards granted to Elizabeth Woodville, who, however, parted with it. It was for some time the residence of the Duke of Lancaster. The most magnificent period in the history of Sheen was in the reign of Henry VII. The palace was subsequently consumed by fire, but was rebuilt in 1501. In the year 1506 Philip I. of Spain was entertained there. Henry VII. died at his favourite

Sheen, and Henry VIII. kept court there from great pomp and ceremony. On his divorce with Anne of Cleves he settled Richmond on her for life. The unfortunate Lady Jane Grey lived at Sheen, and it was from that place that in company with her father, the Duke of Suffolk, she was taken to the Tower of London, where she was beheaded. Mary and her husband Philip, were much at Sheen, and a record was still preserved, showing how in 1557 Elizabeth went from Somerset House by water to see Mary at Sheen,—an incident which would tend to show that whatever might be Mary's faults, she was not chargeable with having treated Elizabeth harshly or unjustly, and that the princess was not under restraint. Queen Elizabeth both resided much at Richmond, and it might be said that during her Majesty's reign, the place attained its culminating point. In 1603 Elizabeth died. Charles I. was educated at Richmond, resided a good deal there, and formed a collection of pictures. Evidence was still extant to show that the Parliament intended him to reside there, as instructions were given to have the palace prepared for his accommodation. His children were at that time at Sim. After the death of Charles, the palace was sold by order of the Commonwealth. Of the religious building, not a vestige now remained. In 1769, the old gateway of the Carthusian Abbey was removed by direction of George III. in order that the whole might be thrown into a royal park.

Mr. Chapman subsequently read a paper, which was to have been read by the Rev. William Bashall, one of the local honorary secretaries, "On the ancient Monuments in the Parish Church." The paper in question called attention to the tower of the parish church, which was erected in the reign of Henry VIII. was the only portion of the original structure left; and that the chancel, as now preserved, belonged to that peculiarly unpropitious period of English art, known as the last half of the seventeenth century.

At the conclusion of the paper the members and visitors repaired to the church, which contains nothing remarkable save a fine mural monument with a female figure weeping on a pillar, and a broken lily by the side, executed by Flaxman, some time after he became a Royal Academician. The tomb is erected to the memory of a Lady Lowther, one of the Lonsdale family, and bears an eloquent inscription to the virtues and amiability of the deceased. The church, which is an extremely ugly building, dark, heavy, and monumental in character, is chiefly noted as containing the graves of Thomson the poet, and Edmund Kean the tragedian. A stone is also erected to the memory of Mr. and Mrs. Yates.

The members assembled at 3 o'clock in the lecture-hall of the new Cavalry College, at Richmond-green, where a local museum was established, containing several objects of antiquity and works of art. A military band performed in the grounds of the college, and imparted additional animation to a scene of considerable interest.

In the evening a cold dinner was provided at the Castle Hotel, and brought to a close a very agreeable and instructive meeting.

THE SERPENTINE.

THIS beautiful sheet of water, so essential to picturesque effect in Hyde-park, has been of late the subject of much animadversion: it has been described as a noisome and pestiferous pool, shedding malaria over the verdant slopes as far as the barracks, and the splendid mansions of the Queen and Prince's gates; and it has been alleged that the lime thrown in at the margin only retains and condenses the noxious vapours, which are again liberated by the summer sun;—one illustrious commentator having gone so far as to deplore the aristocratic taste of promenading on the Drive, and of riding in Rotten-row!

It has been suggested that this extensive sheet of water, a mile in length, and covering some 150 acres of ground, should be treated like the canal of St. James's-park, and concreted throughout its whole extent. Is such a process necessary to secure a wholesome and comparatively pure body of water? It is pestiferous chiefly because the supply of the Bayswater rivulet is not only inadequate, but tainted with fecal matter, and also because the springs which arise within its area are scarcely enough to feed the daily evaporation from the surface. But there is also another cause: hitherto the brook which fed it was the common sewer of a large district: it bore down and deposited a black slime, which lies at the bottom, and which, as the water becomes warm, surrenders a portion of concentrated and sub-

merged gases. The way to remedy such an evil would be, first to drain off the water, say in the month of September, when nymphs of fashion betake themselves to the country or the sea-side; to heap up the rich alluvial in ridges, so that it may become light and nearly dry, to cast it out on the hungry park when mixed with lime; then to fill up the numerous pits and hollows of the bottom; graduate it from the margin to the centre, leaving a good latitude for those who cannot swim, but preserving a good depth in the centre to assure buoyancy for those who can; and thus to keep this fine expanse open, for sailing and rowing, as well as for the amusement of children who first study navigation there.

It would be of little use to clean out the bed, unless a proper source of pure water were attainable to keep up a regular supply: this could be done with ease, by sinking an artesian well, as in St. James's, and then there might be a chance of treating romantic citizens with something better than the present dry cascade.

The process of concreting the whole area of 150 acres cannot be necessary; for the supply being pure and the water of sufficient depth, and therefore forming a large body, the temperature of the lake would maintain a greater regularity and freshness; and the whole substratum being yellow gravel, no impurity could arise, but on the contrary, the well-known springs of intensely cold water which ascend in many parts would contribute to its sanitary qualities.

To clear, to level, to cover with concrete, 150 acres, would cost some 50,000*l*. Perhaps as this is strictly a national concern, that sum may be no object; but the question arises, would it not seal up the tributary springs below? Sir Benjamin Hall obtained honour by his guardianship of the public parks and plantations: it remains for his successor to consummate the great work of lustration, but the former was the first London *edile* who rendered the office respectable.

In these turbid times of horrid war and carnage, the subject may be thought of little moment, but it is not so; it touches the health, the satisfactions, the enjoyment of the whole rising generation of merchants, of nobles, of statesmen, of citizens; for Hyde-park is the concentric place of recreation for the three millions who nestle within and about the precincts of London. On this account the park ought to be made complete; the Serpentine, if not without a defect, at least without a blemish; and now, as a last observation, I may be excused for referring to the great alteration and improvement which have taken place in the Serpentine by the introduction of row-boats and small sailing craft. What animation it bestows! what delight it affords, to old and young, to view the ever-changing skiffs flit to and fro! what a field for the education of naval heroes is offered by the ripple, sometimes amounting to a wave, that now bears the mimic barque in safety and in triumph from shore to shore; and, again, submerges the ill-poised lugger, swamped by an overdone spread of canvas.

These training waters for the British navy ought to be thrown wholly open. What mean those iron chains which, reaching from arch to arch, debar access to the most retired and most beautiful portions of this ornamental pond? One third portion of the whole is shut out from our jolly young waterman. He is forbidden to ply his oar beyond the bridge, and for what? Were the bridge unlocked, and the whole Serpentine thrown open, a good pull of a mile from the cascade, Knightsbridge, to the Bayswater end, would be available, and presented for a rowing or sculling match. The groves of Kensington are not sacred, nor addicted to mysteries, for they are thrown open; wherefore, then, should the water also not be dedicated to the public health and recreation?

It would be well if the conservators of public works, or woods or forests, or the ranger, as it may be, would take thought of this matter: it is a little concession, but a great indulgence.

As a last suggestion, another hint may be given. At or near the Receiving-house, a ferry ought to be established, similar to that which solaced often the public (and myself), in St. James's-park. A veteran might make a good living by taking a penny fare from near the barracks to the opposing strand. Many a saunterer would give twopence for a double row, if only to indulge in aquatics, *à peu de frais*; but, in point of fact, such a regulation would amount to a great public benefit, and would curtail the circuit on foot, now inevitable for all those who traverse from Hyde-park-gardens to Knightsbridge or Brompton.

QUONDAM.

STREET MEASURES.

EXPERIENCE has shown that the costermongers of the metropolis are in their way a useful race. They deal in the great vegetable and other markets, buy up the extra supply, and distribute it at a cheap rate amongst the poorer classes. By their means many luxuries are sold so cheaply that they can be purchased by persons of moderate means. The industry of the class may be admired; the care with which they resist the temptations of making away with their small capital, and the hard struggle they have in many instances to keep themselves from the prison or the workhouse. It must, however, be admitted that this class of dealers require supervision and reform. The perishable goods they sell in districts where the people are ill off should be carefully watched, so that those who are not aware of the consequences may not be tempted by the sale of putrid and poisonous food. They should also be obliged to use honest weights and measures. The other day by chance we met with one of those street dealers who was retailing fruit, and found a quart measure in use nearly half filled with paper, while a smaller one was constructed with a false bottom, which lessened its capacity to half. The policeman had no power to stop the imposition, and the tradesmen close by complained that they were heavily charged with rent and taxes, and that their weights and measures were regularly inspected, while the costermonger came before their own doors and undersold them by cheating in both. Weights and measures used in the streets of the metropolis and other towns should be subjected to inspection, and costermongers should be exposed to the same degree of punishment as dishonest shopkeepers.

LIVERPOOL ARCHITECTURAL SOCIETY.

ON Saturday last the Liverpool Architectural and Archaeological Society made an excursion to Chirk Castle, over which, by the courtesy of Col. Biddulph, they were allowed to range at will, under the guidance of the servants. Most of the party went to Vale Crucis Abbey, a few ascending to the ruin of Dinas Bran, and others wandering down by the river. Rain somewhat interfered, but the dinner restored their equanimity. Mr. Barry was in the chair, in the absence of the president; Mr. Pictou took the vice-chair. Various toasts were drunk with proper speeches.

GENEALOGICAL AND HISTORICAL SOCIETY OF GREAT BRITAIN.

THE purpose of this society is to promote genealogical and historical research, or for the elucidation, compilation, and illustration of family history, lineage, and biography.

This society purposes examining into records carefully and systematically, making copious extracts of the most interesting parts, and compiling from them and all other available sources of information a regular series of genealogical and historical accounts of the old nobility and gentry, combined with biographical notices and narratives of remarkable circumstances and personages, illustrated with fac-similes of ancient grants, charters, patents, seals, deeds, inscriptions, monuments, ruins, arms, &c. and to arrange the whole of such compilations into MS. volumes, with notes and references to the several proofs and authorities from which they are taken.

Lord Ellesmere received the members of the society at Bridgewater House, on Wednesday evening last, when the council reported, and some votes of thanks were passed.

THE BRITISH MUSEUM.

ACCORDING to a report recently published, the number of volumes added to the library amounts to 32,152 (maps, music, and papers included), of which 1,339 were presented, 24,968 purchased, and 5,815 acquired by copyright. 466 MSS. have been added to the general and the Egerton collections, and 72 original charters and rolls. These include some specially worthy of notice, as a fine vellum copy of the famous Samaritan Pentateuch, in large gold characters, with illuminated ornaments, executed for the Amir Rukn-al-Din, A.H. 704-5=A.D. 1304-5; a volume containing the Capitularia of Charlemagne and Louis le Debonnaire, compiled in 827 by the Abbot of Fontenelle; the Welch Laws of Hywel Dda, of the beginning of the fifteenth century; a very large volume, (close of fourteenth century), containing a mass of old English poetry and prose, chiefly of a religious character, remarkable as being nearly a duplicate of, and written by the same hand as, the famous Vernon MS. in the Bodleian; the original "Obi-



Map, showing the new Harbour and the Roadstead, Holyhead Bay, with the Breakwater,—the late Mr. J. M. Rendel, Engineer; and showing the Plan for the Packet-pier and completion of the Harbour,—Mr. J. Hawkshaw, Engineer.*

(* See p. 449.)

REFERENCES.

A A. The plan proposed by Mr. Walker, in 1843.
B B B. Plan by Mr. Page,—30th April, 1844.
C C. The plan by Capt. F. Beechey, in 1844.
D D D. The northern breakwater as in course of completion with (shown by dotted lines) the eastern breakwater, designed and commenced, but now abandoned; and

D' D'. The packet-pier, also part of the design by Mr. Rendel, but abandoned.
d. The point at which the northern breakwater was at first intended to terminate.
E. The eastern breakwaters and packet-piers as about to be undertaken, on Mr. Hawkshaw's plan, with

E'. The timber staging which is in course of completion, in extension of the old pier.
L.S. 1816. } The lines of the sand at the two dates.
L.S. 1840. }
* The figures with dotted lines show the fathoms depth of water.

ternary and Martyrology of Syon (Isleworth) Monastery," about 1400-1640; "Select Lives from Plutarch," translated into Latin by L. B. Aretino, ornamented with exquisite miniatures of Italian art; a roll on vellum of the Procession to Parliament (3rd Henry VIII. 1512) of the King and his Peers, temporal and spiritual; the secret autograph correspondence of Charles I. "some time King of England," with the page Henry Firebrace, when incarcerated in Carisbrook, in 1648; "The Official Correspondence of the celebrated Lord Carteret, Ambassador in Sweden and Secretary of State," 1719-45 (34 vols.), presented by Canon Lord J. Thynne, D.D.; the original correspondence of Henriette Howard, Countess of Suffolk, 1712, 1767; the original mortgage deed of a house in Blackfriars, dated March 11, 1612, 1613, signed by one "William Shakspeare;" a collection of autograph letters and poems of Robert Burns, the inspired ploughman of Ayrshire; and a large collection of impressions from the coffin-plates of the nobility and gentry, 1727-1831.

PROPOSED ARRANGEMENT OF THE ROYAL COMMISSIONERS' LAND AT SOUTH KENSINGTON.

HORTICULTURAL SOCIETY OF LONDON.

OUR readers know the finely situated estate purchased by the Royal Commissioners for the Exhibition of 1851, which extends from what was formerly known as the Old Brompton-road to the Kensington-road, and we informed them in April last, that arrangements were in progress to enable the Horticultural Society of London to use a part of it, about twenty acres, and that Mr. Sydney Smirke had been requested to prepare designs. We have now the pleasure to lay before the public a view of the plan which has been determined on and is to be forthwith proceeded with.

After letting on building leases certain outlying portions of their estate, the commissioners have reserved between 40 and 50 acres for the purposes of their incorporation, forming a parallelogram between the two new roads; Prince Albert-road (100 feet wide), to the west, and Exhibition-road (80 feet wide), to the east; which two roads con-

nect the Kensington-road on the north with the new Cromwell-road (80 feet wide), on the south. Of this parallelogram, the commissioners have reserved a portion of about 16 acres at the south end, for the purposes of the Great International Exhibition, which had been projected by the Society of Arts for the year 1861—the intention of holding which has, it is hoped, been temporarily suspended by the war now raging—also a portion at the north end, with a frontage to Hyde-park, well adapted for any public buildings which it may hereafter appear desirable to erect there; and further spaces of about 150 feet in depth along each of the parallel roads running north and south, for such buildings, public or private, as the commissioners may hereafter, in the prosecution of their own objects, determine to erect.

It is the remainder or centre of this ground that the commissioners, under certain conditions, have offered to place at the disposal of the Horticultural Society. This space, inclusive of a proposed winter garden, and also of Italian arcades with which the commissioners themselves propose to surround it, will contain about twenty acres available for the new garden of the Society.

The conditions on which the commissioners have made their liberal offer were communicated in the course of a meeting held on Thursday last. The main provisions are, that the Society shall engage to lay out and maintain the garden in a fitting style, and that it shall also erect a conservatory or winter garden—the whole at a cost estimated at 50,000*l.*; and should the offer be accepted, the commissioners will be prepared to grant the Society a lease of the ground for thirty years; and further, as before stated, to surround the space allotted for the garden with Italian arcades open to the gardens, and built, at their own expense, at an estimated cost of 50,000*l.*: the conditions as to the payment of interest on any sum so expended (not exceeding the 50,000*l.*), and as to the amount of rent to be paid by the Society, being of a most liberal nature.

The shape and situation of the ground, which slopes gradually from the north to the south, that is, from Kensington to Brompton, admits of the formation of successive terraces on different levels,

affording peculiar facilities for ornamental treatment, and is well adapted besides for the effective display of sculpture; while a fine winter garden at the upper end, and a colonnade extending round the land, will afford a promenade of three-quarters of a mile in length, sheltered from heat and cold, wind and wet. The colonnade will also offer peculiar facilities for the display of the flowers and fruit at the annual shows, free from all risks of weather which have not unfrequently marred the Chiswick fêtes. It is to be hoped that the public will afford such aid to the Horticultural Society as will enable it to carry out the arrangement efficiently.

Our engraving is a bird's-eye view looking northward, and showing the spaces left vacant around the enclosure, with the houses built by Mr. C. J. Fiske on one side, and those by Mr. Jackson on the other. The central part of the enclosed portion, between the higher and the lower end, will be sunk to a level platform; and here water to a certain extent will be used to increase the effect.

Of the arcades, constructed of brick and stone, there will be 4,000 feet of varied design, and these hereafter may be made to afford modes of communication under cover between the various public buildings erected around the area. By means of a verandah, this covered way will continue round the winter-garden. The winter-garden seen in the view, including this verandah around it, will be 275 feet long, 78 feet wide, and 60 feet in height, to the ridge. Beyond it, is a space for a large building to front the Kensington-road.

It is proposed that the public shall have the advantage of entrance to the gardens on two days in the week at a merely nominal charge. Mr. Henry Cole, C.B., Mr. Redgrave, R.A., and Captain Fowke, R.E., act as a superintending committee for preparing the plans.

Some representations and models, of the full size, to test the appearance of the proposed arcades (concerning which, by the way, we cannot express unqualified admiration), are being made at Brompton. The actual works, we understand, will themselves be commenced in a few days.



VIEW OF THE ESTATE OF THE COMMISSIONERS FOR THE EXHIBITION OF 1851, AT SOUTH KENSINGTON, AS PROPOSED TO BE LAID OUT, PARTLY FOR THE HOETICULTURAL SOCIETY.—MR. SYDNEY SMITH, A.R.A. ARCHITECT.—*Superintending Committee for preparing the Plans.*—MR. COLE, MR. R. HEDGECOCK, and Captain BUCK.

THE SCIENCE AND ART DEPARTMENT
AT BROMPTON.

By a minute recently passed by the committee of Council on Education, the Science and Art Department will hereafter assist the industrial classes of this country in supplying themselves with instruction in the rudiments of—

1. Practical and Descriptive Geometry, with Mechanical and Machine Drawing, and Building Construction.
2. Physics.
3. Chemistry.
4. Geology and Mineralogy (applied to Mining).
5. Natural History.

By augmentation grants in aid of salary to competent teachers, and by payments and prizes on successful results, and grants for apparatus, additional advantages are offered to teachers.

An interesting "Guide to the Food Collection in the South Kensington Museum," by Dr. Wankester, the superintendent of that department, has been published at a small price, and will be found to enhance very materially the pleasure of an inspection. We shall give our readers the advantage of some of its facts before long.

The visitors to the Museum continue to be very numerous. During the week ending the 2nd of July, the numbers were as follow:—On Monday, Tuesday, and Saturday, free days, 3,888; on Monday and Tuesday, free evenings, 2,115; on the three students' days (admission to the public, 1d.), 1,133; one students' evening, Wednesday, 111; total, 7,247. At the Museum of Patents, the visitors for the week in the mornings were 3,314; in the evenings, 787; making a total of 4,101.

THE MODERN ORNAMENTATION OF THE
METROPOLITAN STREETS.

The costly buildings which are rising in numbers in the commercial portions of the metropolis are a means of calling into employment a class of workmen which, until very recently, in modern times did not exist. When considering these important works, it is worth while to compare them in an artistic point of view with the street architecture which has preceded them. This matter has been before referred to, in a series of articles, in the *Builder*, on the houses and shops of old London. It may, however, be worth while now to remark that, before the reign of Queen Elizabeth, many of the fronts of the houses were decorated with panels containing heraldic and other devices, and projections, supported by carved brackets of different kinds: the lintels of the doors, weather-boards of the gables, &c. were also carved with scroll-work and other patterns. An examination of such specimens of this carving as remain, shows that it is remarkable for boldness rather than for any delicacy of either design or execution. At no time, if we may judge by the drawings and examples which are left, were the domestic or business buildings of London equal to those in Chester and some other cathedral cities.

The introduction of a more classical style, by Inigo Jones and others, did not produce such a beneficial change as might have been expected in the metropolitan streets. This was in a great measure caused by the sudden necessity of rapidly rebuilding after the Great Fire of 1666. Plain but substantial houses were reared as rapidly as possible, which gave to the City such a grave and sombre appearance.

In the interior of dwellings, notwithstanding the unadorned exteriors, decorative art was often carried to a very high degree of perfection. The doorways of Queen Anne's days, the very fine stone carvings of Somerset House, enable us to compare the artistic skill employed in this kind of work of past times with the present. After a careful examination of several City buildings, just finished and in progress, the designs show a mixture of bold Classical features, combined with an amount of ornament which, if generally carried out, will give to the London streets a degree of picturesque beauty and elegance which has not been presented in former periods. There, however, is to be noticed, in some instances, the application of too much ornament not very judiciously used. Nor are these carvings always so satisfactory as they should be. In some cases the foliage, &c. is coarse and unfinished, and evidently the production of those who require a greater amount of art education. It would be beneficial for those engaged upon this description of work to examine and study the refinement of the carvings on various parts of Somerset House, to which we have referred. There are also useful

materials in the Architectural Museum and the other galleries at Brompton.

In some buildings colour and gilding have been introduced with excellent effect, which, however, is marred by sooty coating, which covers both stone and other work. We have noticed that on the statue of the late Duke of Sussex, in a niche in front of the Royal Free Hospital, the gilding on parts of the figure and inscription has become dull, and in a great measure loses its effect. The gilding in front of the British Museum and in other positions is rapidly becoming invisible. It has often struck me that, if the improved method of gilding were considered and applied, we might be able to get this description of ornament so permanent that even when the stone has become dark coloured the gold would retain its brightness, and have increased effect. But gilding and colour are, however, secondary things in comparison with the carved work on buildings, which will probably remain for two or three centuries as examples of the artistic workmanship of this reign. I therefore venture to remark, that it is better to have less ornament, and that well done, than a great profusion of an inferior description.

There is, however, a fine field open for those young men who will go in the true spirit of artists to the valuable objects for study which are now fortunately easily available, and apply their trained ability to this description of work. VIATOR.

DECREASE OF OUR STREAMS.

The Scottish newspapers give curious accounts of the great drought of the present season. The *Perth Courier* says, that the running-streams are shallower than ever. The rivers Almond and Earn seem to be gradually running dry; and the majestic Tay itself is extremely low. The *Forbes Gazette* says, that the district has not had a shower for the last six weeks, and the effect is likely to be serious upon the various crops. The *Ayr Advertiser* remarks that this is the most severe drought which has occurred within the memory of the present generation: old people say, they never remember to have seen the Doon so low as at present. On farms which are generally considered well watered there is not a drop for cattle or horses. The *Border Advertiser* announces the injurious effect of the extraordinary drought upon the crops. The Gale is scarcely distinguishable as a stream. The Tweed is so low that the trout may think themselves lucky if they get into a hole deep enough to prevent them being parboiled. The *Aberdeen Press*, *Montrose Standard*, and other papers, give unfavourable accounts of the state of the corn, grass, and turnips, caused by the want of rain.

No doubt the present season is an exceptional one, but it is a matter well worthy of careful consideration, to what extent the enormous amount of drainage which has taken place throughout the country has affected the average amount of rain, the height of lakes, and the volume of rivers.

It is believed that very important results would be shown by a systematic inquiry, which would prove the necessity of not only embanking the Thames, but also of causing works to be commenced on the banks of other rivers which are liable to get filled up, through the quantity of water from inland being insufficient for the purpose of carrying away accumulations.

The fishermen and watermen of the Thames nearly all agree that the quantity of inland or "back water" has of late years considerably decreased: if this is actually the case, energetic efforts should be made to provide a remedy for such a great evil.

WALL PAINTINGS IN CHALGROVE
CHURCH.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting held at the Oxford Architectural Society's Rooms, Holywell, on Wednesday evening, the 29th of June (Mr. J. H. Parker, president, in the chair), the secretary read a paper furnished by Mr. Buckler, architect, "On the Paintings lately discovered at Chalgrove Church, in the County of Oxford." It appears that the figures are of early character, and the head-dresses, the wimple, &c. point them out as works of the fourteenth century. The chance in which these paintings exist is of the date above mentioned, and has windows of the character of that style on the north and south sides. These windows form breaks in the subject of the frescoes, and are themselves decorated in their spays by figures. On the north and east walls are a series of subjects taken from the events of our Blessed Lord's Passion, and treated with

delicacy and religious spirit. The north wall treats of the events of the Passion itself, including figures of St. Mary Magdalene, the Virgin Mary, St. John, and St. Peter, in the act of cutting off the ear of Malchus, and of other of the apostles; there appears also the traitor Judas, and the reviling Jews whose countenances are marked with great respectings of character, their noses being exceedingly crooked and beak-shaped. On the east wall our Lord is seen in the act of rising; soldiers appear in recumbent postures beneath some arcades of what is intended to be a representation of the sepulchre. The upper part of this figure is lost, as also is the case with the one in which our Lord is represented as ascending, the feet only being visible. The south side is decorated with traditional subjects, chiefly relating to events connected with the lives of St. Mary and St. John. Mr. Buckler quoted a series of legends translated from curious and interesting sources, which throw much light on this—perhaps the most obscure—portion of the design.

Mr. Freeman trusted that these paintings were not exposed merely to be destroyed as soon as possible. Mr. Parker assured the meeting that steps had been taken for their preservation.

THE "ILLUMINATED INDICATOR."

SIR,—Passing along Piccadilly last evening with a friend, I stopped a few moments to look at the new "Illuminated Indicator." After having noticed the advertisements I looked for the clock, but could not see it until I walked nearly across the road, when I saw a small clock not illuminated, and almost hidden by the ornamental ironwork at the top of the advertising column. Now I ask you, sir, what is the use of a clock in that position? Why not have two illuminated clocks facing towards the pavements (so that foot passengers may not have to go into the road to see the time), and projecting beyond the pillar?

AN OBSERVER.

*** The illuminated indicator at Hyde-park is a wretched failure, and will serve to justify the opposition we raised to those who would have let our street-lamps for advertising purposes. In some positions the erection of a clock, and the provision of a post-office and a light, might be sufficient excuse for disfiguring the road with obtrusive advertisements; but at Hyde-park-corner, where none of these are wanted, there is no defence for it. When some young child or old woman has been run over in consequence of the obstruction this "indicator" causes, it will probably be removed.

PROVINCIAL NEWS.

Maidstone.—The Kent County Lunatic Asylum has been recently undergoing various extensive alterations and additions; the old stone fronts in the main building galleries having been taken out and wood substituted, and the day-room and cell accommodation generally re-arranged and added to. The refractory wards for females have had an entire new story added, and the ground-floor rooms are altered and improved. The old farm buildings have been entirely taken down, and new ones erected on a more convenient site. The works have been carried out under the direction of Messrs. Whichcord and Blandford, architects, of Maidstone, by Messrs. Sutton, Walter, and Goodwin, builders, of the same place; Mr. W. Elsmore acting as clerk of the works.

Cambridge.—The foundation-stone of the Royal Albert Benevolent Society's Asylum has been laid. The object of the society is to provide an asylum for the aged and infirm poor members, without restriction as to their belonging to a Friendly Society. Any one subscribing five shillings annually may receive the benefits of the asylum. The plans selected by the committee, out of fifty-nine sent in, were those of Mr. F. Peck, of Maidstone: the contractors for the building are Messrs. Bullock and Sons, whose tender amounted to 1,675l.

Puriton (Somerset).—The foundation-stone of a new school has been laid in this village. The building is to be in the Gothic style. Mr. Knowles is the architect, and Mr. R. Winter the builder.

Plymouth.—A new Lecture Hall and premises are now in course of construction, at the back of Union-street, and near the railway terminus. The hall will be 60 feet long by 28 feet wide. Fourteen ornamented pilasters will be introduced in the hall, the ceiling of which will be vaulted and also embellished. There will be no side windows in the building, but the lighting will be from the ceiling by means of four inner and eight outer lights in the roof, with arrangements for ventilation. The architects are Messrs. Damant and Reid. There will be an entrance at the north end,

the passage being 6 feet wide, from which there will be access to the hall by means of a flight of steps. The hall is 24 feet in height, and will be fitted for gas. There are three or four outlets to this hall, not for general use, but to be opened in case of any emergency. In front of the hall will be a residence, suitable for a lodging-house or hotel.

Birmingham.—The town council having taken up the question of the sewerage and drainage of the borough, have called in as engineer Mr. R. Rawlinson.

Leeds.—The new Grammar School for Leeds has been opened. The building, according to the *Intelligencer*, consists of two large school-rooms, with class-room and library, and a residence for the head-master, with accommodation for boarders. The style of architecture employed by the architect (Mr. E. M. Barry, of Westminster), is Gothic, of the Decorated period, and the structure is faced throughout with stone. The exterior presents much variety of outline, and, with its pinnacles, dormer windows, and lofty ventilating turrets, is conspicuous for miles round. The windows are deeply recessed, with rich mouldings, including shafts and carved capitals; and the entrance-doorway is ornamented with polished red granite columns. All the roofs are of steep pitch, and at the point of intersection of the main roof with that over the library rises a lofty ventilating turret, or lantern. The latter is divided into two stories, the upper one serving as an outlet for vitiated air from the school-rooms, and the lower one giving access to a balcony. The master's house is at the western end of the building, and has a marked dwelling-house character stamped upon it. The building resembles in shape a Latin cross, the lower or longer arm containing the school-rooms, one over the other. These measure 95 feet long by 28 feet wide, and 85 feet long by 28 feet wide. At the point where the four arms of the cross meet is the staircase for the boys, which is entirely of stone, with flights 5 feet wide. There are no windows, and the landings are supported on iron beams. The right-hand arm of the cross contains on the ground-floor two cloak-rooms, and over them a class-room and the library, each 24 feet long by 22 feet wide. The left-hand arm is occupied by the study and dormitories, each 22 feet square, for the head-master's pupils. The upper arm of the cross is devoted to the head-master's residence. The schools are warmed by hot-water pipes. The roof of the upper school is of open timber stained and varnished, and the floors are supported on wrought-iron beams. The contractors were the executors of the late Mr. Thos. Hall, of Leeds. The sub-contractors were Mr. Whitley for masonry, Mr. Nelson for ironwork, Mr. Garlick for plumbing, Mr. Woodhead for painting, and Messrs. James Wilson and Son for plastering. Mr. Leslie was the clerk of the works. The building has cost about £5,000, including 3,000*l.* for the site.

Newcastle-upon-Tyne.—The baths and wash-houses at the foot of Gallowgate have been opened for the use of the public. The building is constructed externally of stone. The style of architecture partakes somewhat of the Elizabethan. It is approached by a flight of steps leading into a recessed porch, at the junction of Newgate-street with Gallowgate. The baths are on the lefthand side on entering the porch, except those for females, which are on the other side; and in this department there are fourteen warm and cold slipper baths, one vapour-bath, four tepid and cold shower-baths, with waiting-room and conveniences attached. There is no plaster-work in the bath-rooms, nor throughout the washhouses, the whole of the walls being lined with glazed porcelain bricks of a warm, buff colour. The divisions between the baths in the first-class are made of enamelled slate. The second-class bath partitions are plain slate, smooth on both sides. The whole of the baths are each formed in one piece, of Stourbridge freclay, coated on the inside with a layer of white porcelain. The washhouse is reached from the opposite side of the porch to the baths, opened only by the superintendent from the office, for the purpose of preventing ingress and egress without its being recorded. The washhouse has glazed brick walls, painted iron roof, rows of skylights, iron columns, ornamental ventilating grates, and other accessories. This apartment is about 40 feet square, and is divided by slate partitions into forty-five separate washing-stalls. There are two wringing-machines, which expel the water out of the clothes by centrifugal force. The roof of the washhouse is of iron, in three spans, and on the ridge and furrow principle. It is painted in party-colour. The drying-room adjoins the washhouse, and communicates with it by open arches without doors. The contractors for the building

department were Messrs. Scott and Reed; and for the engineering department, Mr. H. Watson. The structure has been erected from the design of Mr. Thos. Oliver, under whose superintendence it has been carried out, with the assistance of Mr. Bryson, the town-surveyor. This is the second corporate institution of the kind in Newcastle. The plans prepared by Mr. Dobson, architect, for the extension and alterations of the Newcastle Gaol, having been submitted to the Home Secretary, have been approved. The Gaol Committee have consequently directed Mr. Dobson to proceed with the working drawings, which will be shortly prepared, and contracts advertised for the commencement of the works.

Sunderland.—The *Gateshead Observer* of last week supplies the following items:—An extensive building has been commenced on Sunderland Moor for the Orphan Asylum. On Monday last, a graving-dock was commenced in the ship-building yard of Mr. James Laing, J.P. Deptford. Messrs. Young, Brothers, are the contractors. This graving-dock is intended to be constructed on an extensive scale, and to accommodate the largest vessels that are built in Sunderland. On Tuesday last, the construction of a new savings' bank was commenced, at the north end of Wearmouth Bridge, near the Royal Hotel, Monkwearmouth.

CHURCH-BUILDING NEWS.

Wivenhoe (Essex).—The parish church of Wivenhoe having been found inadequate for the increasing population, a movement was set on foot for its restoration and enlargement, and a subscription was started, which has reached 1,500*l.* or 1,600*l.* The estimated cost of the work is 1,700*l.* towards which Mr. Rebow has subscribed 400 guineas. The restoration and enlargement will be from plans supplied by Mr. Hakewell, of London, architect, Mr. G. P. White, of London, being the builder, and Mr. J. Heade, of Wivenhoe, the carpenter. The west end of the church has been removed, and the interior cleared. The foundation-stone for the enlargement has been laid.

Swanage.—The foundation-stone of a new church here, in place of the old, has been laid. The whole of the church is to be rebuilt, says the *Sherborne Journal*, excepting the tower. The style will be Perpendicular. The extreme length will be 82 feet; nave, 27 feet wide; extreme length of transepts, 64 feet. There will be a nave, chancel, north and south transepts, north aisle, and children's gallery in each transept. Such parts of the old windows as are sufficiently good will be re-used and adopted. Accommodation will be afforded for 516 adults, and 176 children. The expense is estimated at 2,180*l.* The diocesan architect, Mr. T. H. Wyatt, has supplied the plans, and Mr. Monney, of Dorchester, is the builder.

Kegworth (Leicestershire).—The restoration of Kegworth church has commenced under the management of Mr. Garland, of Nottingham, architect. The body of the church and the chancel have been cleared of the unsightly tea-chest pews, and the reading-desk and pulpit have shared the same fate. The three galleries will speedily be demolished.

Highbridge (Somerset).—The new church of St. John the Evangelist, Highbridge, in the extensive parish of Burnham, has been consecrated by the Bishop of Bath and Wells. The design for the edifice was prepared by Mr. Norton, of London, and the building was entrusted to Mr. Palmer, of Weston-super-Mare, who commenced about twelve months since. The plan of the building comprises nave and chancel, with north aisle to the former, and chapel to the latter, serving for organ and vestry. A tower at the north-west angle of the aisle, groined in stone, serves as a north porch, and a south porch is placed in the second bay of the nave. Rough relieving arches are turned in the thickness of the south wall, to admit of an additional aisle on that side. The principal feature in the design of this church is the mode in which the arcade has been treated, intended by the architect to illustrate the possibility of avoiding the inconvenience supposed to result from the introduction of pillars, as obstructions to sight and sound, in our modern churches. The nave is of five bays; and, instead of the usual four solid pillars, the arches are supported by coupled columns of polished Babbicombe marble, 7 inches in diameter, standing on a solid stone plinth, the height of the bench framings, and combined together under a square abacus, the bell of the caps being carved with foliage of an early type. Externally the blue limestone forms the general facings, with relieving arches and con-

tinuous bands of the old sandstone, from quarries near Bridgwater. The dressings are of Combe Down stone, and the roofs of the church and spire are covered with tiles of local manufacture, arranged in blue and red bands. The belfry-stage of the tower is gabled into the spire, and on each face triplet windows rest on blue slate shafts, the same material being used for window and door columns elsewhere. Chestnut wood has been used for the seatings, the doors, screen, &c. and English oak for the carved chancel stalls. The accommodation is 360, and with the future south aisle, 450. The tower has a peal of four bells, cast by Warners of London. The entire cost of the edifice was about 2,500*l.* the whole of which was borne by the founders, Miss Poole, who has besides erected a parsonage upon the ground of the north side of the church, at a further expense of 900*l.* On the south side is an open space of land intended as the site of a school. The builder of the church was also the contractor for the parsonage.

Coleshill (Warwick).—The restoration of the church here is progressing. The edifice has been roofed in. Scaffolding has been erected around the base of the spire, which it is intended to give a casing to up to the pinnacle. The pews are nearly completed. The windows have been glazed with stained glass. The walls at intervals exteriorly are being decorated with chiselled heads, mostly female, and higher up heads of Gothic monstrosities. These are produced by a deaf and dumb Frenchman, four days being the time he takes to each. The re-erection of the church is entrusted to Mr. Robinson, of Coventry.

Haslingden.—The corner stone of a new Roman Catholic Church has been laid at Haslingden. Mr. Wm. Nicholson, of Manchester, is the architect. The new edifice, when completed, will consist of nave, chancel, lady-chapel, vestry, and presbytery. The style is Gothic. The nave is 65 feet by 32 feet; the chancel, 16 feet by 14 feet; the lady-chapel, 8 feet by 11 feet; and the vestry, 13 feet by 12 feet; but, owing to a want of sufficient funds, the chancel, lady-chapel, and vestry are to be dispensed with for the present, and a room of the house substituted for a vestry. The builder is Mr. P. Farrell, of Manchester.

Tunstall.—St. Mary's Church, Tunstall, has been consecrated by the Bishop of Lichfield. The architects were Messrs. Hay, of Liverpool; the contractors, Messrs. Nelson (carpenter), Hughes (bricklayer), Holt (plumber), and Henshaw (mason). Mr. Ballantyne, of Edinburgh, provided the stained windows, and Mr. Craig the carving of the woodwork.

Rochdale.—The foundation-stone of a new Wesleyan Sunday-school has been laid at Shepherd's-mill, a village near Baglsate, or Blackpit, near Rochdale. The school is to be 64 feet by 22 feet, and 14 feet to the spring of the roof. At one end there are to be two class-rooms, 12 feet by 12 feet, and a vestry. The building will be a plain stone edifice, and is estimated to cost about 320*l.*

Ecclesfield (Yorkshire).—A bazaar has been formed to defray the expenses of an internal restoration of the transept and chancel proposed to be made in the parish church of Ecclesfield. Amongst the contemplated alterations are the removal of the old oak screen, separating the chancel from the church; so that the church will be open from east to west, and increase its architectural effect, as well as afford accommodation for Sunday scholars; the removal of the organ and singers' gallery into the north transept, &c. The estimated cost is 500*l.* The sum of 100*l.* was taken at the bazaar. The proposed alterations are placed under the direction of Messrs. Hadfield and Goldie, and the carving will be executed by Mr. Haybell.

DIPHTHERIA BRICK-KILNS.

THE important theme, under the head "Diphtheria and its Causes," which you published in a recent paper, and which you recommend for further medical research, deserves the peculiar attention of the public at large, and evolves to every body the duty to contribute a share of observation. Dictated from this point of view, I beg leave to submit the following to consideration in your valuable paper.

Every attentive observer will have had the occasion to perceive the injurious influence which the brick-kilns exert over great distances during the operation of brick-burning, for which purpose all kinds of dry fibrous substances are used, and which in a great measure had before been exposed to decomposition in stagnant cesspools, and, therefore, must impart to such building materials the peculiar character for malaria, the more so if a

great demand and a great reduction in prices allow not the necessary time of exposure to the atmospheric influence before their application in buildings, which, on the other hand, are scarcely erected before they are prematurely inhabited, and whose apartments, when covered with paperhangings, or mortared with straw and refuse of flocks, prepare that effluvia which causes the presence of a peculiar kind of inflammation of the eyes, excitement of the larynx, inclination to giddiness, or to vomit, cholera, scorbutic diseases, and intermittent fevers, which for several years have been prevalent, and principally in the brickfields and the adjacent new houses at Islington, and similar localities in other districts of the metropolis.

This indisputable fact can easily be investigated during spontaneous and extreme changes of the atmosphere, when offensive effluvia and miasmatic matter visibly move like waves in the dwellings and their adjacent territory. Contemplating the result of such phenomena, caused by the accumulation of decomposed animal and vegetable substances with which the vacuities of the brickfields have been filled up, on which continuous rows of houses, in a great distance, have been erected, and prematurely inhabited, we cannot wonder that these hidden hot-beds for malignant diseases contribute to the prevalence of the diphtheria.

A further proof of this fact can be established by having recourse to the contents of the journals of hospitals and dispensaries, where afflictions of the elicited kind have come under more professional observation on patients of peculiar trades, subject to the influence of such injurious effluvia; and furthermore, if the leading journals and periodicals would publish these very instructive depositions and professional researches in public institutions, there is no doubt that an invaluable benefit would emanate from it.

Now in regard of the means for the speedy cure of diphtheria, I can conscientiously recommend the alternate use of ipecacuanha and *stimulans opii simplex*, the gargle of a decoction of sage and honey, and the frequent use of cooling beverages, made of the juice of lemons, of strawberries, &c. as well as the frequent fumigation from chloride of lime, juniper berries, and strong vinegar.

Invalids of this kind, however, of a naturally strong constitution, derive a great benefit from bleeding, and a foot-bath of mustard-powder and salt.

Far from the intention of deducing from my observations the universal efficacy of the cure of diphtheria, and its original cause, I expose only my share due to the importance of sanitary investigation, and beg leave, sir, to give you the assurance of my distinguished respect, with which I have the satisfaction of signing myself

ALEXANDER DEMBINSKY,

Professor of Chemistry.

A PROPOSITION FOR STREET RAILWAYS.

I PERCEIVE by the London papers, that a project is on foot for a subway between the Royal Exchange and the West end by Charing-cross. It is now some years since an idea occurred to my mind that it would be possible to lay down lines of rails upon the streets, flush with the surface of the roadway, along the same route,—the carriages running upon them to be propelled by a motive-power placed in a subway under the railway. This plan is widely different from the one above mentioned, but both have the same object in view, namely, that of facilitating the transit of passengers from the City to the West end. The motive power required to propel the carriages, and the proportion and strength of the several parts, are matters for the consideration of scientific men: all I aim at is to direct attention to the subject, which I believe to be of great importance to the inhabitants of London.

The plan proposes a double line of rails; the former for traffic westward, and the latter for the traffic eastward. The floor of each carriage is 2 feet above the roadway, being about a foot lower than that of an omnibus. The carriages in my plan have no seats upon the roof, the compartment for second-class passengers being intended to supersede the necessity for such an arrangement.

The subway from wall to wall is 6 feet wide, in the centre of which, at distances of 10 feet apart, along the entire length of the subway, are cast-iron frames, in each of which is fixed a sheave, 3½ feet in diameter: these sheaves are driven by a rope. Upon the same shaft as the sheave in each frame is a cast-iron drum, or narrow driving-wheel, 4 inches broad, but on alternate sides of

the sheave: the one drives the carriage westward, the other drives the return or down carriage eastward. It will be seen that the effect of the rope working upon the upper side of the sheave—when they revolve—is to send the carriage westward, and when on the underside to send it eastward. This arrangement of having the driving-wheels on alternate sides of the sheaves greatly simplifies the working of the motive power. The rope is supposed to be connected with a sheave attached to and driven by fixed engines placed in houses 500 yards apart along the line of route east and west. It is proposed that the engines should be fixed midway between the two extremities of a set of sheaves driven by one endless rope and one engine, and so on every 500 yards through any distance. The breaks between one set of sheaves and an adjoining one would not interrupt the continuous motion of the carriages along the line between the stations placed any distance from each other. The gangway in the subway on each side of the frames is 2 feet wide, with a clear headway of 3 feet 9 inches: the floor of the subway is 4½ feet below the surface of the roadway in the street. The steam-engines might be fixed in a yard or other place in the rear of a house in the street, the shaft from it to the principal driving sheave in the subway being laid under the ground-floor, footway, and roadway, along a narrow subway or passage used as a means of access to the machinery, &c. in the main subway under the roadway.

I now come to a description of that part of my plan which I believe to be quite a novel mode of applying a motive power for the particular purpose of propelling carriages along a line of rails laid down in a street. The rails upon which the inner wheels of the carriages will run, that is, the two in the centre of the roadway, lying parallel to each other, a foot apart, are laid upon the top of each (outer) side of the frame in the subway. Between these two rails there is a cast-iron cover resting upon the two inner sides of the frame, and between the sides of the rails and the edge of the cover is a space or slit, 1 inch wide, along the whole length of the line of rails,—it will have the appearance of the grooved rails laid down where a line crosses a street. It is through this slit that motion can be given to a carriage, or instantly brought up, at any moment and at any point upon the line, and by the following means. To the far side of the carriage, that is, the one next the centre of the road, there is a frame of wrought iron, 24 feet long, fixed upon two short arms. This frame is always in the slit, and is lifted off and on the driving wheels or narrow drums by means of suitable levers placed under the carriage. Upon the near side of the carriage, and close to the steps, there is a cast-iron plate, about a foot wide: this plate is connected with the levers above mentioned, and also with a break. Now when the conductor wishes to start the carriage, all he has to do is to step upon the plate, when the carriage instantly moves on. If a passenger hails him he steps off the plate, and the carriage instantly stops. This is effected by the dead weight of the carriage and the action of the break. I think it will readily be understood, keeping in mind that the driving wheels are in constant motion, that the instant the frame is laid upon one of them (and it does not act upon more than one at a time) the carriage is directly propelled forward by the action of the wheel upon the edge of the frame, which is the same width at that part of it as in the driving wheel, viz. 4 inches; and, that when the frame is lifted off the wheels, the carriage is instantly brought to a stand-still by the dead weight of the carriage and the break upon the wheels.

HENRY LIDDELL.

ENCOURAGEMENT OF ENGLISH CARVERS.

WILL you allow me space in your Journal for a few remarks that may serve to check the injustice that is daily crushing the stone carvers of England, preventing their talents from being rightly brought into use, and reducing them into mere mechanical instruments? Competition, we are all aware, has not increased the bulk of the working man's fortune; nor have its results added lasting lustre to many of the works executed in modern times, though in itself, were it judiciously used and not abused, the probabilities are that, in most branches, artists and artisans would reap greater benefits, for then the best man would be the best paid; whereas, at the present time, he that sends the lowest price is the accepted one. Regardless of his ability, he is appointed, whence, at the completion of the works, we oftentimes have such

horrible monstrosities that, to speak from comparison, we can lay no claim to following in the footsteps of progression, and, in place of keeping in the van in the march of intellect, we retrograde into barbarism. In no profession dealing with art has the abuse of competition been more keenly felt, or more unintelligently served out, than in that of stone carving. We boast of improvements in most arts and sciences: we revel in the beauties of a Michelangelo, a Phidias, or a Grinling Gibbons: we extol the Medicevalists for their splendour in architecture, and delight in their exquisite carvings, and we thirst for the reproduction of those arts that have been sepulchred in gloom since the Reformation. Thousands of pounds have been expended in casts and drawings for the education of our rising artists; but as a checkmate to our youthful industry and talents, competition, in the hands of contractors, hugs us into recklessness, and makes of us destroyers of art instead of artists.

As the talent of the artists of olden times was not measured by a two-foot rule, nor purchased for the price of a mere humble existence, let me ask why, in these days of progression, when the appetite is keen to refinement, should artists be neglected and treated more like barterers in a market than men of high-born ability? If, as our poet says,—

“A thing of beauty is a joy for ever,”

why not allow the carver time to produce what may gladden and brighten the age he lives in, and pass into posterity as a landmark in the history of art? Carvers of the present day do not reap the golden harvests they were accustomed to some years ago, though memory reverts to and compares the productions of their fathers to those of their own, to which there is no semblance in point of merit; and now we find our numbers increasing, together with encroachments on our privileges, we have formed a society for the purpose of improving our art, and repelling the unprincipled advances of men whose only aim is £. s. d.; and we hope, ere long, to hold position with some of the sister arts, and redeem the negligence of our predecessors. Knowing the relative positions of architects and carvers, I would suggest that all architects make one decided rule to let the carver hold direct communication with themselves by way of contract and interpretations of their views of the carving about to be done. Then we should have respectable carving. Carvers would be freed from the interference so often made use of by ignorant contractors; and, in place of taunting us with the often expressed phrase, that we are unequal to the Mediceval carvers, you would find that we can and would excel them, and grace the pages of history by adding a new epoch.

C. J. HERLEY, Carver.

VENTILATION OF THE SMALL-POX HOSPITAL.

SIR,—Knowing the interest you take in the prevention and cure of disease, I write to inform you of some particulars I have recently heard respecting the Small Pox Hospital, Upper Holloway.

A patient was placed there some weeks since, in a ward with fourteen beds, all occupied. A relation, knowing his dangerous state, after taking the precaution to be vaccinated, went to see him. He describes the smell on entering the ward as most fearful, and declares that though well in health and strong, he could not have endured it a quarter of an hour. Whilst his brother was there eight deaths occurred in this room in five weeks. Most providentially he endured the dreadful disease and atmosphere of the ward, and is now better; but should this condition be so? Can the ventilation be right?

I have not seen many hospitals; but I recollect well going through the South Staffordshire Hospital, Wolverhampton, with a friend, then surgeon there, and I could detect no offensive smell, even in a ward where were several men severely burnt.

A furnace in the roof, with which flues from the wards communicate, the furnace being heated, creates a vacuum in the wards. This is supplied by other flues communicating with the external air, which can be heated in cold weather by another furnace in the basement, so as to warm the air in the wards. In summer it is usual to heat the upper furnace only, and in winter both.

On this principle, also, the gaol at Wisbech, by the late Mr. Bassevi, is ventilated, and, as I was told by the governor, who kindly showed me all the arrangements, most efficiently.

Both the patient at the Small-Pox Hospital, and his brother, speak highly of the attention re-

ceived. The hospital is not supported as it should be; but if the ventilation can be improved, surely it ought to be.

J. W.

THE "QUANTITIES" QUESTION.

SIR,—The advantage of quantities being supplied by some party is so obvious, that any further allusion to it is unnecessary. The principal point of discussion has been the propriety, or otherwise, of an architect taking off the quantities for works under his own supervision. The main objection urged against such a course is, that the architect is thought by so doing to be placed in an improper position towards the builder, when his relation to his client is considered, and that in some cases there might be a temptation to do injustice to the latter. There may be some truth in this objection, but we cannot conceive that any respectable professional man, who is alive to the great responsibility resting on him, and the unlimited confidence reposed in his integrity, would permit any private difference with the builder, as to disputed quantities, to interfere with his duty and his client. On the other hand there certainly are very great advantages to the client himself resulting from his own architect supplying the quantities. The architect thus has the opportunity of more fully insuring the completeness of his specifications and plans, and so rendering less probable the necessity for extra works arising. It also gives a clear review of every constructive detail, which revision may frequently be of benefit, besides affording the best possible check on the contractor's estimates, and permitting the opportunity of reducing the cost, if it should be necessary for the client's interest to do so, before procuring tenders from builders.

With the view to secure the advantages and prevent the evils named, and at the same time do justice to the contractor, we have for the last five or six years almost invariably adopted in our specification the clause quoted by your correspondent. In all our contracts, as far as we know, the operation of this clause has been beneficial and satisfactory; and its introduction has never, after necessary explanation, been objected to by contractors, until the case of the chapel at Bishop's Stortford.

By the ordinary plan, when a deficiency exists in any quantities it is rarely discovered, or, if discovered, brought to notice until the close of the works, and then there is the usual undignified squabble between architect, builder, and client, as to who is responsible for the deficiency. We think it must be conceded that, if a discrepancy exist in any quantities, it is much better for all parties that it should be discovered, brought before the client's notice, and properly adjusted by a *bond fide* sanctioned diminution of the work, or by an addition to the amount of tender before any contract is signed.

The question may naturally arise, that, if a contractor pay for the quantities, why should he have the trouble of testing them?

The answer is plain, that if a deficiency exist the builder must sooner or later go through the quantities, and that it is no great hardship to require a successful contractor to devote a few hours or days, as the case may be, with the explanations of the person who has taken them off, is an easy matter; and surely a little trouble in the first instance is better than the possibility of subsequent dispute and litigation.

POULTON AND WOODMAN.

ACTION FOR DAMAGES: FALL OF HOUSE.

IN a previous number we alluded to the fall of a house in Grafton-street, Dublin, during the progress of rebuilding that adjoining. The proprietor of the fallen structure instituted an action at law against the contractor of the said adjoining house, alleging that the accident occurred in consequence of his neglect in not propping up his building, and that, owing to such accident, he sustained grievous injury by the loss of his house, his business, means of livelihood, &c. The case, viz. *Kempson v. Butler*, came on recently for hearing in the Court of Common Pleas, before Chief Justice Monahan and a special jury. Damages were laid at 7,000*l.* including an amount of 975*l.* required to rebuild the house and for loss of property. The plaintiff stated that "plaintiff's house was entitled to rest on the adjoining house, and that the defendant, having improperly removed the same, was liable to make good the plaintiff's loss;" while on the part of the defendant it was submitted that "the house that fell was a very old one, and came down from the effects of age, and not from negligence on contractor's part, who did everything in his power

to sustain it." At the conclusion of the plaintiff's case the judge stated that "he was bound to nonsuit the plaintiff on a point which had nothing to do with the merits of the case, inasmuch as the plaintiff did not legally set forth the cause of action, viz. the actual right of the defendant to prop up his house at all." An erroneous impression had gone abroad as to the nonsuit, owing to reports in local journals that "the learned judge clearly laid down that the parties building were not bound to uphold the other house or even to prop it;" but this has been subsequently contradicted, and we are informed that the question will come to trial on its merits.

A MARTYRS' MEMORIAL IN SMITHFIELD.

SIR,—In the *Builder* of June 18th it is very properly suggested that some memorial should be placed in Smithfield, on the site where so many martyrs were burned 300 years ago. A few years since, when the market was discontinued in Smithfield, a committee was formed, with the Earl of Shaftesbury as chairman, to carry out the proposal for a "Martyrs' Memorial" in Smithfield.

Some hundred pounds were collected, but the sad failure of the bank in which this money was deposited swept away at once the whole of this fund.

A small sum (less than 80*l.*), collected by a relative of mine, and not at that time handed in to the bank, is the only nucleus for a renewed collection, and I am sure that the committee of the Protestant Alliance would most cordially welcome any addition to this fund, and feel grateful to you for the opportune and valuable advocacy of a revival of this important memorial.

JOHN MACGREGOR.

COMPETITIONS.

Dorset County Lunatic Asylum.—The committee of visitors being desirous of enlarging the above asylum, or of building a new one, as circumstances permitted, invited a limited number of experienced architects to compete for the same, paying their individual expenses in the competition. The designs were sent in, and after consideration (the selection being given to the commissioners in lunacy), those of Mr. H. E. Kendall, jun. the architect of the Essex and Sussex County Lunatic Asylums, were approved of for execution—a new asylum for 280 patients, at a cost of about 30,000*l.*

Charlton National Schools.—Forty-six designs were sent in for the above-named schools, in competition, reduced afterwards to two, the selected having to try again to meet the exact wishes of the committee. The decision has fallen on Mr. Thomas C. Kendall, of Brunswick-square, who is appointed to carry out the work.

Birmingham.—The congregation of the New Meeting, Moor-street, are about to erect a place of worship at the corner of St. Peter's-place, in Broad-street. Several architects were invited to send designs, and the first premium has been awarded to Mr. J. J. Bateman, of Birmingham, the architect of the pile of buildings recently erected by Messrs. Hyam and Co. in New-street. The second premium was awarded to Mr. Bowman, of Manchester.

THE DRINKING-FOUNTAIN MOVEMENT.

A FOUNTAIN, in red porphyry, has been erected at Brighton, in one of the old sentry-boxes on the east side of the north gateway of the Pavilion. It was erected by Mr. Wm. Blaber. The stream issues from the mouth of a dolphin.—Mr. J. R. Jeffery, Compton House, Liverpool, has offered to present twelve of Molly's galvanized iron fountains to his native town, nine to be erected in Devonport and three at Stonelouse. The proposal has been referred to the general purposes committee of the Devonport Council for consideration.—A fountain has been erected in Cardiff, at the corner of the wall at the end of Butecrescent, fronting the steam-packet station at the pier-head. It is of light-coloured marble, and was presented by Mr. Richard Cory, sen. In the centre of the slab is a font of the same material, over which is chiselled a water-lily. The design is thought to have too much the appearance of a sepulchral monument. The fountain was erected by Mr. W. P. Davies, marble and slate merchant, Cardiff.—A fountain, from a plan by Messrs. Senior and Wade, architects, is about to be erected in Barseley, at a cost of about 30*l.*, which has been raised by subscription.—At a meeting of the Edinburgh Council, a report of the Lord Provost's sub-committee was read, which stated that the convener had made an application to the Water Company for water to the fountains free of

expense, which had been granted. The report also stated that the committee were of opinion that orders should be given for the erection of a pillar-fountain near Waverley-bridge, the expense of which pillar fountains they calculated would be between ten and twelve guineas each. The report was approved of, and the whole matter re-committed to the committee.—"A Hammerman" (D. R.) says:—"I have thought on a new plan of fountains, that would be the means of doing much good in all large towns: for instance, Edinburgh, if the tradesmen of different crafts would put up a well of their own, and call the well after the trade. If the hammermen of Edinburgh, for example, would erect a St. Anthony's well, it could be put up for 1*s.* per hammerman, and the well would be our own for the good of the public; that would be the means of keeping us out of the taverns. I have every confidence in the scheme. If you will give this your good opinion, it will be the means of doing much good in every town." The suggestion is a good one. Let the hammermen get a good design, and do something people who come hereafter may be proud of. Surely they could "take the shine" out of the Antwerp well, if they tried?

ART AND DRINKING-FOUNTAINS.

YOUR description in last week's *Builder* of the drinking-fountain recently erected in Bristol by the Local Board of Health, reminds me to acquaint you that one of a similar pattern has just been placed (in Dublin) on the south battlements of Carlisle-bridge. I confess it appears to be much more like "a monumental slab" erected to the memory of a deceased corporation than a fountain to give drink to the thirsty. Stuck up against the high plinth course of the superstructure, and round a corner, its use is likely to be little known unless to a few ragged urchins who frequent the spot, which is close to a row-boat station, and who will enjoy themselves at a game of "splashing." If it be intended—as all public fountains should be—for both man and beast, pedestrians will occasionally find their passage intercepted by a horse or a cow on the pathway vainly trying to satisfy its thirst out of a bowl. In fact, such an attempt at a fountain is preposterous, and calls for censure rather than approbation. If properly treated, a fountain furnishes a subject for a design combining utility with ornament, and a few handsomely-constructed fountains, with capacious basins in connection, would contribute embellishing features to our city, as well as effectually attain the desired end. Another has been fixed at the expense of a "philanthropic grocer," in a populous and not particularly salubrious locality, South St. George's-street; but neither is really suited to its purpose. The movement, however, has begun, and we must hope for beneficial results.

A CORRESPONDENT.

BUILDERS' ACTIONS.—CAUTION.

Smyth v. Hooper.—This was an action at Guildhall, before Mr. Justice Blackburn, for damages, by reason of an accident caused to the plaintiff owing to a hole being improperly left open at some new buildings in Walpole-street, Deptford. The plaintiff was a young woman in service, and the defendant was the contractor for the works in Walpole-street. The hole was intended to be an entrance to the cellar, and no fence whatever was placed around it. The plaintiff fell in while passing the street in the evening. She was very seriously injured by the fall, and was obliged to remain in an hospital for ten weeks, and was not yet sufficiently recovered to do any work. The defence was, that the plaintiff might have avoided the accident if she had used due caution.

Mr. Seymour Barry and Mr. Murphy appeared for the plaintiff, and Mr. Wordsworth and Mr. Prentice for the defendant.

The jury returned a verdict for the Plaintiff.—Damages, 45*s.*

BISHOP'S STORTFORD CONGREGATIONAL CHAPEL.

SIR,—I quite agree that you could not afford space for a personal discussion, but I hope you will do me the favour to insert the following in reply to the architect's letter:—The committee were not unanimous in accepting the tender of Messrs. Young and Co.; nor are they unanimous in their confidences of the architects. I believe the contractors were not made acquainted with the peculiarities of the case before their tenders were received. Mr. Young (who signed the contract on behalf of the firm of Young and Co.) says he had no such information from the architects; his partners might or might not know, but they had not told him. Neither did I clear the way for the committee to act; I said, if they put the chapel to competition again, I should not tender. I challenge the architects to submit the bills of quantities, for examination, to some competent surveyor; if my statement is wrong, I will pay the expenses; and if, on the contrary, they are wrong, let them pay the expenses. I further challenge them to submit the question of the compromise to arbitration.

I know that all I said in my former letter is strictly true, and I can produce witnesses to prove it. I court inquiry, and earnestly desire a strict and honest investigation into

this matter; and I think the architects, having a due regard for their reputation, will not shrink from accepting my challenge.

"As I hope, sir, not to have occasion to write to you again upon this subject, I beg to thank you for your courtesy in giving my communication insertion in your paper. At the same time, sir, allow me to thank the 'London Builder' for his letter."

JOHN L. GLASSCOCK.

THE INTERIOR OF AN ELIZABETHAN HOUSE.

In an account of Eastbury House, near Barking, read by the Rev. E. L. Cutts, at the recent meeting of the Essex Archaeological Society, elsewhere mentioned, Mr. Cutts said:—

A large, plain, empty room presents nothing very interesting to the eye: you must, by an effort of the imagination, refurnish and repeople these old houses, if you wish to share the antiquary's pleasure in them. Go outside again, and enter this fine old mansion with an antiquary's eye. Fancy yourself riding up to the road through a Pleasance of well kept turf beneath an avenue of old elm trees. At the porch the porter receives you with profound obeisances, a groom runs up to take your horse, and you enter the screens. His honour is at dinner—you hear by the clatter and the hum of voices—a feast day besides; but, never mind, enter. There is the hall, in its old state, the ceiling ornamented in panels, the lower part of the walls hung with tapestry, the upper ornamented with weapons, old and new, pike and musket, bows and firelocks, and back and breast plates and head pieces, and one full suit of plate with an esquire's helmet over the dais. "He is so young round," says Truicutt, in Ben Jonson's Epitome, "with pikes, halberds, petronels, calivers, and muskets, that he looks like a Justice of Peace's hall." And then on the raised dais, in a high chair of estate, sits the worshipful Master of the house, with a dozen guests of degree at his right hand, while at the two long tables, which run the length of the hall, sit a crowd of guests less dignified, but equally merry; and, when you have time, notice the wood fire blazing on the hearth, beneath the carved chimney-piece (iron in the kitchen at Parsloes); and the cupboard of plate displayed at the side, chargers and flagons, and cups worthy of a wealthy and worshipful citizen; and the tiled floor strewn with rushes, and a few sweet herbs, whose odour was very pleasant doubtless when the guests first bruised them under foot as they entered, but it is lost now in the more savoury steams of roast and boiled, and spiced ale and wine, which begin to make the air vapoury and heavy as the church is with incense on a Festival.

But if you want to study the guests, wait till they all adjourn to the Great Chamber, and the ladies have room to spread their farthingales of stiff brocade, and to prune their standing ruffs. But it is the gentlemen who are specially worthy study. Now-a-days they are all in costume of one colour—the gloomiest; and one fashion—the most unbecoming. Then gentlemen studied their costume as much as the ladies, and in the gay crowd you will find hose, and cloaks, and caps of every costly material and rich hue; from the young spark, proud of his pretty face and well-dressed mustache and peaked beard, disporting himself in a blue satin hose and doublet, and a sky-blue short cloak embroidered with silver, to the old grand sire in a beard shaped like a tile, and a suit of black camlet. In the furniture of the Great Chamber more modern tastes have prevailed over the ancient state which was affected in the hall. A carpet of Turkey fabric covers the table: couches covered with damask stand against the walls; and high-backed chairs of carved oak stand in a row with them; and low stools are scattered here and there, on which gallants lie at their ladies' feet, and talk euphemistic nonsense. The floor is strewn with rushes mixed with flowers.

In Ben Jonson's "Poetaster," Albion, the Emperor's jeweller, is going to receive a visit from some courtiers, and he and his wife Chloe are making preparations to receive them. Chloe bids "Come bring those perfumes forward a little, and strew some roses and violets here." Albion says, "Let not your maids set cushions in the parlour windows, nor in the dining-chamber windows, nor upon stools in either of them in any case; for 'tis avon-like; but lay them one upon another in some out room or corner of the dining-chamber." And again, "Having no pictures in the hall, nor in the dining-chamber, but in the gallery only, for 'tis not courtly else, of my word, wife."

Then the ceiling is ornamented here with panel-work in plaster; the walls are not hung with tapestry, but are painted in distemper—"By

this heavenly ground I tread on," says Dame Quickly, "I must be fain to pawn both my plate and the tapestry of my dining-chamber."

"Glasses, glasses is your only drinking!" replies the graceless and jovial Sir John; "and for thy walls, a pretty slight drollery, or the story of the Prodigal, or the German hunting, in water-work, is worth a thousand of these bed-hangings and fly-bitten tapestries." The knight's own chamber at the Garter was so painted. "There's his chamber, his house, his castle, his standing bed and truckle bed, 'tis painted about with the story of the Prodigal, fresh and new."

And then adjourn with those young people, who trip up the broad winding stair to the painted gallery, and you shall see gentlemen and ladies walk a grotto, with that chivalrous and courtly grace of manner which we sometimes see yet in courtly old gentlemen, in pleasant contrast with the brusque and nonchalant manners of our day. An old house of this kind is a chapter in the history of England.

Correspondence.

THE NINE-HOURS MOVEMENT.

Sir,—According to the proposition of Mr. Donaldson, it is a sure sign of weakness for a party when assailed to stoop to the courtesy of replying to the assailant.* This idea is so new, and contrary to the common opinion, that we are at a loss to know how it came into the head of the proposer. We are content to leave the matter to the public to decide on the respective merits of his attack of the 18th of June, and our reply on the 25th. * * * * *

There is so little in his effusion of Saturday last that we have no room for anything having the semblance of argument, so much of frantic assertion and deliberate fallacy, that were it not for public considerations we should have passed him over in silence; but on those grounds we will stoop to the "weakness" of dissecting the body of his letter, and replying to its different parts. In our reply of the 25th of June we said, "We do not stand up as the antagonists of machinery, for we believe that every power which eases man of physical toil is a benefit to the human race; but we complain of the monopoly and misdirection of that power to our detriment, and the provision of no equivalent." Now this small paragraph was evidently too abstruse for Mr. Donaldson's mental capacity, and unable to understand, he, like that committee of learned incapables before whom George Stephenson unfolded the force of his new-found power, proceeded to misrepresent and abuse. He states that we seek to nullify the use of machinery. Nothing which we have said or done warrants such an assertion. Again, "That we would restrict its application and use." We have never sought, we have no intention of seeking to restrict its use, and as briefly as possible, state that we seek an equivalent in a diminution of the hours of labour, because machinery, by its rapid growth and the facility with which it can be applied to every description of productive labour, is fast destroying the power of manual labour. To attempt to arrest the onward march of machinery we know would be madness, and productive of no good results, but we likewise know that the present condition of the working classes shall receive compensation for their labour, rendered useless, they must ultimately sink into a state of destitution and slavery. That this assumption is true or false, we leave to the public to decide. The capitalist, weavers, weavers, and many other trades who have sunk under the crushing effects of this power and the heartless cupidity of capitalists. It was a neglect of the rights of labour, a concentration of wealth in the hands of a few, and a thorough disregard of the sufferings of the toiling millions, which really caused the fall of Rome, of Spain, and Venice, and produced that terrible whirlwind—the first French Revolution. Our assailant quotes a passage from the *Times*, of June 18th, for the purpose of showing the benefits which machinery, and the gathering into a few large factories of the labour which used to be done at the numerous homes of the operatives, has conferred on the working classes, but nothing can be more fatal to his argument than the fact as it stands, especially in the particular locality and trade which he has chosen as an illustration. We would advise him to visit Nottingham, and from the lips of the weavers themselves hear a story, sad but true, of the change from comfort and independence in the days of hand weaving, to the misery and slavery they endure, now that the capitalist is their taskmaster, and machinery their coadjutor. Or, if this is inconvenient, let him read some of the many reports of commissions appointed to investigate their distress at times when gaunt famine had almost given birth to fierce revolution. He asserts that neither the bricklayers, painters, smiths, plasterers, nor labourers are affected by the use of machinery. He must be fully conscious that the smiths are largely affected by its use in their trade, and must be very ignorant of the economy of labour, if he cannot see that each of the other trades is seriously affected by the influx of that flood of labour which machinery thrusts out from other callings. This question of machinery and its influences on labour seems to be altogether too weighty for Mr. Donaldson's capacity. The combative gentleman sneers at our statements regarding the present condition of the building operatives, and asks what proofs we can afford of the truth of our assertion. We have the proofs of long personal experience and deep observation; but we will set that aside, and challenge Mr. Donaldson, and as many of his friends as he pleases to bring,

* The writers of this letter must surely know that no such inference is honestly to be drawn from the letter in question. Moreover, vituperation will benefit no cause; and we have withheld a few sentences which contain no argument.

to meet the building operatives of London at a great aggregate meeting, called for the purpose, and by inquiry ascertain from the thousands assembled whether all that we have stated is not true. This method will be fair to him, to the employers, and the public. And now we come to a portion of his letter which for audacity of assertion and cunning falacy is unequalled by anything we know of, except it be a letter of his which was published in the *Builder* of January 24th, 1857, at the time when the starving thousands of unemployed operatives of the building trades were unfolding their miseries to public gaze in Smithfield. The same abuse which he now spits at us he then threw at them; and this *friend* of the working classes, at that time, when the famished artisans, in the distraction of their miseries, talked of walking *en masse* to the workhouse, penned the following philippic lines, which we extract from his letter of the date mentioned:—"Are the skilled artificers prepared to do that, when they know they can always have two or three shillings a day for their usual work?" The proposition is of itself bad enough, but it becomes doubly odious when wedded to untruth. He knew that at that time there was no possibility of their getting employ even at that price, as well as he knows now that he is telling an untruth in holding us up to the public as men in constant employ and comfortable circumstances while our fellow-workmen are enduring the evils of which we complain. The same casualities which affect them affect us, and we are subject to all the evils which they endure. Our fellow-toilers will testify it, and we leave him to blush over his fabrications.

His statements concerning the Union are only repetitions of the calumnies published in his letter of Jan. 24th, 1857, and are unworthy of notice but for one assertion, that a master is not allowed to work on the same scaffold with his men, or remove rubbish, unless he become a Unionist. This needs no comment, the public will at once see that he has overdrawn the bow. Where is the employer who does not know that his eyes and his head gather more profit among his men than his hands? We should like to see the novelty of Mr. Baker laying bricks, and Mr. Cubitt shovelling out. In answer to his letter concerning the impossibility of any but first-rate builders being able to "fight on," we would beg to remind him that there are hundreds of middling and small builders of standing in prosperous existence, who were not players when many of the present giants were clerks or journeymen; and with regard to those who find their way into the *Gazette*, we can prove that eight tenths of them commence without capital, and exist for a short time by the use of accommodation bills and reckless speculation. And now, sir, we must congratulate ourselves on the fact that no other member of the profession of architects, whatever his opinion may be of our movement, has stepped out of his way for the purpose of attacking us, and we feel confident that the gentlemanly feeling which uniformly animates the profession would prevent any of them stooping to the use of such means as those employed by T. L. Donaldson. To the architects, as a body, allow us to offer our sincere respect.

R. W. GREY.
JAMES BROWN.
EDWIN FREEMAN.
THOMAS GRAY.
GEORGE POTTER, Secretary.

Sir,—I have just seen Mr. Donaldson's letter, which appeared in the last number of the *Builder*. It is full of truth, sound in principle, and pregnant with good advice, and I sincerely trust that, coming as it does from an architect who stands high in the profession, it will have due weight with the builders of this metropolis.

I fully agree with Mr. Donaldson, that it is time for (us) the builders to be up and doing, and that we should be united and firm in our resolve to resist any crisis that has been forced upon us by the delegates of the Amalgamated Trades' Society; and I would therefore suggest that the Master Carpenters' Society invite the co-operation of the builders of London to assist them in repelling so absurd and unjust a demand.

If a proper staff of officers were organized, so that notices may be sent to every builder apprising him of any meeting they deem fit to call in reference to this matter, I am convinced that they would find themselves supported by the majority of their brethren, and not by seventy or eighty merely, as on a previous occasion, which, however, must not be due to the laxity of the trade in the question at issue, but to the fact of the meeting not having been sufficiently advertised. There would be no difficulty in obtaining funds, for every builder would no doubt cheerfully contribute, did he see that the matter was being taken up in earnest. I for one would gladly cast my mite into the treasury.

In conclusion, I cannot but share the opinion of Mr. Donaldson, that a more determined front should have been shown in the outset; and firmly believe that if the builders in a body had pledged themselves not to re-employ any who had thrown up their work in consequence of this movement, matters would not have assumed their present serious aspect.—I enclose my card, and subscribe myself,

A WEST-END BUILDER.

Books Received.

VARIORUM.

"A MANUAL OF Surveying and Field Sketching," by Lieut. Lamorock Flower, C.E. has been published by Mitchell, of 39, Charing Cross, for the use of officers and students, civil and military. Lieut. Flower belongs to the Royal Surrey Militia, and his manual is titled "Marching Out," but it is no less useful to civil than to military officers, and an especial object of it is to show how surveys may be made by the simplest available means, and unimpaired by anything like ultra scientific appliances. Independence of artificial contrivances, indeed, is regarded as a chief object to be kept in view, at least until the surveyor has made himself master of the principles and the practice also. In these rifle-shooting and militia-drilling times, this little Manual is likely to be equally useful in a military or at least a military aspect, as in civil surveying; and to a notice of such a work we may fairly

append "The Volunteer's Handbook," published by Dean and Son, of Ludgate-hill, which will be found useful by those for whom it is intended.

Miscellaneous.

SALE OF 120 PUBLIC HOUSES.—The representatives of Calvert, the London brewer, have sold 120 public houses for 95,000*l.* or about 9 per cent. below the nominal estimate. The result is considered favourable, as it was believed that the loss would have been as much as 25 per cent.

GLASGOW.—Observing the much-merited remarks on Glasgow buildings, in your influential publication of the 25th ult. allow me to draw the attention of your correspondents, who may visit the "Royal Exchange" or "Reading-room," to the fact that the pillars supporting the roof are not painted iron or wooden columns, but magnificent solid, fine-grained, freestone pillars. There is no saying what may be painted next, therefore a good receipt for taking the vile paint off these much-admired stone pillars, would be a great boon to its members and travelling public.—J. C.

REVOLUTION IN TYPE-FOUNDING.—The invention of the myria-type of M. Combarieu has been submitted to the Government, and accepted for inspection. This marvellous invention being destined,—if all that is said of it be true,—to operate an immense and immediate revolution in the art of printing, it is worth description. Hitherto the characters used in printing have been composed of a mixture of lead and antimony. These characters, by reason of their extreme softness, wear out quickly, and are, besides, very expensive. The characters are moulded one by one, and the best workman can scarcely produce 5,000 of them in a day in the rough. They have afterwards to be finished up, and pass through several hands. M. Combarieu, by an ingeniously-invented machine, produces 10,000 of these characters at a machine stroke. Each letter is then separated by a mechanical saw, which divides them with mathematical regularity and precision. M. Combarieu announces, moreover, his intention of producing characters in steel, the durability of which will be beyond calculation.

THE EFFECT OF CHLORIDE OF LIME AND ZINC.—In times of sickness it is now a common practice to place diluted chloride of lime or zinc in the rooms and passages. I have noticed that when this has been done in bedrooms, articles of steel, iron, silver, &c. become covered with a dull coat, which is not very easily removed; and it often happens that those who have slept amongst the fumes of the chloride, complain of headache and a dry husky soreness of the throat. I have mentioned this circumstance to others, and find that they complain of similar effects. I have endeavoured to ascertain the cause of this from a number of persons of average information, but without success. I therefore make free to mention this in the *Builder*, in the hope that others besides myself will learn the cause of it; and if the ill-effects complained of result from using too great a quantity of the chloride, or want of sufficient atmospheric air.—INQUIRER.

ELECTRO-TELEGRAPHIC PROGRESS.—The Submarine Telegraph Company's new cable between Boulogne and Folkestone was successfully submerged on the 26th ult. The cable contains six conducting wires of gauge number one, surrounding a hempen core: these wires are covered with hemp, and the whole is enclosed in twelve iron wires of gauge number O. The weight per mile amounts to just upon ten tons. The cable was manufactured and laid by Messrs. Glass, Elliott, and Co. the contractors.—A war correspondent dating from Brescia, on the 24th June, reports a fact which has not hitherto transpired concerning the scientific appliances of electricity to war purposes. It would appear that the remarkable precision and unity of the French evolutions was accomplished by a quite novel sort of flying aide-de-camps. From each corps, once in position, a horseman rode off to the next division, unrolling, on his rapid course a light wire which no time was lost in adapting to a field apparatus; and the process was repeated all along the French line of twelve miles. Hence the movement of the whole army was known and regulated like clock work. This arrangement had been planned in Paris, and a supply of gutta percha-covered metal thread forwarded with secrecy and despatch. Mr. Lair is the chief engineer. Lonato, Montechiaro, and Castiglione were in instant communication with Brescia and Milan when evacuated by the Austrians.

THE ARCHITECTURAL MUSEUM.—The *conversazione* was held at the South Kensington Museum on Thursday evening last, as announced, and was numerously attended. We reserve our notice till next week.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—The sixth *conversazione* took place at the Suffolk-street Gallery (kindly lent for the occasion by the Society of British Artists), on Tuesday, July 5th, when Mr. Otdley delivered a lecture "On Engraving, and the Allied Processes, Historical and Descriptive."

DURHAM COUNTY ENGINEER.—Mr. W. Crozier, C.E. the borough engineer for Sunderland, has been elected by the county magistrates at Durham to the office of county bridge surveyor and architect, vacated by Mr. Howison, who lately was appointed to the county of Northumberland. There were fourteen candidates.

CHESTER CATHEDRAL.—It has been determined, says the *Chester Chronicle*, to remove the present "out of character" tracery in the eastern window of the "Lady's Chapel," and replace it with the tracery of the period when the chapel was built. This restoration is in commemoration of the late Bishop Pearson, who was interred near.

THE POLYTECHNIC.—Sir: Your admirable and praiseworthy remarks in reference to that invaluable institution, the Polytechnic, deserve the thanks and commendation of the public at large; and it is much to be hoped that the salutary advice tendered, and the excellent plan proposed, in your estimable journal, towards saving that "noble ship" from destruction may be immediately carried out.—A WELL-WISHER.

ROYAL ITALIAN OPERA, COVENT GARDEN.—Madame Penco, who was hastily engaged by Mr. Gye to supply the vacancy unfortunately created by the death of Madame Bosio, is rapidly gaining in public estimation, and deserves it. Her performance of *Elvira*, in *I Puritani*, is very admirable—scarcely now, indeed, to be rivalled. Great preparations are making, as well in the painting-room as elsewhere, for the production, in great style, of Meyerbeer's new opera, the rehearsals for which are being superintended by the *maestro* himself.

A CRANK-MAKING MACHINE.—A mechanical discovery has just been perfected and patented by Mr. Lee, of Lincoln, engineer and mechanician, promising to be of economical importance in the construction of steam-engines. Hitherto, it appears, cranks have been formed by the hammer, which renders them brittle. Mr. Lee, according to the *Lincolnshire Chronicle*, has completed a machine which forms the crank all at once, without straining or weakening the texture of the iron.

THE LATE THUNDERSTORM.—On Saturday night of last week, in consequence of the storm which visited the metropolis, no less than five separate cases occurred in which premises were fired by the slaking of lime. In two of these cases, wooden buildings belonging to local boards of works were destroyed, one in St. Thomas-street, borough, and the other in Earl's-road, Camberwell. A building at a soap-boiler's in Whitechapel became ignited, and was charred. Part of the premises of a size and gelatine factory in Bermondsey was injured; and the most extensive fire of any that occurred, not excepting that of the whole stock of a draper in Holloway by the lightning, was the destruction of a three-storied building 100 feet long and 20 feet deep, and a fourth part of another 100 feet building, belonging to a leather-dresser in Bermondsey, and containing lime, which was slaked by the rain and heated. A sixth case occurred in a currier's, but the damage was not serious.

QUEEN'S COLLEGE, LONDON.—The annual meeting of friends of this institution for the general education of ladies, and for granting certificates of knowledge, was held on Monday last, when Lord Ebury presided, and a report was read by the Dean, and some addresses made. The report said, that "as the college has become better known, people have ceased to think of it as merely an institution for training governesses, and have come to look on it as being (what indeed it is) a place of general education, in which may be learnt all that belongs to the highest cultivation of a woman's mind. It will be the effort of the council and committee to fulfil the promise which these words hold out more and more thoroughly." If we were forced to give some brief expression to characterize the speech-making on the occasion, we should probably find it in "namby-pamby." We have reason to hope, however, that this does not extend to the mode of instruction. There are some excellent professors, and we have no doubt it is a most meritorious and useful institution.

GREAT EASTERN.—We are asked to mention that Messrs. Mark Bowden and Co. of Bristol, have received instructions to fit up the *Great Eastern* steam-ship, with their "brilliant-cut" ornamental glass.

THE EAST WINDOW IN CARLISLE CATHEDRAL.—The design for the stained glass which is to be placed in the east window of Carlisle Cathedral has been approved by the committee, and sanctioned by the dean and chapter. A sketch of the design, upon a small scale, has been prepared. The groups are illustrative of the life of Christ. In the centre light are the three principal groups that at the top representing the Ascension, with angels on each side of the chief figure, and the apostles standing below; a full-length figure of Christ, with beneath it the Roman soldiers guarding the tomb; and the Crucifixion, with the Maries at the foot of the cross and angels at the top on each side. The prevailing colour around the central figure is blue, and the rest is varied.

MONUMENTAL.—It is proposed to erect a memorial to Sir Joshua Reynolds, at Plympton, near Plymouth, the place of his birth. The corporation of this disfranchised borough not many years since sold the portrait of the great artist, painted and presented by himself to them in his lifetime. Lord Mount Edgcumbe was the purchaser, at the sum of, it is said, 100 guineas.—The Peel statue, at Glasgow, by Mossman, sculptor, has been inaugurated. Within the last few years statues have been erected at Glasgow, as remarked by the local *Gazette*, to Watt, to Wellington, Her Majesty, and now to Sir Robert Peel,—the last placed on the northern side of George-square, which square now contains the statue, also, of Sir John Moore, the monument to Sir Walter Scott, and the statue of James Watt.—A statue of Jenner has been erected in Paris, in the space between the Louvre and the Pont des Arts. The Parisians are said to ridicule it as a work of art, but whether the sense of ridicule arises from the fact that Jenner's destiny was "not to destroy men's lives, but to save them," or from absolute demerits in the art-work itself, as yet we know not.

VALUE OF LAND IN RETFORD.—At a sale of property in and near Retford, on Tuesday, the 26th ult. lot 2 was a close of arable land, containing about two acres, which was put at 100*l.* and after a good contest was bought by Mr. H. Gyles for 204*l.* Lot 3—three closes adjoining together, two arable and one grass, containing 15a. Or. 15p. which with the previous lot are situated in Common-lane, was started at 30*l.* per acre, and ultimately sold to Mr. Newton as agent to H. B. Simpson, esq. for 78*l.* per acre; who also, at the same price, purchased the next or fourth lot, consisting of one grass and two arable closes, situate in Common-lane, and containing 13a. Or. 14p. Lot 6 contained two closes of arable land, amounting to nine acres, near Bolham Hall, on one of which a barn is standing. 60*l.* per acre was the first offer, and it was ultimately purchased by Mr. John Lee at 75*l.* per acre. The seventh and last lot was a close of grass land, containing three acres, and was purchased by Mr. George Stones, cornfactor, at 79*l.* per acre.

THE BIRMINGHAM ARCHEOLOGICAL SOCIETY.—For the first excursion of this season, a party of about eighty assembled at the Great Western Railway station, to proceed to Warwick, Guy's Cliff, and Kenilworth. The weather was unfavourable. On reaching Warwick the crowd of visitors found only two or three cabs awaiting them; and many had a wet walk to the castle. The whole building (including the basement story, not usually shown), was thrown open. On re-assembling in the great hall, Mr. Jabet read a sketch of the history of Guy. From the castle the excursionists went to St. Mary's Church, to examine the Beauchamp chapel, the newly restored chancel, and the crypt. Leicester's Hospital was the next point of attraction, and next various places of refreshment. From Leicester's Hospital some of the party went by omnibus to Guy's Cliff, the seat of the Hon. C. Bertie Percy, the remainder going on direct to Kenilworth. Arrived at Kenilworth, the visitors sat down to dinner at the Royal Arms, under the presidency of Mr. Bracebridge, the vice-chair being occupied by Mr. Charles Ratcliff. After dinner the Rev. Mr. Hartsborne read a paper on Kenilworth Castle. Many of the visitors afterwards went to the castle, where, under the guidance of Mr. Hartsborne, they traced the plan of the building, and noted the various points of antiquarian interest. The excursionists then returned to Warwick, and thence by special train to Birmingham. The next excursion will take place on the 12th of August, to Wroxeter, to examine the newly-discovered Roman city.

The Builder.

Vol. XVII.—No. 858.

Thames Banks.—Quays to come.



RIGHTFUL, indeed, is the condition of the Thames. To be in its neighbourhood without feeling nausea at certain hours is scarcely possible. What is to be done for immediate remedy? What is the Board of Works doing for ultimate prevention? Sir Morton Peto sought last week to obtain leave to bring a bill into the House of Commons "to provide for the prevention of the noisome effluvia from the Thames," but it simply went to require the Metropolitan Board to make monthly returns, to give it increased powers of taxation, and the House of Commons right to interfere if the Board did too much.

During the discussion Mr. Tite said, that although the Act allowed the commissioners five years for the completion of the works, he thought that much of the evil would be remedied in three years. One great sewer was about one-fifth completed, namely, the High-level sewer, on the City side: on the Surrey side another sewer was about being completed; the former would probably be completed by June next. The whole works were going on as satisfactorily as possible; the evil,

however, against which they were contending, was one which it appeared to him nothing would satisfactorily encounter. There were 80,000,000 gallons of sewage water poured daily into the Thames, containing 200 tons of solid material, which was not only putrid itself, but rendered putrid any mass into which it was poured. The Metropolitan Board had called in eminent chemical advice respecting the deodorization of the sewage, and Dr. Miller was appointed to make reports upon the state of the river, and to inquire whether other agents might not be employed than those already in use for the deodorization of the sewage. He further thought that legislation would only embarrass and confuse the efforts that the Metropolitan Board of Works were making in this direction.—Mr. D. Griffith was of opinion that while lime was in operation it was effective as a deodorizing agent, but he thought that the great work of purifying the Thames would never be completed until the river was embanked. He would go to the length of saying that he attached much greater importance to the getting rid of the mud-banks than to the improved system of drainage. And after Mr. Alderman Cubitt and others had spoken, the House refused to receive the bill.

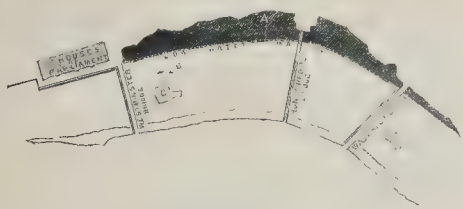
Our knowledge on the subject of deodorizing is still insufficient. It is uncertain, for example, how long the process of lime-flushing the sewers will have the effect of deodorizing the mud-banks of the Thames: on this point eminent doctors differ. We ought to know, too, if the quantity of lime which is needed for the deodorization of thirty or forty great sewers, may not be a means of adding to encroachments on the river which are already very injurious.

Large quantities of lime during the last fortnight have been passed both in a diluted and solid form, to the banks of the Thames, and yet we are strongly disposed to think that the condition of the water is as bad as it ever has been. If so, the lime as it is at present applied, does not act beneficially on the mass of the water of the Thames.

It is curious to note the difference of opinion which still exists amongst those who dwell near the water-side.

In order to learn how much of the effluvia complained of depends upon the action of the steam-packets and the rays of the sun on the mud-banks, we proceeded early in the morning the other day to the Thames banks near Limehouse: no steamers were moving on the water, the tide was high, and Father Thames seemed still and sleeping. The banks of mud were deeply covered with water, and yet a smell—substantial—most difficult to describe, and very sickening, polluted the air, and proved, that however bad the shores may be at low tide, the water itself is the chief source of annoyance. Last summer we mentioned the effects of the splash of early cars in the stream, and now the evil is even worse. The waterman who ferried us across the river, said, "You see it is as bad as stirring up a cesspool." As the business of the river became active, the smell became worse, and polluted the neighbourhood to a greater distance. Throughout several hours of the day we noticed that at the steam-boat piers, where the water was kept constantly in motion, the smell was more offensive than in other parts. The black and pestiferous waves seem to be getting more and more loaded with solid matter, and threatening that if something effectual be not soon done, the power of steam will not suffice to drag vessels through the slime. It cannot be doubted that the action of the steam-packets makes the evil more offensive to the senses, but by circulating the water, it causes much that is hurtful to be carried away. Near Hungerford Suspension-bridge, before low water, we saw a steam-packet aground, causing much inconvenience to the passengers, and we were told that this was not unusual.

In the course of the inquiry we met with some intelligent men who work at the bottom of the docks, clearing away the offensive matter that collects, and of which they gave rather a striking account. One of the most offensive deposits which they remembered to have met with was a quantity of barley which had been



A. Poisonous mud bank.
B. Stranded steamer.
C. Island gradually increasing in size.

The Thames at Hungerford.



The Thames at "Cremorne."



Chelsea Mud-bank.

spilled by some accident, and allowed to remain at the bottom of the water for several weeks. They said that no description could give an idea of the effluvia from this. They consider that a great deal of impure matter, in spite of the regulations, is daily thrown into the docks: the bilge-water pumped from the ships, the corrosion of the copper bottoms, and the arrangement of some of the docks, which only allows of flushing at the intervals of spring tides, increase the evil. Still it is contrary to evidence that to these the present condition of the Thames is to be attributed. It will, however, be necessary to adopt some stringent measures for preserving the waters of the docks from pollution.

The colour of the Thames water is now of a slaty blackness, sickly-looking, and most unpleasant to the eye: this is in a great measure caused by the sewers. We cannot expect, however, even if the drainage be kept out of the river, what with the clay it runs upon and the steam-packet traffic, that the Thames will be as clear as Loch Lomond. The colour of rivers, caused by the materials over which they pass, is noticeable. When the Earl of Derwentwater was executed for his share in the rebellion, the country people believed that the river Derwent flowed with blood. We have seen the Derwent tinged with a deep red in time of floods. In like manner the Thames will ever, even when he is rightly treated, be of a somewhat sombre colour,—clean, however, and wholesome, in comparison with his present viscous state. When the proposed main drainage is completely carried into effect, the Thames will be deprived, on the average, of eighty millions of gallons of water per day. This is an immense quantity, and its absence must have a very important effect in lessening the power of the "back-water" of the river. Already the land-water has decreased in quantity, and it therefore becomes of the greater consequence that measures should be taken for the preservation, for the use of many generations yet to come, of this noble stream. On no river on the face of the civilized earth is there passed during each year such a vast amount of wealth, or are there so many ships from the maritime countries of the globe. The Thames is a national river, and it should not be forgotten that one-tenth of the whole population of Great Britain are lodged upon a comparatively small portion of its banks. On one part is the most renowned of our universities, and on or near to others are four royal palaces. The good condition of the Thames is therefore a matter in which the whole country is interested, and no time should be lost in devising means for preserving it in all its integrity so far as that can be done by well-directed efforts and any reasonable amount of expense.

An examination of the old maps of London will show to what a great extent, in various positions, the water has been indented upon by the land, and in what a great degree the tributaries of the Thames have dwindled; while in some cases their current shortens by the want of power to meet the strong flow of the tide.

As is to be seen in smaller instances, so it will be with the greater river if some thorough plan of embanking be not speedily adopted. Looking at the matter architecturally, while vast improvements have been made in many parts of the metropolis, the ill-defined margin of the Thames remains covered (with a few exceptions) with the most wretched buildings, which have not even rude picturesque to recommend them. In parts are those unsightly banks of slime which for years have been poisoned by various kinds of refuse. We have before mentioned some of the causes of those serious obstructions which, by interfering too much with the width of the water in one part, leave a slack to be filled up by offensive matters in others. If we examine the Thames from London-bridge to Chelsea, the difference of the width is remarkable. The widest part is at Hungerford. A glance at this portion of the river, or the accompanying diagram, shows that nature, suggesting to man what should be done, is gradually accumulating a deposit, which in course of time will become solid earth; but while this

is going on, projections of various kinds are causing whirls which sweep deposits into other places, and it is evident that if this process be allowed to continue, in the course of time the channel will become eventually lost.

Those who, with a map of this portion of the metropolis in their hand, undertake a voyage at low water from London-bridge to Chelsea, cannot fail to wonder at the neglect which has caused the river to be so much interrupted, and will at once see the need there is for great exertions in order to remedy the evil which has been produced. They will notice that along the site of the Millbank Penitentiary, an inland Mr. Cubitt's yard, where a wall has been built—the shore is cleanly swept. If they compare the great mudbank on the north shore from Waterloo-bridge to the Houses of Parliament, with that formed between old Chelsea-bridge and the outlet of the Kensington-canal, of which, also, we give a diagram, they will find that the causes and effect are precisely similar. At the west side of the north end of the old wooden bridge, a wall has been erected at an abrupt angle, which stops the regular flow of the river and causes a great deposit to be thrown back and lodged here. We have sketched its aspect. The same operation may be seen going on, on a smaller scale, in other parts. Look, for instance, near the Lambeth steam-packet pier, close to Lambeth Palace. Here is a much smaller, but still an abrupt, interruption of the river's course, and the consequence is, that a deposit of mud has been formed. And it should be noticed, that these deposits are thrown back by the tide when the inland water has not the opportunity of sweeping them properly away.

Rare business for the mud-larks in the neighbourhood of the Hungerford Suspension-bridge! Even this body are getting scientific, and instead of being content, as they were formerly, to grope along the water-edge, they boldly set to work after the fashion of the gold diggers of Australia, and, from various depths of the black mass, discover matters which have long been hidden. We hope, however, that the mud-larks will find better occupation, and that before long a splendid quay, lined with buildings pleasant to the eye will confine the river in such bounds, that under changes of circumstances, the land stream will be able to maintain such an amount of force, that in future no permanent stoppages will be made.

The cost of the Thames embankment would of course be great, for in order to be effective, it must be thoroughly carried out: partial work would be liable to do more harm than good. It becomes, therefore, an important question how this large outlay is to be met. The cost of the main drainage has been laid upon the inhabitants of the metropolis, and it will be years before that bill is paid. It is to be feared, therefore, that any proposal to increase that burden by the commencement of even such a necessary work as the Thames embankment, would meet with very great opposition. Nor is this to be wondered at, when we know how heavily those taxes press upon the poorer districts of the City. In the Thames, however, as we have already said, the nation at large is interested; it, therefore, seems but fair, that when London has undertaken the gigantic task of relieving the stream from pollution, the embankment should be taken up vigorously by the Government. The good condition of the Thames is a matter on which the welfare of the country at large depends, as much as it does on the breakwaters and other great works which have been undertaken at the general charge; and we believe, that if the intelligent classes throughout the country were polled, there would be little objection made to the application of any reasonable sum of money which might be required to preserve this the most famous of our rivers in a safe and useful state.

Denham speaks of the Thames as,—

"Though deep, yet clear; though gentle, yet not dull;
Strong without rage; without o'erflowing full."

He would be forced to write now, "Though deep, not clear; though gentle, very dull." "Strong" would be applied to its odours, and it is "full" of uncleanness.

THE NEW HARBOUR: HOLYHEAD.*

MR. RENDEL'S plan having been approved of, with details of the construction to be described, money was voted by Parliament at various dates, beginning with the year 1845. The original estimate precisely stood thus:—

For the new refuge-harbour	£ 628,664
For the packet-pier, purchase of land, &c., ..	180,000
Total	£ 808,664

On account of which there were voted, from 1845 to 1855, both inclusive

£610,000
In 1854, however, the question of the extension to make up the total length of about 7,000 feet, had been opened, from the representations of the harbour-master, Captain Skinner, as to the number of the vessels using the harbour; and in 1855 the proposal was approved of by the Treasury, and money was voted by Parliament, on account of an estimate of 390,000, making the total cost of the works, as then estimated, 1,198,063*l.* or about 171*l.* 9*s.* per foot length, or 514*l.* 7*s.* per yard. At first the northern breakwater had been proposed to be extended about 2,000 feet: whilst the project as to the western proposed packet-pier was entirely abandoned, and the eastern breakwater was deferred at least for some years. Prior to this decision, works had been progressing at Ynys Gybi, in forming slopes with stone pitching; and work also was commenced in deposition of material for the substructure of the eastern breakwater proper. This last portion of the work, not however very great in amount, may now have to be removed in consequence of the change of plan by Mr. Hawkshaw.

The extension, Mr. Rendel said, of the northern breakwater, would not bring the end of it too near to the Cliperia Rocks: these would still be about one mile off. The objection seems to have been anticipated that the extension would entail those defects of principle which had been imputed to the plans of Mr. Walker and Captain Beechey; but such defects were avoided by the north-easterly direction taken. Mr. Rendel said, although the sheltered anchorage would be to the west, or windward of the entrance, that, as the deep water extended upwards of one mile south, and expanded one mile and a half east and west, vessels even in southerly gales could enter freely, and select their position for anchoring under shelter of the extension, whilst vessels wanting to go to sea in easterly winds, could do so with ease and safety. He recommended the north-easterly extension, therefore, in preference to what was Captain Skinner's suggestion for an extension in a continuous line, because the latter would increase the difficulty of vessels entering the harbour in westerly and leaving it in easterly winds, whilst, were there not some extension, vessels would be crowding the harbour so much as to unfit it for objects for which it was designed. A suggestion having been made as to the abandonment of the eastern breakwater, to facilitate the entrance in westerly and the departure in easterly winds, the submerged rocks being removed as might be necessary, Mr. Rendel objected that the new harbour would thereby be laid open in easterly winds, which, though "limited to a fetch of two miles" across the bay, and insufficient to affect vessels at anchor, would be injurious to the packets lying at the quays. On account of these and other advantages expected, Mr. Rendel advised only the postponement of the eastern breakwater. This was to allow time for judging as to probable effect of the northern extension, upon ease of access to what would then become the inner harbour. The points considered in this discussion, and the result, ought to afford a body of experience of great value in future harbour works; and the points have not been collected in the same succinct form as we are now endeavouring to give them. The cost of extension of the northern breakwater was estimated at 125*l.* per foot for the rough deposits, allowing the contractors to demand an increase on their previous prices, for the distance, and the greater cost of labour and materials. The packet-pier first proposed was abandoned, chiefly because no longer necessary for separation of the packets from the general shipping. At this date, May, 1854, the stone deposits of the first portion of the northern breakwater were deemed sufficiently consolidated to receive the superstructure.

In 1856, an addition of 3,000*l.* was set down in the estimates, for the substitution in the contract, for the packet-pier originally designed, of an improved landing-place for packets (that is at the old harbour), and a railway to join the Chester and Holyhead line at the Holyhead station, making the total amount 1,201,063*l.* For the new harbour or works in connection with it. In February of

* See page 449, ante.

the same year the work of the extension had been advanced 1,500 feet, the contract for it having been entered into on the 1st of January, 1855. Mr. Rendel still considered the eastern breakwater would be necessary to convert the western half of the area into a harbour sufficiently quiet for the packet-service, and in some cases for vessels that were "ill found." The removal of the Platters Rocks he thought would occupy several years; and they could not be safely beached. He therefore advised the confirmation of the design which included the masking of the Inner Platters and the Outer Platters by heads of the breakwater, as shown on the map in our last number, and also the floating landing-pier. The advantages of a landing-pier he treats as generally admitted; and mentions, incidentally, that the fastenings of large steamers could be more quickly handled than in the case of a fixed pier. Having pointed out other advantages, he gives the estimate for the pier, railway, and railway station.

In 1856 it was decided, on similar evidence to that which had been previously offered, to extend the northern breakwater a further distance of 500 feet in the same direction. The estimated expense was 102,000*l.* which raised the whole estimate for the harbour, and railway works connected with it, to 1,303,063*l.* Some time afterwards, or before the date of the next year's estimate, Mr. Rendel died; and Mr. Hawkshaw, who had been appointed the engineer, and whose views have been already referred to, recommended the abandonment of the eastern breakwater, the construction of the temporary jetty at the old harbour, and the general alteration which is indicated on our map, and which was approved of by the Treasury in February 1858. About this date, it had become necessary to provide for the large class of packets about to be established; therefore, an amount of 20,000*l.* had to be set down for the temporary packet-pier of timber, which we have spoken of, and have shown as in extension of one of the piers of the old harbour. Mr. Hawkshaw estimated his own Eastern Breakwater Packet Piers, the permanent works, at 425,000*l.* Thus the amount 445,000*l.* added to the previous estimate, made the whole amount for the harbour works as estimated up to February 1858, 1,748,063*l.* to which however it was still necessary to add, for certain reasons, 171,937*l.* making the "total aggregate estimate" in March 1858, 1,920,000*l.* of which 863,000*l.* remained to be voted. The amount 171,937*l.* was required to be added, on account of changes which had been made in the quantities and prices, without corresponding modification in the sums total, and on account of the increased size of the head required by the elongation of the northern breakwater into deeper water.

Mr. Rendel's estimate for his eastern breakwater and packet-pier was upwards of 300,000*l.* Before the middle of 1853, 100,000 tons of stone had been deposited at Ynys Gybi, or Salt Island. The work having been damaged by a heavy sea, it was deemed prudent to defer operations till the northern breakwater had been sufficiently advanced to afford protection. At the date of Mr. Hawkshaw's report, or in September, 1857, the deposits for the northern breakwater extended 7,700 feet into the sea from the coast line, and about 1,200 feet of the superstructure had been built up to high water of spring tides; and the quantity of stone deposited was upwards of 64 millions of tons. Mr. Rendel's estimate for the eastern breakwater, after abandonment of the packet-pier, was 153,000*l.*

Mr. Rendel's plan for the eastern breakwater had been much objected to. The landing-stage, from the position of the harbour's mouth, might have been difficult of access for long steamers; the arrangement, with the landing-stage at right angles to the train, was defective; the length of the stage would be inadequate; and no such construction was needed by the rise and fall of the tide at Holyhead, only from 17 to 20 feet at spring tides, as contrasted with from 27 to 33 feet at Liverpool, where the stages are of such value. The original plan was determined on *data* which became altered by the circumstances of the extension; and the history of the case may well illustrate the truth of what we have so often had to advance as to the necessity for time for well-considered plans, and deference to authors who have had such opportunity afforded them, and as to the danger which there is in alteration after a matured conception. But in all such cases, the engineer or architect does not put forth so much his own design, as his design modified by, or rendered palatable to, public opinion: besides, his own opinion becomes moulded, without any sensu-

tion of the circumstances of influence. In any point of view, we believe that condemnation of the original design of Mr. Rendel would be unfairly attempted. It is clear, however, that the various reasons, and amongst them the increased dimensions of the packets, which required both greater space to lie alongside the pier, and greater area to turn in, necessitated the alteration by Mr. Hawkshaw. Considering that an elongation of the pier of the old harbour would not be in sufficient depth of water for transatlantic steamers, Mr. Hawkshaw therefore recommended the piers shown on our map, on the east side of Ynys Gybi, the outer pier to be 1,200 feet long and 120 feet broad, and the inner pier to be 900 feet in length and 50 feet in breadth. The inner pier is designed against any contingency in rough weather, of packets failing, to make fast as speedily as would be desired, to the inside of the outer pier, as well as for increased quay space. In order that undulations, with a northerly wind, might find their way out, archways, useful for boats, will be left at the south end of the packet harbour. The outer pier would terminate in 33 feet of water, and it could be further extended 300 or 400 feet, without too much contracting the entrance of the refuge-harbour; and it could be extended 500 feet southerly. Mr. Hawkshaw decidedly contradicts the notion that the rocks could not be beached; and he instances evidence, the fact of the great use safely made of the harbour, with these rocks marked by buoys only: whilst the water-way between the rocks and Ynys Gybi, would be too valuable to be lost. The outer pier Mr. Hawkshaw proposes to build with vertical walls on both sides, and the inner pier vertical on the east side only. The space between the latter pier and Ynys Gybi is not of much value. The railway would be carried on to both piers. The piers would be built 7 feet 6 inches above the highest water-mark, and lower landing-places would be constructed 14 feet below the top of the pier at each berth. These arrangements, together with the construction of the new mail steamers with a second and higher deck between the paddle-boxes, would allow the embarkation or disembarkation to be made always at a level, or nearly so. Mr. Hawkshaw's estimate for these works, providing 3,300 feet of deep water berths or quays, and railway accommodation, was 425,000*l.*

Sufficient will now be understood as to the actual nature of the plan, which, as well as the history of the undertaking, having been much misunderstood, could scarcely have been recounted at shorter length. We have to describe the structural part of Mr. Rendel's design for the northern breakwater, and the manner in which the works have been, and are being, carried into effect.

We have shown that one very important feature presented in Mr. Rendel's project was the utilization of that material which, in the Holyhead Mountain, was close at hand. Not only had the breakwaters to be contrived of the sectional form and description of masonry suited to resist the sea, but there had to be discovered the best means of quarrying the material, and the arrangement for conveyance and scaffolding, or the general agency by which the stone was to be set or deposited,—that responsible contractors might have inducement to undertake the work. The result in the breakwater in progress now affords example of a combination of manual labour with great use of machinery such as, probably, had not, before Mr. Rendel's time, been seen in work exposed to the action of the sea. Not only has the adamantine stone, previously, as our readers will have noticed, considered almost useless, been quarried in blocks of enormous size and in immense quantities; but, by the aid of lines of railway on shore and on scaffolding or staging, it has been readily conveyed from the quarries to the very end or any other part of the length of the breakwater, and shot, wagon-load after wagon-load, with great rapidity, into the sea; or as in the work which chiefly is in hand at present, by the aid of powerful "Sampsons," spanning the width of the superstructure, and travelling by steam power from end to end, or by ordinary steam cranes on carriages, the blocks are lifted or set in their places with almost equal facility. Great praise, unquestionably, is due to the contractors, Messrs. J. and C. Rigby, of Westminster, and to their own engineer, Mr. R. L. Cousens, for the ingenuity and skill which they have brought to their part of the task. They have, doubtless, developed increase of profit to themselves; but they have given confirmation to what was the project of Mr. Rendel; and the result will be benefit to the nation in works of similar character.

Mr. Rendel, electing in favour of the material at Holyhead as capable of being used for the bulk

of the work,—that is in any masses, and in the rough,—designed the form of his breakwater in section, somewhat as a combination of the sloping and the vertical wall systems. The substructure, however, was not to be pitched or paved on the face next the sea, as in the old pier spoken of by Sir John Rennie, but was to be in the manner of "pierre perdue." The stone was to be cast into the sea in whatever quantities might be necessary to form a permanent substructure—one which after having been drawn out at the base, by action of the sea in the early period of the depositing, would ultimately reach the limit of motion, assuming permanent slopes, or after the proper quantity of material had been thrown down, along the line of the intended construction. The material deposited, ultimately nearly 7,000,000 of tons, extending to a length of 7,260 feet, averages more than 400 feet of breadth at the base. It has been kept heaped up to the underside of the staging carrying the rails—being added to as required, in order that the base might be firmly consolidated, and partly that material at the top might serve for temporary protection in setting the work of the superstructure which has to be described. The depth from the surface of the rails to the zero line, or that of the lowest low-water of spring tides, is about 36 feet; and from that line to the bottom of the sea in the deepest part, at the head of the breakwater, is about 55 feet.

For the formation of the superstructure the engineer proposed, along the line of deposited and consolidated rocks, to excavate, if we may use such a word, a trench down to the level of the zero line, and to build therein a nearly vertical wall, of irregular masses, of the Holyhead stone, to be set edgewise, and grouted in hydraulic mortar, and, where necessary, filled in with concrete, "pitching" the slope and top of the substructure, above low-water line, on the inner or harbour side, and finishing the superstructure as a coped and parapetted terrace, paved in slabs; the work of the latter to be regular set-and-dowelled masonry of the Anglesea limestone, or marble, from Redwharf Bay. The slope on the harbour side, not having been exposed, remains nearly as the materials were first deposited, and will only require making even, to receive the pitching; so that vessels can lie within gangway distance, whilst seamen or others on the breakwater shelter under the wall of the superstructure, in which recesses are formed at certain distances. Thus, in looking at a cross section of the breakwater, there is a broad walk, just clear of the high-water line, or at the top of the material of the foundations and of the inner slope, 20 feet in width, and 27 feet 6 inches above the low-water line, protected by the vertical wall. The latter is 16 feet in thickness, and 11 feet 6 inches in height, exclusive of the parapet, in the portion of the superstructure spoken of; but the foundations built in the trench, starting from low-water line, are there 22 feet 6 inches in thickness, the difference being made up by a batter on what will eventually become the sea-face.

Along the top of the vertical wall, the terrace-walk is about 14 feet in breadth: it is paved with dressed slabs of the marble, and is protected by the parapet, which is 4 feet thick and 3 feet 9 inches in height, set within a coping, or ovolo-formed nosing, of 2-feet projection, and a height of about 2 feet 6 inches, exclusive of a fillet which is beneath it. The dowels in the masonry of the parapet are of slate, and they measure 9 inches in length by about 3 by 4 inches in thickness. The stones of the irregular masonry, great masses nicely fitted with smaller stones, jut out on the sea-face in almost every variety of form; but on the harbour side, by selecting the stones, and slightly working off projections with the hammer, a more even face is kept. The result on either side of the wall, is an effect which is at present very picturesque, and has much beauty of colour. The portion of originally deposited rock-work, from zero line, in face of the vertical wall at short distance, remains to nearly the same height as the terrace, just as left at the work of trenching out; and it will so remain for some period to come. In the course of years, the sea in this case acting upon a portion of the deposit that has been divested of core and backing, will effect the removal, and the material will go to the consolidation of the general substructure. The action of the sea in moderate storms is spent on the slope of the substructure, without injury, before the waves reach the summit, or what will become the base of the exposed and vertical part of the wall. This seems to be shown by what occurs in two several portions of the breakwater, namely, the work generally, and one portion at the commencement, at Soldiers' Point. In the latter case, for a certain

distance, or filling in the space between the first starting point and certain outlying rocks, the vertical wall system was adopted to a greater extent; and there the waves dash against the wall with violence, at the time that no such effect is observable in the work out to sea.

In the design of the substructure of breakwaters on the principle which has been here adopted, it is supposed that below a certain level, say 4 or 5 feet under low-water, the sea does not immediately act upon materials deposited. Above this point the materials would be gradually extended till they reached a very flat slope: below such point ultimately the line assumed would be a steep slope. It has indeed been asserted that at Dover lately, movements have been detected at 15 feet below low water, which might render necessary methods of construction different to those which have in many cases been adopted. Observation of the breakwater at Holyhead, on the other hand, has shown that in some places no movement has occurred for four years: the sea is packing up material or sand, rather than dragging out; so that a conclusion would follow in favour of slope properly constructed, in contradistinction to the vertical wall, in any case where materials are at hand and vessels are not required to lie close alongside. In the head of the breakwater, at Holyhead, the vertical wall will be carried to a depth of 30 feet below low-water line, because it is necessary, obviously, there, that vessels should be able to round the end without danger of striking. In excavating the trench, the stones are lifted out by the cranes, chains being simply passed round the stones; and the stones are cast on the harbour side of the substructure, or where they may be wanted. The lower or foundation stones of the wall are laid flat, generally in a foot or thereabouts of water, at the low-water level, and the other stones are then selected and built together edgewise. Great dexterity is remarked in the workmen,—their habits in the ordinary rubble-work of the district having prepared them for management of larger masses. The mortar is compounded with Abergthaw lime, burnt at the works, and pozzolana. The concrete is composed of one part of the mortar, and two parts washed gravel.

Taking the original breadth of the staging, at Holyhead, at its dimension, 150 feet; on the harbour side of a central line, the materials as we have said, remain as they were deposited, or up to high water of neap-tides. On the sea-side where the materials were heaped up to the underside of the roadways, the mass has been drawn out to a distance of 150 feet from the line of road, and in some cases to 200 feet. The sea has exerted its force to an extent approaching to a distance of 150 feet, forming a slope of about 7 or 8 to 1, so far as regards that side of the breakwater and portion of the slope on which the sea could have action; whilst below that, the slope remains at about "one to one."

The head of the breakwater will cover a very large area of space. We have just alluded to the head, as having one point of difference from the ordinary part of the breakwater, as regards the depth of the foundations of the vertically built masonry. Whereas in the breakwater generally, the cemented masonry is built from low-water line; in the head, the foundation will be commenced, on the deposited material, 30 feet below that line. This portion of the work, therefore, must be executed with the diving-bell, or diving-dress. The construction can hardly be described as decided upon, except as to what is at present nearly completed, namely, the deposit: but there may be a casing of 18 feet to 24 feet in thickness, made up of regular masonry of the Anglesea limestone, for 3 feet or 4 feet facing of that thickness, and of blocks, size 8 feet, by 4 feet by 3 feet, of *déton*, inside, bonded with similar blocks of Runcorn stone, which are now ready for the purpose; whilst the filling-in, or hearting of the whole, will be of the ordinary, irregular material. A lighthouse may be added.

Although there was a vote of money in 1815, and works at Holyhead, accordingly, were in hand in 1816, these had little connection with the new harbour. They comprised the deepening of the old harbour, or a portion of it, to twelve feet below low water, so as to make it available for the large packets, as well as the construction of a jetty. The surveys for the new harbour, however, were about this time in progress; but considerable opposition was made to the scheme, chiefly on the part of Liverpool, and a commission was appointed to investigate the subject.

The works necessary to the construction of the new harbour were commenced in 1817 by the formation of the railway which was to connect the

workshops and offices near the end of the northern breakwater, with the quarries and with the island called Inys Gylbi, whence Mr. Rendel's eastern breakwaters were to commence. This line is carried in one part of its course, intersecting the mouth of the narrow inlet or strait, on timber staging. The work of depositing was commenced in May, 1819, by filling up the gap at Soldier's Point between the shore and rocks, or where the vertical wall has been adequate to receive the shock of the sea. In this part the breakwater extends over a considerable breadth, forming an ample area for stacking merchandise, or whatever other purpose it may be required for.

The scaffolding or staging used in the formation of the breakwater was regularly carried in advance of the work of depositing material; and it was planned and constructed in the manner now to be described. It was designed to serve for five parallel lines of railway, 7-feet gauge, along which the trains of waggons drawn by locomotive engines might run from the quarries, as we have stated, to any part of the breakwater, depositing materials, or moving the cranes, exactly where required. The rails also suffice for the "Sampsons" used chiefly in the work of the superstructure. These machines named, differ from ordinary "travellers" inasmuch as the upper part of the machine (where the movement transverse to the line of building operations, works) is carried on legs, to the feet of which are attached the wheels by which the machine follows the line of operations. The whole machine, on the rails, formerly was moved by manual power,—the raising and setting of stones, with the transverse movement, being effected by a small steam-engine at the top. Messrs. Rigby have now applied the power of the one engine to the wheels below, and have thus dispensed with the manual labour which was needed for the movement longitudinally. By these facilities, the "Sampson," and the steam-engine upon it, can be moved quickly out of the way of harm when a storm arises. A still further improvement in these machines has been recently made to adapt them to the curves of the lines of railway, where the breakwater expands into the head. The legs of the "Sampson" are here attached to pivots, or turn-tables, which are carried by waggons; so that, with the same span for the machine itself, the curves can be rounded, or, with the further aid of the turn-tables belonging to the rails, the whole contrivance could be brought on to a single ordinary line of railway, and both waggons even could be moved with the "Sampson" along the same line, instead of along the two outer rails of the number of lines. The "Sampsons," we should say are used, chiefly, running on rails at a lower level than that of the lines on which the depositing waggons have been running,—the upper levels having answered their particular purpose, have now in great part been cleared away.

In constructing the staging in advance of the breakwater, the balks for uprights, having been shod as piles, and weighted with stone in a boxing, at one end, were towed out, and tilted and guided till they stood in their intended position, sinking by the weight for a short distance into the ground. Their real adequate stay was to be the material of the breakwater, itself deposited round them. On these uprights, 30 feet apart in the length, and five of them in the width of the staging, were placed templates 13 feet in length, and on these, transverse and longitudinal balks to carry the roadways. Of course, with all the support obtained by rapid deposition of stone, the loss has been great; indeed, it is admitted that for every piece of timber, it may be considered that a fellow piece has been required, before the object was attained. There is no cross-bracing of any kind in the staging; but for some of the uprights, two pieces are substituted, spreading at the base, so to act in some degree as struts. Besides destruction of the staging, waggons have fallen into the sea, and had to be recovered. The timber is of little value as cast ashore; and the loss in a single storm has been many thousands of pounds, money.

The materials have been carried along the lines of railway in waggons contrived with a species of false bottom, so that the contents could instantly dislodge themselves and fall through the staging as each waggon passed any point where the material was required, and where a simple mechanical contrivance for tilting by a lever the bottom of the waggon, had been fixed to the sleeper of the rails. The effect of this arrangement of the waggons, which is due to the resident engineer, Mr. G. C. Dobson (who has acted since the commencement of the undertaking), has been that the work has proceeded at a rate which would

have been impossible with any method of "end-tips." At one period, 4,000 tons of material every day, were being deposited; and in one week in 1853, there were 23,846 tons cast into the sea.

It is considered that as much progress has been made in five years, as would have required thirty years under former methods of construction,—say such a method as that in the Plymouth breakwater, where the materials were carried out in vessels. Five thousand tons of material at Holyhead, indeed, have been deposited in one day; and there has been an average of about a million tons of deposit a year, and 1,000 lineal feet of substructure formed. The substructure, as we have said, is now complete, and the superstructure is advanced beyond the point marked *d* in the map we published, and is paved and parapeted for a considerable portion of that distance. The pitching or paving on the harbour slope has to be done. The principal labour would seem almost, to have been the loading the waggons at the quarries. Four powerful cranes are often required for a single stone; and the materials have to be placed carefully on the waggons, that trains may pass one another. There have been about 260 waggons employed, six or eight of the ordinary locomotive engines, and scores of cranes. We may say there have been generally one thousand five hundred men engaged on the works. Seven hundred of these have been in the quarries alone. Attention evidently is given to the comfort of the workmen. From the length of the breakwater, and the distance to any places for lodgings, it has been necessary to provide places on the breakwater itself, moveable as the work extends. Gas, at one time, was thought of, for the lighting at night, much of the work of the superstructure being tide-work; but fires were preferred, for the sake of the heat. The men receive from 2s. 8d. to 3s. a day. The miners in the quarries are paid the latter-named amount. The contract with Messrs. Rigby, as to price, was for an amount per ton of material deposited. The waggons are regularly weighed, at one part of the line from the quarries.

The contractors' workshops and plant include, besides convenient offices and storehouses, an extensive collection of buildings for various branches of a builder's or mechanical engineer's establishment. There are a smith's shop, a pattern-shop, and a foundry; a locomotive shed, and a waggon shed; a fitting-shop, and an engine and boiler house; lime-kilns, and sheds, and mortar-mills; powder-magazines, galvanic-battery apparatus stores, and many other offices and buildings.

Mr. C. Rigby has a house near the point where the breakwater commences. Here he has made himself very comfortable, having a steam yacht in dock, salt-water baths constructed in and out of doors, and tastefully arranged grounds. The manner in which the battlemented masonry of the turrets and walling is put together, of quartz or other picked materials from the Mountain, is worthy of an architect's note; albeit, there may be *mimicry*, such as is objectionable, of castellated character.

We have scarcely touched upon the quarrying, upon the success of which that of every other part of the undertaking may be said to have depended. The quarrying has had its own features of importance and interest; and so much experience or knowledge has resulted from that part of the work, that may be useful in future, that we shall probably notice the subject in a separate article.

ARCHITECTURAL MUSEUM CONVERSAZIONE.

THE annual *soirée* of the members of the Architectural Museum took place on Thursday night, July 7th, at the South Kensington Museum. There was an overflowing attendance of a very brilliant character.

In the absence of the noble President, Mr. Beresford Hope, the chairman of the Council, was called on to preside.

The Chairman, in opening the proceedings, expressed his regret that they were not honoured on that as on previous occasions by the presence of the Earl de Grey, who, through his example and precept, as well as by his exertions, had done so much to further the good cause of architecture. But, while regretting on their own account the absence of the noble lord, the assembly would, he was sure, participate in the feeling of gratification evoked by the announcement that it was through a wedding in the family of the noble earl that he had been detained from coming amongst them.

* Owing to delays in postal communication, some printers' errors in our last article remained uncorrected. Vessels do not "sound" the entrance to the harbour: the Race merely obliges them to make a circuit.

The Prince Consort was likewise unable to be present, but the sympathies of his Royal Highness were with their object; and, owing to various causes, letters of apology had likewise been received from other distinguished personages, among whom were the Bishop of Oxford, Marquis of Salisbury, Duke of Buccleugh, Bishop of London, Mr. Cole, and others. The late Sir B. Hall, now Lord Llanover, had attended that meeting, but in consequence of an accident—not, he trusted, of a serious character—his lordship was compelled to return home. But, in spite of the inability of those of whom he had spoken, there were yet enough present to constitute a great and a goodly gathering. If they asked for a monument to the Architectural Museum, they might look around them. In addition to those who had been fortunate enough to find seats within that lecture-hall, there were many hundreds of their enthusiastic friends who were walking about in different parts of the Museum. It was but a few years ago, let them bear in mind, since they had assembled in their odd home in Cannon-row, Westminster: now, without bating for one instant their pretensions—without claiming less at the same time that they claimed no more, they had become a part and parcel of that national and ornamental Museum in which they were now assembled. Still, though forming but a parcel of it, they had not allowed themselves to be absorbed into it; they had their own officers, and their own rules and regulations, and the compact had been a fair and even one between the high contracting parties. Those parties were, on the one hand, her Majesty's Department of Science and Art, and on the other, the free and self-supporting Architectural Museum, and in that free compact they had kept, and meant to keep, their own. And having done this, he believed they had thereby established matters on a far more satisfactory basis than they had occupied some time previously: they might have imperilled a few interests here and there, but by their course of procedure they had acquired respect, and they had placed themselves in a position which showed that independence and friendliness were synonymous terms. With what object had they come to Kensington? To establish a true, good, living School of Art, as they had done in Cannon-row. There were other departments of art in London to be taken into consideration, such, for instance, as the Royal Academy. He should be sorry to make an attack on that academy or on any other school of art established for the promotion of art, but these schools did not cover everything. There was that true and living art of which the revelation had been made only to their own generation, and he might say only in their own lifetime. An idea had grown up that architecture was not a matter merely of the rule and compass, but that it was an art, and that every moulding, every leafage, every slight accession to a building was as much the architect's business as the general design. For its school of art, workmen must be trained, and while that was doing, the school of decoration must not be weakened. A great deal had been said about the importance and dignity of the art workman, and he agreed with all that had been urged in this respect; but they must take care that they did not obscure other highly important truths,—that they did not run into the extreme of making the art workman everything, and the artist nothing. They must not fall down into the somewhat minute and pedantic worship of detail, of party, and of smaller beauties: this was what that Museum would never do. The Museum wished to set up the study of art in detail, but not as a detailed study: it took detail as a branch, and an inferior branch in the crowning science of the art of architecture. They claimed to be wide, to be free: they claimed to be independent, because they were not socialistic merely, or elaborators of detail, or simply a school of architects, of outline or proportion, wishing to keep down merit in the art workman: they wished to encourage all the arts having similar elements: they wished to encourage the combination of all the elements of art for the accomplishment of the grand whole of architecture. They were a combination of all the broadest and minutest branches of the art of architecture. In support of this view, he need only appeal to the gathering now before him, which had come to that somewhat distant, secluded,—he would not say somewhat inconvenient—portion of the metropolis. They had come then, he felt confident, not merely to see the Museum of the Department of Science and Art, but more especially to take part in their own architectural gathering. And when their *conversazione* had come to an end, and when they again wandered through those long aisles, they

would not forget to visit their own collection upstairs; and he hoped they would not be induced to regard those dingy casts which they would find included in it, as trifles, for they were connected with the finest cathedrals of the earliest times—with cathedrals and palaces, with everything which bore the stamp of Teutonic civilized beauty. With these keys before them, they would be enabled to band down to their children and grandchildren the means for the construction of buildings of a similar character. Sooth to say, though beauty was "a joy for ever," and though the eyes of beauty were on every side that evening in great abundance, yet in the more intellectual resources which were required they did not abound. Herein there was one thing needed, namely, those material treasures which, though, perhaps, not very valuable at their lectures or at their meetings, were yet of importance to the treasury; for there were such things as bills, as salaries, and, as it was agreed on all hands that prizes were to be given to art-workmen, the question was, how were these prizes to be procured? Last year the noble president, who then occupied the chair, made a stirring appeal on behalf of the funds of the Museum, and that appeal had been responded to with great spirit and generosity. The result had been to place the institution on a more satisfactory basis than it had before occupied, but it had not yet put them at the top of the tree, or in the place which they wished to occupy. They were now in the process of solution, but they had not yet become quite solvent. He hoped that next year their solvency would be an established fact, and that they would be able to carry on the Museum with that spirit and independence which ought to characterize its proceedings. He called on all who were not yet subscribers to become so, or at least to contribute donations, and to do something for the advancement of the interests of architecture, by agitating in its favour among their friends and those with whom they came in contact. Once possessed of sufficient funds, they would be enabled to hold real *conversazioni*, at which those who attended, and especially art-workmen, would be enabled to state their difficulties, their troubles, their hopes, their fears, and their views of what the institution was doing for them. Such meetings they had been accustomed to hold in Cannon-row. That had been rather a rude place certainly, and was Medieval in its look; but though their assemblies were of a more dignified character since they had come to their present abode, they would take care that they did not die of dignity, and their present place of meeting would hold ten for every one that had been enabled to assemble in their former contracted domicile at Westminster. He believed it had been the intention of Mr. Scott to draw up, as usual, an able report of their present position and labours of the past year; but the affairs of state in which that gentleman was occupied had prevented him from doing so, and the meeting must, therefore, content themselves with the rough draft which had been prepared. The chairman then submitted the heads of a report which referred to the lectures delivered during the past year, which were seven in number, all of which, with one exception (his own, of course), were excellent. Mr. Clark, it was to be regretted, had been prevented by illness from delivering the lecture which had been promised in his name, but he had no doubt that the pleasure of hearing the lecture in question, addressed to art-workmen, would be enjoyed during the next session. Mr. Godwin, one of the members of the council, undertook, in the unavoidable absence of the chairman, to present the prizes to the art-workmen. The chairman read the list of the prizes awarded last year (which have been already published in the *Builder*); and proceeded to state that the names of several eminent persons who would deliver lectures in the course of the approaching session, were announced. The Museum continued to have friendly relations with the Government, and the officers of the Department of Science and Art had shown the greatest kindness in doing all in their power for the comfort and convenience of visitors to the Museum. Special reference was made to the exertions of Mr. Owen; and the report concluded with an appeal for pecuniary support in aid of its funds. The chairman on resuming his seat was very warmly applauded.

Sir C. Barry in moving the adoption, in lieu of a report, of the able statement made by the worthy chairman, expressed his opinion, in which he believed he would be joined by the entire meeting, that their thanks were due to Mr. Hope, not merely for the lucid and cheering exposition which he had just given of their position and prospects, but for the exertions which he had constantly and

perseveringly made to further, through the instrumentality of that Museum, the great and sacred cause of art.

The Rev. G. Williams, of King's College, Cambridge, seconded the motion. In the absence of one of those admirable reports which they were accustomed to receive from Mr. Scott, he did not know that they could have anything better than the excellent and very clear statement with which they had been furnished by the chairman respecting the progress of the Museum. As regarded the change which had taken place from Westminster to their present abode, nothing could he thought be more hearty, more agreeable, and more calculated in every way for the promotion of the object in view than the meetings which they used to hold; but at the same time he believed there were counterbalancing advantages attaching to their present position, and that the very great encouragement which was extended to them by the Government was a proof of the very material progress which had been made. There had been always a deficit for some years past, and it was satisfactory to know that at length this was in process of being cleared away. He had no doubt that the chairman by his speech had enlisted, as he never failed to enlist, the sympathies and support of a large portion of his audience, and that the result, as exemplified by the subscription list for the coming year, would be everything that could be desired. He thought there was one thing which it would be well to bear in mind in the event of their funds improving to any marked extent. In offering premiums to the workmen for designs and models, it did seem to him desirable that those premiums should, if possible, be sufficient in amount to induce the working classes to contribute. Because it must be recollected that time to them was money, and that they could not afford to waste their time in the preparation of designs, unless considerable encouragement was afforded to them, and unless they were led to believe that not only the first and best designs would gain a prize, but that some reward would also be given to the second and third in the order of merit.

The motion was put from the chair, and passed by acclamation.

Mr. G. G. Scott proposed a motion of thanks to the officers of the Department of Science and Art, for their great kindness on all occasions, and for the support which they had given in former years, and continued down to the present time, to the objects of the Architectural Museum. To some of these gentlemen they were indebted in an especial degree. During the past year Mr. Cole had been for some months in Italy, and had brought back a number of extremely interesting specimens from Rome and Verona; and though he had not yet had an opportunity of thoroughly examining them, he was told that they afforded most valuable illustrations of Antique, Renaissance, and Medieval art, including several very interesting fragments of mosaic, of both descriptions. The heads of the Department generally had followed up this kind aid by increasing the list of photographs, which were now arranged in the museum in a much more clear and effective manner than they had ever previously been; and they had manifested their good will in a variety of ways, which it would be difficult to enumerate. It might seem invidious, where every officer had acted with such great kindness, to make individual references; but he could not refrain from thanking, in an especial manner, Mr. Owen, Capt. Fowke, Mr. Robinson and Mr. Smith. For several years past he had been in the habit of putting before meetings such as the present a statement of the objects of the society, but he hoped that these were now sufficiently well known to render their repetition unnecessary. They were all, he was sure, aware that their great object had been to collect together, in an accessible form, an example of the arts subsidiary to the architecture of all ages and periods, but more especially of that particular period which, up to the time of the formation of their museum, had been neglected in all great public collections: he referred to the Medieval department, and to the antiquities of our country, not as they now existed, but as testifying to the architecture of that period, and to the buildings of France and other nations which were coeval with them, and which were almost as little known. With such small means as they possessed, they had endeavoured to do away with that blot in the general system of museums; and, though their collection might be considered incomplete, and as affording but a very general representation of the art as it existed in the Middle Ages, in England, France, Germany, Italy, and elsewhere, it yet consisted of some thousands of specimens, and had

led to the introduction of this department into other museums. What they had done, however, was as nothing compared with what there yet remained to do. The necessity for exertion was each year becoming greater; for, year after year, the traces which they were so anxious to study and preserve were mouldering away and becoming fainter and fainter. There were objects which he himself had sketched twenty or thirty years ago, in which he was then able to trace every fibre and line of foliage; and on visiting them recently, after that interval had elapsed, he found that the marks formerly so clear had become indistinct and obliterated to a degree that he could scarcely have believed credible. Some of the relics of antiquity were of course more durable than others, but if this silent action were allowed to proceed without any step being taken to acquire the knowledge while opportunity yet existed, the result hereafter must be bitter and unavailing regret. Permission was freely given in foreign countries as well as abroad for the pursuit of studies of an antiquarian character: it was money alone that was wanting, and for such a purpose he was not ashamed to beg. Moreover, funds contributed for such an object were given for an end that was strictly national. It was to preserve to the people of England a knowledge of what they once were, to illustrate their own art, to make them acquainted with their own buildings, and to enable them to compare the knowledge and the efforts of their ancestors with the remains extant of the labours of continental nations.

Mr. G. Godwin being called on, said he felt very great pleasure in seconding the motion. Together with Mr. Scott, and other members of the committee, he had had good opportunities of seeing the great assistance given to them, and the great interest at all times manifested by the members of the Department. And not merely did this interest date from the period at which they had been brought under the roof of the South Kensington Museum, but even while they were in those quarters so often spoken of, and it now seemed with regret even by some—the cock-lofts in Westminster—even then, the members of the Department had aided them in obtaining a grant from Government. From that time to this they had always done their utmost to forward the views of the committee of the Architectural Museum. Mr. Cole, Capt. Fowke, Mr. Culliffe Owen, in fact all the officers were deserving of the warmest thanks of the subscribers to that Institution. But he did not rest quite satisfied with what had been done: he looked forward to further steps. He hoped that by and by measures would be taken to bring about a union of the Greek, Roman, and Renaissance remains and casts already under that roof, with their own fine collection, mostly Medieval, and that by this means we might obtain really a National Gallery of Architecture. This gallery, he thought, should be maintained most sedulously and liberally by Government, but should be carried forward and governed by the present committee as trustees, or by those who might hereafter be appointed. It would still have the best interest and exertions of the members of the architectural profession, and of all art-lovers; but, in the hands of the Government, it would attain to a position and an importance which, depending merely on private support, however earnest, it could scarcely hope to achieve. Instead of taking up the time of the assembly with generalities, it would perhaps be interesting for him to say a few words on a kindred topic connected with the building in which these proceedings were now taking place. It was not perhaps generally known that the 41 acres of land closely adjoining the South Kensington Museum, which belonged to the commissioners of the Exhibition of 1851, were immediately to be laid out in ornamental gardens, surrounded by arcades and colonnades, and decorated with water and statuary. About 20 acres in the centre were to be leased to the Horticultural Society, who would spend 50,000*l.* on their portion; and the commissioners of 1851 were to expend another 50,000*l.* on some 4,000 feet of Italian colonnades, and various other artistic decorations surrounding this area. A space was to be left for public buildings, hereafter to be erected by the commissioners, who were bestirring themselves in reference to the work. The design was from the hand of Mr. Smirke, and operations were to be commenced in about a fortnight; so that in a very short time they might anticipate that a national delight would grow up in that place, which would not merely be an inestimable advantage to the neighbourhood, but would afford an attraction to which all lovers of artistic beauty, and all seekers for

healthful and elevating recreation, would gladly and thankfully resort. Mr. Godwin concluded by seconding the vote of thanks to the officers of the Department, who, in the midst of all their occupations, had never neglected the Architectural Museum.

Mr. Robert Smith, in the unavoidable absence of the head of the Department, returned his acknowledgments for the complimentary vote which had just been passed. In common with the officers of the Institution generally, he was fully alive to the value of such a collection as that of the Architectural Museum; and he had felt much pride when within the last week he had an opportunity of adding to the collection some photographs of the ruins of ancient Rome. In the same way he had experienced pleasure in assisting to carry out the views stated by Mr. Scott and Mr. Godwin. He believed that the development and reorganization of the Architectural Museum had afforded an opportunity such as had never occurred in this country before, of starting on a firm basis a great institution to illustrate not only the architecture of any nation or period, but that great art which was the parent of all decoration—the art of architecture in all ages. In such a design they were wonderfully assisted by the appliances of modern science; the art of photography alone having placed in the hands of architects at the present day a key which had opened to them resources never before within their reach. As regarded the illustration of every kind of architecture, especially, photography was of incalculable advantage, for it enabled men to acquaint themselves with details even of the most striking minuteness without passing away from the legitimate occupations which bound them to their studio.

The Rev. W. Scott moved a vote of thanks to the chairman for his conduct on that occasion, as well as for the labour and interest which he had invariably bestowed on the concerns of the Architectural Museum. Those who were only acquainted with that gentleman in his public capacity, might have frequently had occasion to admire his eloquence, and the generous manner in which he accommodated himself to circumstances; but those who knew him better were fully aware of his sincere, earnest, and zealous a workman he was in anything which he undertook. It was comparatively easy in these days, when art was fashionable, to be a friend to art, and when one had the means, to be a sumptuous and liberal patron of art, but it was by no means so easy to be an earnest student and an assiduous worker in the cause of art. The hon. gentleman had erected a monument of Christian piety in this country conspicuous alike by its sumptuousness and propriety, and which, if not one of the greatest, was certainly a high ornament to the metropolis. Not only in this manner, however, but in the most judicious and an judicious way in which that Museum had been worked, the chairman had shown himself a zealous and untiring friend to art, and of the progress that, under his guidance, it had made, the assembly of that evening afforded the best practical exposition. They had heard from his friend near him an animated description of the gorgeous retreat that was about to arise in that place—colonnades and porticos, and fountains, while vistas and terraces, and all the splendours of the eye would be scattered around; but none of these, however beautiful they might be in their completeness, accomplished half as much for art as the shabby, dingy scraps of architecture which come from ancient castles. There were he wished to impress on all present, that if they desired to be something more than art lovers, and to render services to art, they ought, according to their several powers, to labour for the increase of the collection which had done so much, and which would continue to do so much for this glorious art. They should not fail to remember that the time was rapidly passing away when the formation of such a collection could be any longer possible. For did they suppose that if in past years there had been such collections as were now made, and that objects which time had since destroyed had then been got together, above all, if that art of photography to which reference had been made were then in existence, did they suppose that there would have been that decadence of art; or that difficult and yet successful revival which it was the pride of our own days to see? He had been delighted with the successful results of the mission of Mr. Cole, but the name of Verona had suggested a painful reflection in connection with the delightful specimens of ancient art which were there to be met with,—it was that these glorious works, which were a comfort to man and a glory to mankind, might be at any moment annihilated by the besom of destruction that of that accursed hour, for it was accursed in its beginning, it was accursed in its progress, and it would be accursed in its end.

Mr. Matthew Bloxham, of Rugby, seconded the motion of thanks to the chairman; and referring to a visit which he had paid two or three years ago to the Lakes of Killarney, mentioned that on the beautiful island of Innisfall he had seen a ruin which was only mentioned in the guide-books as "an ancient abbey," but which bore undoubted evidence of having been a monastery of some importance. He believed that in Ireland, from the circumstance of her soil, there was yet remaining a mine of wealth in architectural matters, which had never yet been properly elucidated. The Chairman, in returning thanks, said the progress of their museum had been for many years a source of delight to him; and if he had been able, however slightly, to do anything for it, how highly was he rewarded when a resolution such as they had now adopted was proposed by one who himself had laboured so earnestly, so ably, and successfully in the cause; and was seconded by one from whose works, though he had never actually seen him before, he had drawn in ripe stores of knowledge. The name of "Bloxham" was a household word that they all loved: it was he who had fixed their ideas and given them clear perceptions with regard to style; and to see him come amongst them and utter words of encourage-

ment was in itself an augury of success. It was indeed cheering to behold a gathering such as this in times like the present, when most of what had been well called an "accursed war,"—a war produced by the most loathsome and grovelling of despotisms, growing out of socialism, republicanism, and deep pitiless hypocrisy. An assembly such as this in the midst of the prevailing destruction was an earnest of the future glory of art in this country, and of that healthy English spirit which encouraged and inspired us to keep our way in the midst of surrounding trials, and troubles, and difficulties and dangers. The chairman then directed the attention of the meeting to a specimen which they would find in the collection on stairs, and which they owed to the inventive industry of Mr. Scott, and the workmanlike ingenuity of Mr. Cundy:—he alluded to the restoration of the end of Queen Philippa of Hainault's monument at Westminster Abbey. A small sum of money was all that was required to purchase this, and to place it in its proper position in the "venerable cathedral." Mr. S. C. Hall, having been called on by the chairman before dissolving the meeting, next addressed the assembly. He congratulated them on their numbers and influence, but said that he regretted to miss the hard-headed artisan, on whom gatherings such as the present would exercise the most beneficial influence; and whom, though it might appear a want of courtesy to say so, he would rather be addressing. He believed the mission of the architect to be infinitely superior to that of the artist, for while the work of one was for the most part jealously secluded in galleries, the creations of the other were for the multitude and for all time, or nearly so. If it were true that he who made a useful and public good, and that he who made a beautiful thing made a joy for ever; was not he who combined these two a public benefactor indeed? It reminded him of the story of the old woman who followed the sultan, exclaiming, "Thank you for your gold, thank you for your jewels." "Good woman," he replied, "you owe me no thanks; I have given you nothing." "No," she answered, "but you have allowed me to look at your fine ornaments, and that is all you can do for me." But if tasteful architecture were so much to be desired, what was to be thought of the genius which had given them "illuminated indicators." (Great laughter.) He confessed, that on his way past the Palace of Westminster, he had been tempted almost beyond resistance to shatter that erection. He was afraid that if great exertions were not used to prevent it, the same execrable taste would reign, and be observable in the arrangements which were spreading rapidly throughout the country. His main object in rising, however, had been to recall to their attention that important class, which it was so desirable should derive instruction from the records of the past; and who, when properly trained, would be capable of becoming more a skilled companion to the architect, than the mere machine which he worked. Mr. Hall concluded an animated and stirring address with expressing a hope that this report, which he had accomplished, and he believed that the arrangements which were now in progress in the Museum were calculated in a great degree to lead to that desirable result.

The proceedings having been brought to a close, the meeting shortly afterwards adjourned to the refreshment-room and picture-gallery.

FREAKS AND ODDITIES IN BUILDING.

KENT's elevation of the Horse Guards, facing St. James's-park, possesses merit, and makes a more happy impression than many other buildings of mark in London; but the central archway is much too diminutive every way. Hogarth could not resist from satirising it, and represented the head of a carriage-driver knocked off by collision against the key-stone of the arch. There is no fear of the French architects not making their coach-doors high enough. Staircases, which should be of easy ascent and descent, without any abrupt winders or awkward steps, or treaders too broad, should, as well as doors and arches in passages, or halls and vestibules, have plenty of head-way. In more than one house at Rome the interior mode of ascending and descending to the different rooms is by a winding level of stone or of concrete, from top to bottom, without a single stair, and we believe constructed on the principle of similar means of mounting, as occur in houses in Malta and in Sicily. A very curious staircase in a large open space, surrounded by houses, whose rooms as lodgings are accessible through it at different floors, is seen at Paris, in the northeast corner of the Palais Royal: persons ascending on one side can, with difficulty, see persons descending on the other side. Their small spiral stairs are well known and admired for their contrivance, and the small area they take up in shops, where any other kind of wider stair would be in the way of business; and in *cafés* and *restaurants*, where space is valuable. We have seen more than one of these compact stairs, their circle less than 3 feet diameter. At No. 163, east side of Palais Royal, is a crystal staircase. The tools and the machines, invented, or perfected, by the French mechanics, and employed in their works and constructions, are very satisfactory and efficient, from the most complex instrument down to the wheelbarrow and the spade. In the framing of their vast scaffolding, and in theatrical machinery, in apparatus called *passerelle*, used for lowering masses, and recently employed for lowering the arches of the Pont-Neuf is most ingenious. Their mode of removing large hewed blocks of stone from carls provided for the purpose, with a sliding bottom, from which they

tilt it to the spot required for a building; and their simple mode of fastening and securing loads of goods or of materials, in a truck and in a cart, by means of a vice, fixed at the head of the cart and ropes,—all this shows they come from an inventive or improving race.

In Nash's time the houses in Regent's-park were imprudently built of timber which was infested with vermin, difficult to get rid of, and which forced some of the tenants to quit. The precaution ought previously to have been taken of steeping them in wooden tanks (made water-proof by oakum and tar driven between the joints), of *corrosive sublimate*, or submitting them to Ryan's process. Some buildings have sunk, and become cracked by want of solidity of the points of support: several domes have given way several inches: this was the case with Soufflot's dome, he not having taken sufficient precautions; and Rondelet obviated this defect by substituting masses of construction to the columns and to the pilasters which had sunk. The dome of St. Peter's has been strengthened by iron bars in several places.

We admit the beauty of trees near one's dwelling; and such is the passion of some for having trees to grow as near to their bed-room windows as possible in order easily to see their foliage, and to hear the early birdsong of a morning from their branches, that they would perhaps forego some want of domestic comfort within rather than be deprived of their favourite object without. But trees throw out the moisture which they absorb, or rather during heat it evaporates: and therefore they should not be planted too close to windows, especially of sleeping-apartments. Books, papers, and linen have become mouldy and rotten by having been kept some time in attics to which trees approximated. Want of sufficient light and air in a building, bad prospects from windows, miasma rising from neglected or badly formed drains under it, make a man's home his enemy; a source of misery, when it should be a source of health and comfort, and where he ought to find the common necessities and some of the luxuries of life. Many are the victims to disease on these accounts. But we have remarked some who could afford to live in a model cottage, preferring, from the force of inveterate habits, one black with smoke, begrimed with dirt, and infested with bad air. They are of those who "pay too dear for their whistle."

Not only in Trafalgar-square, where they have often, from bad management, not been able to force by pumps sufficient water for the fountains to play, and the element to flow in gutters to clear the space of accumulated dirt; but from the scarcity or dearth of it in the narrow streets and confined habitations of the poor and of the labouring classes, one would think such an important aid to cleanliness and health was begrudged them.

The want in London of embanking and quaying both sides of the river Thames, and of draining waste land that lies thereabout,—of getting by a perfect system a large supply of the pure element, astonishes foreigners who visit England, and whose own cities and even villages are remarkable for their number of baths, of fountains, of lavatories, and of drying-grounds. They perhaps are not ignorant of the sources from which it can be procured, and the facility, waiving the expense, with which it might be conveyed by aqueducts; and they will naturally attribute the absence of these advantages and this luxury to jobbing, or to the obstacles put in the way of accomplishing that which is opposed to the interests of some party or some corporation. There can be no doubt also that evils long exist festering in society and in crowded cities, that the progress of improvement is arrested, and injury done to architecture by the declaration made wilfully or at random against the exaggerated expenses which the construction of public monuments occasions.

Works left unfinished, and demonstrating the impossibility to complete what has been begun, and of no use if they could possibly be finished, rank among other kinds of folly that is a snare and a disgrace to him who attempted what he could not perform. How wounding to one who has pride for it to be said of him, "This man began a work and is unable to complete it." It is a repetition of the tower of Babel, the tower that was commenced, and already erected to a great height, but not as high as human sanity wished, and not stopping at the limit that human wisdom would have dictated. It was like other vain and fruitless efforts of that ambition that overleaps itself, of that pride that goeth before a fall. However, in that same country, and about

the same time, as redeeming features or as reparation for that failure, and perhaps profiting from it, much was built, many kingdoms and dynasties were formed; Thebes arose in her magnificence, and her gates and colossal obelisks were celebrated; Memphis was wonderful in her pyramids; Nineveh revealed her riches; and, thanks to modern travellers, the relics of the latter, which were buried under the sod as in a sepulchre, now form the nucleus of a most curious and valuable collection of that ancient world in our British Museum. Sometimes you see, in addition to the freaks and oddities of buildings we have already enumerated, a series of brackets or consoles placed in the frieze of the entablature, as in the old front in the court of the Imperial Library, at Paris, which are nothing but false supports to the cornice, that was never supposed to need them. This occurs on the external ornament of the church of the Invalides,—ornaments which are always referred to in praise by architects for their rich and sumptuous effect and well-arranged distribution. This is a pity, because of the great reputation of Mansard, and because his dome, and works in the city and those at Versailles, have had much influence upon French architecture, since he was the architect to Louis XIV. The fault, however, is screened by the greater beauties of this noble building. The falling into these errors by professors themselves only shows the power of examples over precepts, and the former sometimes causing them to forget the latter. There is hardly a house or a street in Paris, and we may say many in London, the roofs of which are not *Mansard's*. The habit of breaking, by small windows, the length and the breadth of the frieze destined for another purpose, cannot be justified on any grounds that we can conceive, and it excludes the opportunity which it offers for a display of sculpture, or some plain inscription in gold as a relief to it, and giving a character proper to it; or of some emblems of industry or of knowledge to which the building is consecrated, and for which the frieze and the pediment, from time immemorial, have served at once as a field and as a frame. The position and change of place which have been given to these consoles are chimerical, and wholly unwarranted. That does not deserve the name of ornament which, like a mask, hides some falsification, or makes illusion by its misapplication, and deceives the eye. Ornament should be above creating any suspicion of being a covering only; for the real motive and signification of ornament,—for the beauty on which it depends, look at the gutter beneath the triglyphs, the lions' heads at the extremities of the pediment, the *antefixa* at the end of the inclined divisions of the roof, &c.: these things will explain more powerfully what ornament is, and what ought to be its source, than the best precepts or maxims of architecture. Everything—the smallest details; trifles that may be tributary to perfection by their treatment; everything that enters into the composition of such a master-work as is above alluded to, is embraced: all their forces are balanced and united into one system of equilibrium.

By the practice pursued in Paris in building large shops, *cafés*, and *restaurants*, and of highly decorating them,—so that though there is some degree of encasing and enveloping of the parts of construction, that is not done to deceive the sight,—they obtain that which is their object, and a fair one it is, to attract by the splendour of effect, which is appropriate to such places of refreshment and rendezvous.† Observe these works in course of construction, and it will be a lesson on the science of building, or remind of what is worth recollecting always: you will trace among the practised workmen that combined confidence and care that bespeaks a superior intelligence of the work under their hands; you will see the means employed for facilitating and for abridging labour: you will see the greatest strength secured by the smallest scantlings of the materials, and the parts very firmly put together,—strong iron columns, but of small diameter, supporting iron bressummers, and keyed together, holes for plugs being provided in flanges in the caps of the columns and in those of the bressummers, and which are afterwards made objects of attraction, covered with wood panelled, carved with flowers or bouquets, or coloured with festoons and vine-leaves and grapes. Gilding is dominant, and perhaps looks best on a cream-coloured or white ground. The ground of

the ceiling is generally white, if not wainscotted, with a centre-flower painted. This account answers only to the most common description of *cafés*. Some of the *cafés* in the *Palais-Royal* and the *Café Parisien* (on one of the old Boulevards), recently finished from the studied designs of M. Duval, are worth a visit from London, or farther off, in order to see them. This architect has erected one or two very beautiful buildings in the French renaissance style: one is in the great avenue of the *Champs Elysées*. The practice of casing and protecting material, as mentioned above, provided it is sound and will bear inspection, is authorized by ancient examples, and is not to be put in the same category as the faults and disguises which some builders have recourse to, nor will it be except by the most exacting and most fastidious. In the ruins of the temples of the Forum, on the Capitoline Hill, and in the magnificent baths of the emperors, may be noticed the best-executed brickwork within their walls, and thick slabs of beautiful marble laid on it for the exterior surface. The only effect of the workmanship of the one and the imperceptible juncture and brilliancy of the other, is to raise admiration the more the system and the sentiment that had given it such a rich but solid tone are thought of.

The pediment is another feature misapplied and misused almost everywhere: sometimes the raking mouldings that compose its configuration are broken, and sometimes the horizontal ones; and the imagination in playing upon it has turned, and tortured, and twisted it into all sorts of strange and odd forms. The ancient Greeks would hardly recognize it. The ancient Greeks would be astonished could they see the violence that has been done to that crowning member of their monuments by the moderns, for one object with them in art was to render to everything its due. There were great and distinguished men among our neighbours and allies,—Lescots, Levans, Perroux, Lebruns, Damons, Soufflars, Mansards, Blondels, Viscontis; and yet they were liable to and seemed to tolerate and countenance many defects, which might be termed *à la mode*: fashion has been often the tyrant that has imposed them: of course many of these minor defects are effaced by striking beauties which atone for them.

And now a word on contradictions in proportions, and then to conclude with a few further remarks. There are found, both in their buildings and in ours, proportions of all kinds, and which perhaps justify all sorts of opinions. It is thought that the Romans did not more agree than the Greeks upon fixed and invariable rules or laws: although these nations appeared to owe less to their inventors, they affected to make their orders as much composite as they could, and regarded the proportions of this art as arbitrary. The reason of what they sometimes did in this respect might have been ascertained by some, but hidden to others. The doctrine that Vitruvius has left us in writing, and which has given rise to various comments, does not more agree with what was practised in his time and the examples that remain to us of antiquity. So many varieties make us presume that the greater part of architects who have studied the works of the ancients think that the proportions should be the same in the better edifices, that they have received the best proportions, and that it is requisite to search into them, and minutely to study their details, to know their distinctions: others, on the contrary, have imagined that every building, according to its position, may occasion the difference of proportion; that they were varied to be in unison with the different qualities they were to express; that the Greeks and the Romans had not general principles, but only applicable to particular cases and circumstances; and that, in short, the different aspects furnished them with so many proportions, according to the diversity of circumstances, of locality, of situation, and of space. Hence the many and the different systems of the orders. Vignola, a good authority, and who was imitated by the priests, the Jesuits, and architects, in numerous churches, in Europe, during the fifteenth and sixteenth centuries, differed from Serlio, who differed from Palladio, who differed from Scamozzi. One pronounces "architecture" with accents and tones very opposite to those of another, but all are masters of their art, or they are pupils of the same master. Open their great works and commentaries with their notes and experience: they have endeavoured to reconcile and to determine its proportions: you will see that they, instead of being fixed, are fluctuating; that they do nothing but show by the diversity of their opinions the difficulty, if not the impossibility, of succeeding in

* We have, after Mansard's construction, our curb-roofs. The word also in French answers to our *attic*.

† The *café* Pedrocchi at Padua is of extraordinary extent and splendour. The great piazza, laid out with fountains and running water, and statues of all the eminent men of Italy, is a very interesting spot.

it: you will find that there are not two proportions in architecture in which they unanimously agree, and that there are not even two edifices among them, that these architects have executed, in which they have observed the same identical rules. For example, some have given to their entablatures the fourth of the height of the columns, others have given the fifth, and others have held to a medium between these two proportions. The elevations of pedestals—those of columns in connexion with their diameter or module, the height of a balustrade to that of the cornice—are not determined with more unanimity: the heights, the relations of mouldings to one another, those of friezes, of architraves, of capitals and of bases, of pediments, offer also continual opposition and contrarieties. The Corinthian colonnade of the Louvre does not resemble more that of Vignola, than that of the palace of the minister in the *Place de la Concorde*.

To collect and to dispose a variety of objects into combinations where harmony and contrast are blended together, is one of the charms of art. There is a great want in many cities of sculpture-groups in open spaces: these, by a happy union of opposite qualities of the objects of art, make a strong and permanent impression; not so a lonely column in the centre of some acres of area. The figure on the top of the elevated pedestal is too high to deserve the true expression of the hero or the duke whom it is supposed to represent. In northern countries, its physiognomy is often obscured by clouds and fog: it is no subject for the study of a Lavater. Placing sculpture too high for observing clearly and with ease the nature of the subject treated, or, if the space afforded a good field for the introduction of sculpture, not making it large enough to be seen well at the distance it is situated from the eye, is a defective result. A great building should have a great cornice, as an excellent orator should have a powerful voice. See the cornices of the Farnese palace, Rome, and the palaces of the Strozzi, at Florence, and the great cornice of the vast dome of St. Peter's. Placing too small a statue on a pedestal of considerable elevation, on a rock, or triumphal arch, consoles of an exaggerated size beneath a light balcony, putting any ornaments where they are not required or seen to advantage, show a vicious propensity. S. Nixon, sculptor, recently dead, a few years ago executed a very good standing statue of Dr. Valpy, for Reading Church, and it was put a long time into the belfry, because the wardens and vestry could not determine upon where to place it. Borromini had his vagaries. His statues on the bridge of San Angelo, in Rome, almost startle the passers-by, who fancy that strong winds are threatening to blow them down, the hair and drapery of the figures streaming in the air in all directions. The statue lately erected to Sir Robert Peel, in the heart of the city of London, so well situated, so characteristic of that eminent statesman, speaks to the public still. But not so statues of the men of England's pride, whom the sculptor has stripped of "the habit in which they lived," and invested them with the Roman garb, as in the statue of James I. at the back of the Banqueting-house, Whitehall. Some cathedrals (as that of Poitiers) are remarkable for their length and for their breadth, but their height does not answer to their two other dimensions. There may often be two or more edifices or churches, as the imitations of Jesus College, or St. Ignatius's, at Rome, after Vignola's designs, which at the first glance seem alike and analogous in their disposition, but when we come to compare and analyse the parts of collocation of them, we find that the work of one, in many respects, is superior to that of the other. There may be several which on first attention seem to be of equal merit, but when we commence to study the minutiae of their design, and the varied conveniences of their respective plans, and the relative degrees they have of serving useful ends, we find that one has supplied comfort, and favours health more than the other; that its rooms, allotted to different purposes and to different pleasures, have had the proper aspect assigned to them; and regard the proper points of the compass. The artist's studio, the library, the bed-room, the conservatory, have each their appointed lights. Exactitude in this particular is a great object in the study of the plans of building: the neglect of it is a great defect. Perhaps we are over-nice, but we like to see the centre axis of churches laid down true to the leading diameter of the compass, and a specimen of orientation. Aspects are of no little interest to the architect in projecting the façades of his villa or palace, on which he is ordered to bestow colour

or *chiaro & scuro*.* We observed, when watching from a vessel in the port of Genoa, her famous palaces glittering with all hues, and the upland city, variegated and standing out in showy relief with olive plantations. On disembarking and looking at those which faced the sea and which had been painted in distemper, we remarked that owing to exposure to the breezes from the salt waves they had been considerably effaced, but that at the back of these palaces, which were considerably sheltered from them, the colours were fresh and brilliant.

Many buildings owe their materials and their existence to the ruins of other buildings; but the means that are had recourse to for this purpose do not justify the end: it is like robbing Peter to pay Paul. During the pontificate of one or more popes, the stone of the Coliseum at Rome, then suffered to be a prey to the avaricious, was, piece by piece, where the ruins of it had begun, taken away to erect more than one Italian *palazzo*. It is said that a great part of the Farnese palace was built from it. Thus it was a quarry for modern structures; but, for a long time since that, succeeding popes have shored up the remaining parts of this mighty amphitheatre with buttresses of masonry, and it is now looked over and preserved by strict edileship. The palaces thus constructed are immense, though it might be only their front elevations and the exterior of them which were thus constructed; but such is the unequalled and overwhelming grandeur of the Coliseum, that what has been abstracted from it appears to leave but a small gap. In 1664, Charles II. king of England, bought, for his palace near St. James's Park, the stones that had been squared and stacked ready for the building of the cathedral of St. Paul.† In some town in the French dominions, where there was a scarcity of building stone, a tax was levied by Napoleon on every one entering it in a cart or vehicle of any sort, to deposit a stone not less than a given weight, and thus supply the contractors with that which they wanted, and which was difficult and expensive to obtain by any other means. Many roads in London have been macadamized and some streets paved from pieces of rock, lava, and other hard substances from foreign countries, the same having been brought to our shores and unloaded from ships in which they served as ballast. Not many years ago, in beginning to lay the foundation of a new street near Finsbury-square, City, the excavators in digging discovered, a little below the surface of the ground, a number of trunks of trees which had been felled for material for fire, or for clearing fields which were then there, for future contemplated improvements. It happened by a curious coincidence that this series of timber corresponded exactly to the line set out for the foundations and frontage of the houses, and they were used as points of support to them.

Hoxton and the City-road are places associated with our younger days. Many of the old houses there, and whence the omnibuses to and from the Bank continually run, and where the traffic is so great, are remarkable for the lofty and flat roofs with which they are surmounted; for in the old days they were surrounded with or commanded a very good prospect of fields, where cattle pastured, and the "Shepherd and Shepherdess's field," lying between Hoxton and Islington, was a celebrated place for the inhabitants to stroll through and lounge in on a Sunday. The flats on these roofs afforded to a large class of the people who lived in this neighbourhood the means of indulging their peculiar propensities: bird-fanciers abounded in this locality: amateur florists, and washerwomen were thus provided with proper sites for training the birds, cultivating flowers, and drying the linen. There are many old buildings in London, and other cities in England and in Europe, which have perhaps little to recommend them in respect to their architectural features, but yet are very interesting from the great names of those who lived in them, for a singular epigraph they bear, or for some curious associations connected with them. The signs formerly used by different trades, referring to their different occupations, and the origin of the names of streets, are historical matters not unworthy of the attention of the antiquary.

FREDERICK LUSH.

* In the great church of *San Petronio*, in Bologna, is a coloured inlaid pavement of the zodiac, and signs of the celestial globe; also some problems and plans. There are shown the designs of the celebrated architects of the *Cinque Cento* in Italy, who competed for this pile. Vignola, one of the greatest architects of that epoch, was buried here, in one of the greatest churches in Europe. The Gallery of the Painting of the Bolognese school, the streets of arcades, and the bronze fountains, render it a place of note.

† Rapin's History of England.

THE AUSTRIAN STATE RAILWAYS.

THE Austrian State railways (*Société Autrichienne* L. E. P. des Ch. de fer de l'Etat), consist of the Northern line, the South-Eastern (Marchegg to Szégedin, Témessvár to Jassonowa, Orawitz to Basiasch), and the line from Vienna to New Szony. The total amount expended on the above for works up to the end of 1858, since the constitution of the company, is 35,890,500 florins; surveys, engineering, superintendence, &c. 2,034,500 florins; total, 37,925,000 florins, or about eighty-eight million francs, at the mean exchange of 129-34 florins for 300 francs.

It appears by the report of the directors to the shareholders on 30th May last, that the Northern line has a total length of 469,804 metres, not counting that from Bodenbach to the Saxon frontier, on which a second line of way has been laid to a length of 5,880 metres, besides various supplementary sidings for stations. On the South-Eastern line, from Marchegg to Szégedin, much work has been done in substituting stone and iron work for timber in the bridges. The works of two very important ones, those of the Gran and the Eipel, are of three bays of wrought-iron trussed girders. The former has spans respectively of 44 m. 556 mill.; 56 m. 880 mill.; and 44 m. 556 mill. The Eipel bridge has also three, of 43 m. 228 mill.; 50 m. 623 mill.; and 43 m. 223 mill. and was opened for traffic on 7th April last. The Gran bridge is to be finished this month. The only timber bridge remaining on this section is that of the Waag, the soundness of which is enough to make it last for some time to come.

The erection of workshops and machine factories at Neuhausel and Pesth, proceeds rapidly. The important stations of Czigled and Szégedin, have been newly organized, and completely finished, as have been those of Temesvár (including the third great workshops). The receipts of 1858, for the whole line, 1,323 kilomètres, were 14,575,732 millions florins; 106,681 florins over those of 1857: the receipt per kilomètre was 11,811 florins, and the working expenses, 5,636 florins. These latter have been reduced from 50-21 per cent. to 47-72 per cent.

RAFFAELLE'S DRAWINGS.

THE University of Oxford, during the repairs of its public galleries, has liberally consented to the removal of its original drawings, by Raffaele and others, from Oxford to the South Kensington Museum, where they will be exhibited for the next two months. Permission has also been given to the Department to take photographs of those drawings required to complete their series of Raffaele drawings which have been collected from public galleries at home and abroad.

THE CHURCH OF ALL SAINTS, MARGARET-STREET, LONDON.

FOLLOWING up the views, interior and exterior, of All Saints', Margaret-street, already given in our pages, we add a view of the reredos, decorated in fresco as, already described, by Mr. Dyce, R.A. The paintings, it will be seen, are in panels, formed by carved alabaster canopies and columns, three stories in height, and comprise on the lowest the Saviour in the lap of the Virgin, with three of the Apostles on each side; the Crucifixion, with the six other disciples, three on each side; and at the top, the Saviour throned in glory, surrounded by the Apostles and others.

Originally the architect intended that, instead of the large picture at the top, there should be three alabaster niches, with canopies like those below, and that there should only have been a difference of 4 inches in the width of the centre and side niches. After all, it appears that the centre niches were made scarcely wide enough, and, in consequence, Mr. Dyce was obliged to double up the arms of the crucifix. The truth is, that the whole design ought to have been remodelled, to adapt it to receive the particular subjects which it was proposed to have painted within the compartments. We have already expressed our admiration of many of the figures.

With respect to the vacant spaces we do not know that anything is decided, except that the row of panels on the north aisle wall is, on the suggestion of the artist, to be filled with subjects, executed by inlaying on the stone, something like the old brasses, only more elaborately, the grounds being diapered. The outlines and hatchways are to be cut in the stone, and then filled with black cement.

We have heard talk of a Transfiguration in fresco on the large spandril to the south of the west window, and an entombment under the window, but these will probably wait for funds.



CHURCH OF ALL SAINTS, MARGARET-STREET, LONDON: REREDOS.

Decorations by Mr. W. Dyce, R.A.



PROPOSED WORKS AT CHICHESTER CATHEDRAL.

THE restoration of this cathedral was commenced so long ago as 1847, from which time it was steadily proceeded with, until nothing further remained to be done but the choir: this portion of the work was, however, deliberately postponed by the dean and chapter, who decided that nothing should be done until they could determine upon some plan by which, without violating architectural propriety, a larger portion of the cathedral might be rendered available for public worship than at present.

Matters remained thus in abeyance until the death of Dr. Chandler, the late dean, who left in his will the sum of 2,000*l.* to be expended in the decoration of the cathedral, expressing at the same time the hope that a sum might be raised to be applied in connection with it. Under these circumstances, a committee was formed to carry out the intentions of the late dean, and to procure such other funds as should be found necessary. It was then agreed that plans should be prepared by Mr. William Slater, the architect to the dean and chapter, and these having received their sanction and being adopted by the committee, we are now in a position to give definite information as to the shape which the restorations will take.

In the first place, the whole of the modern incongruous fittings will be removed; pews, galleries, pulpit, throne, altar-rail and reredos, organ and organ-screen. The present stalls, which are of Late Decorated date, are to be carefully restored, and will remain in their present position; new carved fronts to these, and new choristers' seats will be provided. In place of the present unsightly modernized altar-screen, it is proposed to erect a new reredos in stone, sufficiently elevated to shut off the choir, but not so high as to obscure the beauties of the presbytery beyond. The division of the choir from the aisles will be effected by iron screens, similar in character to the remains of the ancient ones still existing in the same position. The bishop's throne will be new. The organ-screen, supposed to have been formerly Bishop Arundel's shrine, will not be re-erected in its present position, but preserved in some other part of the building.

The arrangement of the seats in the choir, the precise places of the organ and pulpit, and some other matters of detail are left for future consideration.

It is further proposed to adapt a large portion of the nave for divine service, by furnishing it with seats for a considerable number of worshippers, and in order that these latter may be enabled to take part in the services going on in the choir, the return stalls at the west end will be removed.

The cost of the various works proposed to be done is estimated at 4,000*l.*

NOTES OF NEW WORKS IN IRELAND.

A MONUMENTAL ORATORY is to be built at Glasnevin Cemetery, near Dublin, according to designs by Mr. J. J. Lyons, architect. It will be placed within a planted enclosure, 14 feet by 8 feet, defined by a granite base course, rounded at the angles, and surmounted by a plain iron railing. The oratory will be circular on plan, 4 feet diameter in clear, fitted internally with a small altar, and having marble panelling, with Scriptural quotations engraved thereon, round the walls, and lighted from above. Externally, the elevation will be vertical to a height of 8 feet, surrounded by a granite base course, 18 inches high, and having continuous French rusties, impost and astragal mouldings, and surmounted by semicircular stone dome, terminated by a cross, and perforated at top to receive a flash light of very thick glass. The superstructure of the oratory will be of Scotch stone, from Crowhill quarry, near Glasgow, with brick lining, and plastered internally with Portland and Medina cement. The door will be of iron, massive, and perforated, and constructed to open in the centre and slide on iron rollers into the wall. The total height to top of dome will be 11 feet.

The first sod of the Cork and Kinsale Junction Railway Company has been turned by Colonel Beamin, in presence of a large assembly. Messrs. Trowsell and Co. of Stockton-on-Tees, have contracted for its formation, at about 4,000*l.* per mile.

The new church and schools (Zion) are progressing at Rathgar, Dublin, Mr. Welland, architect; Messrs. Cockburn, contractors. The church will be 128 feet long, and consist of nave, transepts, chancel, organ, and choir at intersection of transepts. There will be a boys' and girls' school

attached, and a teacher's residence at the west side.

Sundry works are to be done by the War Department at Templemore, Portobello (Dublin), and Cahir barracks, and tenders are invited.

Important alterations are to be made at Derry Cathedral, by the Ecclesiastical Commissioners for Ireland; and the same body are about re-building the church of Killany, co. Monaghan, and enlarging the churches of Knocknamuckly, co. Down, Donahendry and Drumnakilly, co. Tyrone; and fitting up internally the churches of St. Anne, Dublin city, Ballymoney, co. Antrim, and Leixlip, co. Dublin.

The County Court House at Longford is to be altered and enlarged, and a new entrance formed to the county gaol.

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.

THE distribution of prizes for the session 1858-9 took place on the 2nd inst. Lord Viscount Palmerston, K.G., presiding on the occasion. Professor Donaldson, as Dean of the Faculty of Arts and Laws, read his Report of the principal events of the session, after which his lordship, who was supported by Lord Brougham and many members of Parliament and distinguished individuals, distributed the prizes. Those in the classes of architecture and construction were as follows:—*Fine Art.* First year, prize and first certificate—J. H. Tarring; A. B. Hudson and Richard Kilby, second and third certificates. Second year's course, prize and first certificate—Louis Kosuth; Francis Kosuth and Horace Gundry, second and third certificates. *Construction.* First year, prize and first certificate—J. H. Tarring; A. B. Hudson, second certificate. Second year, prize and first certificate—L. Kosuth; A. Buzzard and Frederick Johnson, second and third certificates.

VENTILATION AND NEW PAINT.

ONE of the most sure tests of the want of right ventilation of a dwelling, or building used for other purposes, is the lingering smell of paint long after this kind of work has been completed. As an instance of this it may be mentioned that upwards of a month ago we had occasion to call at one of those houses in Fleet-street which may be taken as a type of many hundreds in the city. At that time the place had been newly painted, and the smell of it was very offensive. Although the time above mentioned has passed, in both the rooms and passages the smell of the paint is still distinct and unwholesome. In the staircase there is no ventilation by means of trap-doors in the roof or otherwise, and in several of the rooms there is a great neglect in this respect. If a sufficient quantity of air had been allowed to circulate, the injurious vapours from the paint would have been carried away. In houses situated in a similar manner to that mentioned, large numbers of persons are engaged in sedentary employments during several hours of the day. The want of ventilation is more clearly shown by the paint; but there are other gases pent up under such circumstances, which, although not so distinctly to be noticed, are very dangerous.

THE DRINKING-FOUNTAIN MOVEMENT.

Two public drinking-fountains ordered by the Brighton Central Fountain Committee have arrived. They are manufactured by Messrs. Dixon, Brothers, of Newcastle, and are made of iron, about 6 feet in height from the stone on which they will each be placed, and each consisting of a square pillar, with moulded top and base. In the front is a niche and basin, lined with white enamel, ornamented, in relief, around and above, on which is inscribed, "Drinking Fountain, 1869." In the centre of the niche is a gilt lion's head, from the mouth of which the water flows; and on each side hangs by a chain a galvanized iron cup, for the convenience of the consumers. Each side of the pillar bears the inscription, "Erected by the Central Committee. Honest water. Nature's beverage;" underneath which, on the right side only, is a brass plate, on which is engraved, "This fountain supplied gratis by the Brighton, Hove, and Preston Water Company." A lever on each side will, each time it is used, cause half-a-pint of water to flow, just sufficient to fill one of the drinking-cups. On the left side is an index, with a face similar to that of an ordinary gasmeter, registering on its three dials respectively at each revolution, 100, 1,000, 10,000 gallons of water consumed, at sixteen gills or eight cups to the gallon. At the back of the pillar, and near the bottom, is another and somewhat similar ena-

melled and ornamented niche and basin, intended for dogs to drink from.—A working-men's committee in aid of the movement has been formed in London; Mr. G. Clutterbuck is the hon. sec.—Bristol is being supplied with a number of fountains. One is in course of erection against St. Augustine's churchyard, near College-green. It is the gift of Mr. T. P. Jose. The basin and pillars are composed of white polished marble, the surrounding Gothic work being made of freestone, while the water will flow from a shell. One of nearly similar design is about to be put up at the expense of Mr. George Pope, of Stoke, in St. James's, and Mr. J. W. Hall is about to place another in a different part of the same parish. Mr. T. W. Hill, of Clifton-park, according to the *Journal*, gives one for Berkeley-place, and Mr. H. G. Langton another, for the open space at the junction of Hotwell-road and Limekiln-lane. A plain one, with granite basin, is already in work at Temple-gate, near the railway station, the gift of a young lady, Miss Hill; and Mr. J. Budgett has offered 100*l.* for the erection of four or five in the quarters where they are most needed. A fountain has been promised for St. Paul's by Mr. W. D. Wills, and three cast-iron water-pipes have been placed in other parts of the city by the Board of Health. All these fountains will be supplied with the company's water by the Local Board of Health, at the expense of the citizens, save that erected by Mr. Langton, who has undertaken to keep up a constant supply in the one which he presents at his own private cost.—The erection of a drinking-fountain has been resolved on by the Cheltenham Improvement Commissioners, "provided the same can be effected at a cost not exceeding 40*l.*" the site proposed being near White Hart-row, at the junction of the Gloucester and Tewkesbury-road. A Miss Carrington has volunteered to erect a second at her own expense as soon as the commissioners shall have erected one at the cost of the town.—A fountain has been inaugurated at Longton in the Staffordshire Potteries. It is simple in design, and consists of a lion's head let into the front face of a pedestal on which stands a Russian gun: at the base is a dog-trough, which will receive the superfluous water.—Two fountains have been provided for Burnley by Sir J. P. Kay Shuttleworth.—One, from a plan by Messrs. Senior and Wade, architects, is about to be erected in Peel-square, Barnsley, at a cost of about 30*l.* which has been raised by subscription.—Two fountains are to be erected at Perth,—one at King James's Hospital in King-street, and the other near the foot of High-street.—The following cygrian has been dedicated, at Aberdeen, to Mr. A. Fidler, originator of a free fountain there—

When Orpheus struck his well-screwed strings,
The trees and stones danced on the mountain;
From strings relaxed our FIDLER brings
More powerful notes;
For thirsty throats
Find cooling draughts dance in the fountain!

THE POLYTECHNIC INSTITUTION.

WE are asked to mention that the suggestion in our columns from a "Working Man," with a view to subscription, has been responded to in one or two cases. Something more extensive, however, is needed at once, if the institution is to be preserved. 345 ten pound shares are promised for, and donations have been made to the extent of 60*l.* Before subscribing, the public will, of course, look to see who are to be the directors, as upon these will, of course, greatly depend the future success of the establishment. It is, certainly, greatly to be desired that the Polytechnic should be maintained in efficiency.

THE WESTMINSTER PALACE CLOCK BUNGLE.

THIS affair is really becoming discreditable, and calls for interference. In the House of Commons the other day, Mr. Hankey asked the First Commissioner of Works what was the reason why only two faces of the clock were made use of; also, whether there had been any recent correspondence between the maker of the clock and the architect of the Houses of Parliament or the Board of Works; and if so, whether there was any objection to lay such correspondence before the House.

Mr. Fitzroy said the fact was, that the minute hands and the counterpoises for the clock were found to be so heavy that it was impossible to work the clock. The truth was, there was a divided jurisdiction between the architect of the palace and the maker of the clock. It was originally proposed that the minute hands should weigh 2 cwt.; but, having been cast in gun-metal, the weight of them had been increased to 3 cwt.

with something more than 4 cwt. of counterpoise within the clock-room, so that the total weight amounted to no less than 7 cwt. instead of 2 cwt. as originally proposed. Directions had been given to Mr. Dent, the maker of the clock, to construct new hands of the proper weight. A correspondence had passed between the Department of Works and the architect of the palace, but it would not throw much more light on the subject.

If we understand rightly, the architect, Sir Charles Barry, has had no control in the matter, although he is now, out-of-doors, getting all the discredit of it.

THE WEATHER AND ITS WARNINGS.

THE heat of the last few days has been so great that the oldest inhabitants are saying so much drought and heat do not come within their recollection: need we hint that such a condition of the weather requires the greatest sanitary care. The cow-houses in the metropolis and other large towns should be vigilantly inspected, and the strictest cleanliness enforced. All refuse should be removed once a week, and every part thoroughly washed.

When there is a chance of the water-supply becoming lessened, it is very common to neglect the poorer neighbourhoods. Those who gather the rents from the property so situated should consider it a matter of duty to see that the servants of the water companies attend to this important want. Persons of intelligence living near these localities might do much good by examining, occasionally, neglected neighbourhoods, and in case of neglect reporting the matter to the district officer of health. Lives might be saved by this means, and parish boards would find it profitable, even in a money point of view, to thoroughly cleanse, by both sweeping and washing, two or three times a week, the narrow and unwholesome courts and alleys, and when necessary, making efficient use of deodorizing materials.

While it is most desirable to keep all surfaces in the neighbourhood of houses free from impure matters, care should be taken, except in cases of great necessity, not to interfere in such weather with cesspools and other deposits of any continuance; and when this is done, such works should be superintended by persons who will use proper measures for the safety of health.

Stagnant pools and ditches will just now attract attention most unpleasantly. Do not let them be forgotten when the temperature is lower, for then is the time for useful action.

CHURCH-BUILDING NEWS.

Dunkerton (Somerset).—The tower of Dunkerton Church is now being restored, partly by subscription, and partly at the expense of the rector. In order to ensure the future stability of the structure, says the *Bath Chronicle*, it was found necessary to remove much more of the original building than was first contemplated, and, in doing so, the steps and entrance to the roof-loft were disclosed, as well as a curious piece of carving, which may, probably, have formed the tabernacle to a saint. The restorations are being carried on under the superintendence of Mr. Charles S. Davis, of Bath, architect.

Chester.—Some of the beams in the roof of St. Peter's Church have been found to be entirely decayed and falling from their position. Repairs have been commenced.

Wolverhampton.—The new church of St. Philip, in the parish of Penn, has been consecrated. The edifice is in the English Gothic of the Geometric period. It is one of three memorial churches built out of funds raised to the memory of the late Archdeacon Hodson. The stone fount at the entrance of the church is the gift of the archdeacon, and the organ and the west window of Mr. W. H. Shannon.

Lapley (Staffordshire).—The church of All Saints, Lapley, which has been closed for a period of two years, during a partial restoration of the tower, nave, and chancel, has been reopened for divine worship. In the nave, mullions and tracery have been introduced into the windows, and the upper portion of the north wall has been rebuilt, and the west doorway and windows are new. The belfry floor, which formerly blocked up the chancel arch, has been raised, and the arches opened and repaired. The ceiling of the chancel, which was formerly level with the wall-plate, has been removed, the roof opened, and the timbers oiled. The chancel floor, also, has been raised, and the walls scraped. The basement of the tower has been entirely underbuilt, and eight new buttresses added. The old Norman arch, on which that part

of the tower adjoining the nave stands, has been restored. The architect has been Mr. Bidlake, of Wolverhampton; and the builder, Mr. Godfrey, of Birmingham.

Birmingham.—The foundation-stone of Queen's Hospital Chapel has just been laid. The right wing, now nearly completed, is to be devoted to out-patients. The chapel will be an Italian building, with rusticated basement, lunette windows on the sides, and a triplet window in the chancel. The present contracts contemplate an outlay of nearly 1,200*l*. Mr. Bateman, architect of all the buildings connected with the Charity and College, prepared the plans, and the builder is Mr. William Matthews.

Chorley (Lancashire).—A meeting of the ratepayers of Chorley has been held to consider the propriety of enlarging and reseating the parish church. It is intended to take down the south wall and gallery, and to extend the building on that side. The Manchester Diocesan Church Building Society has contributed 150*l*. towards the expense, and the rest will be furnished by voluntary subscriptions.

Bowling (Yorkshire).—The foundation-stone of a new church, to be dedicated to St. Stephen, has been laid in Bowling Old Lane. Messrs. Mallinson and Healey are the architects. The style is Early Decorated, of the time of Edward I. The tower will be a prominent object in Manchester-road. The work (exclusive of the enclosure of the churchyard) has been let, according to the *Bradford Observer*, for the sum of about 2,500*l*. and the accommodation is for 500 adults and 130 children.

Sheffield.—Subscriptions for a new church at Chapelton, near Sheffield, having been obtained, aided by a grant from the incorporated society, it is intended to commence the building as early as possible. Messrs. Worth and Campall, of Sheffield, are the architects. The church is proposed to be erected on a site given by the Right Hon. J. Stuart Wortley, in Howsley Hall Park. The edifice will consist of nave, south aisle, and chancel, with small spire, and will accommodate upwards of 400, two-thirds free. The work of the proposed cemetery for Brightside township, near Burngreave-wood, have been commenced. They have been delayed, says the *Independent*, by various difficulties, the last of which was, that when the contract had been let, the contractor discovered that he had made an error to the amount of 400*l*. and applied to the board to give him an increased price. This they declined to do, and the contract has now been let at 6,000*l*. to Mr. Richard France. It includes the road-making, draining, fencing, the erection of a lodge, and of the necessary episcopal and non-conformist chapels, &c. The woodwork is to be executed by Messrs. Ash and Clayton.

Huddersfield.—St. Thomas's Church, Longroyd-bridge, Huddersfield, has been consecrated. The building will cost about 12,000*l*. exclusive of the endowment. The church is built from designs by Mr. Scott. The style selected is Gothic, of the thirteenth and beginning of the fourteenth century, to which is added a touch or two of the Lombardic-Gothic. The building consists of nave, 66 feet by 24 feet; north and south aisles, 66 feet by 13 feet; chancel, 33 feet by 22 feet; north and south chapels, 18 feet by 13 feet; south porch, 12 feet by 10 feet; with tower and spire at the south-west angle, rising to a height of 175 feet. The aisle and chapel roofs are gabled. The nave has a roof of open woodwork, stained and varnished, the rafters being covered with boarding above, on which is laid Croggon's patent felting. The roofs are covered with Westmoreland dark green slate. The sittings throughout are open. Passing from the west end to the chancel, there are two noticeable features, namely, a stained-glass memorial window and a reredos. A cornice runs along the whole of the chancel, with nine ornaments painted on the wall above it. The large stained window in the chancel is in memory of Thomas, John, and Joseph Starkey. One compartment is assigned to each of the three brothers, and the window is by Messrs. Clayton and Bell, of London. The first group represents the Last Supper; the second, the Crucifixion; the third, Joseph of Arimathea begging the Body of Christ from Pilate; the fourth, the Descent from the Cross; the fifth, the Entombment; the sixth, Mary looking into the Sepulchre; the seventh, the Disciples in the act of assembling after Christ has risen; the eighth, Christ appearing in the midst, whilst they are deliberating; and the ninth and last subject shows them in the act of fishing. The chancel floor is laid with encaustic tiles.

Greeland.—The corner-stone of St. Thomas's Church at Greeland, near Halifax, has been laid. The church will be in the Gothic style, and will accommodate about 700 persons, including 200

children. The cost of the building is set down at 2,000*l*. and the endowment, 1,200*l*. The site, together with land for a graveyard, has been given by Mr. E. C. S. Walker. The contractors are Messrs. Cockroft and Co. of Rishworth; and the architect, Mr. T. H. Rushforth, of London.

Sherburn.—The parish church of Sherburn, in the East Riding, has been re-opened. The alterations have been carried out under the architects, Messrs. Atkinson, of York, by Mr. Weatherley, of York, glazier; and Mr. Danby, of Whitwell, carpenter. The church is now completely stalled. Five new windows, fitted with cathedral glass with coloured margins, have been introduced; and, ere long, it is said, a costly memorial window, with appropriate figures and side lights of geometric glass, will be presented by Miss Rivis, of Wykeham, and Mr. William Rivis, of Sherburn.

Kilnburst.—St. Thomas's Church, Kilnburst, has been consecrated by the Archbishop of York. It was estimated that the expense of the building would be about 1,100*l*. and the cost has only exceeded it by about 20*l*. The subscriptions amount to 1,040*l*. The new edifice stands on a commanding position. The architecture is Early English. The length of the church is 65 feet by 35 feet, the principal entrance being from the west end by a small porch, over which is a bell turret. The stone has been an item of considerable cost in the erection, and was obtained from the quarries at Hooton Roberts. The accommodation is for 376 persons. The architects were Messrs. Pritchard and Son, of York; and the contractors for the entire work and fittings were Messrs. Chadwick and Son, of Conisbrough, and Masbro'.

PROVINCIAL NEWS.

Smarden.—A new school for 100 children, with teacher's residence attached, has recently been erected here. The building is in the Gothic style, and is constructed of Kentish rag-stone with brick dressings. Messrs. Whichcord and Blandford, of Maidstone, were the architects employed; and the builder, Mr. Chittenden, of Tonbridge.

Colnbrook.—The new public room here has been opened. The room, which is 52 feet in length and 22 feet in breadth, including the gallery, in which 100 persons may be seated, will accommodate 350. Its size may be reduced by partitions. It is lighted by means of windows constructed in ornamental curves on either side of the roof. The builders were Messrs. Oades, of Egham.

Stratford-on-Avon.—The railway from Honeybourne has been opened. This is the Stratford-on-Avon branch of the Oxford, Worcester, and Wolverhampton Railway. The line is nine miles long, and starts from "Ladye Meadow," in Sancta-lane, at the south end of the town, and not very far from the church. At about a mile from the station the Avon is crossed by a viaduct of eight dry arches, of 25 feet span each, and a girder bridge of two openings, each 50 feet wide. There will be two passenger-stations, one at Weston Sands, about three miles from Stratford, the other at Long Marston, which is six miles from the town. The Honeybourne Junction Station lies midway between Evesham and Chipping Campden. This railway is a single line, and has been made by the company's own engineers, Messrs. E. Wilson and E. Ponsbury.

Cockermouth.—The works in connection with the high-level bridge are progressing, under the superintendence of Mr. Watson, of Keswick. The inhabitants of the adjoining township of Embleton are raising funds for the construction of two bridges in their locality.

Workington (Cumberland).—The foundation-stone of new schools has been laid at Workington. The site, according to the *Carlisle Journal*, consists of an area of three-fourths of an acre, and is situated in John-street, nearly opposite the Primitive Methodist Chapel.

Peebles.—The Chambers' Institution is to be inaugurated in August next. It is domiciled in a restored mansion called Queensberry Lodging, which has been almost re-erected for the purpose. The reading-room, says the *Scotsman*, occupies the whole of what constituted the floor in the ancient building. Its dimensions are 45 feet long by 19 feet in breadth. The walls are wainscoted, and the room is handsomely furnished. At the height of 11 feet, a railed gangway runs round the apartment, leaving an opening in the centre 33 feet long by 12 feet across. On shelves on the walls above the gangway the books of the library are placed. By this arrangement, which resembles that of the Edinburgh Philosophical Institution, the reading-room and library form one apartment, the height of which, from floor to ceiling, is some

20 feet. The library is reached by the stair to the floor above. The number of volumes acquired and presented by Mr. Chambers was 10,500; and to these have been added a small public library in Peebles—raising the entire collection to nearly 13,000 volumes, representing all departments of literature. In connection with the reading-room and library are several apartments set aside for purposes of reference and study. The gallery of art, entered from the same stair as the reading-room and library, is 76 feet long by 16 feet wide. It has a lofty coved ceiling, and is lighted by a row of semi-skylight windows on each side. At the middle, on each side of the gallery, the roof is raised, to form a kind of transept, mainly for ventilation. The special object of this oblong apartment is to exhibit casts of sculpture, ancient and modern. The collection, though not extensive, comprises examples of different styles of ancient sculpture, from the comparatively rude, though grand productions of the Assyrians and Egyptians, to the refined conceptions of the Greeks, and their successors, the Romans. An apartment at the farther end of the gallery is a museum, consisting of objects of natural history connected with the county of Peebles. On the south side of the quadrangle of the building is a hall, for public meetings, exhibitions, and festive, educational, and other assemblies. The hall is a parallelogram, measuring within the walls 74 feet in length by 34 feet in breadth. At the west end is a raised platform 10 feet broad, with which deduction the floor has a clear expanse of 64 feet by 34 feet. The height from the floor to the central part of the ceiling is 35 feet. The method of lighting resembles that of the ancient Roman basilica. The hall will accommodate about 600 persons. A tower, 56 feet high at the south-west corner of the quadrangle, a verandah, and other conveniences, complete the accommodation. The value of the whole establishment, which is to be vested in trustees, as a free gift to the inhabitants of Peebles by their fellow-townsmen, Mr. William Chambers, is estimated by the *Scotsman*, at 12,000*l*.

Glasgow.—The purification of the river Clyde, it appears, is about to be seen to by Mr. T. W. Kennard, C.E. designer of the Cremelin Viaduct, in Wales, and Continental railway works. According to the local *Gazette*, he is to consider and report on the plan of purifying the Clyde and Cart, by utilizing the sewages flowing into these rivers, by means of carrying them to fertilize the extensive sandy wastes of the adjoining county of Ayr.

Kirkwall (Orkney).—The ancient locality called the Parliament Close is now in course of renovation. The old buildings are being removed to make way for the erection of a suitable office for the Kirkwall branch of the Commercial Bank of Scotland.

GAS.

The directors of the Sherborne Gas Company have resolved on a dividend of $\frac{7}{8}$ per cent. and a reduction in the price of gas from 8*s*. 4*d*. to 7*s*. 6*d*. per thousand. The inadequacy of the gas works at Redditch to supply the town, and the nuisance arising from their position, have led to a movement for the erection of new works in opposition to the present company, who have refused an offer for their works, and have announced a determination to sell their gas 20 per cent. below whatever price the new manufacturer may fix. A maximum rate of 5*s*. 6*d*. per 1,000 feet is what has been announced by the projector of the new works, Mr. Cliff. The award of Mr. George Lowe (as umpire in the Wisbech gas question), has just been declared, the amount of the purchase money for Mr. Malam's gas-works being 10,330*l*. This is considerably more than the shareholders of the new company anticipated, and already a hint has been thrown out that the consumers must not expect to have their gas so cheaply as was at first stated; they are, however, promised a good supply and of an improved quality. It has been determined by the Huddersfield Improvement Commissioners to purchase the local gas-works for the sum of 63,000*l*. The foundation stone of the Aspatia gas works has been laid. The contractors are Mr. Graves, of Aspatia, builder, for the masonry; Mr. Fletcher, of the Lowca Iron Works, for the gasometer, retort, and fittings connected therewith; and Mr. Proctor, of Carlisle, for the piping, &c. In order to generate gas for illuminating and heating purposes more economically than heretofore, Mr. Gerner, of Bayswater, proposes to mount a vertical retort in a suitable furnace, and fit the retort with one or more pipes for conducting thereto the material to be converted

into gas. When making illuminating gas he uses one pipe to supply the liquid hydro-carbon to be converted into rich carburetted hydrogen, and another to supply water which is intended to be converted into hydrogen. When he requires gas for heating purposes only he dispenses with the use of liquid hydro-carbon, and obtains the gas solely by the decomposition of water into its elements.

OXFORD ARCHITECTURAL SOCIETY.

At the Twenty-first Annual Meeting of this Society, held on Saturday, July 2, the President, Mr. J. H. Parker, in the chair, Mr. A. Church, F.C.S. of Lincoln College, read a paper on the Uses and Advantages of soluble Glass.

An extract from a paper read by the Rev. John Barlow before the Royal Institution, was quoted by Mr. Church, which entered into the method called Stereochromie, practised in Germany, and employed in the fresco paintings in the New Museum in Berlin. Besides the above uses, Mr. Church suggested the advantage with which it might be employed in paintings on glass, terra-cotta, plaster of Paris, whitewashed walls, marble: he had himself made some experiments on earthenware also with success, and such was the hardness which the material gave to the coloured surface that the most violent rubbing, and even acids, could do little to affect it. For the decoration of brick surfaces, whitewashed ceilings, and plaster walls, Mr. Church recommended that the colours should be mixed with size and a little whitening, and laid on as in distemper painting: when dry, the painting to be syringed twice or thrice with water-glass.

The reader did not appear to be aware of the information on the subject which, long since, and recently, has been given in our pages.

GLASGOW ARCHÆOLOGICAL SOCIETY.

The first excursion of this season took place on the 8th inst. The party left Glasgow at half-past nine o'clock, and proceeded by railway to Port of Menteith station, on the Forth and Clyde railway, where open vehicles were waiting to convey them to the Lake of Menteith, a distance of about four miles. Having partaken of luncheon at the inn, the party embarked in two boats, and after a stiff pull arrived at their destination—the island of Inchmahome, on which are the remains of an extensive priory. The clouds had by this time cleared away, and the sun shone out brightly on the luxuriant foreground, and the magnificent hills which hem in the secluded little lake. On landing, however, the scenery was soon forgotten by the archæologists, who were surprised and delighted to find the ruins so extensive and so beautiful. Having assembled in the choir, Mr. Alexander Galloway read a paper on the "History of the Family of Menteith, and the surrounding country," and thereafter the visitors employed themselves most agreeably for a couple of hours, exploring every nook and corner of the ruins; some busily plying pencil and rule, while others cleared away rubbish and weeds from dilapidated effigies and sculptured coffin-lids, or attempted to decipher weather-worn inscriptions. The whole of the buildings seem to have been erected about the middle of the thirteenth century. The chancel has no side aisles. The nave has only a side aisle on the north. The eastern window is composed of five graceful lancets, enclosed by one rear vault. The west gable is demolished to the window-sill, but fortunately the doorway is still extant, and very little injured. It is totally devoid of sculpture, but the detail is very elegant, and it seemed to be the opinion of the architectural members present, that there is nothing finer of the kind in Scotland. The conventual buildings are in a very ruinous state, with the exception of the refectory, which is almost entire. The gables of this little building are peculiar, the moulded projection of the skewers being wrought on the horizontal courses.

In the year 1547, Mary Queen of Scots lived at the priory of Inchmahome, and close to the ruins a cluster of stately box-wood trees are pointed out as "Queen's Mary's bower." The party having again assembled here, Mr. Honeyman (hon. sec.) read a paper by Mr. J. B. Simpson, on the "History of the Priory." The party then left the island, and after examining the extensive ruins of domestic buildings on the neighbouring Island of Falla, returned once more to the inn, quite prepared to do justice to an excellent dinner which awaited them. Mr. J. T. Rochede acted as chairman, and Mr. Hart as croupier. After the usual loyal and patriotic toasts, the chairman

gave "Success to the Glasgow Archæological Society," and several other appropriate toasts, and about six o'clock the party set out on their homeward journey.

PROTECTION OF WOOD FROM FIRE, AS ATTEMPTED IN THE WOODEN HUTS AT ALDER-SHOTT.

We insert the following, at the request of a correspondent, in order that our readers may satisfy themselves, by experiments, as to the merits of the two compositions. (See *Builder*, June 11.)—

Materials Employed.—The silicate of soda must be in the form of a thick syrup of a known degree of concentration, and is diluted with water, when required for use, according to the prescription given below. The limewash should be made by slaking some good fat lime, rubbing it down with water until perfectly smooth, and diluting it to the consistency of thick cream.

Treatment of the Wood.—The protective coating is produced by painting the wood, firstly, with a dilute solution of silicate of soda; secondly, with the limewash; and lastly, with a somewhat stronger solution of the silicate. The surface of the wood should be moderately smooth, and any covering of paper, paint, or other material should be first removed entirely by planing or scraping. A solution of this silicate, in the proportion of one part by measure of the syrup to four parts of water, is prepared in a tub, pail, or earthen vessel, by stirring the measured proportion of the silicate; first, with a very small quantity of the necessary water, until a complete mixture is produced, and then adding the remainder of the water, in successive quantities, until a perfect mixture in the requisite proportions is obtained. The wood is then washed over with this liquid, by means of an ordinary whitewash-brush, the latter being passed two or three times over the surface, so that the wood may absorb as much of the solution as possible. When this first coating is nearly dry, the wood is painted with the limewash in the usual manner. A solution of the silicate, in the proportion of one part by measure of the syrup to two parts of water, is then made as above described; and a sufficient time having been allowed to elapse for the wood to become moderately dry, the liquid is applied upon the lime, in the manner directed for the first coating. The preparation of the wood is then complete. If the lime coating has been applied rather too thickly, the surface of the wood may be found, when quite dry after the third coating, to give off a little lime when rubbed with the hand. In that case it should once more be coated over with a solution of the silicate of the first-named strength.

N.B.—This composition is proof against fire for one hour and a quarter only.

COMPETITIONS.

Wellingborough Corn Exchange.—A limited number of architects were invited to compete for the above, and after looking into the merits of the several plans, &c. for six weeks, with professional aid (we are told), the directors awarded the premium to Messrs. Bellamy and Hardy, architects, Lincoln, under whose direction the works are to be carried out forthwith.

Independent College, Taunton.—The secretary has sent us a list of mottoes attached to designs not adopted, with the view of obtaining addresses to which the drawings may be returned, but we cannot insert it.

The Abel Smith Memorial.—Sir: I beg to draw your attention to the advertisement which has appeared, calling on architects to forward designs and specifications in competition for schools to be erected in Hertford, to the memory of the late Abel Smith, esq. To say that that advertisement is one of the brightest specimens of the provincial idea of the value of the architectural assistance required to give form to those grand conceptions which now and then emanate from our country cousins, is saying too little in its favour.

After an illness, do Hertfordshire folk remunerate their medical attendants merely by paying them for the drugs supplied during the attack, graciously adding, by way of compliment, in special cases, a small additional sum as a set-off against the bottles, corks, wrapping-paper, and sealing-wax necessarily used in the transmission of these delectable compounds? On the termination of a lawsuit do Hertfordshire solicitors claim as costs, and do the inhabitants of that county pay those professional gentlemen, merely the amount they may be out of pocket for brief paper, red tape, and copying clerks' time? Do Hertfordshire tradesmen and mechanics ask nothing in return for goods delivered or articles manufactured, beyond the bare value of the raw material? If so, but not otherwise, I, in common with many others (for the effusion has already obtained some notoriety), can account for the barefaced impudence of the advertisement.

Ten guineas premium for designs and specifications! Is this a slip of the pen, or an error of the press? If neither, then the gentlemen who drew up that announcement either do not know the meaning of the word "pre-

mium," or they are in total ignorance of the amount of time and labour which must be expended on a design by an architect before such a work as he would like to set before the public as "complete in all its details," can be turned out of hand. One or the other. Those gentlemen are either sadly in want of a Johnson or of common sense. In short, if they expect that architects of any standing will enter the lists as competitors, on such terms as they offer, it is almost needless to say that they will be grievously mistaken; and, if they receive designs from others, not entitled so to rank (which it may reasonably be supposed they do not desire to do), it is very easy to perceive how far their knowledge of matters connected with architectural design will enable them to select either the plan best suited to the purpose, or that which fully complies with the requirements set forth in the document which you publish.

ONE INTERESTED, BUT NOT AN ARCHITECT.

STAINED GLASS.

Wycliffe Chapel (Stockport).—Memorial windows for Wycliffe Chapel, Stockport, are in course of preparation by Messrs. R. B. Edmundson and Son, of Manchester. One is a window, in three compartments, bearing representations of Faith, Hope, and Charity, with texts, and filled in with ornate decorations and emblematic devices, to be erected in remembrance of the late Mr. Alderman Hampson; and the other is a tablet window, showing a female figure in a devotional attitude, and inscribed to the memory of the late Mrs. Joseph Heaward, of Woodville, Reddish. The windows are nearly completed.

Church of Aspatia.—A memorial window of stained glass has just been placed in the south side of the chancel of the parish church of Aspatia. It is divided into two compartments, one representing the Annunciation, and the other the Nativity of the Redeemer. The whole being surmounted by a shield, bearing the arms of the donor. The window is from the establishment of Mr. Scott, of Carlisle.

"QUANTITIES."

SIR,—If you would call attention, through the medium of the *Builder*, to the wretched system of supplying builders with quantities for estimation at the eleventh hour, it might possibly induce those gentlemen who prepare the same, or the architect of the building, to take some steps to obviate this foolish and pernicious practice, whereby much inconvenience and unnecessary scrambling might be avoided.

In many cases it is impossible for accurate and necessary inquiries to be made, in order to prepare a proper estimate, in consequence: thence, in a great measure, the miserable difference in their amounts. I think builders are justified after the large sums of money (in some cases comparatively speaking fabulous) they are called on to pay, in being provided with quantities, got out with care, and not in the slap-dash fashion they are now daily being received. Surely, they ought to be allowed a fair and reasonable time for preparing a respectable and accurate tender. Surveyors, as they call themselves, seem to think a night and a day will suffice to money-out what in many cases have been with them a labour of weeks in preparing. They do not seem to consider that with large firms, often three, four, and five tenders have to be delivered on the same specified day. A week, and in some cases more, ought to be given between the delivery of the quantities and the receipt of tenders. It is quite time builders should take these matters up, and watch very jealously altogether the present quantity system, and this they would do if they studied their own welfare, and were determined to act fairly and consistently to themselves as well as the public. Did employers really know the ins and outs of building competition, as it is known to practical men engaged in it, they would not be so eager to support it as they now do. The gambling carried on under its auspices far outrages that on a race-course, the result being the frequent ruin of the one, or the sweating of the other. Take the architect's commission, badly regulated (sometimes not at all paying for his services), at others the opposite: add to this the frequent heavy charge made for careless quantities rendered, and the still more serious and heavy charge in proportion for what is termed lithographic charges, &c., a part of which goes into the architect's pocket too often: add also the excess of quantities—a necessary evil to provide against legal contingencies: these, when put together, and material often wasted, make "my dear building," notwithstanding the apparent startling low amounts and variations in the tender-list we witness from week to week. It is quite clear an alteration of the present system is required, in order that the employer shall be fairly dealt with, and the employed be al-

lowed a profit of some kind, whereby he may deal with and be dealt by honestly. This cannot be under the present system, and will not be without a great change.

Your insertion of these remarks may lead to some further comment from others, whereby some service may possibly be obtained in this perplexing and unfortunate state of things, and which, if not altered or lessened, must at some early period lead to very bad results. A. W.

PIMLICO STATION AND STOCKWELL.

WILL you be kind enough to allow me to state (through your valuable journal), the very great inconvenience occasioned to the inhabitants of Stockwell and its extensive neighbourhood, by there being no direct road either to the Pimlico terminus, as it is called, or to the new bridge at Chelsea, or to Battersea Park—three places of great repute, and yet no direct way to get at them; the only way at present being a succession of zigzags—something like unto a flash of lightning: in fact, it will seem as if every impediment was created on purpose to prevent any communication between these places, viz. Stockwell and the new bridge. The only way is now from Stockwell down the Priory-road, then turn up the Wandsworth-road, then down what is called the New-road, to the Old-road, by the Duchess of York public-house: when there you come to a complete stop, not knowing whether to go right or left, as you can see the terminus and bridge, but you must go at least half a mile round to get at them. It would seem but natural that when a bridge was erected across the Thames, there should be formed ready means of access from all parts, on either side of the water, for the general accommodation of the inhabitants of the surrounding district, and every facility opened for that purpose: this applies, also, to the railway terminus. Now, on the Middlesex side, this accommodation is given; but on the Surrey side, none whatever. It is, therefore, high time that a direct road should be formed from Stockwell and Brixton, and other influential parts, past the Swan at Stockwell, down the Bifield-road, in a direct line, down the Priory-road, then cut a road from the end of Priory-road across the meadows, direct to the railway terminus and the new Chelsea-bridge. There is very little obstruction at present in the way of forming this road, as the land is chiefly fields, and therefore the cost would be small when compared with the great advantage obtained; and this improvement is one which such an extensive and respectable neighbourhood positively requires. It would also form a most eligible site for erecting good houses, the whole distance across the fields, towards the railway and steam-boat pier at the new bridge.

R. M. C. R.

AGGLOMERATED CONCRETE.

YOUR paper of the 2nd instant contains an article on "Concrete Building" (*Décrets Agglomérés*). The process therein described by M. Coignet as new has been patented and extensively used by me for many years. The basins for the fountains in the nave of the Crystal Palace, with enormous tanks for Messrs. Glass, Elliot, and Co.—true monoliths, attest its successful application to such constructions.

Side walks of slabs were laid by me at Hyde-park-corner, and in King William-street, City, eleven years ago, and are still there unchanged, while the York paving in close contiguity has been renewed several times.

The basement floors of many City warehouses, the stables of a large distillery, and immense mooring blocks for the Thames conservancy, are but a few of the many successful applications of this material; and elaborate experiments by Mr. Andrews, the Engineer of the London Docks, on the comparative strength of materials, prove its superiority over every variety of natural stone, granite only excepted.

Hrd M. Coignet read the specification of my patent, he could not have adopted more closely the language therein used in describing his alleged new process.

For the construction of sea-walls, piers, and breakwaters, I am confident there is no material equal to it, either for economy of cost, capability of resistance, or rapidity of execution. The Harbour of Refuge at Dover could be perfectly completed, of a strength and durability far surpassing that at present being carried out, at one-fourth of the cost, in five years.

The material I manufacture has a specific gravity but little inferior to that of granite, forms a perfect monolith (however extended the work),

and becomes harder by age, whether submerged in water, or entirely in the air, or exposed to the alternate action of both. These are not mere assertions: the proofs can be seen and examined.

W. BUCKWELL.

A BIT OF CIRCUMLOCUTION.

THE COMMITTEE OF COUNCIL OF EDUCATION.

HAVING occasion to design a school-building in accordance with the most recent regulations of the Committee of Council of Education, and hearing that the information required had been embodied in a pamphlet form, entitled "Memorandum on the Organization of Schools," and that this document was to be obtained at the Council Office, I called in Downing-street, and on seeing the proper official man, my request. After inquiry, where the schools were to be erected, and other questions of a similar nature, I was asked if I was an *architect* (the *ch* pronounced soft). On replying in the affirmative, I was instructed to write to the secretary: this appeared a reasonable, although, on so small a matter, scarcely a necessary request; and, consequently, a polite letter was addressed to that functionary, who, however, has not deigned to reply, to this date. As the matter was pressing, after a few days delay, I again called at the Council Office, expressed surprise that I had not received a reply, when the following conversation took place:—

Official.—Oh, you have not received a reply: well, you will do so in due course: the secretary has a basketful of letters every morning, and things must be done in order.

Architect.—But time is pressing. I cannot proceed with my plans until I know the requirements of the Committee of Council. I am willing to pay for the document. Can I not procure it elsewhere?

Official.—No, they are not for sale; they cannot be had anywhere else. I suppose you are an *architect*!

Architect.—Yes. Are they not given to architects?

Official.—No; we don't give them to *architects*: the gentleman who is going to build the schools must apply.

Architect (indignantly).—This is much too bad. I am instructed to prepare plans according to certain rules, which these memoranda alone can give, and I can neither purchase them nor have them given to me—a piece of circumlocution. (*Exit architect in a pet.*)

Now is not this a crying shame? The only, or at any rate the principal, persons interested are excluded from that information, which I maintain it is the duty of the council to afford to every architect in the country. The trouble which this and kindred offices give to architects, who are compelled to comply with their whims, is something serious, without being positively refused that information which is essential before a grant can be obtained. Can it be true that a brother professional man is at the head of this department?

SIGMA.

FOREIGNERS AND THE POLICE.

PASSING by the National Gallery a few days since, I was witness of a scene from which the suggestion I have to offer through your widely circulating and influential columns took its origin. A foreign gentleman was engaged in a fierce pantomimic contest with a member of the police force. The foreigner sought, with the most painful eagerness, to extract some particular information from the municipal mate, who could make no response to or even understand a syllable of what was being said to him. Nois, shams, and rapid jabbering were of no avail: frequent reference by the foreigner to a street map was equally futile. The policeman was completely at a loss how to enlighten his questioner, or even to tell him that he could not supply the required information. I have frequently seen a puzzled Frenchman or German consulting a map at the corner of a street, who, after half an hour's fruitless researches, has turned about with the most bewildered air, evidently as much at a loss what course to steer as before his investigation.

Now, sir, I think all this might be obviated if we had, in our debating clubs, and National Gallery, Somerset-house, and, in fact, at all our public buildings, a policeman who had at least one language besides his own at his tongue's end. The language should, as a matter of course, be French, as he is the one most generally understood by our Continental visitors. That "the force" is capable of linguistic attainments to the extent I ask has been proved by a sergeant of police having attended some French debating clubs, and reporting their proceedings during a recent notorious trial, in a very efficient manner.

My suggestion does not demand that every policeman should be set to the study of Olendorf's Grammar forthwith. The purpose would, I surmise, be perfectly fulfilled if merely a select few of the force were to become linguists to the extent of a conversational knowledge of the French language. All that is wanted is, that a man capable of communicating some few simple directions as to route, &c., in French, be constantly to be found at the portals of all our great buildings, and, as the policeman is always stationed there, I have to suggest that he be utilized for the purpose.

Our Richard Mayne would thus also be enabled to hold out an additional inducement for the entrance of a superno-

class of men into his brigades, and another class of advancement and larger salary would be created for an order whose emoluments, considering the nature and amount of work they perform, are at present sufficiently scant.

R. RADCLIFFE POND.

PREMIUMS AWARDED BY INSTITUTION OF CIVIL ENGINEERS.

THE council of the Institution of Civil Engineers have awarded the following premiums for papers read during the session recently concluded:—

1. A Telford Medal to M. Scott, for his paper "Description of a Breakwater at the Port of Blyth, and of Improvements in Breakwaters, applicable to Harbours of Refuge."
2. A Telford Medal to R. Mallet, for his paper "On the Co-efficients of Elasticity, and of Rupture in Wrought Iron, in relation to the Volume of the Metallic Mass, its Metallurgical Treatment, and the Axial Direction of its constituent Crystals."
3. A Telford Medal to H. Bessemer, for his paper "On the Manufacture of Malleable Iron and Steel."
4. A Telford Medal, and the Manby Premium in Books, to W. J. Eingsbury, for his paper "Description of the Entrance, Entrance-lock, and Jetty Walls of the Victoria (London) Docks; with Remarks on the Form adopted in the Construction of the Wrought-iron Gates and Caisson."
5. A Watt Medal, to J. W. Jameson, for his paper "On the Performance of the Screw Steam-ship 'Sahel,' fitted with Du Tremblay's Combined Vapour Engine, and of the sister Ship 'Oasis,' with Steam-engines worked expansively, and provided with partial surface Condensation."
6. A Watt Medal, to T. S. Isaac, for his paper "On the Successful Working of Locomotive Power, over Gradients of 1 in 17, and Curves of 300 feet radius, on Inclines in America."
7. A Watt Premium in Books to M. B. Jackson, for his paper "Description of the Gravitation Water Works at Melbourne, South Australia."

RECENT PATENTS CONNECTED WITH BUILDING.*

BRIDGES.—*M. Renny, Dublin.* Dated December 22nd, 1858.—The improvements, as applied to road traffic bridges, are effected by constructing the roadway or the longitudinal framing of the bridge as a double incline platform. The platform is mounted upon bearing rollers, which, if the bridge were free to rise and fall, would enable it to do so, it being balanced thereon: thus, upon withdrawing the bridge, or moving it backward and forward, the power required is chiefly that which is alone necessary to overcome the friction of the rollers with their load running over the rails.

FORGE HAMMERS, AND THE ANVILS USED WITH FORGE HAMMERS AND SQUEEZERS.—*W. H. Dawes, West Bromwich.* Dated November 23rd, 1858.—The patentee makes a series of channels or passages in the tools of the said hammers and anvils, the said channels or passages being made by preference in a plane parallel to that of the working surface, and as near that surface as they can be conveniently made. By causing water to circulate through the said passages or channels, the forge hammer and anvils are kept cool during use, and preserved from the injurious action of heat.

STOVES AND FIRE-PLACES.—*J. Johnson, Derby.* Dated December 6th, 1858.—This invention relates particularly to connecting together the cast-iron plates and other cast parts of stoves and fire-places. The patentee casts one plate or piece with a boss or projection of triangular or other form, and tapering or smaller at the top than at the base. He casts the other piece, which is to be connected to it, with a hole or cavity of corresponding form to the boss, so that when placed over the boss the two pieces are in their proper relative position, and the boss passes nearly, but not quite, through the other piece. A wrought-iron screw is placed in the mould when the boss is cast, and thus becomes fixed in the boss; or it may be afterwards tapped into the boss. A washer is placed over the screw when the two pieces of metal are placed together, and a nut is screwed upon it, and the pieces are thus securely and accurately united without the necessity of filing or other fitting.

MACHINERY FOR PREPARING FOR MANUFACTURE, AND FOR MANUFACTURING, CLAY AND OTHER PLASTIC EARTHES INTO BRICKS, TILES, PIPES, &c.—*J. Eccles, Blackburn.* Dated December 9th, 1858.—The object of the first part of this invention is to prepare clay and other plastic earths direct from the bed ready to be moulded by machines acting on the principle of those known as dry clay machines, in which system of manufacturing articles of clay or other plastic earths the process of tempering or pugging the materials is unnecessary. These improvements consist in drying the clay earths by currents of hot or cold air produced by mechanical means, in combination with arrangements of mechanism described. The second part of the improvements relates to machines or apparatus, which would or

form articles by expressing plastic earths through moulding orifices, and consists in an improved method of securing the moulding cores (especially when a number of such are employed), so as to keep them more correctly in their places. This is accomplished by a stay or stays in addition to the usual means of securing the cores.

FASTENINGS FOR WINDOW SASHES AND CASEMENTS, AND CHAINS USED IN SUSPENDING WINDOW SASHES.—*J. Young, Wolverhampton.* Dated 20th November, 1858.—This invention consists, firstly, in applying locking mechanism of the kinds described in the patentee's drawings to window sashes and casements, so that the said fastenings cannot be acted upon so as to permit of the unfastening of the sashes or casements without the use of a key; and also the sash and casement fastenings without locking mechanism. Secondly, in making chains used for suspending window-sashes of alternate cast single links, and wrought or stamped double links, the said links being joined together by pins in the usual way.

Correspondence.

THE NINE-HOURS MOVEMENT.

SIR,—I again thank Messrs. Grey, Brown, Freeman, Facey, and Potter for their second reply to my letters; for, if the former one by its tone bore the evidence of conscious weakness, the last bears that of conscious defeat in argument. I pass by the impertinent allusions to my weakness. These can never affect me when I consider the righteous motives which have induced me to enter upon the question, and which are to endeavour to release the honest, upright workman and operative from the slavery in which he is held by these Unions. I shall satisfy myself on this point by quoting from a celebrated speech of the Frenchman, Barbes, who, only two months previously, had been released from his political prison, where he had been years, and to which he was soon, poor fellow, to go back. With a calm and impressive tone, he addressed the crowd and said:—"Citizens! Questions of political economy affect the sacred rights of the workman, the legitimate rights of the capitalist, and the respectable rights of genius and progress. As they raise conflicting questions of manual and mechanical labour, it appears to me that these are so vast and complicated that I respect those who study them seriously and honestly. Threats, violence, and insult can only retard the solution we desire. No one of us can say he can do without advice. Let us then hear with patience every frank expression of honest opinion, seeking lightly the truth; and let us not abuse or threaten any one."

Alusion is made by them to a letter of 1856. I put myself in the position of an able, hardworking, high-minded operative, one of those noble fellows struggling against the tyranny of the Union, as so many are, and suffering; and I say, that rather than flock to the workhouse to get the bread of illness, degradation, and abject destitution, would it not be better to gain, even were it only 3s. or 2s. a day, and with my dear wife and little ones to eat the bread of honest independence, rather than that of a pauper. I would be the bread of poverty and trial, but it would be sweeter to me and mine, and less degrading than that of the parish workhouse. Will Mr. Potter and his colleagues indorse a contrary sentiment? But, sir, the real question is not one of the mere nine-hours movement. The ultimate pretension of the unionists, and I say it advisedly, is eight hours a day, 6s. a day, and the half-holiday on Saturday; the liberty to abstain from labour at all who will not join the unions; compulsion on foremen to be unionists—foremen who they will control, and who shall not dare to do justice to the employer, nor urge the mechanic to do more work than he likes.

Can trade go on with such dishonest restrictions, when capital, authority, and all order are to be under the control of such men as could pen the letter of last Saturday's *Builder*?

We will now proceed to a practical illustration of this principle of action. Two bricklayers of an eminent builder, who always has in his employ some hundreds of men, have been compelled, within the last week, to ask to be discharged: the labourers refuse to serve them with materials unless they join the Union. One poor fellow has been with his employer many years, has stood by him in many strikes, but under this threat, which throws him out of bread, he goes to the Union. Now it is to be observed, that there is a *black roll* kept of all men who have ever stood by their masters. The applicant will be allowed to join; but he must pay a fine of 3s. down, and 5s. a week. Do all pay the same fine down? No, no. Some pay 2s. 6d. or 3s. Why should he pay 3s.? Oh, there's a pound a time every strike that the man has stood by his master. May not the poor fellow pay 3s. he cannot afford 5s.? No, it is the rule, and has been decided. He must pay his 3s. or he shall not gain his crust of bread within the reach of the Unionists!

Men attend the committee, and are thus addressed:—"Your foreman is not a Unionist. You must not work under him. Take our orders. Strike at eight o'clock to-morrow morning." And it is done. The poor fellows dare not act against orders. Some there are, however, who detect this tyranny, and declare they will die before they submit. The bounds of privation are let loose. The committee know their power, and use it mercilessly.

The professed object of these unions is to aid the members in case of illness, or their families in the event of death. That is on the upper written surface; beneath is an unwritten conspiracy against all rule, guidance, capital. One has told me, in reply to my question, "What do you get by the union and your subscription?" "Nothing." When I attend the publichouse with the members, the trial seems to be who shall drink most beer. I never hear an improving word among them, nothing to teach me something useful in my trade."

Is there no remedy for this state of things? I seek to tear away the flimsy veil, with which the Unionists try to cover the fallacy of the Unions, and the tyranny with which they lord it over their fellow-workman, and grind from him his weekly subsistence;—the constant perversion with which these men seek to set class against class, and

strive to make the operative the enemy of his employer, and thus destroy the honest kindly feeling which should exist between the builder and his men. I have proved the selfishness and not the *disinterestedness* of the movement; which is, to render all the workmen slaves of an irresponsible tribunal; irresponsible for their acts, irresponsible for the application of the vast funds of tens of thousands of pounds in their hands. I leave it to the English, John Bull, honest, independent feeling of the operative and mechanic, to cast off this grinding tyranny of the Vampire Union, and to think and act for himself as a freeman and not as a slave.

THOS. L. DONALDSON.

Miscellaneous.

PHOTOGRAPHS OF OXFORD.—We have seen a series of photographs for the stereoscope of the principal buildings in Oxford, by Mr. Robert Hills, of that city, which deserve notice. These include the new Museum, the High-street, Christ Church College, Brasenose, St. Mary's porch, and many other points of interest.

THE ROYAL EXCHANGE.—The Gresham committee, in conjunction with the City corporation, have commissioned Mr. Sang to re-embellish the ambulatories in the quadrangle of the Royal Exchange in fresco, the mural decorations originally executed having disappeared.

THE TEMPLE OF NEPTUNE IN PESTUM.—Mr. G. Walker, of Heathcote-street, has published a chromo-lithographed view of the Temple of Neptune, at Pestum, from a drawing made on the spot by the late Mr. D. R. Hill, architect. It is a pleasant specimen of chromo-lithography, but it is to be regretted that it was not founded on a better drawing, for the details are sadly inaccurate, and out of drawing.

COMMUNICATIONS BETWEEN RAILWAY GUARDS, PASSENGERS, AND DRIVERS.—A method of instantaneous communication between railway guards and passengers with the driver, has been patented by Mr. Christopher Batty, of Manchester. Mr. Batty's invention is to place in the weather-board, on each side of the engine and driver, a mirror or looking-glass, in which the whole of each side of the train will be reflected, and which, of course, will be accessible to either driver or stoker. Many engines have at present a weather-board, in which is inserted a piece of plain glass, through which the drivers and stokers can look a head with protection from the weather; and in such cases the mirror would be placed outside this plain glass, flush with the footboards of the carriages. The inventor has provided for its application by night.

WEST CLIFF TERRACE, RAMSGATE, KENT.—We are glad to learn from a correspondent that, acting on our suggestions for their sanitary improvement, the above delightfully situated residences have lately been put into a proper state in respect of drainage, under the superintendence of an architect from London. It may also be interesting to antiquarians to know, that in making the excavations for the works, in what is locally termed the "Roman Trenches," some ancient coins and ornaments, supposed to have been in use by the Romans about A.D. 48, were found at the depth of 15 feet from the surface, in a high state of preservation, and are now in the possession of F. B. Windsor, Esq. on the premises, who would feel a pleasure in showing them to any gentleman taking an interest in such curiosities. The property belongs to the Right Hon. the Lord Mayor of London, under whose management it will, without doubt, become an important neighbourhood.

ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE POOR.—A general meeting of the shareholders in this society was held on Thursday last week, at the offices, in Coleman-street, London. From the report it appeared that 8217, 9s. 5d. have been received from the dwellings for families in Albert-street, Mile-end New Town, during the year ending 31st March, 1859, and deducting therefrom 5227, 7s. 7d. for expenses, there remains a profit of 3991, 1s. 10d. There have been four deaths out of an average population of 306. The sum of 1,084, 10s. 10d. has been received from the tenants in Ingestre-buildings, New-street, Golden-square, and deducting therefrom 627, 4s. 5d. for expenses, there remains a profit of 457, 6s. 7d. Out of an average population of 323, at these buildings, there have been nine deaths. It appeared from the revenue account that the receipts for the year amounted to 3,031, 1s. 10d. and the expenses to 768, 6s. leaving a balance of 2,262, 6s. 10d. The total cost of the properties belonging to the association was 88,608, 14s. 11d. The capital received, including the balance of 2,262, this year, was 91,163. The report and balance-sheet were adopted, and a dividend of 2 per cent. declared.

* From the Engineer.

APPARATUS FOR RAISING WATER.—Mr. Robert Nelson, of New York, proposes to obtain a vacuum by the ignition of heated hydrocarbon fluids, such as turpentine, naphtha, &c. The volatilised fluids are employed as steam, and the vacuum is then produced by the explosion of the said volatilised fluids.

PECKHAM MONASTERY.—On the 7th instant, the first stone of the Capuchin church at Peckham was laid. It is a large building, designed in the most simple style, and will cost, with the monastery, when completed, about 6,000*l*. Mr. Pugin is the architect. The contract is taken by Mr. Kelly, of Kingland.

STRIKES.—The Sunderland shipwrights have met and determined to carry on their strike. They will submit to no modification of their claim of 30*s*. per week. The South Shields shipwrights have also held a meeting, and they refuse to accept the offer made by the masters, viz. of an advance from 2*s* 6*d*. to 2*s* 7*d*. a week. They refuse to take less than 6*s*. a day. The extra hands sent from Sunderland, Shields, and other northern ports to Chatham Dockyard were paid off on Saturday, and they may shortly be expected at their homes.

BURSTING OF A RESERVOIR AT BORDEAUX.—News of a terrible accident has been received from Bordeaux. The central reservoir of the city, which was very full of water at the time, burst with such a tremendous noise that the inhabitants of the quarter believed at first that the St. Medard Powder Mills had blown up. In a few seconds, however, the torrent rushed in the direction of the Rue d'Ares and the Judaïque, carrying with it the ruins of many houses, furniture, beds, men, women, and children. Three or four dead bodies had been found, and about a dozen people more or less seriously injured were in the hospitals.

UTILISING WASTE HEAT FROM SLAGS.—In iron and other manufactures large quantities of heat are carried off and wasted in the slags tapped from the blast and other furnaces. Mr. Hugh Lee Pattinson, of Slotes Hall, Newcastle-on-Tyne, has, therefore, patented an invention which consists in employing, by the aid of suitable apparatus, such waste heat in the heating of airiform and other fluids. The hot slags should be caused to move through suitable channels; whilst the air, or other fluid, is contained in contiguous channels, and by preference caused to move in an opposite direction to that in which the slags move.

SUFFOLK INSTITUTE OF ARCHEOLOGY.—The Suffolk Institute of Archaeology, &c. had one of their re-unions on Tuesday before last, under the presidency of the Hon. and Rev. Lord Arthur Herve, the president of the Institute. The place of meeting fixed for the commencement of the day's tour was Coldham Hall, the property of Sir Thomas Rokewood Gage, bart. of Hengrave Hall. The company thence proceeded to Stanningfield Church, a small building, but possessing several features of interest to the archaeologist. All Saints' Church, Hartest, was the next place seen; and Boxted Hall, a brick mansion, surrounded by a moat. Mr. Weller Poley, Lord of the Manor, and his lady here invited the company to partake of luncheon. Between forty and fifty were present. On returning to the panelled hall of the mansion Lord Arthur Herve took the chair, and read a paper on the history of Boxted Hall and of the family of Poley. Mr. Almack, the Suffolk antiquary, also read a paper on the arms in the windows of the hall. In consequence of the prolonged stay at Boxted Hall, it was suggested that the contemplated visit to the neighbouring church of Glemsford should not be undertaken, and the party separated.

FALL OF THE PRESTON RAILWAY STATION.—About twenty minutes to eleven o'clock on Monday forenoon, a luggage train to the north was passing through the Preston Railway Station, and upon one of the trucks was a large conical iron casting, which was being conveyed from Low Moor to Dumfries. The casting was 8 feet 6 inches in diameter, and 6 feet in length, and projected so much over the side of the wagon that in coming into the Preston station it struck one of the iron pillars by which the ponderous wooden roof is supported. This first pillar it only cracked, but it came more closely into collision with the next three pillars, and snapped them, causing a large portion of the roof to fall to the ground. The collision between the casting and the pillars broke the ropes by which the cylinder was lashed to the trucks, and the immense mass rolled off upon the wooden gangway between the lines of rail, and from thence to the rails on the west side of the station, smashing everything in its progress, the casting itself being cracked in two places by the fall.

LICENSED VICTUALLES' ASTLUM.—At a meeting of the committee held on the 17th ultimo, Mr. M. C. W. Horne, of London and of Plymouth, was elected the architect for the erection of the buildings at Mutley.

SOUTH KENSINGTON MUSEUM.—During the week ending 9th July, the visitors have been,—On free days and evenings, 6,435; on the three students' days (admission to the public, 6*d*.), 885; one students' evening, Wednesday, 118; Thursday evening (Architectural Society *conversazione*), 1,500; total, 8,945.

DRAWINGS FOR THE NEW FOREIGN OFFICE.—In reply to a question by Mr. Tite, Mr. Fitzroy said that the working drawings might be inspected within ten days, but the estimates would not be received in less than three weeks. It was for the House to say whether the whole should be submitted for inspection at once or not.

HOLBORN-HILL.—A correspondent, "a sayer of horse-flesh," suggests a stationary engine of considerable power at the top of Holborn-hill, to work an endless chain; any given link of which, say, starting from the pulley at the bottom of the hill, would be drawn to the top, pass over the working wheel, and descend the hill on the other side. To prevent the contact of the sides of the vehicles, he continues, it would be necessary to have rollers placed in a frame along the chain, against which the sides would run.

THE BOSTON SURVEYORSHIP.—The Local Government Board proceeded last week to elect a surveyor. The candidates were examined by Mr. Rawlinson, C.E. who had been sent down by the Central Board of Health, at the request of the Local Board. The following were the candidates: Wm. Howden, jun. engineer, Boston; Wm. Henry Wheeler, surveyor, Boston; Thomas Milburn, engineer and surveyor, London; J. W. Harrison, civil engineer and architect, Hunslet, near Leeds; Wm. Roe, architect, Boston; Richard Warburton, architect, Drunkenfield; Frederick Utting, engineer, Peterborough; and John Wain, architect, Boston. Mr. Wheeler was ultimately appointed to the office. The appointment, if we may judge from several letters we have received, has not given entire satisfaction.

THE SOUTH-EASTERN RAILWAY COMPANY AND PAROCHIAL RATING.—The appeal of the South-Eastern Railway Company against the poor-rate of the parish of Battle, which was adjourned from the Easter Session at Lewes, again came before the court, on the 28th and 29th ult. when the railway company entered into an arrangement to be binding for five years to pay upon an assessment of 150*l*. a mile for the line and of 80*l*. for the station, the company paying 90*l*. costs to the parish. This is the sixth consecutive rate against which the company have appealed. The assessment in all but the last was on 276*l*. being at 80*l*. a mile for the line, and 51*l*. for the station. The appeals against the four first were quashed, and the company ordered to pay 240*l*. costs to the parish. The fifth rate was quashed by consent on technical grounds, the parish paying 100*l*. costs to the company. The assessment of the railway was then raised to 350*l*. The result of these several appeals, as we understand, is, that the assessment of the railway company is as a compromise increased by consent from 276*l*. to 500*l*.

THE THAMES AND THE LIFFEY.—Sir: If the venerable aqueous monarch on whose back the modern Babylon rests is deporting himself in a manner at this season not very palatable to the nasal organs of his subjects, his fair cousin "Anna Liffey" seems to be afflicted with the family complaint; for we Dubliners, who either inhabit the vicinity of our admittedly handsome line of quays, or whose avocations lead us on an occasional marine trip from ferry to ferry, have our olfactory nerves literally assailed with an overwhelming noxious effluvia. The local corporation—to do a naturally sluggish body justice—has been improving the sewers of the city, which are all, or nearly so, emptied into the Liffey; but the more new sewers are constructed the worse the river is becoming, and the general evil thereby engendered counterbalances the partial sought to be remedied. We begin already to talk of "purification," but as we talk here very much and very long before we do anything in the way of improvement, I suppose we must only put up with the annoyance until official eyes are opened with statistical results of spreading fever, &c. &c. In conclusion, I must hope that the wherewith to drink furnished by the new "Monumental Slab" on Carlisle-bridge (as noticed in the *Builder* of 9th inst.), and erected on "the margin of fair Liffey's water" is not derived from the "limpid stream" below.—LYNX.

EDINBURGH.—The church in Lauriston-place, for the United Presbyterians, has just been completed at a cost of about 5,000*l*.

DECIMAL COINAGE.—The Report of the Decimal Coinage Commissioners has been issued. In the opinion of the commissioners it is better to put up with the inconveniences of "established habits," with regard to the coinage, than to attempt to remedy the evil by any partial introduction of a new principle.

NEW BATHS AND LAUNDRIES AT MANCHESTER.—The Manchester and Salford Baths and Laundries Company, encouraged by the success of their establishments in Greengate, Salford, and Mayfield, Manchester, have begun a third building for Hulme. The site is close to Stretford New Road. Mr. T. Worthington is the architect. The Hulme Baths, according to the *Courier*, will be larger and more complete than any of the other establishments. The principal front of the building, which will be to Leaf-street, will be Veronese or Lombardic in style; the façade being 114 feet long, and the depth of the building about 117 feet 6 inches. The front will be of two stories, with an attic storey added in the centre, to form the dwelling-rooms of the superintendent; and the materials will be brick, Halifax stone, and red tile. Mr. R. Neill, of Strangeways, has contracted to finish his part of the work by May next. The cost of the building will be about 11,000*l*.

HOLYROOD PALACE.—The works here are being expedited. Within the last few years very extensive improvements have been made in the external aspect of Holyrood. Formerly surrounded with small houses and gardens, and almost inaccessible either from the town or the park, it now stands in the midst of a somewhat spacious and neatly-enclosed garden, and a carriage-drive of ample breadth has been formed all along its front, communicating on the one side with the New Town, in the centre with the Old Town, by way of Canongate, and on the other extreme with the Queen's drive, the royal parks, and the hills of Arthur's Seat. Among the still more recent improvements carried out here the renovation of the ancient mansion of Croft-an-gir, situated in the north-east corner of the palace gardens; the erection of lodges at Holyrood, Parson's-green, and St. Leonard's, the outlets of the park; and fountain "taken" from that in the courtyard of the ruinous palace of Linlithgow. The figures on it, which are sixteen in number, are from 18 to 20 inches in height. The work is under the superintendence of Mr. Matheson, of the Board of Works.

FREEDOM OF LABOUR.—When a trade exists, there must be a certain number of men engaged in manufacturing the articles in that trade. When the trade expands by reason of the increased demand for the articles manufactured in it, then there will be an increased demand for labour. If the labour supply be insufficient, then wages will naturally be higher; but if the supply of labour be plentiful, then the rate of wages will be regulated by the amount of competition; and this competition will naturally be regulated by the number of unemployed individuals. The smaller the number of the unemployed, the less will be the competition, and as a natural consequence the wages will be higher. It is, therefore, of the utmost importance to the people that work should be found for as many persons as possible. If a combination strive to restrict the supply by artificial means, it will certainly fail, either by preventing the employer competing with articles made in places where labour is cheaper; or by causing machinery to be introduced to supply the deficiency of labour; or by compelling the employer to remove to a place where labour is cheap, plentiful, and unrestricted. Every attempt artificially to restrict trade is unjust to the workman. I have a perfect right to work for whom, what, and how I like, providing that such labour is legal, and no person or persons have any right to dictate to me what trade I shall follow, or on what terms I shall enter that trade. All trades ought to be perfectly free to every person who can master the details requisite to make a workman. Some individuals have a natural aptitude for certain trades, and therefore do not require the same amount of instruction as those of a less intelligent mind. Nor does the mere fact of a man having been an apprentice guarantee that he will be a good workman at the trade to which he was apprenticed; therefore, if I possess a natural talent which enables me to learn that trade without serving an apprenticeship, no person has a right to compel me to do so. I may learn any trade I like, whether as an apprentice or not.—*John Plummer's Defence of the Rights of Industry.*

The Builder.

VOL. XVII.—No. 859.

French Opinions and French Art.—The "Revue Générale de l'Architecture."



ONS. DALY'S review named in our title is little read in England, though now in the nineteenth year of its existence, and undeniably an admirable work. It is remarkable, as we have before now said, both for its engravings, which are models of all that purely architectural drawing should be, and for its essays, which are as perspicuously exact as the drawings illustrating them: it only requires to be known to be appreciated. We shall be performing a double service by again bringing it before our readers.

It is no easy task to combine merely transient and technical topics with subjects of enduring interest in such a manner as to form high-class volumes fit both for professional and general libraries. This is, however, the task which M. César Daly, the editor of the "Revue de l'Architecture" has accomplished successfully, producing a monthly *résumé* of the most important professional news, and an annual volume which all amateurs, as well as professors, of architecture should read and possess.

As the title indicates, the newspaper element is subordinated to the critical, and, bearing this in mind, one overlooks the more readily certain irregularities of publication, which would be quite inexcusable in a journal. A journal, for instance, which, purporting to appear once every month, sometimes delayed its issue for two or even three months, and then proffered little more than half the matter which was due for the interval, would—at least on this side of the Channel—shortly lose its subscribers. And, indeed, such irregularities are considerably damaging to the character of the *Revue*, and should be remedied, as well out of respect for subscribers as for commercial reasons. But when we have mentioned this defect, which is rather one of past time than the present, and a somewhat similar laxity in the matter of serial articles, we have already exhausted mere blame, and may move to more valuable points of view.

The first glance along its pages reminds one involuntarily of a walk through the streets of modern Paris, it is so eminently and characteristically French. In both cases we are struck by a tone and style remarkably contrasting with our English ways. There is the prominent prevalence of a systematic and scientific habit of mind; a deference everywhere to some "grande idée," which compresses all individual vagary within narrow and superficial limits, and aims at complete and exhaustive classification and arrangement. There is, equally in the streets and the pages, a calm, broad, mathematical treatment, and a brilliant, fascinating surface effect,—the play of architectural or literary ornament over a plan—a style—prepared by rigorous general axioms and universal principles. There is the same effect of restraint and refined conventionality about both; the same treatment even of nature, as artificial in the boulevards as abstract in the book. We may, perhaps, add, there seems the same absence of feeling and genuine interest about both,—of an affection for art which dwells upon details with real enthusiasm,—of a personal conviction which heats a style with the fire of earnestness rather than enlivens it with the sparkles of brilliance.

We shall justify these remarks and this

analogy better by quotation than by any vague amplification,—not choosing our extracts, however, with reference to it, but rather from such parts as may exhibit a good work at its best.

Taking up the volume for the year before last (with which we commence our notice, for reasons mentioned below), we turn naturally first to whatever may be said about ourselves. It is not, perhaps, a great deal, but the opinion of "intelligent foreigners" is always as interesting as it is proverbially valuable.

We find two or three papers read at the Royal Institute of British Architects, translated at length, and published in some cases with the explanatory diagrams. This is satisfactory and complimentary, to begin with. We have Mr. Owen Jones's paper on the Principles of the Composition of Ornaments at various epochs, and Mr. Charles Barry's description of the scaffolding employed at the New Palace of Westminster.

We next happen upon a lively description of the Reform Club-house, situated, as we are told more than once, in *Piccadilly*; "a name almost as well known," says the writer, "as that of our Palais Royal. It is there that the principal clubs of London are grouped. The *Tories* here—there the *Whigs*; on one side the *Athenæum*, where reposes sedentary literature; on the other side the *Traveller's Club*, where is concentrated more knowledge of the earth and its inhabitants than in all geographies; then come the *Army and Navy*, and any number more."

This paper is illustrated by plans, elevations, and sections exquisitely rendered on steel, and opens with a disclaimer, half in earnest: "Let not the reader alarm himself at the title of this article, it will be in no sense political. We are not going to denounce a new secret society; the members of the Reform Club are not revolutionists." The description of the building follows, and is concluded by some reflections on "Progressive Architecture," and the complex buildings of the moderns, as compared with the simpler antique forms:—

"This edifice," says M. Daly, "is not an inert mass of stone, brick, and iron; it is almost a living body, with its circulatory and nervous systems. In these walls, so motionless to the eye, circulate in fact gases, vapours, fluids, liquids; on exploring them one discovers fuses, conduits, wires—the arteries, veins, and nerves of this new organic being—by which are carried warmth in winter, fresh air in summer, and in every season, light—warm water—cold water—food—and all the numerous accessories which a high civilisation demands."

By these concealed roads the will itself travels, orders to servants pass, clocks are regulated, and, thanks to their aid, the abominable iron bell-wires cease to disfigure the corners of rooms. In this monument, modern science is our servant; she is prompt, obedient, nice (as she can be at pleasure), and discreet,—as all men know. * * * It is in edifices devoted to the wants of large numbers—as hotels and clubs—that one can trace best the characteristic traits of future architecture. * * * It is in buildings where many men assemble freely, putting their existences in contact at many points, that one will find accumulated the proofs of that serious alliance between art and science which so many artists have put aside as impossible. Without faith in their age, these blind ones have been unable to see the fertile germs which already push their vigorous shoots across and through the dust and ruin of the old world and of ancient art-traditions.

Beset by the dream of a resurrection of the past, they have concentrated all their energies on nourishing exclusively this one branch—the antique—or that other branch—the mediaeval—without perceiving that the roots themselves of the tree were already dead."

Passing by various notices of recently acquired antiquities in our British Museum, and archaeological researches made by Englishmen in Assyria and other places, we find, in an essay on the Manchester Exhibition, the most entertaining reference to ourselves contained in the vol. for 1857. The author (M. Husson), after a general recital of the contents of the Exhibition, says of Sir Joshua Reynolds painting:—

"He has transferred to the domain of art the peculiar sentiment of his race; he has realised the

ideal of the English type; he has given the exact impression which the phenomena of light, its play and contrast, produce on English eyes; he has shown in the woman and child of the English race those beings, refined, slender, delicate, almost transparent, almost aerial, of a velvety whiteness, which the faintest ray piercing the murky British atmosphere suffices to illuminate, to make shine, and of which the *Una* of Spenser, the *Miranda* of Shakspeare, and the *Lanthe* of Lord Byron, offer the poetical analogies. I know not whether I fall into extravagance, but perhaps you will understand me better when I recall to you that verse of Spenser:—

'From her fayre head her fillet she undight,
And laid her stole aside; her angel's face,
As the great eye of Heaven, shined bright,
And made a sunshine in the shady place.'
Fairy Queen, Book I. Canto 3.

Reynolds excelled in painting children. Among his child-portraits I note two which are charming—"The Schoolboy," and "The Strawberry Girl!"—the last, a little untamed fawn, has a strange look, unquiet, furtive, obstinate, and prettily fierce.

Reynolds has sometimes approached the style of mockery and pleasant irony. His *Puck*, seated on a load-stool, is very droll; it is not, however, altogether Shakspeare's *Puck*; it belongs to the class of antique satyrs, with the addition of modern malice, a mixture which resembles him to certain masks, introduced by Jean Goujon into decorative sculpture. * * * A name which deserves to increase in celebrity is that of Gainsborough. I would cite the portrait of "The Blue Boy," and a likeness of Mrs. Siddons, the great actress. These are works of the subtlest talent and of great charm.

Hogarth is always very interesting, but less as a painter proper than a satirical moralist. The pictures of Wilkie, that arch and tender observer, are less pleasing than the engravings from them. Lawrence has greatly lost his former fame. Turner is often poetical, but lacks solidity and consistency; he is hardly more, whatever his enthusiastic panegyrist, Mr. Ruskin, may say, than a pseudo-great painter. Turner has his devotees, nay, more, his fanatics. To Mr. Ruskin, for example, Turner is neither more nor less than a discoverer who should be placed amongst the greatest geniuses of England and of the world. In fact, says he, it is by Shakspeare that the seal has been broken, and humanity unveiled; it is by Bacon that the principles of nature have been discovered, and by Turner—her aspect.

Mr. Ruskin is a brilliant critic, whose ideas are often just in their boldness, but too often also mixed up with exaggerations and outrageous paradoxes.

Constable has observed nature closely, and rendered her with a little heaviness, perhaps, but with force and freedom. The colours contrast with each other as boldly on his canvases as in the real scene. Without falling into such minute imitation as the living landscape painter, Mr. Linnell, he is faithful, and if he fails to give a great variety of expression, or subtlety of interpretation, at least he produces an effect of luxuriance. * * * Landseer is well known and appreciated in France. I regret that grey tones are too prevalent in his pictures. His animals are very frequently no more than actors in a human comedy; at other times, however, he takes them without any fabulist intention, and in their natural guise. He feels deep interest, and carries us with him, in all the tawny race of deer and stags. Some of his Scotch idylls recall the scenes of the great rural poet, Robert Burns. * * *

The school of pre-Raphaelites, so warmly patronized by Mr. Ruskin, counts for its chiefs Mr. Millais, Mr. Hunt, and Mr. Windus; for disciples, Messrs. Hughes, Hook, Wallis, &c. The pretension of this school is, as its name implies, to return to the usages and systems of the masters anterior to Raphael, without dreaming, however, of imitating the stiff and awkward forms of Gothic painting, as was attempted some years since in France. They do not desire, as they inform us by their organ, Mr. Ruskin, to return to the ignorance of the primitive painters, but to the principles on which they acted from the time of Giotto; i. e. to seek the strict truth, to avoid the conventional and academic nobleness.

The pre-Raphaelites are then realists and *genre* painters, but they differ widely from the French realists, in seeking the true, they do not renounce noble sentiment and lofty thought; our French realists, on the other hand, only attach themselves to the truth on the condition of finding it ignoble, or, at the least, trivial and vulgar. * * * I confess I delight greatly in Mr. Mil-

lais 'Dove from the Ark;' and, despite its exaggerated intensity of colour, in his 'Autumn Leaves.'

As to English sculpture, it is lean, pretentious, softly elegiacal, or weakly coquetish; engaged, in fine, in a detestable course.

One asks, why the presence of the Parthenon marbles at the British Museum has not exercised a healthier influence over British sculptors? *** A competition has lately taken place for the Duke of Wellington's monument in St. Paul's Cathedral. The designs of the numerous competitors were exhibited in one of the rooms of Westminster Hall (*sic*). All were most mediocre when not ridiculous.

It is probable that it will be necessary to have recourse, for the erection of this national monument, to a stranger, who has made himself a great position in London; M. le Baron Marochetti."

Leaving now, however, the search for English names in the volume, we turn back to observe the division of every number into formal sections, each headed by a vignette title, and named respectively, "History," "Practice," "Miscellaneous."

Under each section in each number we meet with essays of scholarly excellence extending over a great range of subjects. There are treatises on "Animals, from an art point of view," by M. Huxon; on "Chinese Architecture," by M. Colley; on "Ancient coloured Glass," by M. Jollivet; on the "Ancient Ports at the Mouth of the Tiber,"—an elaborate series of papers, by M. Tenier, Member of the 'Institut'; on "Natural Polychromy," by M. César Daly; on the "Compt de Laborde's 'Report upon the Application of Art to Industry,'" by M. Lemaître; M. Lenoir's "Report on Henszmann's System;" and many others. But very principally noteworthy and admirable is a long series of profound and luminous essays by M. Beulé, on the "Architecture of the age of Pisistratus,"—a series so brilliant and interesting as to demand a separate notice, and to which we shall hope to return upon another occasion.

From amongst the other articles above named, we select the following as specimen passages:—

"In 1850," says M. Lemaître, in his review of M. de Laborde's "Report;" "M. de Laborde was sent to London as French delegate to the Great Exposition. He was named a member of the 30th jury, appointed for the judgment of fine-art works. Let us hasten to add that on this point France seemed to endeavour to escape the contest. None of her celebrated artists, excepting Pradier, sent their works to the Crystal Palace. Impartiality was so much the easier to the French delegate; instead of warmly defending national productions, and exaggerating their merits in his own eyes, while ranting them to his colleagues for the sake of prizes, he applied himself as an impartial observer to the various objects submitted to him, and to the determination of their inferiority or superiority to French works."

The result of his examination seems at first sight favourable to France, for M. Laborde establishes that she alone, at the present time, possesses great artists, and that the works she exhibits are remarkable amongst all; but he at the same time reports a symptom of universal decadence, to which he frequently calls the attention of Government (and please God his appeal be heard!); the attention, also, of men of taste; and of those who have already noticed the danger. This danger is 'common-place.' The nineteenth century has no style of its own. In this respect all originality seems refused to it, and it is by a heavy and tasteless luxury that our time endeavours to displace the recollection of that beauty which it seems to despair of obtaining. The ornaments of all epochs, mixed and confounded without order or choice, constructions copied now from Grecian temples, now from Gothic abbeys, furniture either Chinese or *vococe*, or Egyptian or Renaissance, servile and unskillful copies which jar with all surrounding them; behold all that the imagination of our fashionable manufacturers can offer to the caprice of a *blanche* opulence! As to the man of taste, the artist or amateur who seeks in all things simplicity and beauty,—there is no place for him in the times in which we live. Is this decadence, then, definitive, and must we resign ourselves to it? M. de Laborde thinks not. He recognizes the corruption of taste and the false

* Pantheon marbles in the original.

direction of artists; but he believes there is yet time to remedy this actual corruption. He is convinced that by an energetic reaction against a lamentable impulse, one may arrest the artists and great manufacturers in their false path, replace them in the right road, and inaugurate at length the triumph of modern art. * * *

As contributing towards this great and desirable object M. de Laborde suggests and examines various studies, theoretical and practical. He devotes the first portion of his report to a very original and very beautiful historical essay, * * * and then, thinking that the comparison of diverse peoples is not less instructive than that of diverse epochs, he studies with penetrating sagacity (says M. Lemaître), the productions sent from all parts to the universal exposition of London. * * * He concludes that if we would assure to our country the superiority which she yet preserves, but which others already begin to dispute, we must energetically resist the invasion of bad taste, organize upon a larger basis the teaching of the fine arts, and, in fine, thoroughly introduce, in every manner, art into industry.

To attain this triple end M. de Laborde indicates many ways; evidently that on which he counts the most is the universal teaching of drawing from childhood.

'While yet the hand is incapable of labour,' says he, 'from two to six years, one can teach children to see in teaching them to look; and when one sees, one has already mastered the most difficult and most essential part of drawing.'

If, he goes on, 'this was an innovation in the habits of men, I should hesitate to propose its adoption: I should doubt its success; but it is old as the world. Four hundred years before Christ, Pamphilus, the most famous painter of Sicily, had obtained as a rule and even an obligatory law, that all children should learn to draw before learning to write—before undertaking any other study; and the generation formed by this excellent system, gave Greece more artists than writers, gave her especially that delicate public which was competent judge of Ictinus, Phidias, and Apelles. Drawing is not an art. Let us proclaim it loudly and at once, that it be not put aside as a luxurious superfluity, reserved for idle people, or as a special study for artists. Drawing is a sort of writing, and before long every man will have a good or bad drawing hand, as now a good or bad hand in writing; but it will be disgraceful not to draw at all, and a man will blush for it, as now he blushes if he cannot write; and just as to write, that is to trace upon paper one's thought with ink which flows down from a pen, does not constitute the talent for writing, that is, to have profound or elevated thoughts expressed in a precise or glowing style, so also to draw all that one sees or has seen will not constitute the talent of an artist, nor authorize pretensions which flow from it. Formerly a man was held in honour who could read and write correctly; a position in the world was reserved for him. Soon to become a private in the army—a labourer in civil life—it will be necessary to read, to write, and to draw.'

Mark well, that drawing is a language which no spoken or written description can replace. * * * Writing is a part of drawing; to teach it alone is the mistake. * * * To teach children the proportions of things by the habit of figuring natural objects, is to approach them through their imitative instincts; to lead them at the same time to make letters, is to facilitate for them the imitation of the conventional figures which compose writing. Thus the child who will have reproduced easily and pleasantly a flower, because it is a familiar object to him, will pass readily to the imitation of the letter P, which, despite its strangeness and meaninglessness, harmonizes with his natural ideas of just proportions. * * * But to compel the child at first, and without any previous preparation of his judgment or exercise of his hand, to reproduce mechanically figures which to him have no meaning, no association with any of the forms his eyes are accustomed to rest upon, is to take reason in reverse and study backwards—to disgust and stupefy the child. Thus, what is writing for children if not a long punishment, of which the progress is marked out by the trace of tears? How far otherwise, if drawing, an attractive study, has preceded writing: then the latter presently mingles in as a companion pursuit, and the child passes from one to the other, assisting each by each. * * * Nothing so much as drawing, especially when acquired in youth, accustoms the mind to rest upon objects and to observe them keenly, till their general and peculiar forms are fixed in the memory. This gift of observation, so exercised and developed, becomes through life

the source of a thousand enjoyments which escape other men.'

'I have quoted,' says M. Lemaître 'all this passage, because it is the fundamental idea of M. de Laborde's book—nay, more, the future of art and industry.'

From M. Daly's article on "Natural Polychromy," we select the following:—

"In our moist climates, the application of colour to the exterior of monuments is met by serious difficulties. We published in this *Revue* (in the year 1849-50, plates 45, 46, and 47) the tomb of Admiral Dumont d'Urville, designed by M. Constant Dufeux, whose teaching has largely contributed to spread the taste for architectural polychromy among the students of the School of Architecture in Paris. This little monument, inaugurated in 1844, has already been repainted many times, and the same lot is certainly reserved for the charming hotel of Prince Napoleon, in which our *confrère*, M. Lenoir, has realized so brilliant a Pompeian dream."

The perishable character of external painting in these damp and rainy climates, naturally presented itself to our professional brethren, from the very commencement of discussions on the matter, as a serious objection to the general adoption of polychromy for the façades of buildings. * * *

In the midst of the researches, experiments, and sometimes the failures in polychromy, for the last thirty years, some artists, distrustful, perhaps, of the resources of modern science and industry, or determined to adopt nothing but methods consecrated by history—the architect antiquarians abounding for now twenty years—declare that external polychromy ought to restrict itself to the employment of materials variously coloured by nature. They think it should only be a species of mosaic, where the incrustation is so combined with the ordinary and usual construction, as to give the luxury and variety of colour, in unison with that solidity and durability so essential to external ornament, and to all sound building.

This theory only errs by its narrowness; what it admits is very well, but it does not admit enough. Above all, it seems to renounce too readily the benefits which the progress of science and industry have conferred already, and will confer every year more abundantly upon our art.

Meanwhile natural polychromy is more and more appreciated. If the style of Louis XIII. is just now the leading fashion in Paris, it is undoubtedly much more due to the charming effect of contrast produced by brick and stone, than to any qualities of correctness, stability, grace, or even logic which appertain to it, for these qualities have never characterized the transient phase of architecture called after Louis XIII. On principle we disapprove imitation of the Louis XIII. as of any other ancient style. This imitation is but a fashion, and will be as ephemeral. But we must at the same time remark, that the present adoption of this style will not have been entirely useless; it will have strengthened the taste for polychromatic architecture, by familiarising the public with the spectacle of contrasting colours on the exterior of buildings. It is in the same manner, but even to a greater extent, that the neo-Gothic Renaissance, now declining to its end, will have introduced us to beauties—to technical processes—to crafts now long neglected, and which will have been thus happily rescued from the tomb.

It is in the same manner again that we shall, doubtless, witness and assist the restoration of other ancient styles, each one only traversing the transitory scene of our existence, to deposit in our minds some neglected germ, some inspiration useful to the unfolding of a new art, which, to develop itself freely, only awaits the moment when society herself shall repose in the security of principles distinctly formulated and widely adopted. For art can never be, and has never been other than the reflex of contemporary society, mobile or stable as it is, founded like it upon the caprice of a day, or upon lasting principles.'

In the double number (4-5) is a report made by M. Albert Lenoir to "the Archaeological Section of the Committee of the Language, History, and Arts of France, at the Ministry of Public Instruction," a document which would appear sufficiently unique in an English blue-book, but very illustrative of the scientific patronage extended from the highest places of the French nation, and of the detailed and intimate interest in all that can affect national education, so advantageously contrasting our neighbours with ourselves:—

"I had the honour," says M. Lenoir, "at the last month's session of the archaeological section to submit to you a work of M. le Docteur Henszmann, entitled 'A Treatise upon the Discovery of the System of Classical and Medieval Architecture.' In it the author explained that after examination of many hundreds of the most remarkable monuments of Greece, Italy, France, Germany, England, and Hungary, he had discovered a process by means of which their architects had established the proportions between the mass and the details of the buildings so as to produce harmony. After having indicated some developments of it calculated to explain the importance and utility of the discovery, he terminated by proposing to communicate it to a special commission, undertaking to make good the evidences of his theory if the administration concurred to make it public.

Charged by M. the President of the archaeological section to examine the demand of M. Henszmann, I submit to you the results I have obtained from the communication of his long labours.

* * * M. Henszmann demonstrates simultaneously by geometry, arithmetic, and algebra, that from the highest Grecian antiquity down to the end of the 15th century, architects, taking for a basis the fundamental dimensions of the edifice they were about to build, established upon that line an increasing and decreasing scale of proportion, constructed after a mathematical formula which was slightly modified in the Middle Ages; that they submitted to this scale all the portions of the building, whether large or small, at their wish, and without constraining in any way their taste and imagination; that it was merely a rule to which they submitted both mass and details in order that harmonic relations should subsist between them.

The artist who was bolder in his invention and more skilful than his predecessors in the arts of construction, arrived at more slender proportions, as seen in the Parthenon or the Sanite Chapelle of Paris; it was then the nicer and finer gradations of his proportional scale which guided him, but the mathematical harmony was not altered by that, for as a musical composer remains obedient to the laws of acoustical harmony, whether he raises or depresses the pitch of his composition, so the architectural conception, not less free, would be submitted to an analogous law which guarded it from the digressions of an unregulated imagination.

To each of the increasing or decreasing divisions of the geometrical scale established by the artist, corresponded a series of figures, forming in some sort octaves, falling and rising like those of a keyboard; he found in the *ensemble* of these numerical series, or in their combinations, all the measures needful to the success of his conception, just as a musician, having on an instrument all the notes and their various relations, seeks the effect he desires to produce, and deduces from their mutual relations the harmony of his theme. It is an analogous law which M. Chevreul has discovered in the harmonic relations of colour. After examining the work of the discoverer as a whole, I verified its analysis; with compass and pen I verified the geometrical and numerical scales of most parts of the buildings, of which the plans, facades, and mouldings compose his rich collection of drawings; in all I have found the perfect harmony which he announces. Desirous of pushing my experiments still further, I procured drawings on a large scale, from buildings unknown to Mr. Henszmann, and of Roman and Gothic periods. Forming then for myself the scales according to his theory, I found all the members of these various buildings correspond precisely to the divisions without the smallest geometrical fraction. I found, besides, in applying the method, that it furnishes a mathematical means for detecting either the changes in the plan of a building after its commencement, or alterations by another artist, modifications which sometimes are imperceptible by the eye, but become evident on application of the harmonic scales. This theory thus facilitates the study of the chronological comparison of monuments, of schools, or of diverse nationalities; and from the application made hitherto by the discoverer, it results that France plays the chief part in the arts of the Middle Ages. * * *

The discovery of M. Henszmann enabling one to distinguish immediately an original construction from a modern imitation, or even from an alteration of ancient date, it would become easy to restore a dilapidated edifice to its original harmony. * * * The work of M. Henszmann is ready to be published; it is conceived that it would be desirable to publish it, for the sake of both theoretical and practical

architecture. The archaeological section will doubtless join us in requesting M. the Minister to encourage warmly a publication which would throw so much light upon the study of art, and of which the consequences would be so important for the country where it might be undertaken."

This is strong encomium on M. Lenoir's part, but he warns with his subject to a yet more startling result of approbation. He concludes his official report to his official department as follows:—

"I find in the 25th chapter of Exodus these words, 'The Lord spake unto Moses and said, Speak unto the children of Israel that they bring me an offering.....and let them make me a sanctuary that I may dwell among them, according to all that I show thee after the pattern of the tabernacle.'

In the 26th chapter follows the complete description of the tabernacle; and the last verse of the preceding chapter is thus expressed, 'And look that thou make them after their pattern which was showed thee in the mount.' Farther on, in the Chronicles, David is seen giving to his son Solomon the plans and descriptions which he had received from God for building him a temple at Jerusalem. Now in the proportions and definite forms indicated by these various books of the Bible, one follows the elements of the harmonic system, discovered by Mr. Henszmann. Did Moses in making the tabernacle rest upon a revelation? The Greeks profited by it, since we recognise the theory in their monuments. The ignorance of the Romans about it would indicate amongst the Greeks an initiation analogous to our northern freemasonry, strangers not being permitted to penetrate the secret.

Byzantine art would have served as the bond between Greek antiquity and Christianity in respect of this theory. We have already said what were its mediæval developments and perfections; and we must admit that the secret of the lodges, which could only be based on mathematical science, was connected with it, since by as many builders as they furnished to Europe the harmonic law was applied.

As to its revealed origin, I find some sort of proof of it in the ancient Christian tradition, which demanded that the churches should recall to some extent the temple of Solomon or the tabernacle; also in the consideration that the builder, bishops, and abbots, who gave themselves up to the practice of religious architecture, considered it as sacred and consecrated."

The foregoing extracts must suffice to represent the general character of the *Revue* for the year 1857; the papers of M. Boulé being reserved for separate consideration.

In another notice we may give some insight into last year's volume.

Meanwhile we may point out in the quotations already made the prevalence of that scientific tone and bent alluded to before as characteristic of French art. This is as remarkable from the "conspicuous absence" of appeals to nature, feeling, and imagination, as from the direct use of syllogistic reasoning and the frequent reference to modern science, modern progress, modern industry. Even the enthusiasm approaching absurdity which we have last quoted finds its occasion in a scientific system only, and the more regulated raptures of M. Boulé over classic art, we shall see hereafter similarly directed towards the machinery rather than the life of art.

The logic of the affections, so potent with all highly-wrought artistic temperaments is altogether left alone. No English book, or article, or paper about art, can now be taken up without an instant reference found, and constant deference paid to meaning, and truth, and earnestness. Even the cold heights of Academic lectures melt into the fertile eloquence of feeling under the rising sun of a new period. It is not so in France; distinctly it is not so in this review at present before us. Much, no doubt, in the latter case may be attributed to the decided tendencies of the editor, whose catholicity would be esteemed by many as latitudinarianism, or even indifference. But the *Revue* on the whole is a fair reflex of the national art, and France of to-day, the more she is studied or self-displayed, the more appears widely scientific and the less deeply artistic.

THE DECAY OF BUILDINGS.

THE HOUSES OF PARLIAMENT.

STRIVE as man may, let him work in the most massive manner, with the most enduring materials, his resistance to the sure decay of time is during a comparatively short period. Many mighty wonders of the world which in the glory of their creation men thought would prove imperishable, have crumbled into dust and left "not a rack behind." Of the great cities of the Old Testament history, only a few mounds of earth remain, in which lie a comparatively insignificant number of objects, which serve, however, to prove the truth of ancient sacred history, and to give some faint idea of the former magnificence of those now solitary spots.

The important works of antiquity which remain serve as marks by which we can compare the durability of other buildings. Since the probable time of the rearing of the great pyramids of Egypt, the proud cities of the Medes and Persians, and mighty Babylon, have fallen into dust. The scenes of the triumphs of the Greeks have passed away, and peoples wonderful for the extent of their civilization and skill, who were once powerful against the world in arms, have had successive rise and fall. In about half the time since the pyramids of Egypt were built, Imperial Rome has risen and its glory waned.

"So generations in their course decay."

"So flourish these when those have passed away."

The humble and more ambitious memorials in the graveyards, the important monuments of royal and other personages, and matters of a more substantial description, raised to perpetuate great deeds or the names of eminent individuals, show how strong the inclination of human nature is to fight against time's destruction and oblivion. Considering this, it is to be wondered at that the materials of which some of our most important national works have been made should have been chosen with so little attention to their durable qualities. If we examine the tombs of the kings and queens, in Westminster Abbey, and other records elsewhere, the towers and tracery of some of our most beautiful cathedrals and churches, it is pitiful to see to what a great extent the rare work has perished, and how figures, niches, and foliage are converted by early decay into shapeless masses. In the olden time, when roads were bad, and the conveyance of stone from long distances was scarcely possible, it was necessary to use those quarries which lay in a convenient situation; and this has been the means of affording an opportunity of judging by dear experience of most of the varieties of British and some kinds of foreign stone. Look, for instance, at the crumbling condition of the exterior of the churches of Coventry; look at those portions of the cloisters of Westminster Abbey which have not been recently restored. Nearly all traces of architectural detail have mouldered away, and many of the upright shafts are worn to a thread. The exterior of Henry VII.'s Chapel has been once entirely re-cased since the time of its erection, and is again decaying. Many of the buildings at Oxford, not 300 years old, have as ruined an appearance as some of the temples of great antiquity which were reared more than five times as many years ago. If we look at buildings which have been erected at a comparatively recent date, it is painful to notice the commencement of decay. At the British Museum, a national structure scarcely completed, the surface is peeling off, and layer after layer will have fallen in the same way before a century has passed away. The effect is worse along the river front of the new Houses of Parliament. Without the decay can be arrested, the ornament which has been produced there at so much cost will speedily vanish.

If we examine the vast surface of St. Paul's cathedral, and some of the churches by Sir Christopher Wren in the metropolis, it will be seen that they have till the present well defied the weather. Parts are a little chafed, but generally over the whole surface of St. Paul's but little impression has been made, and nearly throughout, the jointings of the masonry are as close and square as if they had been completed yesterday. In many instances more durable materials have come into use in this country for sculptural and other purposes, but as regards the public buildings of the metropolis, there is certainly a need that, guided by the experience of the past, we should select for great purposes materials more lasting than those which have been generally brought into use. Great ignorance on the subject prevails.

In the House of Commons, on Saturday, when votes were being taken, Lord Fermyn called the attention of the committee to a large item,—

7,000*l.* odd—for indurating the stone of which the Houses of Parliament were built. He wanted to know what that really meant. His own belief was that, disprove the fact as they might, the whole structure had been built of rotten stone.

Mr. Fitzroy said, unfortunately, that was no new subject. From some cause or other,—either from the effects of the London atmosphere or from some inherent reason,—the stone of which the Houses were built indicated a tendency to decay. That was particularly the case with parts of the building more exposed to the frost and wet than others. In more sheltered situations it did not show the same signs of decay. Various means had been tried to arrest that unfortunate tendency,—one process, in particular, which had been invented by a Hungarian, who did not choose to inform the public of what the substance used by him was composed. A gentleman named Ransome had also been permitted to apply a process, well-known, to several parts of the building, and his (Mr. Ransome's) idea was that if that process were properly carried out, it would answer the end in view. The matter remained in doubt when he (Mr. Fitzroy) acceded to the office he now held, and the question was put to the Treasury whether they would sanction a reference to some high scientific authority, with the view to ascertain, if possible, the cause of the decay, and some effectual remedy against the evil. The result had been a reference to Mr. Faraday, who with that high sense of generosity and honour which always distinguished him, said he could not think of acting professionally in the matter, or of accepting any remuneration, but that he would give the best opinion he could upon the subject. That gentleman spent some hours in examining the stone in different parts of the building, and as a result of his advice a portion of the building had been set apart under circumstances precisely similar for a trial of the processes of the two gentlemen whose names he (Mr. Fitzroy) had mentioned. Time alone, however, could decide the question; and it was under those circumstances that the Government had asked for the vote to which the noble lord (Fermoy) had taken exception.

WATER-GLASS AND ITS APPLICATIONS.

AMONGST the various notices which have appeared from time to time in our pages on the subject of water-glass, we have not omitted to inform our readers of Mr. Frederick Ransome's processes. That gentleman now writes:—

The articles upon the subject of water-glass, by Dr. Fuchs, which have recently appeared, and the report of the commission of the French Government on the experiments of Professor Kuhlmann, would lead to the conclusion that the important subject of silicification and the various applications of soluble glass are comparatively unknown in this country, the more so as no reference whatever is made, either in the report, or the articles in question, to English discoveries and manufactures dependent upon the same principles.

As the inventor and patentee of various processes, in every respect analogous and almost identical with those suggested in the articles alluded to—as having, during the last fifteen years, occupied myself exclusively in modifying and improving the manufacture, and applying successfully on a large scale, the soluble glass to various useful purposes previously unknown in this country, I may be allowed to claim attention to the great injustice of bringing so prominently forward as a novelty the history and results of experiments conducted by foreign chemists in the manufacture and use of a material for which I received the *Telford medal of the Institution of Civil Engineers*, in 1848; a *prize medal from the Jury of the Great Exhibition* in 1851; and which I have been manufacturing at the rate of many tons per week at my own works, and more lately at those of the Patent Silicious Stone Company, at Ipswich.

My own attention was first directed to the subject in the year 1811, when carrying out a series of experiments with a view to the production of an artificial stone suitable for grinding, building, and ornamental purposes, which should possess all the advantages, and be free from many of the defects of the natural stones hitherto in use.

I was not at that time aware of the memoirs published by Dr. Fuchs, in Kastner's "Archie," for 1825; nor of the further researches either by him or Professor Kuhlmann; nor have I yet learned that either of those gentlemen attempted, or even contemplated, the manufacture of stone by such process; but, on the other hand, I may be allowed to state that I secured a patent in France for this very process in the year 1815.

In the year 1845, I obtained letters patent in England, Scotland, and Ireland, for the application of a soluble silicate for combining small coal into blocks, and for preserving wood from fire and decay.

In the year 1854, and still without any knowledge of the work done by Dr. Fuchs or Professor Kuhlmann, I invented a process for "preparing oxides and carbonates of lead or zinc," "and carbonates or sulphates of barytes with soluble silica," either with or without being "mixed with colouring or other matter," and enrolled a provisional specification, intending to complete the patent for the same, but owing to an attack of illness, I was prevented from obtaining this protection.

In the year 1855, I claimed and obtained a patent for further improvements in the manufacture of artificial stone; and, lastly, in 1856, I invented and patented a process for preserving natural or artificial stone and other building materials, and in rendering them less liable to decay.

The application of this process, which I also patented in France, in March, 1857, has, in every instance in which I have operated, been attended with the most satisfactory results; decay has been prevented in the softest and most friable stones, and where disintegration had commenced prior to its use, this has been at once arrested, and the same stones rendered perfectly hard and durable.

THE PHYSICAL CONDITION OF THE BRITISH SOLDIER.

LAST week the commander-in-chief reviewed, in Hyde-park, the available strength of the Foot Guards stationed in the metropolis. The troops took up their positions shortly after nine o'clock in the morning, and went through the regular evolutions of a field-day, with rapidity and precision. The report says, that owing to the great heat, the men appeared much fatigued, and several were obliged to fall out from being overpowered. Although the heat on the day mentioned was great, still it must be admitted that there must be something wrong either in the physical condition, or the nature of the accoutrements, of the flower of the British army. If an ordinary review at home knocks up a number of these strongly framed men, many will ask what would be the consequences in scenes which would require far more energy and endurance. Our readers know the ill condition of the metropolitan barracks a short time ago, and how utterly impossible it was in those places to preserve the health and strength of the men; and it is a sad fact, that but little beneficial change has been yet made. There are other circumstances which tend to the deterioration of the troops lodged in the metropolis. The men in many instances have not that sufficient amount of education that would cause them to take an interest in intellectual pursuits, and they have no opportunity of devoting their attention to gardening or other occupations, which are both useful and health-giving: the consequence is, that some fall into the habits of dissipation, which are injurious to health.

The dress of the Foot Guards being the same in summer as in the cold of winter, seems to most civilians to be ridiculous; those closed and thickly-padded cloth coats, the bear's skin caps, and other portions of the guardsmen's dress, are so contrived as to be utterly unfitted for the heat of summer, or a hot climate. It should not be forgotten that in the Crimean war the guards fell out of the ranks in large numbers during a march of a few miles, and numbers died from fatigue. It seems that the usual dress of the guards for summer use is about as unfit as a suit of armour of Henry VIII.'s reign would be on ordinary occasions. Something is to be attributed to the insufficiency of gymnastic training, and it is well known that with practice, it is no hardship for a man to walk without inconvenience twenty miles and more each day.

The Roman soldiers were almost as remarkable for their ability to construct defensive and other works as they were brave and skilful with their weapons. Why should not the British soldier be similarly trained? A large proportion of the body of our army have been brought up to agricultural and other pursuits; they have been accustomed to active and industrious habits, and it is in consequence of the want of employment, that they are tempted into those injurious habits which are complained of.

It troubles the minds of thinking men, that while the nations on the continent have almost impregnable fortresses, constructed according to the best and most scientific principles, in England we have no stronghold which, in case of invasion, could be made good against an invading host, and

afford the opportunity of preserving military stores, and, if necessary, recruiting fresh strength.

Although gardens for soldiers cannot be provided in the metropolis, there are many other situations in which this provision could be easily made. The British soldiers have never lacked bravery, and this quality will be improved by raising their mental condition—by the better arrangement of our barracks—by attention to athletic exercises—by reform in the costume—and by placing within the means of our soldiers healthy and harmless amusements.

THE MUD BANKS OF THE THAMES.

ALLOW me to express myself obliged by your excellent article on the "Thames mud banks and embankments," in your last number. Reading that article has induced me roughly to lay before you a little of my own experience on the subject. I think it will help to verify much which you have stated and suggested. I only wish that I had better notes on the subject.

Nine or ten years ago, not in any way connected with the Sewers Commission, I was engaged in taking the dimensions and levels of all the sewers discharging into the Thames between Chelsea, or say Waudsworth, and Woolwich. Every inch of the river bank between these two places, on both sides of the water, I believe I traversed, and in the performance of the duty I was engaged in, I of course noted the peculiarities of the shore, and everything connected with the discharge of the various sewage outlets. I have not been up the river with any eye, or any particular eye, I should say, to its examination, since that date, or at least for many years; but your sketches have so vividly brought to my mind the appearance of the two spots you refer to, that I see little change in the configuration of the mud shore has taken place since the date I speak of: the depth and offensiveness of the "matériel" have, doubtless, increased, but it appears to me that the line of current, if I may so term it, is exactly as it used to be. The projection shown at the end of the bight at Cremorne has, doubtless, a great deal to do with the accumulation there. I recollect that at a spot, say about a quarter of the distance between the Kensington canal and Battersea-bridge, a 12 or 14 foot rod was, at the time I speak of, easily thrust up to the head, in the black deposit, and all along the whole bank at this point, nothing less than some 4 or 5 feet of mud could be sounded: there may though be some peculiarity in the shore stratum underneath the mud here, which accounts for the great depth of soft deposit, for, if I recollect rightly, just above the point—Waudsworth way, at which your sketch (plan) terminates, and where the river shore takes a slight reverse curve, the bank is free from mud, and yet it is scarcely possible to support the weight of a man upon it. The deposit (opposite Cremorne) was not, at the time I refer to, offensive like that observed lower down the river,—naturally so, as there would be less deposit of sewage,—but consisted of an intensely black mud.

The next below Chelsea at any moment—before the embankment of the river at that part was executed—occurred, I think, between Chelsea Hospital entrance-stairs and the entrance to the Grosvenor Canal, where there was a break for a short distance, and then again it continued to the western end of the premises, which were, I think, termed "Smith's Distillery." Here again the deposit was very deep, especially in front of premises situate about half-way between the hospital and the present site of the Chelsea-bridge; and the embankment executed in this part does not encroach so far into the river as the low-water line of the mud bank did, by some distance, I think. Here, and close by the Grosvenor Canal, I have a remembrance of 5, 6, 7 feet of deposit, partaking, of course, of the same character as the deposit above Chelsea, but mixed with a larger amount of sewage matter; the more so, as this bank lay close below the outlet of the Ranelagh sewer. From this bank down to the one portrayed by you below Westminster—the worst, undoubtedly, on the river, and, curiously enough, occurring exactly on the spot where any remedial measures taken with respect to it would be of most service to the river and the public, if those measures took, as they must to be effective, the form of a solid embankment. I do not think that, on account of holes, any real account of the soundings from Whitehall-stairs to Adelphi-terrace has been or could be taken without a great deal of labour. I have seen bargemen unable to bottom it with their poles, and I have also seen more than one man in it up to his neck, and many in danger

of losing life from accidental falls into it. Here the "mixture" became remarkably offensive, and in many parts covered—that's not the word—swarmed—with the red entangled worms with specimens of which, magnified, lecturers are so fond of frightening timid females in their scientific harangues. As Southwark-bridge was nearer—though not close to the bridge, but more in the vicinity of Queenhithe Dock, east and west—the accumulation, though not extending far into the river, was in many cases very deep and offensive.

It strikes me very forcibly that if all those who write and talk about the subject, commissioners of sewers and metropolitan boards, or what not, would just walk down the river banks at low water, they would form vastly different ideas upon the subject of the sewerage embanking, deodorizing, &c., to those which they are in the habit of expressing. Now they must be founded upon nothing better than theory, if they have not done so,—that I am quite confident of. Lime water, or any other deodorizing agent, to the extent it may be used for deodorizing the sewers, will never have the effect of doing away with the noxious effluvia, &c. dependent upon the immense mud deposits. Take the mud bank you sketch, and say there is a depth of four feet only of matter, such as it is composed of, and just think of that stewing, day after day, lying as it does, in a compact mass: then let some one suggest how much deodorizing matter it would take to counteract its effects, to say nothing of the wash of every tide: their computations would be far out, I fear, whatever they might be. The water, as you say, no doubt, contains the chief source of the annoyance, but it derives it, to a very large extent, I confidently believe, from the surface of these mud banks, as every flow gathers the noxious particles from their surfaces, and holds them in solution, and every ebb causes all this accumulation to traverse the length of the river, the whole mass, mixed up together in its course by the run of tide, moving of steam-boats, &c., and thus exposed to the air and influence of the sun, and just the very best course that under any circumstances can be pursued, even by art, to create miasma, out of such materials: the receding tide leaves the banks with a fresh layer of matter—wet—to be "stewed up" into material for the next tide, and so we go on. When it is really seen, and clearly seen, what a state the river has been permitted to get into, it is a serious matter, without exaggeration, simply because it must get much worse before the proper remedy can be effected, that is, before sufficient time can have elapsed to allow of works being carried out. It is now '59, and you can remember, as well as myself, quite as much being talked about as to "something being done" as a remedy in '49 as now; and I believe it to be as at present stands quite a query as to whether '69 will not find "those who know all about it" still talking on the subject.

J. S.

"VENUS GUIDING ÆNEAS AND THE TROJANS TO THE LATIN SHORE."

THIS is the title of a noticeable picture now in London, by Mr. Page, an American painter, who has been residing for some years in Rome. Mr. Page has treated the subject after the traditions of Virgil and other classic poets, introducing as many of the attributes of Venus as he was historically warranted in doing, on the authority of the best poets. Venus was the mother and patroness of Italy, as well as the goddess of beauty and love, hence this picture might almost be called the *Discovery of Italy*. She was born of the foam of the sea, and poets all unite in representing the sea, as well as the air, as perfectly calm in her presence. Though she lent her vesture to Juno, she never parted with the bright pearl which Vulcan gave her. The artist uses this, and has not forgotten the tradition of her golden hair and light blue eyes. The goddess is represented as of life size, standing or sailing in a shell drawn by her doves, and propelled by two wingless cupids, with the galleys of Æneas following in the distance. She is seen near at hand. As the sea and the sky are as serene and still as when Agamemnon sighed for Iphigenia in Aulis, the artist has ingeniously contrived to give considerable action to the figure by balancing her in an enormous shell, which is just being turned towards the land (Italy) on her right by the touch of one of the Cupids on the opposite side. Mr. Page has shown some boldness in departing from the beaten track, and encountering the difficulties of action. The famous Venus of Titian in the palace of Uffizi in Florence, as well as almost all other pictures, represent the goddess

as in repose, or nearly so. In a word, the artist has aimed at originality and high art, and has produced a work of art of no ordinary character.

The picture is in his studio, 74, Newman-street, Oxford-street, where any one who desires may see it by sending in his card, between the hours of two and six o'clock.

SITTING AND STANDING IN CHURCHES.



Standing in Church. A Leaning Stick.

IN your notice of the annual meeting of the Ecclesiastical Society (No. 855, p. 427), the Rev. Mr. Jenner is reported to have made the following observation:—"The summary of the arguments in favour of seats might, he believed, be thus summed up: it would be best, he thought, to have chairs; and the worst of all would be to have benches." I would venture to suggest an intermediate contrivance between the "no seat at all" and the chair, and that is the contrivance which Raffaele, in the cartoon of Paul preaching at Athens, has put into the hands of one of the listeners in the crowd on the Areopagus: it is a staff in the form of a crutch, and admirably adapted for leaning upon. Similar cross-handled staves are still in use in the Coptic Cathedral at Cairo, where they are placed in the body of the church for the accommodation of the laity. The circumstance of this being a custom with the Egyptian Christians, and probably derived from a remote antiquity, would appear to afford a very satisfactory elucidation of the allusion, in St. Paul's Epistle to the Hebrews (xi. 21), to the passage in Genesis (xvii. 31).

There is in the Leyden Egyptian Museum a fragment of an ancient stick of the kind described.

JOSEPH BOXOMI.

THE OLD AND THE NEW BRITISH MUSEUM.

CONTRASTS are useful in enabling us to judge of our present strength and amount of progress. Amongst the most remarkable of these instances is the advance of our great national Museum. In 1784, William Hutton, the famous bookseller and historian, of Birmingham, visited the metropolis, and gives the following account of a visit to the British Museum:—"I was given to understand that the door, contrary to other doors, would not open with a silver key—that interest must be made some time before, and admission granted by a ticket for a future day. This mode seemed totally to exclude me. As I did not know a right way, I was determined to pursue a wrong, which probably might lead me into a right. By good fortune I stumbled upon a person possessed of a ticket for the next day, which he valued less than two shillings. We struck a bargain in a moment, and were both pleased."

On the 7th of December of the above year Hutton, with nine others (all strangers to him), assembled at the old Museum. He says: "We began to move pretty fast, when I asked, with some surprise, whether there were none to inform us what were the curiosities as we went on. A tall young man in person, who seemed to be our conductor, replied, with some warmth, 'What!

would you have me tell you everything in the Museum?—how is it possible? Besides, are not the names written upon many of them?' I was too much humbled by this reply to utter another word. The company seemed influenced: they made haste, and were silent: no voice was heard but in whispers. If a man pass two minutes in a room in which are a thousand things to demand his attention, he cannot find time to bestow a glance on each. When our leader opens the door of another apartment, the silent language of that action is 'Come along!' If I see wonders which I do not understand, they are no wonders to me. Should a piece of withered paper lie on the floor, I should without regard shuffle it from under my feet; but if I am told it is a letter written by Edward VI. that information sets a value upon the piece: it becomes a choice *monnaie* of antiquity, and I seize it with rapture. The history must go altogether: if one is wanting, the other is of little value. I considered myself in the midst of a rich entertainment, consisting of ten thousand rarities; but, like Tantalus, I could not taste one. It grieved me to think how much I lost for want of a little information. In about thirty minutes we finished our silent journey through this princely mansion, which would well have taken thirty days! I went out much as wise as I went in; but with severe reflections that, for fear of losing my chance, I had that morning abruptly torn myself from three gentlemen with whom I was engaged in an interesting conversation; had lost my breakfast; got wet to the skin; spent half-a-crown in coach-hire; paid two shillings for a ticket; been hackneyed through the rooms with violence; had lost the little share of good humour I had brought in; and came away completely disappointed."

The editor of Hutton's Life remarks that the old regulations at the British Museum seemed expressly calculated to create disgust, and to exclude as many persons as possible. When it was first opened the trustees published "Statutes and Rules relating to the Inspection and Use of the British Museum." Among other things laid down were:—1st. That such studious and curious persons as were desirous to see the Museum must, in the first place, make an application in writing to the porter, stating their condition, place of abode, &c.; that they must call another day for their tickets, and then go a third day to see the sight. 2nd. That no more than ten tickets should be delivered out for each hour of admittance, and no person or persons be allowed to see anything without being attended by the under librarian, or under assistant. 3rd. That visitors should be conducted in regular order and succession through all the departments of the establishment, and not be allowed more than three hours to examine the whole, but depart when notice is given by ringing a bell [this bell, it appears, did great duty, for besides ringing people out, it rang them from one department to another]. 4th. That children on no account be admitted into the Museum.

At all events we have improved in Great Russell-street.

SANITARY PAMPHLETS.

IN the report for 1858 on the sanitary condition of the parish of St. Mary, Islington, by Dr. Ballard, the medical officer of health, there are some valuable statistics in regard to diphtheria, from which it appears that from January, 1858, to the close of the first quarter of 1859, there were 80 fatal cases of epidemic sore-throat, most of them being attended with the peculiar exudation in the interior of the throat which has been regarded as the characteristic sign of true diphtheria; so that it was a mistake to imagine that most or many of these cases were not the true diphtheria. It appears that diphtheria attacks the middle and comfortable classes of the population, rather than those of the lower ranks in life. Scarlet fever and diphtheria do not appear to be mutually protective against each other, in Dr. Ballard's opinion, as gathered from the statistics of his parish. Other forms of sore-throat also prevailed during the period of the epidemic. Diphtheria is considered from the statistics of the disease in this parish to be contagious, and the reporter impresses on all the necessity of isolating the sick persons from the healthy in cases of epidemic sore-throat. In more than half the houses examined where such cases occurred, there was some defect or other in the sanitary arrangements or surrounding conditions of the patient. In the greater number of houses thus deficient, the fault was discovered in the state of the drainage, bearing out our own statements. The subject of ventilation in the sleeping apartments also

ought carefully to be investigated in all such cases. We have known of instances in which virulent sore-throat of long standing was cured by the mere removal from a close sleeping-room to one better ventilated at all times. None are more apt to shut themselves up in "snug" and comfortable sleeping rooms, with curtains drawn, and even chimneys stuffed up or papered over, than "the middle and comfortable classes," and this may be one of the main causes of their greater liability to such epidemics. In another pamphlet which we have here occasion to notice, namely, the "Third Annual Report of the Medical Officer of Health to the Vestry of St. James's, Westminster" (Dr. Lankester), the subject of defective ventilation is prominently brought under notice. "In connection with the deficient drainage of the better class of houses," says this officer, "I would especially refer to their frequent deficient ventilation. The fear of a draught is alike the bane of rich and poor. Windows are not only not opened, but they are not made to open. Many windows have the top sash immovable, the letting down of which is the only efficient way of ventilating the room at all. The water-closets are frequently placed in positions where ventilation is next to impossible; and many of them, even in good houses, are disgustingly small, damp, and noisome. These are some of the causes which, amongst even the wealthier classes of society, produce direct attacks of disease, or by their constant action on the system, predispose it to succumb to the action of poisons from without." We may here afford a hint to those who sleep in rooms next the roof, and are anxious to improve defective ventilation. The ceilings of two such rooms, the writer of these notes lately had carved neatly out in several places, with a round disc in the centre, and oblong cuts at the corners, till the lathing was reached, which was left so as to form very good gratings, opening into the interior of the roof, which, being abundantly open to the air, both between the couplings at the ridge, and between the slates, afforded a complete system of ventilation, and entirely removed the closeness which existed every morning, notwithstanding even open windows and fireplaces. From Dr. Lankester's report, it appears, that while the average deaths for ten years previous to 1856 in St. James's were 775, in 1858 they were only 666. In the intervening years they were intermediate, or 682 and 712, so that, thus and otherwise, it pretty clearly appears, that in this parish there is now a decided saving of life from sanitary agencies.—A series of "Sanitary Tracts" is being issued under the sanction of the Metropolitan Association of Medical Officers of Health. No. 1 is an important paper on Vaccination (and small pox), by Dr. Ballard, Medical Officer of Health for Islington. The advantages derivable from vaccination are forcibly urged in this paper, and objections to it satisfactorily answered.

PALACE OF THE PEOPLE, MUSWELL-HILL.

THE undertaking was, we may almost say, inaugurated, on Saturday last, when the ground having been staked out, and its chief points marked by flag-staffs, a party of about 350 ladies and gentlemen assembled on the site at the invitation of the promoters, and in order to meet Lord Brougham and other patrons and friends of the enterprise. Amongst the company were Lord Talbot de Malahide, Mr. Alderman Stacey, Sir Cusack P. Roney, Sir C. Fox, Mr. Bowley, general manager of the Crystal Palace, Mr. R. W. Kennard, M.P. Mr. Masterman, Mr. Geo. Cruikshank, Professor Donaldson, Mr. Gruneison, and other friends of art and general education.

The weather was delightful throughout the day, and by a pleasant railway trip from King's-cross to Wood-green, and a walk across the fields, the visitors reached a tent erected on the site of the People's Palace.

Addressed by Sir Charles Fox, Lord Brougham inspected the site, and was afterwards addressed by Mr. Masterman, who read the prospectus of the company, which is now termed "The Great Northern Palace Company (Limited)," with a share capital of 500,000*l.* in 2*l.* shares, and 250,000*l.* in debentures. The prospectus describes the leading features of the intended building, its advantages for recreative purposes to the dense population of the northern suburbs, its educational objects (with a lecture-room for 10,000 persons), and the beauty of the surrounding scenery.

Lord Brougham expressed his gratification with all that he had seen, and considered the success of the People's Palace perfectly assured. Its first object was to afford relaxation, both mental and

physical, to the working classes, and to which they had a moral right, if, by their daily labour, they had first earned the time for it,—if it was innocent in its nature, and such as not to interfere with the rights of others,—and at the same time so consistent with prudence as not to be injurious to themselves. Believing that these principles would be carried out in the People's Palace, he had consented to place himself at the head of the educational department, for which a special fund would be provided, and was proposed to be applied, in a manner which had his entire approval, particularly in the plan of awarding prizes for proficiency in history, geography, astronomy, geology, and other branches of science.

The company then partook of luncheon, Mr. Hughes (of the firm of Masterman, Hughes, and Co.) presiding as chairman in the absence of the Lord Mayor, who was prevented by illness from attending the meeting. After the formal toasts, including "The House of Lords," acknowledged by Lord Talbot de Malahide, and "The House of Commons," replied to by Mr. Kennard, M.P. the chairman proposed "The Health of Lord Brougham," which, it is needless to say, was most enthusiastically received. His lordship replied in a comprehensive and animated speech, and gave "The Health of the Chairman," coupled with that of the Lord Mayor.

The toast of "Art, Science, and Literature," was acknowledged for its several departments by Mr. George Cruikshank, Professor Donaldson, and Mr. Godwin. Mr. Cruikshank dwelt on the educational aspect of the undertaking, and Lord Brougham's exertions in its cause. Professor Donaldson expressed his belief that the magic wand of Mr. Owen Jones might even enable him to enhance the natural beauty of the site of the Palace; and Mr. Godwin gave cordial good wishes for the success of the enterprise, because it promised to provide healthy and elevating recreation for the working classes, as well as education, which had hitherto been somewhat neglected in such undertakings.

"Success to the Palace of the People," acknowledged by Sir Cusack Roney on behalf of the patrons, was the next toast, and then the health of Mr. Owen Jones was warmly responded to. In reply, that gentleman referred to the exertions of Sir Charles Fox in promoting the practical details of the undertaking, which he hoped, when realized, would have a successful career as a twin brother of the Crystal Palace at Sydenham. Other complimentary speeches and the toast of "The Ladies" brought the proceedings of the day to a close.

Mr. George Stevens, the (at present honorary) secretary to the company, contributed effectively to the success of the arrangements for the day.

ON THE TENSILE AND COMPRESSIVE STRENGTH OF VARIOUS KINDS OF GLASS.

At a recent meeting of the Royal Society a communication was read "On the Resistance of Glass Globes and Cylinders to collapse from external pressure, and on the Tensile and Compressive Strength of various kinds of Glass," by William Fairbairn and T. Tate.

The researches contained in this paper are in continuance of those upon the Resistance of Wrought-Iron Tubes to collapse, which have been published in the "Philosophical Transactions" for 1858. The results arrived at in these experiments were so important as to suggest further inquiry under the same conditions of rupture with other materials; and glass was selected, not only as differing widely in its physical properties from wrought iron, and hence well fitted to extend our knowledge of the laws of collapse, but because our acquaintance with its strength in the various forms in which it is employed in the arts and in scientific research is very limited. To arrive at satisfactory conclusions, the experiments on this material were extended so as to embrace the direct tenacity, the resistance to compression, and the resistance to bursting, as well as the resistance to collapse.

The glass experimented upon was of three kinds:

	Specific gravity.
Best Flint Glass	3.0782
Common Green Glass	2.5284
Extra White Crown Glass	2.4504

Tenacity of Glass. For reasons detailed by the authors, the experiments upon the direct tenacity of glass made by tearing specimens asunder are less satisfactory than those in the rest of the paper; and it is argued that more reliance is to be placed upon the tenacity deduced from the experiments on the resistance of globes to bursting in which water pressure was employed, than upon

the tenacity obtained directly by tearing specimens asunder. The results obtained by the latter method give the following mean results:—

	Tenacity per square inch in pounds.
Flint Glass	2413
Green Glass	2306
Crown Glass	2346

Resistance of Glass to Crushing.—The experiments in this section were made upon small cylinders and cubes of glass crushed between parallel steel surfaces by means of a lever. The cylinders were cut of the required length from rods drawn to the required diameter, when molten, and then annealed, in this way retaining the exterior and first cooled skin of glass. The cubes were cut from much larger portions, and were in consequence probably in a less perfect condition as regards annealing. Hence, as might have been anticipated, the results upon the two classes of specimens, although consistent in each case, differ widely from one another.

The mean compressive resistance of the cylinders, varying in height from 1 to 2 inches, and about 0.75 inch in diameter, is given in the following table:—

Description of Glass.	Height of Cylinder in inches.	Mean Crushing-weight per Square inch.		Mean Crushing-weight per Square inch.	
		In Pounds.	In Tons.	In Pounds.	In Tons.
Flint Glass {	1	29,168	13.021	37,582	12.313
	1.5	20,773	9.274		
	2.0	32,803	14.644		
Green Glass {	1	22,588	10.081	41,876	14.227
	1.5	35,029	15.628		
	2.0	38,105	16.971		
Crown Glass {	1.0	23,151	10.348	31,003	13.810
	1.5	38,823	17.332		

The specimens were crushed almost to powder by the violence of the concussion: it appeared, however, that the fracture occurred in vertical planes, splitting up the specimen in all directions. Cracks were noticed to form some time before the specimen finally gave way; then these rapidly increased in number, splitting the glass into innumerable prisms, which finally bent or broke, and the specimen was destroyed.

The following table gives the results of the experiments upon the cut cubes of glass:—

	Mean Resistance to Crushing.	
	In Pounds.	In Tons.
Flint Glass	13,130	6.861
Green Glass	20,206	9.010
Crown Glass	21,887	9.762

Hence, comparing the results on cylinders with those on cubes, we find a mean superiority in the former case in the ratio of 1.6:1, due to the more perfect annealing of the glass.

NOTES IN NEW YORK.

THE Central Park, popularly designated the cynosure of the future glory of New York, extends over 760 acres—being about 300 acres larger than Hyde Park—and is in the shape of a rhomboid, a mile and three quarters in one direction, and a mile and a half in the other. The cost is about 5,000,000 dollars, although still in a very unfinished state; and it is situated about four miles from the City Hall. Blasting operations are being proceeded with at present, to reduce inequalities. A species of natural bridge is preserved across a stream which runs through, and will feed a skating pond from the great Croton reservoir, which is centrally placed, and is an object of considerable interest.

In the city, avenues are springing up, lined, not with houses, but with palaces. An American journal says, "Neither London nor Paris, with all the accumulations of the wealth of a thousand years, can show such a street as the Fifth Avenue," and that "when the Central Park is surrounded by dwellings, all the historic splendours of Babylon and Nineveh will pale before the dazzling wealth of this great city." One of the most conspicuous features is the new hotel in Madison-square, with its marble front, and wings of two stories. It is pentagonal in plan, has a large square with shrubbery in front, and is locally considered superior to the Hotel du Louvre in Paris. The frontage is somewhere about 26 feet on the Fifth Avenue and Broadway, and the flanks on Twenty Third and Twenty Fourth streets are 202 feet deep. Accommodation is provided for 800 visitors, or more if necessary. A vertical railway, worked by steam from the heating apparatus, conveys the inmates, as also luggage, &c., from the first

to the several floors, without the trouble of ascent and descent by staircases. The proprietor invested 1,000,000 dollars in the premises, and the lessee expended 350,000 dollars in the furniture and fittings. The suburb Brooklyn, containing a population of 225,000 people, progresses wonderfully: it is very elevated, and the magnificent harbour lies at its base. Brown sandstone houses are the rage among the new rich men. The City Hall, a structure of white marble, is said to be a beautiful building, and was only recently completed, the foundations being laid in 1836. A large building called the Brooklyn Tabernacle, has been erected for a young and favourite divine, the Rev. W. A. Bartlett, at a cost of 6,000 dollars, to accommodate 2,000 hearers. Several other buildings are in course of erection, and others projected, which, when we learn particulars, shall be duly chronicled.

IMPROVEMENTS IN PUBLIC PARKS AND GARDENS, ROADS, &c.

In the House of Commons, last week, while the supplies were being voted in committee, Sir Joseph Paxton took occasion, on a vote of 73,000*l.* for public parks and gardens, to object to the great increase that had annually taken place under this head. What he complained of was, that in 1855 an attempt was made to convert these gardens from their original botanical purposes to those of a popular flower garden, under the administration of Lord Llanover and Sir W. Hooker, thereby greatly increasing the expenditure, and competing with the Crystal Palace! Why, too, above all things, should they be open on Sundays and the Crystal Palace not? The museum that had been erected at Kew was unworthy of the architectural taste of this country, and resembled more than anything a third-rate lodging-house. They were asked to expend 30,000*l.* for a new conservatory, but he believed that a glass structure sufficient for the purpose might be erected at half the expense. As regarded Hyde-park, there was a report from Mr. Page that 30,000*l.* would be required for altering and improving the Serpentine, and it required it; but he totally dissented from the proposal to put an island in the middle. He objected to the system now constantly going on of "gardenizing" the parks, and of filling them with tawdry flowers, instead of leaving them in all the simplicity of grass and green trees. Sir Joseph then urged upon the Commissioners of Works the necessity of improving the communications through the parks. Alluding particularly to St. James's park, he said that within a short period there would be a railway station in Victoria-street, only a few hundred yards from Buckingham Palace, in which case it was not reasonable to suppose that the communication by the side of Marlborough House and Buckingham Palace would be sufficient for the accommodation of the public. He believed, therefore, that they would be obliged to adopt the suggestion which had been made some years ago, and cross the park by means of a road and bridge to Victoria-street direct, with a branch to Buckingham Palace and another to the Houses of Parliament. In Hyde-park also, improved communication was wanting. From the Westbourne-terrace district to the Kensington-gore district a person who was not in a private carriage must go all round by Park-lane and Hyde-park-corner; and he was satisfied that a good road might be made, without being an eyesore, somewhere between Hyde-park and Kensington-gardens. He next complained of the design of Battersea and Victoria parks. He hoped the Chief Commissioner of Works would take proper advice, and place such persons only in the management of the parks as were properly qualified for the office. Lord J. Manners said that, although his hon. friend began by complaining of the increased expenditure on the metropolitan parks, he had ended by proposing schemes which, if sanctioned, would involve an expenditure of at least 100,000*l.* As to the purification of the Serpentine, he put the matter in the hands of Mr. Page, and the scheme that gentleman had placed before the house he (Lord J. Manners) had reason to hope would be permanently successful. With respect to Kew, he fancied that most gentlemen in the house would be extremely vexed if the flower-beds were abolished. With regard to the proposed conservatory at Kew, this work he had put into the hands of Mr. Decimus Burton, and Battersea and Victoria parks at present were under the management of men who were perfectly competent. Year after year greater numbers of people frequented the parks; far more public attention was directed to them; hardly a day elapsed without some recommenda-

tion to increase their beauty, or the enjoyment of the people in them, and he was quite satisfied that no one could fill the situation which he had lately held without feeling an anxious desire to promote, as far as possible, the comfort, the convenience, and the recreation of the toiling masses of this metropolis, for whose benefit, after all, these parks were chiefly maintained.

BUILDERS, LOOK TO YOUR MEASURE.

SIR, It has long been known that an American flour-cask, which only holds $3\frac{1}{2}$ bushels of flour, is supposed to contain 5 bushels of cement; also that a cart only capable of containing $1\frac{1}{2}$ cubic yard of earth will easily carry 2 cubic yards of lime. This the trade have known and assented to, but until lately I did not know that the practice in the Island of Portland, as exemplified by certain quarry owners, is to mark the blocks (with a deficiency equal in many cases to ten per cent.) in excess of the actual quantity. Very recently I made this discovery, and on requesting the manager to re-measure the cargo, I was not very politely informed that they could not undertake to re-measure; and that for the future, if I did not think fit to take the stone as marked, they must decline doing business with me.

How long will the building trade suffer itself to be thus imposed upon? Can any person with certainty calculate the cost of his materials when he cannot know to what extent he will be called upon to pay for that he never receives? A builders' trade protection society might and would, in a few months, work wonders. At present, no honest dealer has a chance with a set of persons who drive a business by professing to sell low, when in fact the measure given makes the article much dearer. I could give the names of several such, and am ready to join any builders to devise means to stop this evil.

Mill End.

JAMES KNIGHT.

SCHOOL-BUILDING NEWS.

Coggeshall.—The new school-house at Coggeshall, built for Sir Robert Hitcham's Charity, has been opened. The cost of the building (the plan and superintendence of which were by Mr. T. Clarke), will exceed 1,000*l.*, and the work was carried out by Mr. J. Brown, of Bocking.

Shrewsbury.—The foundation stone of St. Chad's new parochial schools has been laid by the Mayor. The site is at the end of Bridge-street. The school will be of two stories, the lower for the boys, the upper for the girls. Each is 65 feet by 18 feet, with two class-rooms, 18 feet by 14 feet. The whole will accommodate 170 boys and as many girls. Near the approach to the girls' school a convenient house for the mistress is placed. At the end of the boys' school is also a residence for the master. Attached are playgrounds for each class. The building is Elizabethan, of pressed brick, with stone dressings, and ornamented gables and chimneys. The architect is Mr. Edward Haycock, and the contractor, Mr. Treasure, of Newport.

Wistanlow.—New schools have been opened here, according to the *Shrewsbury Chronicle*, the cost of erection being about 800*l.* The new building, which adjoins the old schools and the church, is Italian in style, and without ornamentation, economy being considered. The school-room is 67 feet by 18 feet; the class-room 18 feet by 12 feet. There is also a cloak and hat room, and a house for the schoolmaster and schoolmistress, the whole surmounted by a bell-turret. The architect was Mr. J. L. Randal, of Shrewsbury; and Mr. Oldham, of Lunnington, was the builder.

Eastington (Gloucestershire).—The new National Schools have been opened at Eastington. The group of buildings is situated near the church, upon a piece of land presented by the rector. They are of brick, with balk-stone dressings, and have a roofing of Broseley tiles. The entire cost is about 1,100*l.*

Pawlett (Somerset).—The Pawlett National School has been inaugurated. The building is part of the old farmhouse adjoining the churchyard, on the west side, and it is approached by a wicket, through what was originally the paved court, now a green sward. Like all ancient farmhouses, it is low-roofed, with walls of great thickness, and deep window recesses. The interior dimensions of the school-room are length, 10 feet; breadth, 20 feet; height, 16 feet; and it has been fitted up by Mr. E. Jebout, of Taunton, under the direction of Mr. H. Smith, the steward of the lord of the manor.

Brewood (Staffordshire and Salop). The founda-

tion-stone of new National Schools has been laid at Brewood. The school-buildings consist of a boys' school, capable of accommodating 100 boys; and a girls' school of the same size, with large class-room and other necessary buildings attached. There is also a master's house near the schools. The buildings are of the old English style, having mullioned and transomed windows and perforated barge boards, and are erected in brick, with stone dressings, quoins, &c. The several buildings have been designed by and under the superintendence of Mr. E. Banks, architect, Wolverhampton; and Mr. Godfrey, of Birmingham, is the builder.

Lancaster. The Ripley Institute is making progress, although it will not be completed for three years yet. The estimated cost was 25,000*l.*, which was paid out of the first dividends arising from a sum of 100,000*l.* given by the widow of Mr. Ripley, a native of Lancaster, in accordance with a desire of her late husband to erect an hospital for orphan children in Lancaster. The contract for the whole was taken by Mr. C. Blades, of Lancaster, builder, but the masonry was entrusted to Mr. C. Baynes, also of Lancaster. The building stands on the Ashton-road, about half a mile from the town-hall. It is intended for the education and maintenance of 300 orphan children, boys and girls. The style is that of the twelfth century, Early Pointed. The plan is somewhat in the form of the Roman capital letter E, with a side and two wings, and fronts the north-west, of three and four stories. The side between the wings is 135 feet in length. The wings on each side are 130 feet long, each four stories high (68 feet), and are terminated at the north-west extremities by houses—one for the schoolmaster on the boys' side, and the other for the schoolmistress on the girls' side. The material chosen for the exterior of the building is white sandstone, from adjacent quarries. The spaces between the heavy parts are filled with inserted rubble.

Bolton.—A National School-room and Church Service Room, of Gothic architecture, has just been completed at the top of Bolton-lane. They consist of a room intended for church service on Sundays and a national school during the week, with a dwelling for master and mistress. The whole is from the designs of Messrs. Mallinson and Healey, of Bradford. The site, valued at 150*l.*, was the gift of W. H. Rawson, esq. of Mill House, near Halifax. Towards the building fund, amounting to nearly 1,000*l.* J. Atkinson Jowett, esq. presented 100*l.*

Dundee.—In 1850, Mr. John Morgan died at Edinburgh, leaving property to the value of nearly 100,000*l.* to endow a school for 100 boys in Dundee. The House of Lords has just decided in favour of the bequest. The funds have dwindled, under the kind care of "the law," to 82,000*l.*

Crieff.—Some thirty years ago, says the *Scotsman*, Mr. James Morrison, who was born in Muthill, Perthshire, and was for a considerable period a builder in Edinburgh, died and bequeathed a large sum to found and endow an educational establishment in his native district. The institution is intended to afford what may be termed a first-rate "middle-class" education at a very low fee. The trustees, on the list of whom are Sir William Gibson-Craig and Lord Advocate Moncreiff, procured plans and designs from Messrs. Peddie and Kinneir, architects; and these having been approved of, building operations will, it is expected, be commenced in a few weeks. A field a little to the north of the picturesque-situated town of Crieff has been selected as the site. As the space acquired is upwards of ten acres in extent, there is ample provision for playgrounds. Architecturally, the proposed institution is a modification of the Scottish style of the end of the sixteenth century, with the chief features approaching the French type. In length, the edifice extends 180 feet, and is about 40 feet in depth. It is composed of a projecting central mass, with wings, the extremities of the wings projecting to a line with the centre. The centre is three stories in height, and is square in plan. It has a projecting high-pitched gable in front, which is finished with a bell-cot; the total height being nearly 80 feet. This front is broken up by circular turrets, one on each side, containing staircases leading to the library galleries, which have slated roofs, and a large oriel window. The part of the wings adjoining the centre of the edifice is two stories in height, and has two rows of windows. In the projecting wings the elevation terminates in high crows-stepped gables, from each of which stands out an oriel of two stories, finished with a sloping stone roof. Internally, the apartments comprise library galleries, eight class-rooms, and various other rooms suited to the establishment.



SWEETENING THE AIR OF THE COUNTRY.
A Village in Essex.

FRESH AIR IN THE COUNTRY.

"I AM going out of town for change of air. The wear and tear of London life, the foul Thames, the evil condition of neighbouring streets, are all against me here." Quite true. But take care where you go to, or you may jump out of the frying-pan into the fire. And what we said to our friend in particular, we say to our readers in general. Towns are becoming everywhere more and more crowded. In 1801 the rural population of Great Britain, amounted to 8,143,722: in 1851, this section of the population had amounted to 13,914,768, showing an increase, in fifty years, of 5,770,966, or 70 per cent. whereas the population of towns of upwards of 20,000 inhabitants, which was in 1801, 2,435,184, had risen in 1851, to 7,044,709, an increase of 4,609,525, or 189 per cent. This shows that in the course of half a century, the increase of the urban population in proportion to the suburban was about $2\frac{1}{2}$ to 1, and these figures by no means indicate the full extent of the proportionate decrease of the rural part of the population.

Again, in the whole of the towns of Great Britain, in 1851, there were 5.2 persons to an acre, while in the country there were 5.3 acres to each person. In London there were 19,375 persons, and 2,509 houses to each square mile. In part of Middlesex, there were 34,389 persons, and 4,202 houses to the square mile. In Northumberland, there were only 154 persons, and 24 houses to each square mile; and in North Wales, 131 persons and 27 houses.

In 1801 there were in England and Wales 1,579,923 inhabited houses, 1,896,723 families, and 8,892,536 persons. In 1851 the inhabited houses had increased to 3,278,039, families to 3,712,290, and persons to 17,927,609. In 1801 $4\frac{1}{2}$ persons occupied each house: in 1851 the number of persons occupying each house had increased to upwards of 5.

"In the towns of England centre all the literature, all the art, and all the science of modern civilization, which makes England pre-eminent amongst the nations. They are the most progressive, if not the most important, part of the nation. Their inhabitants, becoming daily more numerous and influential in the whole society, will most materially shape the future fate of Great Britain. This is not the adventitious result of any peculiar policy: it is natural and necessary. For help and protection man clings to man, and skill and power are much more social than individual."

When we consider this vast increase of the number of inhabited houses, which have very nearly been doubled during the last half century, that the population of England and Wales has more than doubled, and that the chief increase of the population is in the towns, the necessity for sanitary regulation, of an enlightened and sufficient nature, is evident, and the usefulness of getting away into the country is no less so. But simply "to go into the country" is not enough. The neighbourhood must be looked at, and circumstances considered. If you send your children to an ill-drained watering-place, and let them play half the day at the mouth of a drain on the beach, or to a damp farm-yard, with decomposing vegetable matter on all sides of them, and bad

water to drink, the chances are that evil and not good will result. Pure air is the first necessity, and man does all he can to increase the difficulty of obtaining it. Dr. Angus Smith, who has devised means of learning the relative amount of decaying animal and vegetable matter existing in the air under different circumstances, found, as compared with the purest air he examined—that of Lake Lucerne,—that at the forest near Chamounix the amount of organic matter was double, evidently owing to the decay of the leaves; in North Lancashire, the same. In the fields near large towns, as London and Manchester, there is between nine and ten times as large a quantity as at Lucerne. In the purest parts of London there is double as much as in the adjacent country; although this is immediately reduced one-half by the purifying influence of a thunder storm. Over the putrid Thames, in the warm weather, there is double the amount of that in the purer parts of London, and four times as much as in the Highgate fields. Manchester is nearly as bad. In close dwelling-houses the air is still worse; and in open pigsties it is so charged with putrifying effluvia, or what may be truly termed animal stink, that there is absolutely eighty times the amount that is found in the pure air of Lake Lucerne.

If it be correct that, when respiration is performed naturally, there are about 18 respirations in one minute, 1,080 in the hour, and 25,920 in the 24 hours; and that by each respiration a pint of air is sent into the lungs, that is 18 pints in a minute, or in the hour more than two hogsheds, the effect impurity may produce is evident.

When the body is in a state of health, there will be 72 pulsations of the heart in a minute. Every pulsation sends to the heart two ounces of blood. Thus 144 ounces are sent for purification to the lungs every minute. In one hour there are sent 450 pints; in 24 hours, nearly 11,000 pints. The blood performs a complete circuit in the system in 110 seconds. These figures show how great is the need for the air we breathe to be pure and wholesome.

Simple assertions of the evils to which people expose themselves in the country have little effect. A special instance, however, may have more. Our sketch shows part of a village in Essex where the houses drain into a large pond on the opposite side of the road. At the time of our visit it was sufficiently foul to produce a pestilence, and we were not surprised to learn that fever frequently visits the cottages, and that the prevailing odours are not those of Araby the blest.

Go into the country by all means for fresh air; but do not take for granted that you will get it.

REMOVAL FUND, ROYAL INSTITUTE OF BRITISH ARCHITECTS.—We are glad to hear that some 170*l.* have already been subscribed towards the removal fund. We hope to find it come up to the 300*l.* estimated outlay for removal. Sir Charles Pasley, C.B., Sir Gardiner Wilkinson, and Dr. Layard, honorary members, have come handsomely forward to assist. There are now about fifty names on the list, from 25*l.* down to 1*l.*; so there is a range in amounts of donation to serve as precedent to any who like to subscribe.

CHURCHES IN THE STATES AND CANADA.

New churches are in progress of erection at Hawesville, Hancock County, an important cut-stone edifice; at Hickman, Fulton County, a brick-built building, far advanced; at Bowling-green, Warren County, Ky; and at Long Lick, Breckinridge County, one to be dedicated to St. Anthony, and to replace the present tottering structure. The new church of St. Patrick's, at North Bridgewater, has been dedicated; it is 110 feet by 58 feet; is built of brick, with free-stone dressings, and basement of granite; style, Romanesque; tower and steeple 180 feet high, and commands a fine situation, in a principal street. The cost was 25,000 dollars.

The corner stone of a new church has been laid at Galt, C.W. It is to be under the invocation of the Apostle of Ireland.

In Toronto a new church has been commenced, and will also be dedicated to St. Patrick.

The new church of St. Aloysius, at Washington, is said to be an important building, and will be dedicated on the 15th of August.

The corner stone of the new church at Greece, N. Y. was laid on 19th June. A similar event took place at Carondelet, where the new church of St. Mary has been commenced.

At Louisville a new church of brick is in progress of erection on the site of the old log church of St. Vincent; and another has been commenced at Chicago, on the Lebanon railroad.

The corner stone of the new church at Portsmouth Va, to replace that recently destroyed by fire, has been laid.

SANITARY STATE OF BELFAST.

It is a strange thing that Belfast, one of the most modern and architecturally built towns in Ireland, is, perhaps, the most deficient in sanitary arrangements and sewerage. Judging, however, from reports in the local journals, some happy-minded individuals seem to labour under a delusion that *such is not a fact*, but that Belfast is a pattern for every town in the United Kingdom as regards its sanitary arrangements; but a very casual observation with a fresh eye will convince that it abounds with courts and alleys so narrow that the inhabitants of opposite houses may shake hands from window to window, and so filthy and ill-ventilated that it becomes a matter of surprise how frail humanity can exist therein at all. Many of the streets may be said to have no sewerage whatever, as the old sewers when opened are found to be filled with a hard, dry, black residuum, up nearly to the soffit of the arch, which can scarcely be dug with a spade; and in some of the principal streets new sewers have been built at a low level, perhaps about that of ordinary neap tides, and the mouths of those connected with low lying districts liable to be flooded at high water, and provided with valves to prevent the ingress of the sea, and are during part of the time mere cesspools. We believe the population of Belfast is about 120,000, and that about one-third live (?) in the habitations above alluded to, in courts, &c. and the remaining two-thirds, including the professional and mercantile classes, are doomed even in passing to and fro through public thoroughfares to breathe the pestiferous exhalations from the dwellings of the humbler, from the public slaughter-houses in the centre of the town, and the starch, soap, bone, and other factories in the neighbourhood.

ST. LUKE'S CHURCH, HOLLOWAY, WEST MIDDLESEX.

THIS church, which was designed by Mr. Charles Lee, and erected under his superintendence, is situated on the estate of Thomas Henry Allen Poynder, esq. whose father, the late Mr. Thomas Poynder, presented the site. The funds have been raised by subscription, to which 500*l.* were contributed by Mr. Allen Poynder, and 1,000*l.* by the late Mr. Alfred Batson, the owner of the Copenhagen estate adjoining. The building is of the Decorated period in style: the plan is cruciform, with a tower and spire at the north-west angle: there are galleries in the transepts, and at the west end. The roof is open, showing its construction: it is of deal, stained. The exterior is faced with Kentish rag stone, the whole of the windows and doorways being executed with Bath stone. The church will contain 1,300 sittings, viz. 800 adults in pews, 324 adults in free pews, and 176 children in the west gallery. It is to be opened for service in October next. The total cost of the church, exclusive of enclosing walls to the site, will be 7,000*l.* The builder is Mr. George Myers, and the clerk of works Mr. Bontron.



ST. LUKE'S CHURCH, HOLLOWAY, WEST MIDDLESEX. -- MR. CHARLES LEE, ARCHITECT.

HATFIELD HOUSE AND ITS CONTENTS.

THERE are many spots of interest and great beauty within a circuit of twenty miles from the centre of London, and which can be reached at a trifling cost by railway; but few of them surpass in interest the picturesque grounds and house of the Marquis of Salisbury,—a place of some antiquity, and associated with important passages of the life of Queen Elizabeth. Before starting from the King's-cross station to Hatfield, it may be as well to note that this manor was an ancient demesne, and continued in the possession of the Saxon monarchs until it was conferred by King Edgar upon the monastery of St. Ethelred, in Cambridgeshire. Particulars of it are given in Doomsday book; and at the time of the confiscation of the church lands, this manor seems to have come into the possession of the crown. During the latter part of the reign of Henry VIII. Prince Edward resided at the palace of Hatfield, which had been built by the bishops of Ely. Upon the death of his father, Henry VIII. the young King Edward was escorted thence by his uncle, the Earl of Hartford, and others of the nobility to the Tower of London, previous to his coronation. In the fourth year of his reign, the king conveyed the palace to his sister, the Princess Elizabeth. In the latter part of the reign of Queen Mary, the princess was removed from the monastery of Ashridge, in Buckinghamshire, to London, and imprisoned in the Tower, in consequence of her being charged with having been concerned in the rebellion of Sir Thomas Wyatt; she was, however, permitted to retire to Hatfield, under the guardianship of Sir Thomas Pope, the founder of Trinity College, Oxford. The manor afterwards came into the possession of Cecil, Earl of Salisbury, son of the great Lord Burleigh.

The railway runs past Halloway, Hornsey, the incongruous mass of buildings at Colney-hatch, the battle-field of Barnet, and so to Hatfield, through a pleasant and richly-cultivated country. The little town of Hatfield stands pleasantly on the side of steep hills: the old-fashioned houses, mixed with trees, and the body and spire of the church form a pretty picture.

Climbing up the hilly street to the old brick gateway of Hatfield-house, most of the shops and houses are seen to be of dwarfed proportions, the head of a tolerably tall visitor reaching above some of the shop-windows; but the place looks pleasant, and is very clean. We learn, in passing, that the drainage of Hatfield is carried to a place at some distance, called the "Black ditch," where it is collected and laid upon the land.

The brick entrance leading to the park and grounds seems to be of a little earlier date than the reign of Henry VIII. This has not any remarkable architectural features; but it seems that a wall of several feet in thickness was found while making some alterations: this has probably been a part of a building of much more ancient date. After entering, all that remains of the old palace inhabited by Edward VI. and Queen Elizabeth meets the eye. A large portion of this room where Elizabeth was kept for some time a state prisoner: the chamber which she occupied is situated in the north part of this building: the exterior of dark red brickwork still is partly overgrown with ivy. The stable has a wooden roof springing from grotesque corbel heads, and is lighted from windows partly filled with stained glass and of great size, and was the banquetting hall of the old palace: here were kept Christmas festivals, and at Shrovetide, 1556, Sir Thomas Pope made for the "Ladie Elizabeth, alle at his own costes, a greate and rich maskinge, in the greate hall at Hatfield, where the pageants were marvelously furnished." At night the cupboard of the hall was richly garnished with gold and silver vessels, and a "blanket of sweete dishes, and after a voide of spices and a subtletie in thirty pye, all at the charges of Sir Thomas Pope." On the next day was the play of Holophernes. Queen Mary, however, did not approve of these "folies," and intimated in letters to Sir Thomas Pope that those disguisings must cease.

Although the Princess Elizabeth was kept here prisoner, she occasionally went to London to pay her court to Queen Mary; and in 1556 she was invited to court, and proceeded thither with great parade. The princess, however, preferred the quiet and pleasant scenery of Hatfield. The hall now accommodates about thirty horses: although the space here is very great, we should not be surprised to hear that it is an unhealthy place, for, according to the present arrangements, the place must be hot and confined in summer

and very cold in winter. The combination of old trees, the rich coloured brickwork, the richly-wrought ironwork of the flower-garden gate, independent of its historical associations, forms a pleasing scene.

The noble park is eleven miles in circuit: here the new house, finished, in 1611, by Cecil, Earl of Salisbury, comes boldly to view. The house is of great size, designed with the architectural features of James I.'s reign: instead, however, of going at once to the house, many will be tempted to wander amongst the trees in the direction of the river Lea, which passes through the park. Flocks of deer are resting in the shade: rabbits are hopping about amongst the fern; and pheasants flying amongst the branches. Not far from the house is the racket-court and riding-school, both large buildings: near here is an ancient oak of extraordinary size, called the "Lion oak," a venerable tree, which, although deprived of many branches, is still crowned by large masses of green foliage and numerous acorns, is upwards of 30 feet in circumference, and is called a thousand years old.

A broad green glade of the park, now used as a cricket-ground, was, we believe, formerly occupied by the kitchen garden of the old palace. This, however, was removed by the first earl. The people of the town have the privilege of access to this delightful spot, and a short time before our visit, Mr. Rogers, the worthy clergyman of the Charter-house district—which is one of the poorest and worst-conditioned in the metropolis—was allowed, by the kindness of Lord Salisbury, to bring from the dingy courts and alleys upwards of three thousand poor children. Numbers of the clergy and occupants of the neighbourhood, and the band of the county militia, were also in attendance, and it was a day of pleasure to those little pent-up Londoners, and no less agreeable to those who had the opportunity of witnessing so much enjoyment.

A long and noble avenue of trees, with sunlight glistening on the grey mossy trunks and boughs, leads to the spot where the kitchen garden is now situated. Here is an old oak, now much stunted, under which the Princess Elizabeth was sitting when the messengers brought to her the news of Queen Mary's death, and saluted her as queen. With pomp, and amid great rejoicing, Queen Elizabeth progressed to London—a journey accomplished with much greater trouble three hundred years since than at present. Decayed parts of this historical oak, the "Lion oak," and some others, have been, from time to time, covered with cement, and this has not only had the effect of stopping the progress of destruction, but also been the means of producing both new wood and vegetation.

At the further end of the avenue just mentioned is a building of two or three centuries old, but which has been much disguised by alterations, which is now used as the gardener's lodge. Through this we reach the vineyard—a curious example of the trim gardening of former days. From a terrace a bank descends by a deep gradient to the river Lea. On the upper portion of the terrace are yew trees planted at intervals, and dressed into singular shapes; in other parts the yew trees are so cut, that up to a considerable height they seem as straight and solid as a wall: openings are left here and there which lead to dark avenues, cunningly formed by the arching of the branches. From the centre a broad flight of steps, covered with turf, leads to the river. On the opposite side of the river, an opening has been made in the trees, which shows a picture that stretches away in long perspective. Descending the steps, and looking upward, the view is very striking, and we perceive that the design is intended to imitate a fortress, with its towers of defence, loop-holes, and battlements,—in fact, vegetation is made to assume an architectural form, which has an extraordinary effect.

The vineyard is admirably cared for, and must cause much labour. The ground is simply of grass closely cut. The scene suggests pictures of fair ladies and gallants in the brightly coloured costumes of former times.

When Charles I. was confined at Hatfield the vineyard was in good condition; and Hobson, the famous Cambridge carrier, who left people such limited "choice," and yet, amongst other good works, erected a fountain, and provided for its supply, near the scene of his successful labours, visited the vineyard about three hundred years ago, and speaks in praise of the arrangement and condition of both the vineyard and garden. The same praise may be given to the gardener now, for the grounds are well and skilfully kept. It is desirable to preserve the few old gardens which still

remain, for, although they do not compare with the more free and natural style now in use, the effect is good, as a contrast with the free and picturesque pieces of water—displayed in the avenues close by. The river Lea is here very clear, and abounds with various kinds of fish.

At a little distance the Lea is crossed by a bridge, of Gothic design, erected by the present marquis.

Returning across the park to the north entrance, we are admitted into a spacious entrance-hall, which leads to a gallery of great length, open on one side by a sort of trellis work to the lawn. Here is displayed a large collection of arms, some of which was captured from the Spanish armada. Here is the saddle-cloth, of rich materials, which was used on the white charger ridden by Queen Elizabeth at Tilbury. There is another saddle-cloth, also by the first earl of Salisbury. There are also models, &c. and weapons captured in the Crimean war, which, as time rolls on, will become as valuable as those taken long since from the Spaniards. Hence we pass through various apartments used as sleeping and dressing-rooms. We will not describe these in detail, but generally mention that they are of good proportions, and have a sombre yet rich appearance. In each bedroom there are wardrobes and closets, carved in various manners in the style of James I.'s reign. The mantelpieces, chiefly of carved wood, are of large size: some are supported by massive pillars entwined with flowers; some stand out boldly, and are supported by caryatides and figures; others are flatter and more or less ornamented. The bedsteads, and much of the furniture, are of the same date as the other fittings. Throughout the whole of the house, in those apartments, are fenders of modern work, and of very good design: in the centre of each are the armorial bearings of the earls of Salisbury. In this part of the building a fire broke out not many years ago, when the dowager Countess of Salisbury, the mother of the present earl, perished in the flames. The damage has been well restored; and in the carved woodwork of the mantelpiece an oval gilt frame has been introduced, containing a well painted portrait of the deceased lady when she was a young girl. This introduction has a good effect.

In the chapel, at the other end, is a stained glass window of considerable brilliancy. It is of Flemish work, and contains, in compartments, scenes from Bible history. The effect of this fine work is to a great extent damaged by the flood of light which comes in at certain parts of the day from windows at the west end. All light in this well-proportioned little chapel should be subdued, except the principal window, and then the colours should be distributed throughout the carvings and walls. No doubt the effect of the chapel is better in the morning.

The long gallery, which measures upwards of 160 feet in length, 19 feet in width, and 16 feet in height, is a noble apartment, the narrow proportion and peculiar height giving it an appearance of great extent. The florid ornament in the roof is richly gilt. The light streams in from the numerous windows on the dark oak floor, and lights up cabinets and furniture of curious workmanship. There is a state chair here which in said to have been used by Queen Elizabeth. In a black cabinet is preserved a hat with a broad circular brim, which we are told was worn by the Princess Elizabeth when seated under the oak at the time of the arrival of the messenger above referred to. At the eastern extremity of the gallery is a very fine room, 60 feet long by 30 feet broad, and 21 feet high. In the estimate of the work done in 1610 this room is called the Great Chamber, and was probably used as such by the Lord Treasurer Cecil for his royal master. The large mantelpiece of various marbles, of bold and at the same time highly artistic design, has an excellent effect: in the centre is a statue in bronze of James I. In this instance the dark colour of the bronze figure is carried throughout the design by pillars, &c. of black marble; and a broad and satisfactory effect is produced by the contrast of marbles of slightly different tints, some highly polished, and some left dull. There are several pictures in this room of much interest, amongst them a head of Henry VIII. by Holbein; heads of Henry's wives; a characteristic portrait of Queen Elizabeth, and other historical personages. King James's bed-room has the fittings, it is said, exactly as when the king last used them: the hangings, of deep crimson, are profusely ornamented with tassels-work and fringe; the quilted coverlid has wrought flowers in the centre, and at the top of the bed is a royal crown, and other ornaments, which have an unpleasant effect.

It should be mentioned that many of the rooms

throughout Hatfield-house are fitted with woods of different kinds, and are named, in consequence, the "Oak-room," the "Rose-room," the "Walnut-room," the "Elm-room," &c.

The library, 57 feet long, 27 feet wide, and 18 feet high, contains a valuable collection of books, prints, and manuscripts. Here are original letters and other memorials relating to the political affairs in the reigns of Henry VII. and Edward VI. Here is also the diary of Lord Burleigh, and other matters in cabinets. Here are several relics, such as James I.'s purse, medals, and, until lately, the first pair of silk stockings introduced into England, worn by Queen Elizabeth. These, together with some other matters from Hatfield, may now, by the kindness of Lord Salisbury, be seen in the Brompton Museum.

Of the pictures, which are hung throughout the house, we would particularly notice the portraits of the great Lord Burleigh, and then his two sons; various portraits of Elizabeth: in one, taken when young, the face has a sweet and beautiful expression, in the others dresses are most elaborated—in one picture the robe is covered with eyes. There are various portraits of Queen Mary of England, and in the winter dining-room, which to our fancy is one of the most completely arranged apartments in the house, is an oval portrait of Queen Mary of Scotland, when at the age of sixteen years. Here are the Earl of Leicester, of Elizabeth's reign, James I. Charles I. different members of the Salisbury family, which are not only valued records, but also serve to show the progress of art. In the room just mentioned is a painting well coloured and drawn; it is a view in which the background is the Tower of London, and shows the procession, &c. of Cardinal Wolsey to meet Henry VIII. and Anne Boleyn. Here are the cooks at work, and the minstrels, &c. playing, and other matters which give a vivid picture of the times. Phillip of Spain, Van Tromp, the famous Charles of Sweden, Peter the Great of Russia, &c. are to be found on the staircases, &c.

In a great hall leading from the place where we first entered is the minstrels' gallery, ornamented with carvings of figures and animals, heraldry, &c. Here is a picture, life size, of the white horse on which Queen Elizabeth rode at Tilbury Fort, and ten large paintings of Adam and Eve. This hall is very picturesque.

The room occupied by our present queen, during a recent visit, commands some beautiful views. It will be viewed with love and reverence in future years.

OUR COLONIES AND HEATHEN TEMPLES.

In a new colony we must not look for advanced taste: the required church is built large, capable of holding many more than attend, but it may be hoped empty seats will in time reproach, and entice many that might leave their stores and go. The church is, however, frequented by a goodly number of the most affluent, and stands where all must be reminded of its unfinished state, and yet the flooring is not completely finished. Years have passed over, one governor has followed another, and yet, which of them would celebrate his reign by causing the finishing stroke to be put to the church? Year after year has passed with signs of the incomplete workmanship. As you enter, and would desire to tread lightly and avoid the staring which every colonist appears to consider himself or herself at liberty to bestow on the last new arrival from the old mother country, you find each step, on the loose temporary flooring, makes a sound loud enough to rouse all curiosity, and along these planks you must be content to shamble. The reading-desk and pulpit cause your next fear, unless you know how many years they have already lasted. You naturally think this is the last day they will stand on their poor supports, made of rough poles from the bush: these are merely hints of the generally imperfect state of the church, though we could dwell on many other such sad particulars. We believe the appointment of the clerical care over our colonies has improved; but until we see able men in every point sent from the mother country—not merely those who desire to colonize and thus provide for large families, but those who would sacrifice their all to lay foundations for further extended exertion—we shall not see church principles take root in new soils. In the Australian colony I could draw a picture of a Roman Catholic convent, extending influence and care that tend to weaken any other less vigilant. The mistakes causing the disappointment in the much-hoped-for New Zealand colony of Canterbury, need not discourage, but ought to show what should be avoided. Party spirit runs

high in a new petty world, to which a colony may be compared; but there are more hospitality and ready desire to lend a helping-hand, than can ever be found in the mother country. A blind man would never have to wait there for a conducting hand. Would England own the same kindred feeling there so happily influencing her children, the distance between them would seem less in other climes; and with such grounds as neighbourly cordiality to work on, would not a spiritual pastor mould a foundation to church principles, as well as the merchant scheme plans for traffic? Then storekeepers would not have their stores finished before the House of God. Could our clergy be allowed and enabled to carry out Catholic principles, our fallen sister of Rome would have less power. She must have a great hold on our Australian colonies, where so many emigrants are Erin's sons and daughters; but the greater the difficulty, the more able ought those to be who are sent to struggle: even highly talented, energetic, and hard-working men. It is quite a mistake, but one we often see, to believe that a fine scholar must be kept for a Belgravian pulpit, and is not needed in remote wilds. We believe he might there give a higher tone to each community thus ably headed. Learning would increase his authority and usefulness. We need not dwell on the loneliness he might feel. I have said a sincere, hard-working priest; and such a one will feel a true missionary spirit, and see it as a privilege to be selected for such important work. Our settlements amongst Africans, Indians, and others, require the same care; for, when we remember how soon the human mind sinks and degenerates, we might rank English officers in different departments and situations as in the same need as emigrants; and, even with heathens, the very great immensity and difficulty of conversion calls for all possible care in the selection of one who may find all powers and even cultivation of his own mind requisite. This has been a long digression from architecture, but I claim my right to think, as I am a traveller, and have visited four of the five continents. I believe wandering steps cause wandering thoughts.

When dwelling on the unfinished state of the church I have alluded to, I might well contrast, though with shame, the care even heathens show for the decorations of their temples; and I must add, that the colonists I allude to, though far from rich, could well come forward with means to assist, but they had already given well, and why will our English Government be lax? Government houses are built, commissariat warehouses, public buildings of all kinds, are erected by Government, and we might almost forget church and state are hand in hand. In India we may see the poorest votary bringing offerings of all he has, and seldom have I been more impressed than when seeing a poor ignorant heathen prostrating himself before his giant god, and offering his fresh pure flowers, the beauties, the voices of nature. And here, to redeem my promise, and turn thoughts more particularly to the form of building, I may mention a temple of Buddha I once visited in Ceylon, a few miles from pleasant bright Colombo, as to which, perhaps, if you have ever visited, and learned to the prize Southern hospitality of the residents, you may join in my wish that I would once more find myself amidst nature's true architecture. The lofty palms, the large soft-greened broad leaves of the useful plantain and wonderful mighty bananas, all might figure forth man's attempts, all give satisfaction,—a desire to excel in each sweep of the giant boughs of the mighty trees, under the proud covering, rearing their heads to protect us from a tropical sun. We entered the temple precincts, not of Herbert's sacred porch, for heathenism was around us. There were many steps to try us, accustomed to Indian bungalows, all sensibly built on the ground-floor. At each side of the portal, inside the first gate-way, may be found the huts of the priests and others employed about the temple. More steps, and then a black snake crawled past us, to remind us of sin. We hunted him under some planks: sin was covered for awhile, and we turned to man's works. Beside the temple there was a large white plaster building, in shape very like a pudding-basin standing bottom upwards. This was supposed to cover the teeth of the great god Buddha. We entered the temple, and found all possible care given to the internal embellishments. In the middle of one side of the room we first entered, there was a large figure of the god Buddha, and standing right and left, two smaller figures. The whole of the walls were painted with various histories,

redounding to the praise and glory of the god; illustrating singular merits he had shown his votaries,—kings and queens, who had been beset by their enemies, saved by his timely succour; sickness cured; and, in fact, no event in life unrecorded by some tribute to his powers. In an inner room there was a gigantic figure of Buddha, extended at full length, his head resting on his hand: it was entirely gilded over, and preserved in glass. On a long table outside the glass-case there were nature's offerings laid. Here I saw the gorgeous shoe-flower, both red and orange; the lovely sweet orange-blossom; all brought as offerings. While we stood looking on the gilt monster, a poor Cingalese Buddhist entered noiselessly with his unshod feet, and knelt with the air of true reverence, neither soft cushion, nor pew, nor ease-suggesting hassock required. His attitude showed this awfully erring, ignorant being, sincere and earnest in his faith. Are such things seen by angels? His whole figure seemed resting on prayer; and, until the eye turned to the idol, devotion seemed before us. No care and pains seemed too great for this temple: the floor was ornamented very prettily with what might well answer as tiles in our churches. It was a sad, impressive visit, that heathen temple. I sought another, where I could not understand a single word of the language. I had only just come into harbour, or rather, the open roadstead of Colombo, and rushed on shore with childlike eagerness. I had learned the names of the gods, and fancied Vishnu was the chief. I inquired anxiously for his majesty: the poor, gentle native, running by the side of my carriage, seemed to understand I wanted to see some temple and idols, and quietly took me off to the Roman Catholic church. The curious rebuke was striking. Perhaps I may here be allowed to wander into the land of mosques, and speak of a magnificent one I visited in Cairo, a large building, still giving the idea that no labour or expense could be considered too much for the place of worship. On entering the court we were required to take off our shoes before going inside the sacred building: when we did so the effect was striking; the decoration elaborate; but the extreme bareness struck us much. We missed the furniture of the church; in the midst of warm external gleams, all looked cold here; no altar, no seats; each person coming to pray carrying his own little piece of carpet. But nothing could exceed the care and pains bestowed on the building; walls, and ceiling were beautifully painted.

We may contentedly wander and roam far over God's fair earth, love nature in all her charms, but if man undertakes work, we judge with the recollection of the powers allowed, which he has undertaken to use: on he must toil; not wrap up his talents in a napkin, but labour with all his might; and may it not be that civilization some day shall crown her sons with glory, that all things may tend more and more to God's works,—show more and more His children's love of them; the earthly edifies for His worship more cared for; and all signs given of man's recollection of his Maker's goodness in letting the worm man assist in showing forth His glory, goodness, and power.

A TRAVELLER.

CHURCH BUILDING NEWS.

Newbury (Berks).—The New Baptist Chapel here was opened on the 12th instant. The edifice is situated on the east side of Northbrook-street. It will accommodate about 500 persons. The width in the clear of walls is 41 feet, and it is 56 feet in length, with an apsidal end, 17 feet in diameter, containing minister's platform and a gallery for the choir. On either side of the chapel, on the ground-floor, are passages to the school-rooms in the rear: the galleries extend over the passages, and are supported by ornamental cast-iron brackets. The ceiling is panelled, and in the centre there is a glass dome, from which the light to the interior is mainly derived. The dome is between the ceiling and roof, and covered externally with sky-lights. The front is of Bath stone. The building stands between two dwelling-houses. In the rear is a large school-room, with the requisite offices.

Egham.—St. Jude's Church, Englefield-green, has been consecrated. The style is that of the middle of the fourteenth century. The building consists of a nave, chancel, short transept, and tower. Outside, the materials are Kentish rag with Bath stone dressings. Inside, patterns of brick and stone cover the walls, instead of plaster. There are two memorial windows, one in the east, commemorative of the vicar's eldest son, who died in 1855, on his way to the Crimea; and the other

a rose window in the transept gable. These are done by Mr. Lamb, of London, the architect of the church. The east window contains five distinct subjects. The first light, on the left hand, contains "Our Lord blessing the children;" the second, "St. Peter baptising Cornelius;" the third, or centre light, "Our Lord's Ascension;" the fourth, "Our Lord stilling the storm;" the fifth, "The Angel sitting by the open sepulchre and pointing upward." The subject of the rose window is "Mary sitting at our Lord's feet to learn of Him." The sittings of the chancel, the pulpit, the reading and prayer desks, are of oak. The church will seat 400 persons. The whole of the work has been done in the parish of Egham, by Messrs. Oades and Son, builders.

Woolwich.—The new congregational chapel in Rectory-place has been opened. The buildings comprise a chapel, calculated to seat 550 persons; a lecture-room for 230, which will also be used as a girls' school-room; a boys' school-room for 130; an infant school-room for 65; committee-room; library; and several rooms for vestries, &c. The chapel itself consists of transepts, galleries, and nave, the roof spanning the entire width between the walls. The interior dimensions are 62 feet in length, and an average width of about 40 feet. The main entrance is from Rectory-place, under a tower and spire. At the back of the chapel is a corridor extending the whole width of the building, having an entrance in Rectory-grove, and communicating by passages and staircases to all parts of the building. The edifice is built of Kentish rag and Bath stone. It is designed in the decorated style of Gothic architecture. The lighting of the building is by Gothic latticed and stained windows, and by numerous chandeliers suspended from the ceiling. The pews and wood-work are carved. The architects are Messrs. Lander and Bedells, of London. The building operations have been carried out by Messrs. McLennan and Bird, of London, under the superintendence of Mr. Neeton, clerk of works.

Hastings and St. Leonard's.—The foundation-stone of a new church, or chapel-of-ease, in the parish of St. Mary Magdalen, has just been laid. The site of the new edifice is in the London-road, and is the gift of Lady St. John, to whom the parish will be indebted for the erection of this poor man's church. The building is calculated to seat nearly 400 persons, free. The body of the church will be 53 feet 9 inches in length, and 32 feet in breadth (interior dimensions), and in the frontage or eastern part will be attached a chancel, 14 feet 5 inches wide by 7 feet 9 inches deep. On the southern side of the projection forming the chancel is a vestry-room. Four oblong windows, arched at the top, will supply light at each side. The only attempt at decoration is in a bell-turret, surmounted by a carved cross.

Keqworth.—The works in progress at the church here are progressing from designs and under the superintendence of Mr. Mitchell, of Sheffield, architect. Mr. Garland, of Nottingham, mentioned in our last, being the builder.

Durham.—The first report of the committee for the rebuilding of St. Nicholas' church has just been issued to the subscribers. The original scheme of repairing the old church at an estimated cost of £8,000, having been abandoned, an entirely new edifice has been erected; in addition to which two school-rooms have been built adjoining the church, upon the site of an old house which was purchased for that purpose. These enlargements upon the original plan have been accomplished at a cost of £5,530l. 3s. 11d.

Gateshead.—The new Roman Catholic Church of St. Joseph, Gateshead, has been opened for worship. The building has been erected from the designs of Mr. A. M. Dunn; Mr. Hogg was the contractor. The church is designed in the Early Decorated style. The masonry of the walls is of "block in course," with chiselled dressings round the doors and windows. The principal part of the building, extending from the main entrance at the west end to the chancel at the east, presents the common arrangement of a nave and two side aisles separated internally by two ranges of stone pillars running from end to end. The nave measures 81 feet long by 24 broad, and the north and south aisles each 81 feet by 14½ feet. At right angles to this portion of the structure, and at its eastern extremity, is placed what may be termed the transept. This is occupied by a chancel 28 feet by 18 feet; and the chapels of the Virgin and St. Joseph, which open into the aisles and chancel by moulded arches, to be filled up with carved screen work. The tower will not be completed at present. The total cost of the building, exclusive of the site, will be upwards of £8,000.

Newcastle-upon-Tyne.—The churchwardens of the parish of St. Nicholas, says the local *Courant*, have resolved (in conjunction with the Ions Memorial Committee) to put new stone-work into the large east window of the church, with a view of having it filled with stained glass as a memorial to the late Dr. Ions. The present window, which is much dilapidated, is one of the largest parish church-windows in the north, is itself a memorial window, and was erected by Roger Thornton early in the fifteenth century, about the same time as the spire. In order to insert the new window, it is found necessary to take down the whole of the end between the buttresses as low as the window sill, which will be restored with the window and the gable finished with a carved cross. Mr. Dunn is the architect entrusted with the restoration and design of the new window, which will be considerably higher than the present one, and will be filled with tracery, retaining the features peculiar to windows of the Perpendicular period, during which the existing window and that portion of the church were erected. The height from the sill is 33 feet, and the breadth 18 feet, the whole of which space will be filled with stained glass from the studio of Mr. Wailes.

Lumley (Durham).—The contracts for the new church at Lumley, says the *Gateshead Observer*, have been let, and the work is proceeding vigorously. By permission of the Earl of Scarborough a concert in aid of the building fund is to be held in Lumley Castle, and the foundation stone is to be laid by Viscount Lumley. The design for the new church is Gothic, and is by Mr. Matthew Thompson, architect, under whose superintendence the works will be carried out.

Coupar-Angus.—The foundation-stone of a new parish church has just been laid at Coupar-Angus. The old structure (to which an older still gave place in 1780) was condemned some time ago as dangerous. The new church has been commenced, the walls in some places being a good way up. The architect is Mr. Carver, Kinloch. The church is to be seated for about 1,200.

Coleshill (Warwick).—The restoration of Coleshill Church is now so far completed that the edifice has been formally opened. The entire expense—amounting to nearly 10,000*l.*—has been borne by the vicar, and by his brother, G. W. Digby, Esq. of Sherborne Castle. The restoration has been carried out, from the designs of Mr. Slater, of London, under the superintendence of Mr. William Thompson. Internally, the tower arch has been thrown open, the galleries removed, the floors in nave and aisles lowered seven inches, the walls of the south aisle rebuilt, and those of the north partially so, and both aisles lengthened at the west end about thirty-five feet. The roofs are entirely new. The seats, which are open, are oak. The chancel arch has been rebuilt. The roof has been restored as nearly as possible to its original style in the reign of Henry VI. The chancel contains several monuments of the Digby family. The stalls and pulpit are of richly-carved oak, executed by Mr. Forsyth. The reredos of alabaster, inlaid with marbles, by Mr. Poole. The decorations to the roofs, by Mr. Lea, of Lutterworth. The floor is paved with tiles, and the spaces between these and the stalls (which have carved ends and finials) are filled in with Digby marble. The east window is of stained glass, the subject being the Crucifixion. One window on the north side contains a number of the prophets, and one on the south John the Baptist and several of the disciples. The artists were Messrs. Clayton and Bell, of London. The whole of the stained glass and chromatic illustrations are not yet completed. Externally the stone-work is almost entirely new. The walls of the tower (which was in a state of dilapidation) are being replaced stone by stone, and the masonry of the spire has been repointed. The whole of the carving, both in wood and stone (with the exception of the gargoyles), has been executed by Mr. Forsyth, of London. The inhabitants have contributed 500*l.* for an organ (which will be placed at the east end of the south aisle) and fittings of upholstery. The approaches to the church have been improved. The builder for the body of the church and chancel, was Mr. Robinson, of Coventry; for the tower and spire, Mr. Norris, of London.

Hawarden.—The re-opening of Hawarden church, Flintshire, on the completion of its restoration after the fire, which, in October, 1857, almost entirely destroyed the structure, has just taken place. The restoration details have been executed in accordance with the style of the latter end of thirteenth century, the only additions to the former structure being a spire on the tower, 35 feet in height, with four spirelets. In the interior the galleries have been

removed, and at the north-west corner of the chancel an organ-chamber has been built. The interior of the church contains nave, with north and south aisles, the roof resting on three lateral arches supported by octagonal columns of Runcorn stone, which are new; but the arches have not been restored. In the aisles are the memorial tablets as before; and by the absence of the galleries additional light is obtained through new plain glass windows, in keeping with the type of an old window recently discovered in the south aisle. The floors of the nave and aisles are laid with black and red tiles, the pavement of the chancel being enriched with encaustic tiles. The roofs are of polished Dantzic oak, covered with lead, except the roof over the sanctuary, which is an arched and panelled ceiling of oak, enriched by tracery, and covered with green Welsh slate. The stained glass windows which had been put in not long previous to the fire have been renovated; and in the Whitley chancel a new stained glass memorial window has been erected by the widow of Capt. C. J. Deans Dundas, late of the Coldstream Guards, for some time M.P. for Flint. It is a three-light pointed window, having for its subject Ary Scheffer's "Christus Consolator," and executed by Mr. Wailes, of Newcastle-upon-Tyne. The sittings are open seats running along the nave and aisles, with carved bench ends bearing sunk quatrefoils filled in with carved natural foliage. Accommodation is provided for about 650 hearers, which is an increase of nearly 60 sittings on the former building, notwithstanding the removal of the galleries. The timber used in the structure (English and Dantzic oak) was supplied by Messrs. Dixon and Myers, of Chester, and the metal work has been executed by Mr. Leaver, of Maidenhead, Berks. The tower has been underpinned and strengthened, a new floor of oak put in, and the peal of six bells re-hung by Mr. Mears, of London.

THE SERPENTINE.

THE article in *The Builder* (p. 455) is well worthy the consideration of those in authority. I agree with the writer of it, it cannot be necessary to concrete the bottom. If the mud were cast up in ridges and lined, it would be invaluable to spread over the land, in both the Park and Kensington-gardens: the bottom could then be filled up to the requisite depth with rubbish, which is always easily obtainable at a very small cost, and then covered with a good bed of gravel, which can be obtained in the Park and Gardens without any injury to the trees. The gravel should be run into the bed by a tram-way, and the mud, when dried, be removed by the same means, as much as is required for manuring the ground, and the remainder to fill up the excavations for the gravel, and at the same time the surface of the ground would be improved by a little undulation. Some alterations have been made of late to the sewers in the Baywater-road, and, I believe, the sewer that used to overflow into the Serpentine at times is now connected with the main sewer that runs down across the Park from about Albion-street, so that no overflow of sewage need be feared in future.

The proposed artesian well should be high up in Kensington-gardens, so as first to supply the Round-pond, and then, by cascades or fountains, the head of the Serpentine. The expense of draining the bed of the lake, filling to a regulated depth, and gravelling the bottom, instead of concreting it, would very much reduce the expense.

The suggestion of a ferry to the receiving-house is a very good one, which I hope to see carried out. There was a ferry there some years since, but I know not if it has been continued.

OCTAVIUS.

FLY-WHEELS TO SMOKE-BLOWERS.

WE have received some letters from a working man, pointing out what he considers errors in the application of heavy fly-wheels to hand-blowing machines:—

"Almost every smith says that these machines are of no use unless they are worked by steam-power. I say they are, if the driving-wheel is as light as possible for that purpose.

A boy six years of age can work one that I have arranged; but it takes a strong man to work the heavy one to produce the same effect. I have tried them both, and I know this to be a fact. Just fancy a man having to pull 3 cwt. of wheels round, and another man only having 28 lbs. of wheels to pull round. It puts me in mind of two equal men having to row a match, one man's boat to be 3 cwt. and the other man's boat to be 28 lbs.

A BIT OF CIRCUMLOCUTION.

THE COMMITTEE OF COUNCIL OF EDUCATION.

SIR,—Your correspondent, "Sigma," is just in his denunciations of the above council, in your last impression, and if he is proceeding with his schools, I can tell him further, that the circumlocution will progress with him. He will send in his drawings for approval by and by, and as he will indicate some red brick bands, or dressings, or scolloped slating, or angle brick course, under his gutters, the P. C. will indignantly return the drawings to the "Correspondent" of the schools, saying that they are of too expensive a character. He will then be requested to prepare another set, and if wise, he will call about two o'clock (he seldom turns up earlier), on the architect of the department, and ask him what he recommends him to do. The architect will receive him most courteously, and eventually recommend him, with a tinge of satire as to the noble president, to "leave out his scollops." "Sigma" will return to his office, and have the same design prepared by his Quaker clerk, no scollops to the slates, no angle brick cornice, no red bands; altogether a most quakerish set of drawings. In they go to Downing-street, upstairs to be opened, down stairs to have "approved" inscribed by the architect, and then away one hundred miles into the country, to the "Correspondent," instead of over the road, or to the Adelphi, where the designer's office is, for him to prepare the working drawings (and lucky will he be if they don't get lost on the road, and another set have to be made and sealed before he can begin). Let me also warn "Sigma" touching that same "memorandum," because the P. C. do not abide by it. They therein allow 22 inches to big boys, and 18 inches to little boys; but in calculating the area by which their grant is made, they will not allow the larger dimension to be accounted for at all. They only give grants to little boys, and he will be told to reduce the dimensions of his school-room, as it is too large for the number of boys, "Sigma," in his innocence, having reckoned half for large boys, 22 inches, and half for small, 18 inches.

DIGAMMA.

SIR,—I regret to say that your correspondent "Sigma," is not the only one who has to complain of the unnecessary and vexatious treatment that parties receive from some of the subordinates in making application for grants, particulars, &c., at the office of the Council of Education; a system of annoyance perfectly unknown to the Lord President or the secretary, whose time is too much occupied to redress all the evils so much complained of, and which add so materially to his present onerous and over-powring duties; and many questions, instead of being left in the power of their architect, are left in the hands of those who know as little about architecture as they do of how to pronounce the word properly.

A SUBSCRIBER.

. We have received five other letters to the same effect. The mode of managing matters in the office has evidently produced a very unpleasant feeling, and we recommend those who are concerned in it to attempt some improvement forthwith.

AMERICAN BUILDING PATENTS.*

PILE-DRIVER.—*Waldo P. Craig*, Newport, Kentucky.—Claim—1st. The application and arrangement of the guides attached to their upper ends by universal joints to the frame, and at their lower ends, sliding in apertures in a collar adapted to fit over the end of a pile, and follow the same in its descent. 2nd. In combination with the above, the turn-table, constructed as set forth.

CASTING AND ANNEALING ARTICLES MADE OF SCORIA.—*Wm. H. Smith*, Philadelphia, Pennsylvania.—Claim—1st. The construction and use of the horizontally revolving casting wheel, for facilitating the casting of slag and similar mineral products. 2nd. The construction of an annealing chamber having various modes of retaining and regulating the heat therein, viz. by a series of dampers, by the construction of grooves and troughs in the walls, in connection with the flanges and dippers of the bed, with or without the use of sand, by the devices at the ends of wagons, and by the use of the ante-chambers. 3rd. The use and combination of a series of rollers with a traversing bed, for imprinting an entire pattern of different-coloured figures. 4th. The construction and employment of segmental sliding moulds, as shown, or of similar character, and the mode of arranging and working the same, as described.

MANUFACTURE OF STEEL.—*E. L. Lohage*, Unna, Prussia, assignor to *E. L. Benson*, Boston, Massachusetts.—Claim—The art of manufacturing steel of any desired temper, or hardened according to the various purposes or uses for which the steel

may be required, by arresting the decarbonization of the mass of metal in the furnaces at certain points or stages thereof, ascertained and recognized by means of certain phenomena, or external indications manifested by the material, substantially as described.

MAKING BOLTS AND RIVETS.—*J. R. Bassett*, assignor to self and *A. E. Bateman*, Cincinnati, Ohio.—Claim—The die, substantially as described. CAST IRON POST FENCE.—*P. Stewart*, assignor to *Aschambaugh, Brothers*, New Lebanon, New York.—Claim—A cast iron fence post, constructed with flanges to protect the ends of the fence rails against being split as well as against moisture, in the manner described.

EXPANDING AUGER.—*Charles Meyer*, Fond du Lac, Wisconsin.—Claim—An expanding auger, constructed and operated substantially as described.

ROOFING CEMENT.—*Oscar S. Oaks*, South Rutland, New York.—Claim—The employment, in combination with the other substances specified, of the alkaline solution of shellac and the sulphate of baryta, the whole being compounded substantially as and in about the proportions set forth.

CEMENTING ROOFS.—*J. L. G. Ward*, Adrian, Michigan.—Claim—The covering of roofs of buildings by laying bricks, or tiles, or slabs of other material, in a bed of cement consisting of an alkaline silicate, and subsequently treating the surface of said cement with an acid which combines with the alkali thereof, and leaves a surface of pure silica.

APPARATUS FOR HEATING BUILDINGS.—*Lewis W. Leeds*, City of New York.—Claim—Combining the uses of steam and water for heating buildings, by means of one or more water vessels combined with a separate steam-boiler, and applied in such manner that the steam from the said boiler is employed only to heat the water in the said water vessel or vessels, and that the said water vessel or vessels constitute the heater or heaters of the air, as described.

METHOD OF OPENING AND CLOSING GATES BY WEIGHT OF VEHICLE.—*Frederick B. Betts*, Brownhelm, Ohio.—Claim—The combination of the roller and its appurtenances with the levers and connecting-rods, and with the gate, for the purpose specified.

METHOD OF OPERATING FARM-GATES BY APPROACHING VEHICLES.—*A. J. Hamilton*, Kewanee, Illinois.—Claim—1. In combination with the two road-levers, the rigid actuating-rods, crank-levers, latch-rod, swivel-bar, and latches. 2. In combination with the road-levers, the elevations or hedges, as described.

Correspondence.

THE PROPOSED HORTICULTURAL GARDEN, SOUTH KENSINGTON.

SIR,—As a matter of justice, I ask your insertion of the following:—

A plan for a new garden, in the grounds reserved by the Commissioners, was foreshadowed and sketched in the *Builder* of the 19th inst. This is truly a grand opportunity for the attainment of some public exhibition worthy of the day, of the projectors, and of the country.

The site given is a parallelogram, of about 750 yards long by 400 yards wide, extending, in length, from the Kensington Gore-road, north, to the Cromwell-road, south; and in width from the Exhibition-road, east, to the Prince's-road, west.

This plot slopes from an elevation of 64 feet at Hyde-park, to 30 feet at the Cromwell-road, and is surrounded by broad causeways, which rise 6 feet above its level on the east, west, and south, but level with the Gore-road on the north; on this latter side there are still several houses standing—two terraces, three or four small old tenements and gardens; and at the north-east angle, Eden House and grounds, which occupy about eight acres, and may be termed the Garden of Eden. The only portion of the north frontage now in possession of the Commissioners is that which formerly belonged to the Countess of Blessington, an abode known for the extraordinary luxuriance of its shrubberies, and for scenic and floral beauties, which savoured more of Hants or Devon than of the suburban metropolis. The whole extent of this once lovely seat is now covered over, and filled in to a level with Kensington-Gore-road, and presents the aspect of a terrace of London rubbish, about 300 feet wide by as many in depth. Two or three feet are cut away from the border next the road, to form a dead level: the shrubs are wholly buried, and the fruit-trees are collared round, and heaped about to the height of 20 feet, at about the springing of the topmost branches.

It is intended, doubtless, to treat the other lovely bosquets on the north end, as soon as they fall into possession, just in the same manner.

Well, now we are to have *flowering gardens*, terraces, fountains,—mayhap something more; yes, we are to have an arcade, as you say, Mr. Editor, "4,000 feet long, of various design."

Good!—the garden is to be twenty acres out of one hundred; twenty acres more are to be reserved on Cromwell-road for an exhibition of 1861: a margin of about twenty acres is to be also reserved, of 150 feet in depth, along each of the parallel roads; and lastly, about forty acres (as before described) on the north end next the Gore.

This reservation of 150 feet in depth, running to a length exceeding 2,000 feet along the Prince's and Exhibition roads, looks suspicious; for, as you say, "The Commissioners may hereafter determine to erect buildings, public or private."

Is the Commission a scheme for plotting out land in order to obtain the largest annual rental? Is it really to obtain by public grants land for public uses? Or is it a coup d'état to enrich the Exchequer under the semblance of consulting the public health, benefit, and recreation?

I say, sir, that the intrusion of a single private structure upon the area purchased for the public uses would be a breach of faith, a breach of principle, and a breach of contract. I might say more, but respect for possible good intentions of the principal actors restrains me. The temptation to let off 2,000 feet frontage at three guineas, or, even four guineas a foot (for much would actually bring four guineas), is too great for mortal commissioners to resist; and seeing that they have let already much at three guineas, and that the speculation has turned out a most prosperous one, the commissioners might be induced to forget that they were appointed to be only caterers for the common weal, and not Chancellors of the Exchequer.

There is throughout Europe a taste growing in favour of that style of landscape plantation which we call the English garden: in America, they affect it; in Australia, by a slight metamorphosis of the rude woodland, they realize it: every country gentleman exhibits with pride his garden, his shrubbery, his bosquet, his wilderness; all adjacent, or vicinal, or commingled: the products of the forest, the riches of the nursery, and the luxuries of Flora, are all blended; and thus those treasures which nature profusely offers to the senses are judiciously combined to afford delight in sequestration; but now we are to forego all this, we are to revert to the terraces, the steps, the balustrades, the fountains, mayhap of a Dutch, or a French, or of a German garden. Well, for a level, where his garden, his shrubbery, his bosquet, his wilderness, all adjacent, or vicinal, or commingled: the products of the forest, the riches of the nursery, and the luxuries of Flora, are all blended; and thus those treasures which nature profusely offers to the senses are judiciously combined to afford delight in sequestration; but now we are to forego all this, we are to revert to the terraces, the steps, the balustrades, the fountains, mayhap of a Dutch, or a French, or of a German garden. 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appear to me that the classic Pagan tastes ought to find a less prominent place in education, and that we ought to cultivate that taste which is the genuine outpouring of a Christian heart. Happy the time when England was not ashamed of being and of seeming Christian, when her flowers, the Star of Bethlehem, the Passion Flower, Solomon's Seal, the Speedwell or the Traveller's Joy, marked the habit of giving to all, even to that which is evanescent, pleasant and sweet names, showing that the spontaneous utterance of the heart was love to God and love to man."

In what is said of deformities, as regards architecture, we may quote the remarks of Mrs. Schimelpenninck, as an example of the mode in which she deals with her subject, and of the general style of her book:—

"Deformities may be divided into two grand classes, corresponding to those of direct and indirect beauty."

In the first class various parts of the same object are made to exhibit contradictory expressions mutually destructive of each other, as though the object or work of art had been constructed to no determinate end; and as a house divided against itself obviously cannot stand, little more need here be said of this class of deformity than that it is a solecism, the representations of which can never enter into any legitimate object of artistic representation.

As examples of this violent self-destructive discord, may be adduced *spiral columns*; the waving line of compliance being substituted for the right-lined perpendicular form of strength, in that part of a structure the very object of which is to give firm support.

Again, in architecture, Houses, like many in Rotterdam and Amsterdam, with the upper storeys overhanging the lower, are essentially on a false principle. For a house being stationary, the base ought to occupy a wider space than the superstructure. The latter should, in truth, almost imperceptibly converge as it ascends, on the principle of a Gothic tower, thus giving the effect of being firmly rooted and grounded.

The foregoing examples will sufficiently illustrate the self-destructive principle. This class of deformity corresponds by inversion to the indirect class of beauty.

I believe that in Raffaele's cartoon of "The Beautiful Gate of the Temple," the false line, the spiral column (in contradiction to all sound intellectual taste) is introduced with consummate skill to impart redoubled force to the rectilinear form of the apostle; thus weakening the strength of the massive fabric of stone, to infuse a preternatural force into the divinely-inspired soul beaming through the temporary tenement of flesh and blood."

To all who love the ideal and the mystical combined in art-subjects, this work will doubtless prove a treat, whether the readers agree or differ with the authoress. There is not much of definite and tangible teaching or fruitifying principle to be found in it, but there is a good deal of lofty thinking, and religious idealism.

GUIDE BOOKS.

New editions of three of Messrs. Longman's cheap practical guides, by "An Englishman Abroad," have been issued, namely, the "Practical Rhine Guide," the "Practical Swiss Guide," and the "Practical Paris Guide." These all appear equally good as those already noticed, and although not intended to rival Murray's more elaborate and dearer guides, they seem to be excellently well adapted for a rapid run over the ground, noting only just the most notable points as they everywhere turn up and disappear again in the distance. Their purpose, in fact, is to aid those who only desire "to see all that ought to be seen in the shortest period, and at the least expense," without much loss of time in close or leisurely inspection.

VARIORUM.

THE present number of the *Edinburgh* contains an article on Athens and Athenian art, founded on a review of M. Beulé's book, "L'Acropole d'Athènes," wherein, giving M. Beulé credit for "patient and minute research, which is the first quality of the archaeologist," objection is taken to most of his conclusions. We give the reviewer's concluding paragraph:—

"We linger round the glorious works of the Athenian Acropolis, and the illustrious names which are associated with them. Of most of them our knowledge is scanty indeed. Mnesicles, Ictinus, Callicrates, and Alcámenes are but a few with whom time has dealt more gently than with others once not less illustrious; yet even these are to us but little more than a name. Philas alone stands forth, solitary alike in his greatness and his misfortunes; and in his history, so glorious in his course, so disastrous in its close, we see the full working of that mysterious spell which lured the countrymen of Pericles to reject and dishonour the most eminent of their race in philosophy and art as in civil government. The workman was great, but his work remained to win for Athens an undisputed supremacy. The choice of the Sage Goddess was fully justified: the statesman and the sculptor had both made her city a prize for all ages. They left to their children a glorious heritage; but a scanty surface on a craggy rock, scarcely more than 900 feet in length or 400 in breadth, sufficed to contain it. On what other spot of equal size has so much of faultless beauty and grace and majesty been ever brought together."

—The *Quarterly* contains a long paper on Berkshire, following out course of topography commenced in previous numbers. There is a paper on Life Assurance Societies, which would interest most of our readers. Speaking of William of Wykeham and Windsor, the writer of the first-named article says:—

"It must be confessed that the great William had but

a poor time of it, from 1357, when he was appointed, down to 1373, when his work was finished, what with the plague coming to Windsor, his men running away, the sheriff getting negligent, and the king in hot haste to get the job done. And we find him altogether justified in placing the three words 'This made Wykeham' on a stone in the Winchester Tower. A synchroal courtier, however, reported to the old king that William had inscribed 'Wykeham made this' on the royal castle; whereat the kingly wrath had like to have blazed out against the architect, but was appeased by the explanation, that the fame of building the castle had been the making of him the aforesaid William, and that nothing more was meant."

—*Titan* of this month contains a graphic sketch of the potteries and pot-making, under the title of "The Land of Pots."—The *Universal Review* has some well-written articles.—*Once a Week*, the new periodical started by Messrs. Bradbury and Evans, boasts such a staff of both authors and artists as should ensure for it an enormous circulation. Some of them have not yet done their best in it, but each number has been a remarkable three-pennyworth notwithstanding.

Miscellaneous.

TELEGRAPHIC.—Mr. John Macintosh, of North Bank, Regent's-park, is said to have invented a new submarine telegraph. India-rubber is used as the insulating agent, and permeability to water is said to be prevented by immersing the coated wire in bisulphuret of carbon and chloride of sulphur.

NEW SCHOOL-ROOMS FOR BRENTFORD AND HOUNSLOW.—The foundation-stone of New British School-rooms for Brentford and Hounslow has just been laid. The new building is about the centre of the town, and will be a red brick and stone edifice, from a design by Mr. Figg, of Brentford, surveyor. Messrs. Adamson and Sons, of Turnham-green, are the builders.

NOISOME RIVERS.—London is not the only town suffering from a stinking river. The inhabitants of Hadow are complaining loudly of the state of the Bourne, which "poisons the atmosphere for at least a quarter of a mile on each side of the stream; and Hadow has within the last few years suffered severely from epidemic diseases." At Liverpool St. George's Basin has been "presented" by the grand jury. "The pestilential state of the basin," says a local paper, is incomparably worse than anything of the kind ever complained of, or at least ever endured, from either the Thames or the Clyde. The *Times* correspondent says that Marseilles is still worse.

DANGEROUS CONDITION OF SAINT GEORGE'S CHURCH, LIVERPOOL.—The church of St. George in the Crescent, at the top of Lord-street, has been discovered to be in a critical condition. Evidences have shown themselves in the vestry, at the south-west corner, says the local *Courier*, that some portion of the foundation has given way, and it is feared that the spire, one of the loftiest in Liverpool, is not as safe as it might be. The church belongs to the corporation, and is the one which the mayor and corporate officials usually attend every Sunday. Measures have been taken to prevent any accident. Spaces round the north and south-west ends have been boarded in, and a massive scaffolding is in course of erection on the south side, where the danger is most apparent. Some years ago, the spire, which was originally surmounted by a ball, was considerably shortened, as it frequently swayed to and fro in high winds, to the great alarm of the neighbourhood.

SWINDON.—Sir: You have often before referred to sanitary affairs at Swindon, where Mr. C. A. Wheeler has for more than ten years agitated for official remedial measures. Nearly all his staunchest opponents, including the Lord of the Manor, have come round, and advocate adoption of the Local Government Act; but many of the former friends of the Public Health Act have turned round against doing anything more than the imperfect Nuisances Removal Act empowers. They are aware that most wretched schemes have been adopted in direct opposition to an engineer's plans (for which the parish had paid), but having paid dearly for stupidity, it is argued that, as the carrying out perfect plans would probably involve the undoing of much work recently done, the enormities must remain, and thus, without power to compel a single houseowner to use the costly sewers already executed, the evils for which the public money has been wasted in futile attempts to remedy must be submitted to. I have been opposed to giving power into the hands of a Central Board, but begin to doubt whether in rural districts, with petty conflicting interests, any great good can come until sanitary regulations become compulsory and universal.—A LOOKER-ON.

MOULDED BRICKS.—We are requested to state that, as well for the purposes of exhibition in the construction division of the South Kensington Museum as to show what can be done in moulded brickwork for the proposed arcades of the Horticultural Society, manufacturers are requested to send specimens and their prices to the secretary of the science and art department at Brompton.

MATERIAL FOR INTERNAL DECORATION.—The agates and other similar stones, found upon the sea-beach and in gravel, might, by the aid of steam, be cut and polished at an expense small enough to admit of their being used, set in cements after the manner of mosaic, as an internal facing for walls. W. SCARGILL.

SCARCITY OF WATER IN DUBLIN.—An advertisement from the corporation says:—"The supply of water to the sources from which the city is supplied has become deficient, and in consequence they have to press on the citizens the urgent necessity of economizing the use of water in every way possible, and to prevent all waste, as there are reasons for apprehending that a continuance of the present dry weather may be attended with serious consequences to the manufacturers and citizens generally, if such precautions are not taken," &c. &c. The questions at once suggest themselves, why should this be?—to whom is the blame attributable?—what about the improved waterworks, so long talked of?

THE SURREY THEATRE.—Sir.—The admirable criticisms that occasionally appear in your valuable paper, on the construction and arrangements of our theatres, induce me respectfully to solicit your attention to the enormous space occupied by the box-lobby at the Royal Surrey Theatre. I venture to say that if proper advantage was taken of the room there thrown away, by a skilful architect, from three to four hundred persons might be comfortably seated, instead, as is now the case, of having to stand leaning over the high inclosure which separates the boxes, during the whole performance, grumbling, as John Bull invariably does, at their uncomfortable position. From the character of the performances at this theatre, the lobby is often crowded; and should you do me the favour of giving publicity to this brief notice, and it chance to meet the eye of the lessees, they may probably think it worth their while to consider whether something cannot be done to remedy the evil I have pointed out.—PHILIP MILDMAY.

WINDSOR CASTLE.—Considerable improvements are contemplated on the north side of St. George's Chapel and the Cloisters. A house has been pulled down and another will also be speedily demolished, and other alterations effected. The plaster has been knocked off the walls of the Dean's Cloisters, with the intention of showing the ancient stone and chalk with which they are built, but, with the exception of two sides which are in tolerable condition (the south and east), the remainder, according to the *Windsor Express*, is so intermixed with bricks and other unsightly material that it is probable a coating of plaster must be again the remedy. Workmen are engaged in making good the stone-work of the two sides alluded to. The monuments will be removed to another part of the Cloisters, and the ceiling raised on the side next to the Tomb-house, so as to show the apex of the arches hitherto hidden. The pillars from which these arches spring are of fire-stone and Purbeck marble. A Gothic window and door-way, which had been blocked up for centuries, were found on either side of the entrance to the deanery.

"STEAM SUPERSEDED."—Dr. A. H. Ensmann, of Stettin, proposes, as a substitute for steam, carbonic acid in the solid form, and anticipates that his discovery (?) will lead to the navigation of the atmosphere with balloons. It is nearly a quarter of a century since Thilorier succeeded in producing solid carbonic acid, and the process of making it has since been much simplified by Faraday and Natterer. Faraday has stated that carbonic acid is a singular substance, on account of the high pressure which emanates from it in passing from the solid state: there is nothing equal to it in this respect. Its vapour is said to have an enormous pressure which increases with its temperature. At zero, it is equal to 23 atmospheres; at 16 degrees, to 29 atmospheres; and at 32 degrees, to 38 atmospheres. The only difficulty was the production of the solid acid in sufficient quantities; but Natterer has succeeded in obtaining several pounds at once, and his apparatus, which will stand a pressure of 2,000 atmospheres, is now sold in Vienna for 10*l*. We are not told the cost per pound of the acid, nor its economy as compared with steam.

BRICKS FROM DRY CLAY.—At the Warwick meeting of the Royal Agricultural Society lately, a machine, invented by Messrs. Madeley and Craven, of Wakefield, was exhibited by Messrs. Humphrey and Chamberlain, of Worcester. By this machine bricks are said to be made from perfectly dry clay, so that when moulded they can be taken direct to the burning kiln. It is said to be capable of making 15,000 to 25,000 bricks per day.

GIGANTIC STEAM HAMMER.—The Mersey Steel and Iron Works Company, according to the *Liverpool Journal*, have had an immense steam hammer fitted up for carrying on the Clay steel-making invention. The size of this implement is so great, says the *Journal*, as almost to arouse the conjecture that a statement of its dimensions must in some measure prove an invasion of the regions of romance. The width between the upright supports is 14 feet 6 inches: the weight of the piston and hammer is fully eight tons; and this enormous mass, when employed in working, has a fall of 6 feet. The piston and projection-rod, which are in reality one, and of one piece, is 15 inches in diameter, by about 7 feet in length: it is one admirably-forged piece of steel, made by Clay's process, and manufactured at the Mersey Works, under that gentleman's own superintendence. Its weight is seven tons, probably one of the largest masses of steel in existence. The anvil block is a square, measuring 9 feet on each side. From the base it is contracted upwards, in the form of buttresses, till, at the height of 6 feet, it terminates in a kind of truncated pyramid, about 3 feet square on the upper surface. This stupendous mass of cast iron weighs not less than 32 tons 15 cwt. It was successfully run at one casting, by Messrs. Fawcett, Preston, and Co. The total height of the hammer is about 23 feet, and the absolute weight of the metal in the apparatus, including bed-plates, framing, and anvil-block, is fully seventy tons. It is worked by steam, furnished from the general steam supply of the works. In practical operation it was found to work well and smoothly. The whole fabric is firmly fixed in the sandstone rock.

REPORT ON KEW GARDENS.—Sir William Hooker has lately presented to the Chief Commissioner of Her Majesty's Works a Report on the Progress and Condition of the Royal Gardens at Kew, from 1853 to 1859. Sir William, who is the director of this important and extensive national establishment, states that it is only within the last six years that the Royal Gardens can be considered as a complete national establishment. The Botanic Gardens, which, when transferred in 1841 by the royal family to the public, consisted only of eleven acres, now extend to seventy-five acres. This is exclusive of the pleasure-grounds. The visitors in 1841 were 9,174; and in 1858, 405,376, exclusive of those to the herbarium and library. The good behaviour of these, often inconveniently crowding the plant-houses and museums, has been throughout of the most satisfactory nature. The greatest number admitted on any one day to the gardens was 13,761. The months during which the attendance is greatest are June, July, and August; those when the visitors are fewest, November, December, and February. For the further gratification of the public, increased grants have been recently made for the higher keep and ornament of the gardens. More flower borders have been designed, new shrubberies and clumps have been formed, and standard flowering plants and trees have been planted. The director states that all the hot-houses and green-houses are progressing satisfactorily, both in beauty and usefulness. The green-house conifers, and other trees and shrubs of temperate climates, that require protection in winter alone, show symptoms of deterioration, caused, as the director alleges, by want of suitable house accommodation, which he hopes will soon be remedied by the erection of a gigantic glass house for the culture of large conifers. The arboretum, or pleasure-grounds, comprise 250 acres. This area is divided into—1. The arboretum; 2. Nurseries; 3. A large lake in process of formation; and 4. The Queen's garden. There are two nurseries. In 1856, 1,010 trees (chiefly planes and elms) were furnished to plant in the metropolitan parks; in 1857, 13,389; and in 1858, 20,814 to the parks and the new grounds at Kew. The Queen's garden, originally consisting of 12 acres, has recently been enlarged by 14 more acres being taken in. Under the head of museums the director states that the cost incurred in filling the new and large museum has been exceedingly small. The Kew herbarium has, during the past year, received a vast accession by the addition of the enormous collections of plants made in India by order of the Indian Government.

SOUTH KENSINGTON MUSEUM.—During the week ending 16th July, there have been 6,204 visitors. At the Museum of Patents, there have been 1,822.

GAS.—The price of gas at Colchester, which some years since was reduced from 8s. 6d. to 6s. is now to be reduced to 5s.; and, "we believe," says the *Essex Telegraph*, in announcing the reduction, "that the lessees will find that increased consumption follows the lowering of the price, and it is a fact that the gasmakers formerly lost money at 15s. per 1,000 feet in one town, where they are now deriving a good income at 3s. 4d."

—The Boston Gas Company are about to declare a dividend of 8½ per cent. out of receipts amounting to 8,588½, after deduction of 6,652½ for disbursements, leaving a balance of about 1,936½. The company have extensive new works in progress. —The licensed victuallers in Manchester and Salford, dissatisfied, as there is too much reason everywhere to be, with the meter system, have issued a circular, drawing the attention of the gas consuming public to Lord Redesdale's bill in the House of Lords, for the establishment of a fixed legal standard of gas measurement, and urging an expression of public opinion on the subject.

PLUCKING A DAW OF ITS BORROWED FEATHERS. The *Notts Guardian* speaks of "a scene in the meadows" in regard to a block of buildings recently in course of erection there. Rumour has it, says the writer, that, some time ago, a certain gentleman, who is nameless, employed and entered into an agreement with a builder in the town, to construct for him the buildings in question. The agreement made, the builder proceeded until the work was in a condition approaching completion, when an untoward disclosure leaked out. It was said that the enterprising speculator, at whose instance the work was undertaken, had been active in strategy with a view to his own pecuniary advantage; that is to say, that he had mortgaged the property and pocketed the money. Having satisfied himself, rumour continues, that such was the true state of the case, the builder communicated with the plumbers, the slater, and the gentleman who supplied the bricks and chimneys, and they proceeded in a body, with their assistants, to the spot, where they at once began to undo the work which had cost so much time and trouble, that, if possible, they might save the materials. The work of demolition speedily progressed, until the roofs had been cleared, the floors taken up, the spouts taken away, the chimneys brought down, &c.; but, whether the mortgagee or some one else has interfered we know not; in any case they have stopped, and the dismantled walls are still standing, surmounted by the skeleton roof. So much for speculative house-building.

THE DRINKING FOUNTAIN MOVEMENT.—A large meeting of the working men and women of St. Giles's has been held at the Bloomsbury Mission Hall, to adopt measures to secure at their own cost the erection of a free drinking fountain. The site suggested is in the midst of a cluster of gin palaces, in a densely populated neighbourhood. More than half the required sum has been subscribed.—The first drinking fountain yet established in Oxford has been erected in the Free Public Library and Reading Room. It is the gift of Mr. Richard Cox, and has been manufactured by Mr. Clifford, from the design of Mr. Seckham. It is made of a soft stone ornamentally chiselled, while the basin is of marble. The *Herald* thinks, however, that it has perhaps too much the appearance of a fancy wash-hand stand.—The last of the six drinking fountains given by Mr. Livesey to Preston has been erected. There are three fixed in walls: these are of Aberdeen granite. The other three are standards, cast by Mr. Whitehead, and painted green; the inside of the basins white: they have also a font at the bottom to receive the waste water for dogs. All are supplied with galvanised ladles.—An iron standard drinking fountain has been erected in Railway-street, York. In appearance it is not unlike a pillar letter-box, with two ladles. There are also cattle and dog troughs.—Mr. C. Salmon, of West Hartlepool, and the local Temperance Society, have each presented a fountain to that town. It is said to be the intention of the West Hartlepool Harbour and Railway Company to erect three other fountains.—The Dublin Society for Promoting the Social Improvement of the Working Classes waited on the Lord Mayor to consult his lordship relative to the erection of free drinking fountains in this city. His lordship warmly entered into the views of the society, and stated that he intended to erect one at his own expense in Grafton-street.

MR. GEORGE CUBITT'S CHURCH, AT DORRING.—The Church of St. Barnabas, now in course of erection on Rammore Common, at the cost of Mr. George Cubitt, of Denbies, son of the late Mr. Thomas Cubitt, is making rapid progress. The spire will be about 150 feet high. The parsonage house is already finished.

RATING: APPEAL.—The Chartered Gas Company, v. St. Leonard, Shoreditch. The appeal of the company against the recent survey and valuation of the parish, made by Mr. Paine, was formally withdrawn by consent, at the July sessions, the company, through their Solicitors, Messrs. Crowder and Maynard, having undertaken to pay upon the full amount of their rating, viz., 1,500*l.* per annum, for their works, plant, and premises in Worship-street, and also all arrears which have accrued since the survey.

MESSES. OSLER'S SHOW ROOMS, OXFORD-STREET.—The show gallery which has been erected under the direction of Mr. Owen Jones for Messrs. Osler, at 45, Oxford-street, is charmingly elegant and effective. The roof, a trefail, is similar in construction and character to that of the London Crystal Palace, already fully described in our pages, and is fitted with red, yellow, white, and blue glass. At all the intersections of the ribs are arrangements for the display of chandeliers, of which there are a number of brilliant specimens. Looking-glasses on both sides, and a noble one at the end, repeat indefinitely the magnificent display of glass that fills the tables, themselves all mirrors. The ceiling is of white and gold, with very slight colourings of red and blue. The rooms demand a visit.

DRAINAGE IN PARIS.—The termination of the great conductor beneath the pavement of Paris, says an English contemporary, is regarded as a success by the engineers connected with the enterprise. The gigantic drain is destined, it appears, to form the great artery of a system of sewage which has long been in contemplation, both for the salubrity of the city and for economy at the same time. Two of these stupendous drains are to be constructed in a line parallel with the Seine, and to conduct the refuse waters of the city into a vast reservoir, whence they are to be disseminated as liquid manure over the most barren of the plains round Paris. The system adopted is that experimentalized at Berlin with such eminent success that the sandy plains, in the midst of which that city is situated, have been converted, within the space of a few years, into the richest meadow land in the whole of Northern Germany. The prevalence of epidemics and miasma during the autumn months in Paris have always been attributed to the immense mass of stagnant waters left to corrupt beneath the slightly covered drains which run beneath the houses, whence they creep as lazily as they list into the Seine. The new system, which will come into action in October, is considered one of the greatest benefits conferred as yet upon the inhabitants of Paris by its municipality.

THE BURHAM BRICK, POTTERY, AND CEMENT COMPANY, (LIMITED).—This Company is formed for the purchase of the extensive brick and cement works, established by the late Mr. Thomas Cubitt, at Burham, on the river Medway, which he succeeded in making what they are now believed to be—the most extensive and complete of their kind in the kingdom. In the brick department are comprised twenty kilns, capable of burning 2,500,000 at once; seventeen acres of covered back grounds and drying sheds; seventeen Ainslie brick and tile machines, as improved by Cubitt, with all the requisite gearing machinery, small plant, &c., and driven by a pair of condensing steam engines, of 220 horse-power, by Maudslays, Sons, and Field; also large malm backs, wash mills, engines, by Clayton, Shuttleworth, and Co., and a reservoir of three acres extent, filled by the tide for the general supply of the works; three miles of iron railway, intersecting the works, with the requisite turn-tables, weigh-bridges, &c., and running down to the river side, where there is a wharf forming a boundary to the works, with stone fencing-walls, of a sufficient extent to load six barges simultaneously. The cement works comprise four kilns, three drying stoves, nine cooking ovens, wash mills, engines, pumps, pipes, &c., and a separate wharf on the river: there is also on the opposite side a wharf belonging to the sand-pits. Arrangements have been made with the executors of the late proprietor, for the purchase of the whole of the premises, machinery, plant, &c., at a cost of half the original outlay, a large proportion remaining on mortgage, at the usual rate of interest. The directors anticipate a profit estimated at fifteen per cent. on the outlay: their offices are at Gresham House, Old Broad-street.

The Builder.

VOL. XVII.—No. 860.

Notes, Sanitary and Architectural, in Blackpool, Bangor, Llandudno.

HERE are two aspects under which sea-side watering-places should receive attention in these pages,—the conditionsanitary of those places, and the character in regard to architectural. The people of London, just now, who have the opportunity, are glad to escape from the offensiveness and pollution of the atmosphere there; and the ordinary residents of the northern towns have filled to overflowing the resorts of Yorkshire and Lancashire, and of the Welsh coast, which is within easy reach of so much that is grand

and beautiful in nature, or curious in art and archaeology. At another time, we might be disposed to linger on the interest of the Welsh counties. There, the artist finds scenes and prospects innumerable, and each changing to a different picture, every moment of the growing day: the architect may observe this nature's beauty, and feed thereby his power to create the beautiful in his art. The land is strewn with relics of the early British, and later periods; and the castles of the Edwardian time, each differing from the others, are historic and architectural monuments, perhaps not equalled in interest by any structures in our country. To the naturalist, Wales is inexhaustible; and of the interest geologically of Carnarvonshire, it may be sufficient to speak by alluding to the researches of Murchison and Sedgwick, regarding the Silurian and Cambrian systems of rocks, the *strata* lowest of the fossiliferous series, and earliest by countless ages of time, which are cast up in the cloud-capped mountains of this part of the island. The geology, indeed, of the district might detain us for many present reasons.

A second edition of Sir Roderick Murchison's work has appeared recently: the products of the *strata* of North Wales, in one description of building material, are unequalled in value; and we have to return shortly to the subject of the use made of another material from the primary rocks, at Holyhead. Moreover, through observation of the work of nature in the filling up of estuaries, and the recession of the sea, and formation of banks like the Lavan Sands in Beaumaris Bay, light may be thrown into some of the difficult questions of the day, such as the maintenance and the new provision of ports and harbours; and the question, important to London,—to what extent the navigation of a river suffers by embankment, or the reclamation of land in an estuary, as that of the Dee,—a case where, what has been the source of gain to the landowners, it has been often asserted, has been the destruction of the port of Chester. Leaving these points stated merely as indication of what each section of our readers may find to profit from in a district to which our attention has been drawn closely of late,—a district which there

are the greatest facilities for seeing, by the tickets issued by the London and North-Western Company, and we may add the reasonableness of hotel charges,—we revert to the more immediate bearings of these notes.

We say that both in the sanitary aspect, and that of art, we should be called upon to watch the progress of such places as are growing up on our coasts. The progress of many of these on the Lancashire coast, and the coast now skirted by the line of the Chester and Holyhead Railway, has been most remarkable. Fleetwood, Blackpool, Lytham, Southport, and Crosby, Waterloo and Bootle, near Liverpool, on the coast of Lancashire; New Brighton and other places on the Mersey; and Parkgate on the Dee; Rhyl, Abergele, Colwyn, and Llandudno in Flintshire and Denbighshire; and Bangor and Beaumaris, are at this time crowded with visitors in search of health and amusement; and it might be important to consider more minutely than present objects and opportunities allow, whether the benefit derived is what might be expected. We may, however, doubt whether we should feel thoroughly satisfied with the condition of many of these places, in either of the points of view which we have set before ourselves. Looking at the matter sanitarily, there may be no evil felt now that should stop the influx of visitors, but there is every necessity for attention on the part of those who may be the authorities at these places. Take the case of Bangor, situated in a deep gorge, between the hills opening from the Menai Strait. Under the local Board of Health, there is an adequate water-supply; and there is a sewer which itself possibly is properly constructed. Though there may have been some cases of small-pox, there has been, we are assured, little cholera or typhus; but in the narrowness of the principal street, and that which lead out of it, in the fact that noxious trades are carried on in the middle of the town, and in the obvious defects of such localities as Kyffin-square in regard to drainage, there is every reason for improvement. It may seem very curious, and some persons might deem the fact opposed to our reasoning, that in one of the worst huts that could be conceived, in the quarter named, at the bottom of a hill, and a spot to which surface drainage flows, there is a healthy-looking mother of a family who has had nearly twenty children; but then the greater number of these died at various ages. It is not the mere statistics, or the first statement of facts, as to such places, that we must look to; but we must apply the same reasoning as we should apply, unprejudiced, to any investigation of truth. It is confessed, that if there be at any time zymotic disease in the town of Bangor, it is to be found about Kyffin-square. The purity of the external air, and the disease-disseminating influences of the habitations in such localities, are working against each other: fortunately, as regards the majority of the houses, the influences of the former kind largely prevail; but the period will arrive when the balance of force will be more nearly equalized, and the condition may arise which has accrued in many villages ordinarily reputed healthy, and which may be even remarkable for longevity of their inhabitants.

There are two matters which more especially have forced themselves on our attention recently. The one is the universal evil of the unsettled question of outfall for sewerage; the other is the deficiency of water-supply where dependant on neighbouring streams. Every artist knows the village of Beddgelert and the Pass of Aberglaslyn; and how the scenery thereabout is usually enhanced by the water falling in miniature cascades, or rushing through the rock-strewn beds of the streams. One of these streams at Beddgelert, is nearly dry: into it the people of the village cast too much of every description of filth, drawing what water they can scoop up from the same source. At the well known inn, "The Goat," otherwise a most agreeable place of sojourn, there is but one want—that of something like pure water to drink, or for purposes of ablution. Everywhere, except at towns like Bangor, having a supply from a distance, the case is the same;

and the poor feel it acutely. Anglers visiting Wales have to give up the streams in despair, and trout or other fresh-water fish, at most of the inns, are not to be had. Whether the remarkable lowness of streams, of some years past, is referable to temporary deficiency of rainfall, or whether one or both have been influenced by works of land-drainage, are questions to which instant attention ought to be directed. There are sources which would serve for the supply of large towns, in the Welsh lakes,—for example, the Bala lake, and some which are high up in the mountains: one of them is on Snowdon itself.

The sewerage outfall question, however, is less easily to be got rid of. The engineering practice of the day, in this matter, may be said to end with the collection of all sewerage into one channel, which, if a long channel, may be an evil in itself, or otherwise may have the same effect at the point of outfall. In the sea-side towns, the system of sewerage is now in most cases carried to sea, and below low-water mark. We have suggested ere this, that there might be some necessity for inquiring whether such a system would be sufficient, even assuming the easy emission of sewerage from the sewer's mouth. Is not there, however, the tendency in the system at the sea-side, that the sewage will be ponded back, and effluvia made to escape into the town as much as under the existing London system?

At Blackpool, under the local board, the sewage, having been complained of, was lately collected into a channel, and taken to a considerable distance southward, perhaps in the line of an old watercourse; turning at right angles, it has thence to find its way by a "trunk," or wooden constructed and covered channel, to below low-water mark. Many houses, however, have been built lately, opposite to this very point of emission, the locality being, it would seem, rather preferred on account of the distance from the more populous quarter. Any object, therefore, in extra length of sewer, cannot be said to have been answered; procured distance to an outfall, in fact, is a mere staving-off of that question which is eventually to be solved by disinfection and utilization, profitably or not. When the tide at Blackpool is out, the nurses with children in their charge, select the sewer, which is conveniently raised above the wet sand, and from which a perceptible odour arises, for their favourite walk.

There is little else that is evident to the senses about the town of Blackpool, to detract from the reputation which it bears with the people of Lancashire. A fine expanse of sea, with distant views of the Great Orme's Head, the Isle of Man, Walney Isle, and the Cumberland Mountains; good sands and bathing; such comfort and economy in lodgings as are hardly known in the south; a sufficiency of libraries and repositories of fancy goods; and crowds of visitors, are the attractions of the spot—which has no beauty of situation beyond what we have mentioned. The place has, however, a character superior to most watering-places in its general architecture. The houses have slight ornament; but the red brick and stone, the latter the Longridge stone, in the prevalent two storied bow-windows and the door cases, are managed with better result in effect than is the cement of the more common character of sea-side architecture. One or two of the houses, which we believe are due to Liverpool architects, have certainly this superiority.

The Liverpool men, we may say, seem to have much of the work in North Wales in their hands, as well as on the Lancashire and Cheshire coasts. The most striking architectural feature of the Menai Strait, after either of the bridges, is the house on the Anglesea side, nearly opposite Bangor, called Rhanva, built for Sir John Hay Williams, Bart. from the design of Mr. Charles Verelst. It has a Gothic character in the details; but is most remarkable for its general outline, and its grouping with the accessories of landscape and outbuildings, in all which particulars it tells with considerable effect, in spite of some of the *mimicry* of character which we considered objectionable in a case recently spoken of at Holy-



head. The angles of the main building have circular turrets with conical cappings, and an external gallery in the recesses of the front, with the eaves of the roof projecting over it, is contrived in the upper story. The grassy slope extending towards the water-side is a feature of great value to the architecture. Glyn-Garth, on the same shore, is also effective in grouping, and in the landscape; but it is not so satisfactory in detail as the reputation of its architect, the late John E. Grogan, of Manchester, would have led us to expect. The rest of the recent architecture of the towns in North Wales is too frequently pretentious, and devoid of study in general forms and details. It essays to be Gothic, and commonly also to be castellated. At Conway every late building, from the sometime railway station, or the two or three houses which there are on an eminence near one of the gates, to the police-station now building, mimics the forms of the Plas Mawr,—a building most interesting as a specimen of domestic architecture, but no excuse for copyism in Wales, or anywhere else. The bank of Messrs. Williams and Co. at Bangor, attributed to Messrs. Hadfield, Weightman, and Goldie, which is in the Elizabethan style, is very superior to other works in the same town. The Angleses marble is an excellent material for effect, and it can be obtained in very long blocks. A piece of ordinary scantling in the curb of a railing measured 10 feet 9 inches in length. There is, however, a case of the greatest importance before us, where the material has been applied in little to too severe tests.

At Llandudno, the reason for the designation beautiful, which is given in advertisements, must be looked for in the scenery, and not in the architecture. The crescent lining the bay, and the building for the baths, built upon the rocks, are not wholly ineffective, from causes which could hardly be missed or counteracted; but the details of the architecture generally, and the cement coatings, are in the worst style of Brighton and other watering places of the south, though in a locality where stone was at hand, and might have been built with in the rough with good result. The baths are the most effective of the buildings; though prospect-towers, which are shown in views of these baths, have yet to be built. Whether the architects, whose names were attached to the general design of the town, which was exhibited in London, are responsible for defects of detail, which are general in the houses and the churches, we should much doubt. Their original design, at least, has been departed from, unless as regards street and building plan; and other architects have been employed; but the defects are such as we are accustomed to in speculative building-work of the south, rather than in much of the modern architecture of the north, in which stone, or brick combined, is made the material for expression.

The town of Llandudno is built on the low land which joins the great Orme's Head to the main land. Thus it is bounded on the south-west by Conway Bay, and on the opposite shore (or we may say north-east of what is, in part, an isthmus) by the fine bay of Llandudno, or Orme's Bay, which sweeps between the Great Orme's Head and the Little Orme's Head. The Great Orme's Head rises to a height of 750 feet above the level of the sea. It has precipitous cliffs, round which there is a narrow walk many feet above the water level, and overhung in some places by the rocks. There are copper mines in the mountain; and there are architectural monuments and antiquarian remains,—the old church of St. Tudno, restored in 1855, under the direction of Mr. Fiddian, of Birmingham, cromlechs, remains of a British fortress, and of Gogarth Abbey; a cavern in which Roman or British articles were found; and another, difficult of access, in which there are what are described as a font and an altar. From the summit, on which is one of the semaphore telegraph stations of the line from Liverpool to Holyhead, is a fine view of Conway and its castle, and Penmaenmawr and other Carnarvonshire mountains, and of other features of the coast, east and west.

A place so favoured by nature and so thronged with visitors should not be wanting in whatever could be supplied by sanitary science, or by art. The site is magnificent: whether looking at the lofty headlands towering above the town, or approaching from the sea, the scene is one of remarkable beauty. The ground, however, on which the town stands, is nearly a dead level; and the drainage outfall question involves here its difficulty. The system which has been adopted from the design of Mr. Macdougall Smith, is described as consisting of a "reservoir main sewer, with collateral drains from the main parade at the Orme's Bay to the Conway Bay, into which they

are discharged at about three-quarters ebb tides, when the sewage becomes diluted with a vast body of water, and passes to such a distance down the tidal current as to be carried away beyond any chance of return with the floods. To effect this, advantage is taken of the rise of tide for the flushing the whole system of drainage between the bays, by means of tanks placed at the extremities throughout the length of the esplanade, and filled by the rising tides, and each tank discharged throughout the sewers, when the penstock is raised at the outfalls of the main sewer, thereby giving a head of water from 12 to 15 feet for flushing at each tide, and thus insuring the cleanliness and healthiness of the town.*

This appears to bear date July, 1858. We are not aware whether the entire system described has been carried out; but evidence from our senses would lead us to infer that the existing system is not sufficient.

Returning to Blackpool, whence we have been drawn in the somewhat discursive progress of these notes, we may mention the recent erection there of Viener's Bazaar, in Talbot-road,—Messrs. Hibbert and Rainford, architects,—from whose design was built the chapel at Preston, of which we lately published a general view, and some of the ornamental details—as those of the capitals. In the bazaar, and a house for the proprietor which adjoins it, the effect chiefly is derived from the novelty and the general management of the details, and like most other new whilst successful architectural compositions, does not admit of description in writing, to do justice. We may say, however, that the bazaar has a low front of red brickwork, enriched with encaustic tiles, and three arches with spirally-cut roll-mouldings, rising from shafts with highly-enriched capitals, and from the impost mouldings to broad piers which there are at the angles. In the side arches, there are on pedestals simple tablets for inscriptions; whilst the centre arch spans a wide opening for the doorway. The house is remarkable for the good effect of the simple panelling in the brickwork of the upper story, the stonework to the strings and sills, and the door case, and the slate and iron-work balcony to the first-floor windows. Pressed bricks are used for the facing. The bazaar, a single room, and the house, cost 2,000*l*. Next this bazaar, a new Catholic church has just been completed, from Mr. E. W. Pugin's designs. It is a large building, "Decorated" in character, with a low western tower and transepts; and derives much of its effect from the warmth of its yellow-coloured stone and the crispness in its roughly-dressed masonry. Time did not suffice for us to go through formalities which were necessary to get a sight of the interior; but it was said to be highly enriched.

The principal portion of the town of Blackpool consists of houses in the esplanade, which will shortly extend some miles in distance, and is in part at a considerable height above the sea. This esplanade is much exposed, and the roofing to the houses, throughout of low pitch, is in most cases secured by pieces of stone-paving, to weight it down.

No less important than the question of reclamation of land and subsidence of the sea, is the subject of sea-defences: it is almost impossible to conceive the force of the sea, towards destruction of almost every description of barrier that has been tried on the Lancashire coast. In a great storm, five or six years ago, every sort of defence that had been placed on the line from Fleetwood to Blackpool, was washed down: crumpled masonry or concreted blocks; double sheeting of timber and poles, with rammed clay and ties of iron, alike came to ruin; and the sea spread for miles over the land, carrying with it masses of stone great distances, and causing the destruction of some houses. It was impossible to survey the scene of wreck, and the waste of labour and ingenuity, without emotion of awe, and the sense of human littleness. At Blackpool, where in most winters the sea sweeps above the usual limit of high-water, drives up the lofty slope, and even enters the houses on the esplanade, a very simple means of defence has been found the best. Posts are driven into the marl, so that only about a foot of the head projects: planks, on edge, are then nailed to the heads of the posts, so as to form the whole surface of the bank into square spaces; and these are then paved with the largest pebbles from the beach. The largest of the stones are placed, on the best foundation that can be obtained, at the foot, which in a few hours may be again covered with sand to a considerable depth. Constant repairs are necessary; but the method

of formation admits of the execution of these with great facility. Upright walls, with whatever iron cramps, are considered to have been proved wholly ineffectual. At the time we have spoken of, when the scene of ruin was so remarkable, northward, the defences at Blackpool had either suffered little, or had been quickly re-instated.

The Blackpool Improvement Act of 1853, which is supplementary to general acts of the country, besides provisions as to ruinous buildings, consumption of smoke from furnace-chimneys, and permissively for the conversion of sewage, prohibits the removal of shingle from within 60 yards of the sea-wall without license, or under any circumstances to the injury of the wall. The Local Board, to whom permission is granted to license removal of shingle, have to render account and pay over one-twentieth of the receipts to the Queen, as Duchess of Lancaster. They may require owners or occupiers of premises fronting the wall at certain distances, to effect the repairs in those cases.

Lytham, which is southward, at the mouth of the Ribbles, has made considerable advances as a place of resort; but we have had no opportunity of judging of it from inspection.

Fleetwood, northward, at the mouth of the Wyre, has not yet made the advances which were expected. There is excellent frontage to the sea; there are good hotels and baths; packets sail thence to Glasgow, Belfast, the Isle of Man, and the opposite coast of Furness, and the place has advantages as a port. A good building-plan, with the streets radiating to centres, and designed with reference to features of architectural effect, was made some years ago for Sir P. Hesketh Fleetwood, Bart., by Mr. Decimus Burton; and for the best ground fronting the sea, belonging to Mr. James Wheeler, there has been some time prepared a plan and design by Mr. Edward Hall, architect. An extraordinary deadness, however, fell on the town at the end of the railway fever, from which it does not seem to have recovered; any advantages which it has, as an agreeable summer residence, are scantily appreciated: travellers pass through it only; or visitors to Blackpool are content to make to it a day's excursion. Decks have been talked about during late years.

There would be some truth in the assertion, that under circumstances of rest for observation alone, art can be thoroughly appreciated; though there is no value in the illustration of such position, adduced by one writer who has gone into divers relations of the subject. This certainly might be expected, that at the places of resort at this season of the year, subsisting by the resources which they can offer, for health, and bodily and mental relaxation, we should find rather the best art in architecture that could be produced, than as we generally find, the worst, or examples merely of pretentious and tasteless building. In the sanitary point of view however mainly, we call for inquiry into the condition of these places,—even though the present appearances seem to be evidence that the sanitary condition is good. But we spoke not long ago of what we apprehended were defects of the position of New Brighton, near the mouth of the Mersey; we thought from statements at that time made to us, that the place might be subject to disadvantage from the sewage of Liverpool, and more recent information confirms us in the view, and as to other such localities, and, we believe, justifies us in any general warning that we may have here conveyed

THE STRIKE.

We hear, with regret that words can be inadequately express, that 400 men have struck at Messrs. Trollope's, for the reduction of the day's labour to nine hours. We printed last week the formal demand, for this alteration, which had been addressed to three or four builders. The reply was in the negative, and the men have struck at one of the firms so interrogated!

The following handbill has been circulated:—
"Nine-Hours Movement.—Important Notice to the Operatives of the Building Trades.—The master builders having refused to concede the nine hours as a day's work, the Conference of the United Building Trades have been directed by the members of the movement to call upon a firm to cease work: having done so, they now appeal to you to aid them in supporting the men now on strike at Messrs. Trollope and Sons. It is earnestly hoped that no workmen will go in to supplant them till they have gained their object.
 "It is expected that every man will do his duty."

By order of the Executive,
 GEO. POTTER, Secretary.
 N.B.—Any firm striking for the above object without the sanction of the Conference will not be supported.
 The committee sits daily, &c.

Considering how short a time has elapsed since

* "The Handbook to Llandudno and its Vicinity," by John Hicklin.

those connected with the movement indignantly denied that a crisis was approaching or that a strike would be made, the act will surely astonish all.

A meeting of master-builders was held on Wednesday last, at the Freemasons' Tavern, Great Queen-street, and was very numerously attended. The resolution which was come to, to close all the establishments on the 6th of August, but meanwhile to appoint a committee to arrange with willing men, will be found in our report of the proceedings.

Most earnestly we pray that the wide-spread ruin in prospect may be averted!

Our opinions on many of the questions under discussion have been often expressed. So long ago as 1848, immediately after the memorable 10th of April, when much excitement prevailed in London, we wrote,—

"We have good reason to believe that we possess the confidence of the thoughtful and intelligent portion of the building operatives, and that they know us to be their earnest friend and warm advocate. They know well that we have ever shown an anxious desire to promote their interests and aid their advancement, and our doings have been but a faint reflex of our feelings. We may risk the loss of this confidence by the assertion which, nevertheless, we are bound to make, that those who prompt them to demand legislative limitation of the hours of labour and the amount of pay; protection against machinery (a long-ago exploded error); and the abolition of the middle-man system, all which we find set forth in reports of various meetings of trades' delegates,—are not the friends of the industrial classes. Those who urge them to do this may honestly believe that they are advising rightly, but if so, they act in ignorance, and most earnestly we caution our readers, that they may not hastily commit themselves to a course which would bring increased distress and more widely-spread destruction."

To prevent a man who is his own master from rising early in the morning or working late in the night, when employment is offered him, is manifestly impossible, and, if it were possible, would be unjust and tyrannous. The competition of workmen amongst themselves will not be restrained by the will of the masters or the dictum of the legislature. Again,—

"The demand for the suppression of middle-men—of masters, in fact,—for, short of this, if the principle be admitted, there is no stopping—equals the last requirement in absurdity. Are intelligence, and skill, and capital—the result of these—to have no reward, and no opportunity of bringing into productive action the labour of less able hands, which, without their intelligence and capital, must remain unproductive? And where are you to stop? If the small master—the sub-contractor—is not to be permitted to come between the workmen and the general contractor, on what ground will the general contractor be permitted to come between the workmen and the employer? As we said before, therefore, the demand is for the abolition of masters altogether. Let this be done, and contemplate with calmness, if you can, the inevitable result. It is by means of accumulated capital that all our advances have been made: without it we should fall into a state little superior to that of barbarous nations."

Charles Knight says truly,—“Whatever tends to make the state of society insecure, tends to prevent the employment of capital. In despotic countries that insecurity is produced by the tyranny of one. In other countries, where the people, having been misgoverned, are badly educated, that insecurity is produced by the tyranny of many. In either case, the bulk of the people themselves are the first to suffer, whether by the outrages of a tyrant, or by their own outrages. They prevent labour, by driving away to other channels the funds which support labour.” All statesmen agree that the labourer has rights over his labour, which no government, and no individual, and no committee should presume to interfere with. “Natural justice demands,” says Lord Brougham, in his “Rights of Industry,” “that no labour shall be forced from the labourer, and no rate of payment for that labour be prescribed by statutes or ordinances; that he shall be free to obtain as high wages as he can possibly get, and turn from one employment to another if he think fit.

What becomes of this “freedom of labour,” if a man may not work more than a certain number of hours, if he be forbidden from working under a foreman unless that foreman be approved of by others, and prevented from taking “piece-work,” by means of which skill and intelligence are enabled to manifest themselves and obtain advantages?

This interference with the freedom of labour (the rights of labour), came in earlier times from the governing powers: men were not allowed to work at trades to which they had not been apprenticed: men were not allowed to take more than a certain number of apprentices—were not allowed at particular periods to work for any but the king. Now, however, the interference is created by the men themselves. To take the words of one of their own class, John Plummer, an operative of Kettering,—“One of the rights (says he) which I claim for myself and my brethren is, the absolute freedom of labour in every shape whatsoever, and I trust I shall be able to prove that no person or persons have the right to take it away from us by any interference on their part.”

An interference with the natural laws of supply and demand never was and scarcely can be productive of advantage. A letter in a recent number of the *Melbourne Argus* illustrates this. The writer says,—

“Where high wages arise from the scarcity of labour and a demand for it beyond the supply, then it is a sound and healthy state, and can afford no just cause of complaint. But clearly this is not the case now; we have nominally wages perhaps three times above those of any other country, and yet vast numbers are unemployed. This applies especially to artisans. In some of the representations lately made to the Government, it was stated that not above one-third of the bricklayers and masons could find employment. Common labourers also find the greatest difficulty in obtaining employment, and the bulk about Melbourne and the suburbs do not obtain work above three days in the week. All this is in the face of a thriving and every way prosperous and improving country, increasing its capital daily year by year. The truth is, that the nominal price of labour is now far above its real value in the market, and this alone prevents the full employment of every mechanic and labourer that we have. Our resources for the employment of labour are almost inexhaustible; but then there is a maximum price beyond which it will not pay to bring these resources into operation; and until labour is brought below this they will remain dormant and unused. The natural tendency of things is to find their level, but to do this they must be left to work by themselves, and not to be forced or thwarted by any artificial means. If supply and demand were left to regulate themselves, the price of labour would find its real value in the market, and all would find employment at that rate. It is evident, therefore, that the combination amongst the mechanics to fix an arbitrary rate of wages, unless regulated by moderation and wisdom, which it is hardly possible to obtain, tends, for a time, to defeat the equitable working of supply and demand. I say for a time, for it cannot long hold out against the natural working of the principle; but in the meantime inconvenience and distress are accumulating, which will at length break up this combination with many aggravating circumstances. I would, therefore, entreat my fellow colonists to be convinced of this truth; and not, by a forced combination, keep the labour market in a false position, but leave each one to act for himself.”

The writer goes on to urge that there is much money to invest, and that buildings are wanted; but that at the present price of labour, kept up by artificial means, an adequate return for capital cannot be obtained,—

“Several instances of the injurious working of the present combinations have come under my own observation. Twice I advertised for a gardener, and each time one or two masons applied for the situation, and stated that they were not quite equal to the colonial work, and that the societies would not allow the masters to employ them at lower wages, and therefore they could not work, and must seek other employment. Surely this is a most arbitrary and unnatural state of things.”

Earnestly we solicit our readers to think over these matters. The present demand that the day's work shall be confined to nine hours (desirable as it unquestionably is to shorten our hours of labour when we are in a position to afford ourselves the indulgence), involves a principle altogether untenable.

The proposition to prevent joiners and bricklayers from working more than nine hours a day, “for the purpose” (as set forth by the committee in our pages) “of giving the thousands who are now hungering in unwilling idleness, an opportunity of feeding themselves and families,” would not be listened to for a moment if it took the shape of forbidding barristers to accept more than, say, three briefs a week, in order that the briefless might have their share; popular physicians to see more than ten patients a day, in order that the rest might go elsewhere; or leading architects from superintending more than three buildings at a time, so that the scores of rising Wrens and Wykehams might get back some part of the cost of their education. It would not be listened to, we assert, for an instant, and, moreover, it would do but harm were such a view countenanced.

FALL OF A CHURCH DOME IN RUSSIA.—The central dome of the church of the Trinity, in the large monastery of Jellovski, at Makarew, in Russia, a short time since suddenly fell in with a tremendous crash. Fortunately, no one was in the building at the time. This building dates from 1055.

METROPOLITAN BOARD OF WORKS.

TENDERS FOR THE SOUTHERN HIGH LEVEL SEWER.

At a meeting of the Board on the 22nd, the following tenders for the Southern High Level Sewer were opened:—George Myers, 242,700*l.*; Wm. Lavers, 229,000*l.*; Wm. Downes, 228,760*l.*; Messrs. Dethick, 223,000*l.*; W.H. Rowe, 218,600*l.*; Wm. Moxon, 217,800*l.*; Thomas Lucas, 217,000*l.*; J.N. Hebling and Co. 217,000*l.*; Wm. Webster, 216,750*l.*

It was announced that the tender of Messrs. J.N. Hebling and Co. was accepted, subject to the usual inquiries.

A report was received from the Works and Improvement Committee, submitting draft bill for the amendment of the Metropolitan Local Management Act.

After some discussion, the further consideration of the matter was adjourned for a fortnight, in order to enable the several parishes and districts to pronounce an opinion upon the subject.

Mr. Bazalgette stated that during the week ending Wednesday, the 20th instant, “706 tons of lime and 58 tons of chloride of lime have been converted into milk of lime, and poured continuously day and night into fifty-three of the main sewer outlets, in varying quantities proportionate to the flow of sewage through them, at a cost of 2,412*l.* Up to the present time, 2,109 tons of chalk lime, and 60½ tons of chloride of lime have this summer been mixed with the Thames waters, at a total cost of about 5,440*l.*”

A report from Mr. Miller, and letters from the surgeons to the Dreadnought hospital ship, and water-guard, stated that “no injury to the public health can be traced to the effluvia of the river.”

MEETING OF MASTER BUILDERS.

In consequence of the strike of Messrs. Trollope's workmen, for the purpose of limiting the day's work to nine hours, and the publication of a manifesto, declaring, in specific terms, that the conference of the nine-hours movement have ordered the strike, and calling on their brother workmen to use their endeavours to prevent Messrs. Trollope obtaining fresh workmen, a meeting of metropolitan builders was held at Freemason's Tavern, on Wednesday, the 27th instant, “to consider and adopt such measures thereon as may seem expedient.” About 500 builders were present.

Mr. Lee was called to the chair, and in taking it, said the meeting was restricted to builders. It was held in consequence of a notice that had been given to four master builders that, unless the hours of labour were reduced to nine per diem, the men would turn out. Those builders had been advised by the trade not to consent, and assured that they would receive the support of the other builders.

Mr. Wales then read a letter signed George Potter, stating the reason why Messrs. Trollope's firm was selected for the first strike, which will be found below.

The Chairman then read the notice which has been circulated by the society, and is printed on another page.

Mr. Piper said it was considered desirable to elicit the opinions of the meeting before any formal resolutions were proposed. There was a peculiarity about the letter read from Mr. Potter, and that was,—the reason given why Trollope's firm was selected first. The word “first” evidently implied that it was intended to strike against other firms. He believed there was a large number of the working men who did not sympathise in this movement. It was the duty of the masters to support those men. Was there any one present prepared to support the nine hours' movement? (No, no.) He felt satisfied that they were united in feeling that the movement should be resisted. There was another peculiarity in the workmen's notice addressed to the four builders. They said, “Nine hours a day will meet our present requirements,” which indicated ulterior reductions of time. The proposed interference was injurious to the men themselves, as well as to the masters, and as such ought to be resisted. He would suggest that a committee be formed and empowered to take such steps as might seem to them advisable.

Mr. Morris thought it would be well to come to some agreement as to what was to be the basis of their deliberations. It appeared to him that they should resort to something like the old “document,” and not employ any man who did not sign a declaration that he did not belong to a society.

Mr. Hunt, an American, said he thought nine hours were quite sufficient for any man to work.

The Chairman inquired if he were an employer of labour in this country.

Mr. Hunt.—No, but I am a builder.

The Chairman.—Whatever you may be pleased to style yourself, if you are not an employer of labour in this country, you have no right to be here.

Mr. Hunt was then forced to leave the room.

Mr. Abbott said it was most desirable, even for the benefit of the men themselves, that they should be released from the trammels imposed on them by the society.

Mr. Lucas called for the immediate closing of every firm until the men gave up their absurd claims and signed the following declaration:—"I do hereby honestly declare that I am neither now, nor will I, during the continuance of my engagement with my present employers, become, a member of or support any society which, directly or indirectly, by its rules, meetings, or funds, professes to control, or interfere with, the arrangements or regulations of this or any other establishment, the hours or terms of labour, the agreements of employers or employed, or the qualifications or period of service. I do also further declare that I will not, while in my present employment, call in question the right of any man to follow any honest calling in which he may desire to engage, or of any employer to make what arrangements, and engage what workmen, he pleases, upon whatever terms they choose mutually to agree." This document had been formerly used under similar circumstances, and should be resorted to again. He did not see why a man should not be employed, whether he belonged to the "union" or not.

Mr. Turner thought the "document" calculated to do mischief. He did not approve, either, of closing the shops without due notice to the men. He did not like to see the men taken on the hip. Most of the best workmen belonged to the union. (No, no.) Well, many of them did; and therefore he would not refuse a man employment because he belonged to a society. He altogether disapproved of the nine hours' movement, as contrary to political economy.

Mr. Myers said it was his anxious desire to be on friendly terms with the men, but great difficulties had arisen owing to the conduct of the men, and those difficulties should be met by firm and decisive measures. He thought the best plan would be to give the men reasonable notice. The master had not free action: he was overpowered by numbers; and unless he submitted to their restrictions, they would not work for him themselves, nor permit others to do so. Such a state of things, for the sake of all parties, should be put an end to as speedily as possible.

After some remarks from Mr. Lucas to the same effect,

Mr. Trollope moved: "That the establishments stop work on the 6th of August, and continue so until the men abandon their unjust claims."

Mr. Robinson seconded the motion.

Mr. Dunnage then moved as an amendment: "That the workmen in the employ of Messrs. Trollope and Sons having struck, for the purpose of obtaining the payment of ten hours for nine hours' work; and, it appearing to the meeting that it is the intention of the conference of building trades to order strikes to take place, occasionally, of the men in the employ of other masters; it is resolved that it is the opinion of this meeting, that, in order to combat the movement which has arisen, the metropolitan builders are compelled to close their establishments on Saturday week, the 6th of August; but taking into consideration the great number of men who wholly discontinue trade societies, that a committee of twenty be appointed to consider the best means of opening the doors to such men as may be willing to come to work independent of, and not subject to the dictation of, any trade society interfering with the labour of the working men."

Mr. Piper seconded the amendment.

Sir M. Peto, M.P. who had arrived late, said he would give the amendment his most earnest support. No one could be more desirous than he was to do everything to encourage the intelligent and industrious artisan; but he could not approve of the man usurping the position of the master, or having either of them deprived of their liberty of action by a society which, in his opinion, was the worst of all despotisms. He hoped the master builders, as well as the public, would give those persons the most united and determined resistance. He and his partners had sacrificed from 15,000l. to 16,000l. in consequence of the strike that took place among the workmen employed on the Houses of Parliament, and he never regretted

that sacrifice. He hoped the meeting would unite as one man and do their duty to themselves, the non-society men, and the public. The object of the union was to reduce labour to its minimum, and prevent the master from having a fair day's work for a fair day's pay. The master was entitled to have 1l. worth of labour for every pound he paid in wages. If the society men succeeded in the present movement, the difference between ten hours and nine hours labour would cost the public 300,000l. a year. The Government and the public were sure to support the masters in resisting the unreasonable demands of the men, and he hoped therefore that by unity of action they would frustrate the efforts of a few designing men, who preferred living by agitation to working with their hands.

The motion was then withdrawn, and the amendment unanimously agreed to, those present afterwards signing a paper in accordance with it.

Thanks were then voted to Mr. Lee, the chairman, and the meeting separated.

The following is a list of the committee appointed:—

Mr. H. D. Austin	Mr. Lucas
" Arding	Alderman Lawrence
" G. Bird	Mr. Myers
" W. Carr	" Morris
" S. Cook	" Mansfield
" Downes	" Piper
" Dunnage	" G. Smith
" Ennor	" Spicer
" W. Higgs	" F. Smith
" Kell	" J. Williams.
	G. Wales, Secretary.

Sir,—I forward you a copy of a letter transmitted to the meeting of master builders this day, which you will oblige by inserting in your next impression.

G. P.

"Paviors' Arms, Johnson-street, Westminster."

"Sir,—As a meeting of the master builders of the metropolis is convened for to-day, to consider the question of the nine hours, I think it right that they should be informed why the firm of Messrs. Trollope and Sons was the first firm selected for the men to cease work,—the reason being that one of the deputation presenting the memorial was discharged on Wednesday last, at a quarter past five p.m. This so irritated the men working at the job that they ceased work the next day without consulting the Conference of the Nine-Hours Movement. When the Conference met on the following Friday to consider which should be the firm selected, the members felt so insulted at Messrs. Trollope's conduct that it was decided, by a very large majority, that the remainder of the men on that firm should be called out for the nine hours per day. You are respectfully requested to read this at the meeting of the master builders this day.—I remain, yours, on behalf of the United Trades,

"GEO. POTTER, Secretary.

"To Mr. Wales, Secretary to Builders' Society."

SIR,—The Notice to Builders in "A. B.'s" letter last week shows that the men know not where to stop; but, if they can force the builders to yield now, they will soon want to have the time reduced still more. They are not content with one hour and a-half on Saturday, but now want five hours more, making in all a reduction of six and a-half hours per week at the present wages of from 5s. to 5s. 6d. per day. Is not this a monstrous demand, when there are a great number of men out of employ? The leaders of this movement well know that many of the leading builders have heavy contracts, and they have commenced to fight them piecemeal, as I understand they are now out on strike of several works. A bricklayer called on me the other day for a job. He had been working for some time at Woolwich Arsenal at 6s. a day. The men struck there for the nine hours, and he was anxious to get a job anywhere, as he had a wife and family to support. He might get work at any other job, but dared not go on there, as he is a Society man. Can the struggle go on much longer? The builders must rouse themselves or be ruined, and the best course they can pursue is at once to make a stand, and determine not to be trifled with by a few men who are misleading the working classes to serve their own ends. All the men I have spoken to on the subject say they cannot help themselves, and that they are afraid that beggary and ruin are before them in many instances. Let the builders meet publicly and determine their course of action, and if they have only the firmness to act as the builders of London did about the time the new Law Courts at Westminster were built, we should hear no more of strikes for the nine-hours movement for some time to come.

The men struck then, and the builders determined to stop all their public works; and I am informed they did so for a month, when the men were glad to yield. Now I say, if the men strike, and so attempt to ruin their employers, the wretchedness and the ruin will fall on their own heads, if the employers will only have the courage to do as has been done before, stop all their works. This is no time for trifling, but the time for action has now come. I am told the trades' unions hold out the threat that they will themselves become con-

tractors. All I can say is, they have a perfect right to do this if they think proper, but they will find there is a great difference between receiving their ready-money every Saturday at four o'clock, and taking contracts with all the risks attendant thereon. I do not believe there is a man amongst them that believes ten hours too much for any man in good health. If the men believe ten hours too much, let them have the nobleness of heart to come forward and assist their suffering brethren in other trades who are compelled to work from twelve to fourteen and fifteen hours daily, while they work only ten. Were they to do this, they would have the credit and the honour of doing a public good, instead of a public injury.

ACHTAVIS.

P.S.—I never found ten hours too much when I worked at the bench.

Str.—Now is the day and now is the hour! The builders of London have passed at their meeting to-day (Wednesday) (attended by more than 500 masters) very strong resolutions to combat the workmen, and to endeavour to break up the despotism of the secret conclave which can order strikes, and raise money to enforce them, in the most cowardly manner, against any master they may choose to select. Where is the boasted freedom of Englishmen, when such documents as the manifesto issued by the executive of the Nine-hours Movement can be unblushingly put forward? Doubtless you have seen this document, but in case you have not, I enclose one, and I hope you will print it conspicuously in this week's number of the Builder, in order that all engaged in the trade may be fully informed. The masters want only that which is fair, and their resolutions of this day support this assertion unequivocally.

A BUILDER.

AN OPERATIVE'S REPLY ON THE LABOUR QUESTION.*

The writer of this "Reply" complains, in the outset, that it has been supposed he is not an operative, whereas, as he states, he really is one, and with not over plentiful leisure time for literary efforts either.

While acknowledging the ability shown in the composition of the Prize Essay, he regrets that it should be based on a false and erroneous principle, namely, that capital is not the friend of labour. This, though not positively asserted in direct terms, he observes, is the pervading principle of the essay.

The reply, he goes on to say, will be divided into four parts:—

"The FIRST will consist of some observations on Mr. Daniel's pamphlet; the SECOND will assert the principle that the Nine hours movement is both impolitic and unnecessary at the present time; the THIRD, that a Strike will not effect the objects desired; and the FOURTH will treat of the true principles by which the elevation of the working classes may be secured. To do so calmly and dispassionately is the aim of the writer, and he entreats of his fellow-toilers the privilege, if not the right, of a fair hearing, that he may utter that which experience has shown him to be alone the true policy to be followed, if his fellow-toilers really desire to obtain the realization of their professed wishes."

As to the necessity of the nine-hours movement at present, the writer admits what is stated by Mr. Daniel, in the prize essay, that a large proportion of preventable deaths arise "from premature exhaustion of the physical powers induced by the long hours of labour, and from the injurious nature of the trades themselves;" but the statement, he asserts, "applies more to the overworked seamstresses, tailors, and similar professions, rather than to the bricklayer, carpenter, or mason, who work for ten hours in the open air, instead of being cooped up in a close, ill-ventilated, hot, and gas-lit room for fourteen, fifteen, or even sixteen hours!"

A man who possesses a real desire to improve his intellectual powers, he is of opinion, "will do so in spite of every disadvantage; and experience," he continues, "teaches us that those who are the most clamorous for a real or alleged benefit are very often those who care the least for its possession. Depend upon it, the really intelligent and proficient operatives of the building trades are fully aware that the agitation for the nine-hours movement will not, or at least will but slightly, increase their chances of self-improvement, while it may possibly lessen them by convulsing the trade, and producing bitter feelings of discontent between the employers and the employed. Of course it would be advantageous to the operative employed in the building trades, that he should be competent to understand the various manuals and works relating to his profession; but how does his inability to do so really arise? Let Mr. Daniel inquire into the history of the greater portion of his fellow-toilers, and he will find it to arise more from the neglect and cupidity of parents, than from any other cause."

* Dedicated to the Members of the London Building Trades: Reduction of the Hours of Labour, as proposed by the House of Commons in a Reply to the Prize Essay of the United Building Trades; with Remarks on Strikes. By John Plummer, the Kettering Factory Operative. London: W. Tweedie, 1859.

As to the assertion that the reduction of the hours of labour to nine will afford employment to those who are unemployed, the "Operative" says, "This at first sight appears very plausible, but upon examination it will be found not to be based upon the true principles of political economy. There may probably be 60,000 skilled labourers employed in the London building trades alone, leaving out the unskilled labourers. At present these work ten hours per day for five days in the week, and eight and a-half hours on Saturdays, as they leave work at four o'clock. These ten hours, on the first five days of the week, they desire should be reduced to nine: at the same time, however, they require that the rate of wages should remain the same, or, in other words, that ten hours' pay should be given for nine hours' labour! So that, in fact, the real aim of the agitation is to procure a higher rate of wages. Of course the men have an undoubted right to use every fair means to attain their object, but their employers have also the right of showing that the demand is unreasonable. The loss of 60,000 hours per day will amount to 300,000 hours per week: this would necessitate the employment of many more hands, but it would also increase the cost of building, and thus tend to diminish the demand, consequently to reduce the number of labourers required; so that, ultimately, the men would find themselves in a worse position than at first! The cheaper things can be produced, the greater will be the demand for them, and consequently the more will be the number of labourers required; but, when the price rises, the demand will fall, and less labourers will be required."

In the course of his remarks in support of the position that a strike will not effect the objects desired, the writer says:—

"Of all means used by working men to attain any desired end, strikes are among the most useless, for if they injure the employer, they affect the employed still more.

This is the history of nearly all strikes; and if the artisans employed in the building trades do not wish to injure their interests, they will stonily set their faces against a 'strike.' True, the leaders attempt to show the certain success of such a measure, but, on perusing their speeches, we find the same expressions which have been used a thousand times before, and with the same results—stern denunciations of the tyranny of employers; fervid exhortations to resistance; predictions of certain success; followed by the ultimate falsification of every hope and prospect held out by the ignorant leaders to their poor deluded followers."

"If I could perceive that the slightest good to the operatives would arise from the contemplated strike, I would as firmly advocate it as I now sternly denounce it. I know this language is not popular, but

'Oh, my brothers, to me listen,
Ere the sorrow and the tears
Cause each sunken eye to glisten
With the grief of after years;
Ere the wretched mothers, weeping,
Sob as though their hearts would break,
For their infant darling sleeping,
And their thoughtless husbands' sake;
Ere ye tramp on lonely highways,
In the village or the town,
Or in city's crowded byways,
Sadly wander up and down;
For employment ever seeking,
When there's none, alas! to give;
Till the hunger glance is speaking,
That ye scarce know how to live.'

The employers would probably agree to the proposed reduction if the men would work by the piece, or consent to a proportionate reduction of wages. I suspect the latter is out of the question, as the majority of operatives would most likely rather work the ten hours than lose the pay for the spare hour, therefore we must consider the question of piece-work.

This brings us to the second question. Is the time-work principle advantageous to the operative? To this I can safely answer, 'No,' for it tends to bring down the skilled labourer to the level of the unskilled; and to cause the clever and industrious workman to be hampered with the cumbersome efforts of the more stolid and indolent of his class.

I can gain far more by piece-work, providing there be sufficient employment, than I can by time-work; and I have invariably found that the most clever, industrious, skilled, intelligent, and well-to-do working men were those who, as a rule, worked by the piece. Consequently, the objections urged against piece-work are rendered harmless, and they only show the real spirit which animates but too many of those who would fain drive their more sensible and quiet brethren into the destroying vortex of a

strike. Well has Miss Martineau shown the facilities afforded by strikes 'for meddling and governing, for rioting, for idling, and tipping, and journeying, and speechifying at other people's expense. No better occasion could be devised for exposing the simple, and timid, and unwary to be robbed, and jobbed, and made tools of by a few sharpers and idle busy-bodies. It is very certain that three or four individuals have often succeeded, for their own purposes, in setting three or four hundred, or thousand, better men than themselves at enmity with their masters.' If the building operatives really desire a little more time for the purposes of health, physical and intellectual recreation, and the like, they would not hesitate to adopt the piece-work system; but their refusal to do so, and their threat of a strike, inform us plainly enough that such is not their real aim."

In conclusion, and while pointing out the true principles by which the elevation of the working man may be secured, the Kettering Operative insists that "these are temperance, economy, religion, education, prudence, and similar virtues. To preach these may not be so interesting as the delivery of a fierce denunciation of employers as tyrants; but it is far easier to destroy the welfare of a people than to elevate their condition. If ever we are to rise from the bondage in which we are asserted to be, it will only be by our own efforts, aided by that amount of self-reform which is indispensable to true and permanent success. An ignorant, a drunken, or an immoral people may become the slaves of the oppressor; but a free, enlightened, and self-enfranchised nature NEVER! Let us cut out the cancer of intemperance which consumes us: let us dash aside our class prejudices, and learn to look without envy on the success of our more fortunate brethren; let us learn to behold, without hatred in our hearts, the efforts made by those of lofty station to aid us in improving our condition; let us despise the false, cruel, and mischievous theories of popularity-seeking demagogues, and, rely on it, a better time will dawn for our class.

The principles which regulate capital and labour, and the condition of our lives, are at present only imperfectly understood by those the most concerned; but perhaps these few words of mine may lead some to investigate for themselves these things; and it may be that they will learn to think of me not as an enemy to the cause of his fellow-toilers, but as one who sought to lead his brothers from the false path on which they were proceeding, and to avert from themselves and their families the heart-rending anguish and bitter misery entailed by a strike."

THE WORK OF IRON, IN NATURE, ART, AND POLICY.*

WHEN I venture to speak about my own special business of art, it is almost always before students of art, among whom I may sometimes permit myself to be dull, if I can feel that I am useful: but a mere talk about art, especially without examples to refer to (and I have been unable to prepare any careful illustrations for this lecture), is seldom of much interest to a general audience. As I was considering what you might best bear with me in speaking about, there came naturally into my mind a subject connected with the origin and present prosperity of the town you live in; and, it seemed to me, in the out-branchings of it, capable of a very general interest. When, long ago (I am afraid to think how long), Tunbridge Wells was my Switzerland, and I used to be brought down here in the summer, a sufficiently active child, rejoicing in the hope of clambering sandstone cliffs of stupendous height above the common, there used sometimes, as I suppose, there are in the lives of all children at the Wells, to be dark days in my life—days of condemnation to the pantiles and band—under which calamities my only consolation used to be in watching, at every turn in my walk, the welling forth of the spring over the orange rim of its marble basin. The memory of the clear water, sparkling over its saffron stain came back to me as the strongest image connected with the place; and it struck me that you might not be unwilling, to-night, to think a little over the full significance of that saffron stain, and of the power, in other ways and other functions, of the steely element to which so many here owe returning strength and life;—chief as it has been always, and is yet more and more markedly so day by day, among the precious gifts of the earth. The subject is, of course, too wide to be more than suggestively treated; and even my suggestions must be few,

and drawn chiefly from my own fields of work; nevertheless, I think I shall have time to indicate some courses of thought which you may afterwards follow out for yourselves if they interest you; and so I will not shrink from the full scope of the subject which I have announced to you—the functions of Iron, in Nature, Art, and Policy. Without more preface, I will take up the first head.

I. IRON IN NATURE.—You all probably know that the ochreous stain, which, perhaps, is often thought to spoil the basin of your spring, is iron in a state of rust; and when you see rusty iron in other places, you generally think not only that it spoils the places it stains, but that it is spoiled itself—that rusty iron is spoiled iron.

For most of our uses it generally is so; and because we cannot use a rusty knife or razor so well as a polished one, we suppose it to be a great defect in iron that is subject to rust. But not at all. On the contrary, the most perfect and useful state of it is that ochreous stain; and therefore it is endowed with so ready a disposition to get itself into that state. It is not a fault in the iron, but a virtue, to be so fond of getting rusted, for in that condition it fulfils its most important functions in the universe, and most kindly duties to mankind. Nay, in a certain sense, and almost a literal one, we may say that iron rusted is Living; but when pure or polished, Dead. You all probably know that in the mixed air we breathe, the part of it essentially needful to us is called oxygen; and that this substance is to all animals, in the most accurate sense of the word, "breath of life." The nervous power of life is a different thing; but the supporting element of the breath, without which the blood, and therefore the life, cannot be nourished, is this oxygen. Now it is this very same air which the iron breathes when it gets rusty. It takes the oxygen from the atmosphere as eagerly as we do, though it uses it differently. The iron keeps all that it gets; we, and other animals, part with it again; but the metal absolutely keeps what it has once received of this aerial gift; and the ochreous dust which we so much despise is, in fact, just so much nobler than pure iron, in so far as it is iron and the air. Nobler, and more useful—for, indeed, as I shall be able to show you presently, the main service of this metal, and of all other metals, to us, is not in making knives, and scissors, and pokers, and pans, but in making the ground we feed from, and nearly all the substances first needful to our existence. For these are all nothing but metals and oxygen—metals with breath put into them. Sand, lime, clay, and the rest of the earths—potash and soda, and the rest of the alkalis—are all of them metals which have undergone this, so to speak, vital change, and have been rendered fit for the service of man by permanent unity with the purest air which he himself breathes. There is only one metal which does not rust readily; and that, in its influence on man hitherto, has caused death rather than life; it will not be put to its right use till it is made a pavement of, and so trodden under foot.

Is there not something striking in this fact, considered largely as one of the types, or lessons, furnished by the inanimate creation? Here you have your hard, bright, cold, lifeless metal—good enough for swords and scissors—but not for food. You think, perhaps, that your iron is wonderfully useful in a pure form, but how would you like the world, if all your meadows, instead of grass, grew nothing but iron wire—if all your arable ground, instead of being made of sand and clay, were suddenly turned into flat surfaces of steel—if the whole earth, instead of its green and glowing sphere, rich with forest and dower, showed nothing but the image of the vast furnace of a ghastly engine—a globe of black, lifeless, excoerated metal? It would be that,—probably it was once that; but assuredly it would be, were it not that all the substance of which it is made sucks and breathes the brilliancy of the atmosphere; and, as it breathes, softening from its merciless hardness, it falls into fruitful and beneficent dust, gathering itself again into the earths from which we feed; and the stones with which we build,—into the rocks that frame the mountains, and the sands that bind the sea. Hence, it is impossible for you to take up the most insignificant pebble at your feet, without being able to read, if you like, this curious lesson in it. You look upon it at first as if it were earth only. Nay, it answers, "I am not earth—I am earth and air in one; part of that blue heaven which you love, and long for, is already in me; it is all my life—without it I should be nothing, and able for nothing; I could not minister to you, nor nourish you—I should be

* From "The Two Paths," by John Ruskin, M.A.

a cruel and helpless thing; but, because there is, according to my need and place in creation, a kind of soul in me, I have become capable of good, and helpful in the circles of vitality."

In these days of swift locomotion I may doubtless assume that most of my audience have been somewhere out of England—have been in Scotland, or France, or Switzerland. Whatever may have been their impression, on returning to their own country, of its superiority or inferiority in other respects, they cannot but have felt one thing about it—the comfortable look of its towns and villages. Foreign towns are often very picturesque, very beautiful, but they never have quite that look of warm self-sufficiency and wholesome quiet with which our villages nestle themselves down among the green fields. If you will take the trouble to examine into the sources of this impression, you will find that by far the greater part of that warm and satisfactory appearance depends upon the rich scarlet colour of the bricks and tiles. It does not belong to the neat building—very neat building has an uncomfortable rather than a comfortable look—but it depends on the *warm* building; our villages are covered in red tiles as our old women are in red cloaks; and it does not matter how worn the cloaks, or how bent and bowed the roof may be, so long as there are no holes in either one or the other, and the sobered but unextinguishable colour still glows in the shadow of the hood, and burns among the green mosses of the gable. And what do you suppose dyes your tiles of cottage roof? You don't paint them. It is nature who puts all that lovely vermillion into the clay for you; and all that lovely vermillion is this oxide of iron. Think, therefore, what your streets of towns would become—ugly enough, indeed, already, some of them, but still comfortable-looking—if instead of that warm brick red, the houses became all pepper-and-salt colour. Fancy your country villages changing from that homely scarlet of theirs which, in its sweet suggestion of laborious peace, is as honourable as the soldiers' scarlet of laborious battle—suppose all those cottage roofs, I say, turned at once into the colour of unbaked clay, the colour of street gutters in rainy weather. That's what they would be, without iron.

There is, however, yet another effect of colour in our English country towns which, perhaps, you may not all yourselves have noticed, but for which you must take the word of a sketcher. They are not so often merely warm scarlet as they are warm purple—a more beautiful colour still: and they owe this colour to a mingling with the vermillion of the deep grayish or purple hue of our fine Welsh slates on the more respectable roofs, made more blue still by the colour of intervening atmosphere. If you examine one of these Welsh slates freshly broken, you will find its purple colour clear and vivid; and although never strikingly so after it has been long exposed to weather, it always retains enough of the tint to give rich harmonies of distant purple in opposition to the green of our woods and fields. Whatever brightness or power there is in the hue is entirely owing to the oxide of iron. Without it the slates would either be pale stone colour, or cold gray, or black.

Thus far we have only been considering the use and pleasantness of iron in the common earth of clay. But there are three kinds of earth which in mixed mass and prevalent quantity form the world. These are, in common language, the earths of clay, of lime, and of flint. Many other elements are mingled with these in sparing quantities; but the great frame and substance of the earth is made of these three, so that wherever you stand on solid ground, in any country of the globe, the thing that is mainly under your feet will be either clay, limestone, or some condition of the earth of flint, mingled with both.

These being what we have usually to deal with, Nature seems to have set herself to make these three substances as interesting to us, and as beautiful for us, as she can. The clay, being a soft and changeable substance, she doesn't take much pains about, as we have seen, till it is baked; she brings the colour into it only when it receives a permanent form. But the limestone and flint she paints, in her own way, in their native state; and her object in painting them seems to be much the same as in her painting of flowers; to draw us, careless and idle human creatures, to watch her a little, and see what she is about—that being, on the whole, good for us—her children. For Nature is always carrying on very strange work with this limestone and flint of hers—laying down beds of them at the bottom of the sea; building islands out of the sea; filling chinks and veins in mountains with curious treasures; petri-

fying mosses, and trees, and shells; in fact, carrying on all sorts of business, subterranean or submarine, which it would be highly desirable for us, who profit and live by it, to notice as it goes on. And apparently to lead us to do this, she makes picture-books for us of limestone and flint; and tempts us, like foolish children as we are, to read her books by the pretty colours in them. The pretty colours in her limestone-books form those variegated marbles which all mankind have taken delight to polish and build with from the beginning of time; and the pretty colours in her flint-books form those agates, jaspers, cornelians, bloodstones, onyxes, cairngorms, chrysoprases, which men have in like manner taken delight to cut, and polish, and make ornaments, from the beginning of time; and yet, so much of babies are they, and so fond of looking at the pictures instead of reading the book, that I question whether, after six thousand years of cutting and polishing, there are above two or three people out of any given hundred, who know, or care to know, how a bit of agate or a bit of marble was made, or painted. How it was made, may not be always very easy to say; but with what it was painted there is no manner of question. All those beautiful violet veinings and variegations of the marbles of Sicily and Spain, the glowing orange and amber colours of those of Siena, the deep russet of the Rosso antico, and the blood-colour of all the precious jaspers that enrich the temples of Italy; and, finally, all the lovely transitions of tint in the pebbles of Scotland and the Rhine, which form, though not the most precious, by far the most interesting portion of our modern jewellers' work—all these are painted by nature with this one material only, variously proportioned and applied—the oxide of iron that stains your Tunbridge springs.

But this is not all, nor the best part of the work of iron. Its service in producing these beautiful stones is only rendered to rich people, who can afford to quarry and polish them. But Nature paints for all the world, poor and rich together; and while, therefore, she thus adorns the innermost rocks of her hills, to tempt your investigation, or indulge your luxury,—she paints, far more carefully, the outcrops of the hills, which are for the eyes of the shepherd and the ploughman. I spoke just now of the effect in the roofs of our villages of their purple slates; but if the slates are beautiful even in their flat and formal rows on house-roofs, much more are they beautiful on the rugged crests and flanks of their native mountains. Have you ever considered, in speaking as we do so often of distant blue hills, what it is that makes them blue? To a certain extent it is distance; but distance alone will not do it. Many hills look white, however distant. That lovely dark purple colour of our Welsh and Highland hills is owing, not to their distance merely, but to their rocks. Some of their rocks are, indeed, too dark to be beautiful, being black or ashy grey; owing to imperfect and porous structure. But when you see this dark colour dashed with russet and blue, and coming out in masses among the green ferns, so purple that you can hardly tell at first whether it is rock or heather, then you must thank your old Tunbridge friend, the oxide of iron.

But this is not all. It is necessary for the beauty of hill scenery that Nature should colour not only her soft rocks, but her hard ones; and she colours them with the same thing, only more beautifully. Perhaps you have wondered at my use of the word "purple," so often of stones; but the Greeks, and still more the Romans, who had profound respect for purple, used it of stone long ago. You have all heard of "porphyry" as among the most precious of the harder massive stones. The colour which gave it that noble name, as well as that which gives the flush to all the rosy granite of Egypt—yes, and to the rosiest summits of the Alps themselves—is still owing to the same substance—your humble oxide of iron.

And last of all:

A nobler colour than all these—the noblest colour ever seen on this earth—one which belongs to a strength greater than that of the Egyptian granite, and to a beauty greater than that of the sunset or the rose—is still mysteriously connected with the presence of this dark iron. I believe it is not ascertained on what the crimson of blood actually depends; but the colour is connected, of course, with its vitality, and that vitality with the existence of iron as one of its substantial elements.

Is it not strange to find this stern and strong metal mingled so delicately in our human life, that we cannot even blush without its help? Think of it, my fair and gentle hearers; how

terrible the alternative—sometimes you have actually no choice but to be brazen-faced, or iron-faced!

In this slight review of some of the functions of the metal, you observe that I confine myself strictly to its operations as a colouring element. I should only confuse your conception of the facts, if I endeavoured to describe its uses as a substantial element, either in strengthening rocks, or influencing vegetation by the decomposition of rocks. I have not, therefore, even glanced at any of the more serious uses of the metal in the economy of nature. But what I wish you to carry clearly away with you is the remembrance that in all these uses the metal would be nothing without the air. The pure metal has no power, and never occurs in nature at all, except in meteoric stones, whose fall no one can account for, and which are useless after they have fallen: in the necessary work of the world, the iron is invariably joined with the oxygen, and would be of no service or beauty whatever without it.

Iron in Art.—Passing from the offices of the metal in the operations of nature to its uses in the hands of man, you must remember, in the outset, that the type which has been thus given you, by the lifeless metal, of the action of body and soul together, has noble antitype in the operation of all human power. All art worthy the name is the energy—neither of the human body alone, nor of the human soul alone, but of both united, one guiding the other: good craftsmanship and work of the fingers, joined with good emotion and work of the heart.

There is no good art, nor possible judgment of art, when these two are not united; yet we are constantly trying to separate them. Our amateurs cannot be persuaded but that they may produce some kind of art by their fancy or sensibility, without going through the necessary manual toil. That is entirely hopeless. Without a certain number, and that a very great number, of steady acts of hand—a practice as careful and constant as would be necessary to learn any other manual business—no drawing is possible. On the other side, the workman, and those who employ him, are continually trying to produce art by trick or habit of fingers, without using their fancy or sensibility. That, also, is hopeless. Without mingling of heart-passion with hand-power, no art is possible. The highest art unites both in their intensest degrees; the action of the hand at its finest, with that of the heart at its fullest.

Hence it follows that the utmost power of art can only be given in a material capable of receiving and retaining the influence of the subtlest touch of the human hand. That hand is the most perfect agent of material power existing in the universe; and its full subtlety can only be shown when the material it works on, or with, is entirely yielding. The chords of a perfect instrument will receive it, but not of an imperfect one; the softly-bending point of the hair pencil, and soft melting of colour, will receive it, but not even the chalk or pen point, still less the steel point, chisel, or marble. The hand of a sculptor may, indeed, be as subtle as that of a painter, but all its subtlety is not bestowable nor expressible: the touch of Titian, Correggio, or Turner, is a far more marvellous piece of nervous action than can be shown in anything but colour, or in the very highest conditions of executive expression in music. In proportion as the material worked upon is less delicate, the execution necessarily becomes lower, and the art with it. This is one main principle of all work. Another is, that whatever the material you choose to work with, your art is base if it does not bring out the distinctive qualities of that material.

The reason of this second law is, that if you don't want the qualities of the substance you use, you ought to use some other substance: it can be only affectation, and desire to display your skill that lead you to employ a refractory substance, and therefore your art will all be base. Glass, for instance, is eminently, in its nature, transparent. If you don't want transparency, let the glass alone. Do not try to make a window look like an opaque picture, but take an opaque ground to begin with. Again, marble is eminently a solid and massive substance. Unless you want mass and solidity, don't work in marble. If you wish for lightness, take wood; if for freedom, take stucco; if for ductility, take glass. Don't try to carve feathers, or trees, or nets, or foam, out of marble. Carve white limbs and broad breasts only out of that.

So again, iron is eminently a ductile and tenacious substance—tenacious above all things, ductile more than most. When you want tenacity, therefore, and involved form, take iron. It is emi-

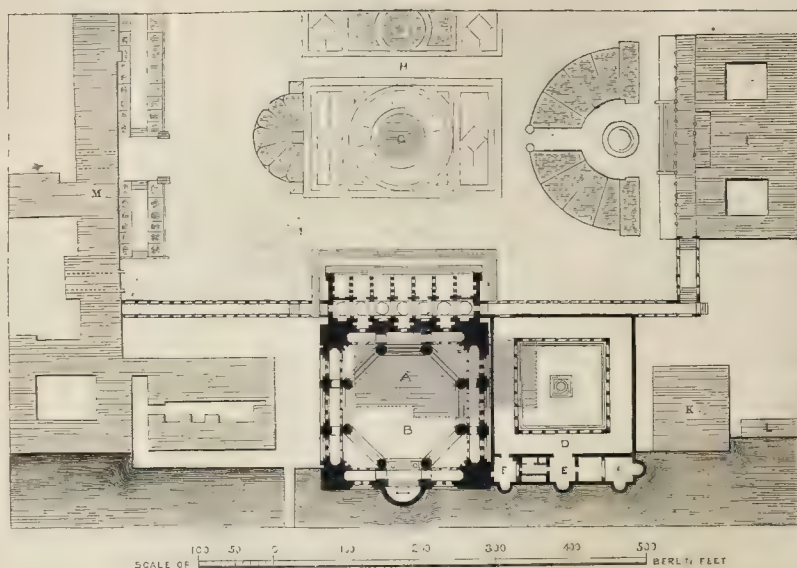
* I do not mean to attach any degree of blame to the effort to represent leafage in marble for certain expressive purposes. The later works of Mr. Munro have depended for some of their most tender thoughts on delicate and skilful use of such accessories. And in general leaf sculpture is good and admirable, if it renders, as in Gothic work, the grace and lightness of the leaf by the arrangement of light and shadow—supporting the masses well by strength of stone below; but all carving is base which proposes to itself *slightness* as an aim, and tries to imitate the absolute thinness of thin or slight things, as much modern wood-carving does. I saw in Italy, a year or two ago, a marble sculpture of birds' nests!

This, however, being in the present state of civilization a frequent manner of discourse, and there being unfortunately many districts where the iron railing is unavoidable, it yet remains a question whether you need absolutely make it ugly no less than significant of evil. You must have railings round your squares in London, and at the sides of your areas; but need you therefore have railings so ugly that the constant sight of them is enough to neutralise the effect of all the schools of art in the kingdom? You need not. Far from such necessity, it is even in your power to turn all your police force of iron bars actually into drawing masters, and natural historians. Not, of course, without some trouble and some expense; you can do nothing much worth doing, in this world, without trouble, you can get nothing much worth having, without expense. The main question is only—what is worth doing and having?—Consider, therefore, if this be not. Here is your iron railing, as yet, an undeducated monster; a sombre seneschal, incapable of any words, except his perpetual "Keep out!" and "Away with you!" Would it not be worth some trouble and cost to turn this ungainly ruffian porter into a well-educated servant; who, while he was severe as ever in

I might contemplate all night—if you would sit and hear me—on the treatment of such required subject, or introduction of pleasant caprice by the old workmen; but we have no more time to spare, and I must quit this part of our subject. Whether as I could not explain to you the intrinsic merit of such ironwork without going fully into the theory of curvilinear design; only let me leave with you this one distinct assertion—that the quaint beauty and character of many natural objects, such as intricate branches, grass, foliage (especially thorny branches and prickly foliage), as well as that of many animals, plumed, spined, or bristled, is sculpturally expressible in iron only, and in iron would be majestic and impressive in the highest degree; and that every piece of metal-work you use might be, rightly treated, not only a superb decoration, but a most valuable abstract of portions of natural forms, holding in dignity precisely the same relation to the painted representation of plants, that a statue does to the painted form of man.

WE have received some particulars of the culture of very considerable buildings erected in the eastern part of London under an engineer. Various architects and others have been called in to report, but as the matter is likely to be privately adjusted, it may, perhaps, not be necessary to discuss it. We shall see.

AMONGST the working classes of the metropolis the complaints are general of the difficulty of obtaining accommodation sufficiently cheap and desirable for the use of families of children. The consequence of this, as we have often said, is very serious, for it is in those cases where a large number of children are to be reared that the necessity for proper arrangements are the greatest; and it is difficult to estimate the extent of the evil which arises from this serious matter for complaint. According to the present plan of the greater number of the houses in the metropolis which are provided for the use of persons of small income, those who do not like to venture are not able, to undertake the risk of tenantry, and of meeting a large part of the rent and taxes by sub-letting, find the greatest difficulty in getting satisfactory accommodation. In the long columns of advertisements in the local papers, young men are said to be desirable.



THE NEW CATHEDRAL AT BERLIN.—Plan showing adjacent Buildings.

elderly ladies are much sought after,—a young married couple may find many comfortable homes. In some instances it is condescendingly stated that "one child will not be objected to;" while in other cases, after the convenience of the place has been described, and the cleanliness praised, follows, "children not taken in,"—"those with families need not apply." The consequence of this is, that those who have the greatest need for all the aids to health are driven into neglected places, into back and low neighbourhoods, where both the manners and health of children are deteriorated by sanitary neglect and ill-bred companions.

In the outskirts of the metropolis, where speculative houses are run up, where the pavement is badly formed, families may find that children are not objected to, but are admitted into the damp, unfinished houses, for a time to "air" them. As these streets get into a more habitable condition, the houses fall into other hands, who do them carefully up, and let them to those in a more prosperous condition, who, in case they may have apartments to let, would object to children, and refuse to take them in. This causes the children to be driven from one spot to another, but always to places which are dangerous to both the health and morals of some thousands who are now rising to take the place of the workers of the present generation. It is this which in a great measure causes the large loss of life from bronchitis, scarlet fever, diphtheria, &c.

It is bad for those who are obliged to find apartments for families. As to those who run the chance of meeting the expenses of a whole house, in the hope that the children may be more at liberty and less exposed to the ill effects of overcrowding, and the want of the opportunity of separate arrangements—divisions,—it will be found that even in this position the children are obstacles.

In several of the provincial towns numbers of houses have been built on a plan which insures the privacy of families. In London next to nothing has been done; the well-known causes which lead to this being the expense of land, the expense of sub-leasing, and other matters which have been from time to time referred to in these pages. It is, notwithstanding, a sure yet painful fact that if capitalists could put faith in the belief that those for whom the construction of a different form of dwelling is so desirable would appreciate an alteration, we would soon have a suitable provision.

It is most necessary that such as require improvements should examine those attempts which are made to promote alterations which must produce the most beneficial effect.

At present the railway fare by third class from King's-cross to Holloway is 1½d. This would for return come to 1s. 6d. a-week for the six working

days. It, however, unfortunately happens that at Holloway the land is becoming every day more and more valuable, and is eagerly sought for the better class of houses. When we get farther into the fields by the Great Northern Railway, a single fare by third class is 4d. This sum puts it out of the power of the working man who is engaged in London to avail himself of houses which might be properly built and had at a comparatively cheap rate in a pleasant neighbourhood. Along the line of the Great Northern and other railways are spaces of ground, which, in some instances, might be conveniently drained, on which houses and gardens might be usefully built. If a mile of these banks, in a suitable position, were appropriated to this purpose, on which, including each side, 450 detached cottages might be built, if each family's room let at a rental of 4s. per week (8s. per week for each cottage), this would give a rental of close upon 10,000l. a-year. If, attached to each dwelling, there was a railway return ticket to town and back, for each working day, for one person, at 1s. 6d. a-week, this would make the rent and conveyance to King's-cross, 5s. 6d. a week for each workman (railway fare, 3l. 18s. a-year): this would produce a yearly revenue of over 4,000l. There would other income arise from other members of the family being obliged to visit town at the regular fares. It would depend in a great measure upon the style and manner in which such buildings were carried out how much they would cost, but it may be estimated that each double cottage might be put up for 200l. and this would leave about 10 per cent. to defray this cost, the value of ground-rent, taxes, &c. At the present time the sloping banks of these railways are rather a source of trouble than profit. This idea has been mentioned by persons who have carefully thought upon the subject, and certainly the matter is worthy of consideration; for if an arrangement could be made, which would make it worth the while of the railway companies, and either some joint stock company or builder, to provide such dwellings as those alluded to, it would be conferring a chance for such workmen as complain of their present situation, to avail themselves of more healthy conditions.

ARTIFICIAL LIGHT ON VEGETATION.—Some inquiry on this subject having been made, a correspondent writes,—"I planted vegetables in a place where daylight could not penetrate, over which I suspended a paraffine oil lamp, with a reflector to throw the light upon the plants. They have grown up a beautiful dark green. I have also lighted a greenhouse with lamps every night, and find it not only increases vegetation, but gives a beautiful deep tinge to the plants."

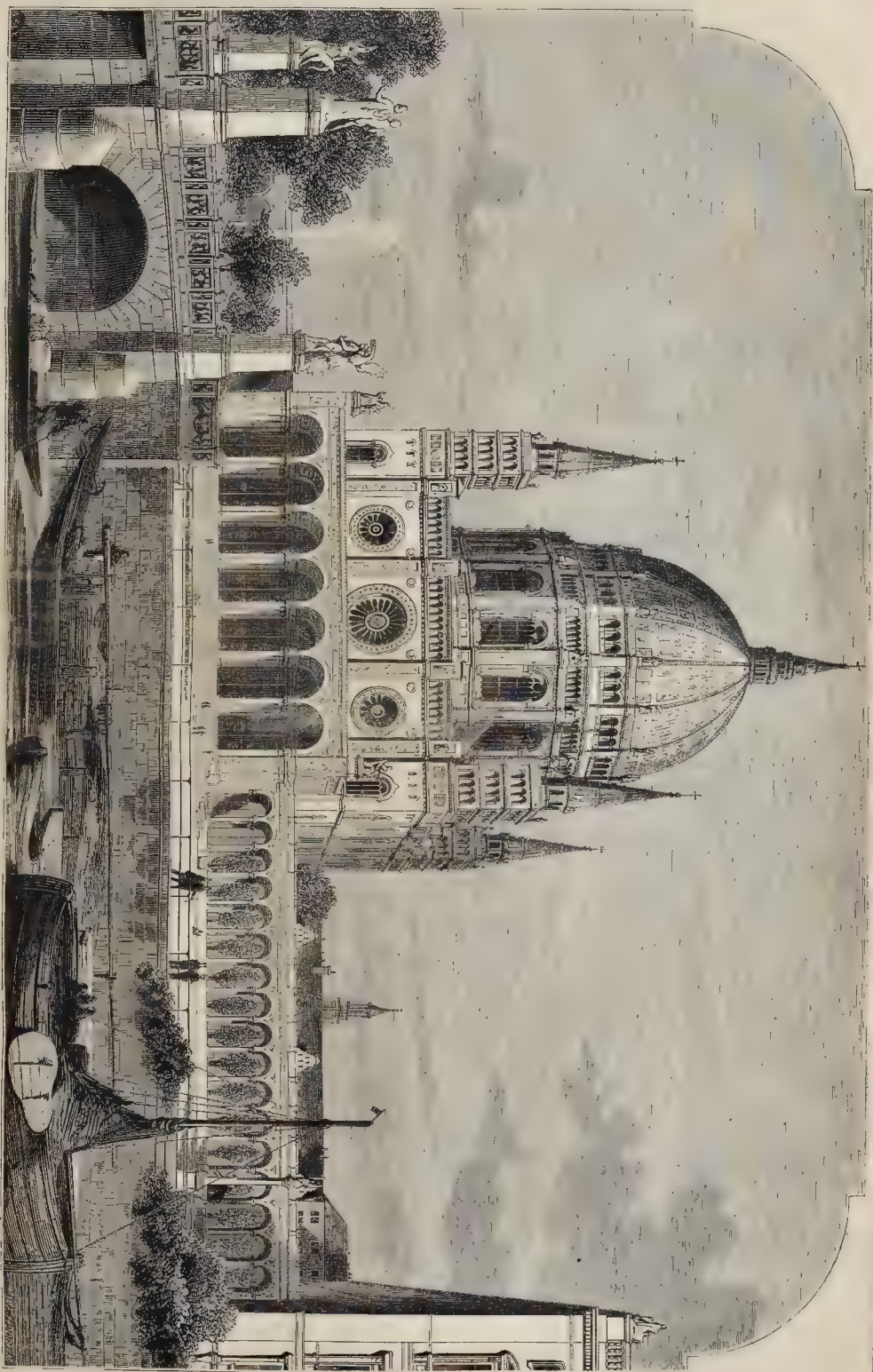
THE NEW CATHEDRAL IN BERLIN.

The project of a new cathedral for Berlin has for many years been a favourite idea, and occupied the anxious thoughts of the King of Prussia; and he has had from time to time various projects from different parties, professional and dilettanti. These, however, seem to have been superseded by the design of Herr Stüler, his favourite architect, who has commenced carrying it into execution. We have engaged a view of the design. In point of scale it will be a very considerable monument, and the artist has sought, by the adoption of a style which recalls neither of the other metropolitan cathedrals of Europe, to free himself from the suspicion of plagiarism. In such a case, however, the architect must be justified by his success for daring to break through the trammels of precedent, and asserting a liberty which may, perhaps, be accused of being a license. In a building of such importance, there are two leading considerations, the originality and graceful combinations of the whole as a composition, and the beauty of the details. Of the latter a small illustration does not enable us to form an adequate conception. But it may be doubted whether the style or the combination of the parts, as here presented, admit of that elevation of sentiment and impressiveness of character so essential to an ecclesiastical building of the very highest class; and above all a vigorous treatment of the subject is of the highest consequence, for the absence of which even immense size can hardly compensate. The grace of Herr Stüler's taste will produce many pleasing combinations and elegant rendering of parts; but much study will be necessary to make the present design, as a whole, come up to the mark.

There are few places in Europe which rival the *platz*, where the cathedral will stand, in the great Linden Alley, near the Spree. On one side of the area is the museum, built by Frederick William III. and on the other side the Royal Palace.

REFERENCES.

- A. Site of the Old Cathedral.
- B. The New Cathedral.
- D. Royal Sepulchre.
- E. Chapel.
- F. Sacristy.
- G. Fountain.
- H. Garden.
- I. The Museum.
- K. The Exchange.
- L. Machine.
- M. Royal Palace.



THE NEW CATHEDRAL, BERLIN.—Herr Stüler, Architect.

THE ARRANGEMENT OF THE READING-ROOM AT THE BRITISH MUSEUM.

ON Monday last, when a vote of 47,425*l.* to complete the sum for salaries and expenses of the British Museum, and another of 12,270*l.* for new buildings there, were taken, a discussion ensued, in the course of which,

Mr. Walpole said the number of books returned to the shelves of the General Library during the year had been 177,290; to those of the Royal Library, 12,428; and to those of the Grenville Library, 687. Adding the number of volumes which the students could command without any order, 754,405, the total number was 876,000, or 3,000 per day, as against 576,000 last year, or 2,000 per day.

Mr. Gregory wished to impress upon the House the necessity for making the British Museum an institution not only for exhibition but instruction. The upper classes could purchase books, and could go to the assistants of the British Museum for information; but, until a system of lectures was established, the lower classes would never have an opportunity of reaping all the advantage of which the Museum was susceptible.

We take occasion to say, that the arrangements in the new reading-room appear to give very general satisfaction. Mr. Watt is generally to be found in the central part of the room, and shows an anxiety in case of need to afford valuable information; and there are other gentlemen here, to whom many readers are indebted for much time saved. The assistants are familiar with the contents of this great library, and also understand the arrangement of the catalogue.

The selection and arrangement of the books in the reading-room may be praised too. Without proper classification, it is not easy to lay hands on the books needed, and it may be useful to print a more detailed description than we gave some time since, of the books in this library, which can be had by students without the trouble of writing a ticket.

For the use of the readers, plans of the reading-room, mounted on card-boards, are hung at the end of each of the benches. On this the spaces occupied by the books of a similar description are distinctly shown in coloured rays, and the name of the subject, and leading works bearing upon it, distinctly marked. Each press, or division for the reception of the books, is numbered; and the numbers of them in the lower division of the new room range from 2,050 to 2,121 inclusive. There are seventy-one presses of books which can be immediately taken from the shelves.

It is worth while to bear these numbers in memory, for often a reader, not knowing that a particular book is not in this part of the library, refers to the catalogue, and finds, perhaps, a book with the press-mark, 2,100*b*, and immediately writes a ticket, which he hands to one of the attendants. He would, however, have had nothing more to do than to have gone to the press numbered 2,100, and on the second shelf from the top he would find the book needed. The shelves of each press are arranged to hold folio, quarto, and other sizes of books; and the shelves are marked alphabetically, from the top, A, B, C, D, and so on downwards.

The advantage of having free and uninterrupted access to these books is very great.

In the reading-room readers are as free as if they were in their own library. We mention this the more particularly, for it would be a decided advantage if a similar plan were adopted in all the literary and philosophic and mechanics' institutes throughout the country. Those libraries either have or ought to have a collection of books similar to that in the basement of the reading-room, and they should be quite as accessible. This is the case in some instances, but is not so in others. It will be objected that confusion will be produced by careless persons putting volumes in wrong places. This, however, could easily be remedied by an order to the effect that, while members of the institution should have the privilege of taking books from the shelves, it should be left to a practised attendant to restore them to their places.

The arrangement of the new reading-room is as follows:—

The black lines are measured, and show proportionately the amount of space allowed for the various subjects.

To the Right of the Entrance.

GEOGRAPHIES, VOYAGES, AND TRAVELS. Here are collected the standard geographical dictionaries; the best editions of the works of distinguished travellers, atlases, reports of societies connected with geography, &c.

CLASSICS.

BIBLIOGRAPHY.

THE POETS. Here, although the space is but small, are the best editions of glorious works: here are arranged the poems of Shakspeare, Dryden, Goethe, Schiller, Coleridge, and others. Chalmers's "Encyclopedia of the Poets," and other publications, form useful hand-books to the best productions of the ancient and modern poets, both at home and abroad.

BELLES LETTRES occupy

about an equal space with the Classics and Geography. And what a distinguished array of names are here arranged. Swift, Johnson, Goldsmith, Stewart, Bentham, Franklin, Webster, Jefferson, Milton, Guizot, Bacon, Hallam, D'Israeli, Scott, Southey, Coleridge, and others.

BIOGRAPHY.

From the works of the poets, &c., above-mentioned, we pass to the account of their lives. The amount of space given is considerable, as this department contains records of those who have been distinguished in literature, science, and art.

THE FINE ARTS are modest in their claims, notwithstanding there is much valuable matter in a circumscribed space.

BOTANY does not even demand so much space as the Fine Arts; but grave

PHILOSOPHY stands prominently forward, and so numerous are the well-known publications in this department, that we must pass them over with bare mention. Considering the endless ramifications and uncertainty of the

LAW, one might have feared that it would have needed much more room than other departments of literature: it does not, however, do so; and although we have reports of the State Trials, "*Abridgements*," which are of extraordinary bulk, &c., the law books are but as a dwarf in contrast with a giant, in comparison with

THEOLOGY. The religious periodical journals, transactions of societies, the reports of societies, and the writings of the most distinguished divines, are here ready for reference. Those various phases of literature complete the information which is contained in one semi-circle of the New Reading Room of the British Museum.

Retracing our steps once more to the entrance we turn to the left hand, and find, first, a most, valuable collection of books on

TOPOGRAPHY. Here are county histories; ancient and modern histories of London and its environs; accounts of England, Wales, Ireland, &c. &c. &c. This department is admirably selected and arranged.

HISTORY requires the largest amount of space:

LITERARY JOURNALS and periodicals occupy the next greatest space in comparison with history and theology. Here are ranged the volumes of the *Athenaeum*, *Annual Register*, *Builder*, *Edinburgh and Quarterly*, *North British*, *European*, *Westminster*, *Dublin*, and other *Reviews*, the *Gentleman's Magazine*, *Frazer's*, *Blackwood's*, *Eclectic*, *Monthly*, *Penny*, and other *Magazines*, &c.

ENCYCLOPÆDIAS present a formidable and invaluable array, much greater than the

DICTIONARIES of many languages; and then we have

PEERAGES, GENEALOGIES, DIRECTORIES, CALENDERS, &c. which end our list.

REPORT OF THE COMMISSION APPOINTED TO CONSIDER THE SUBJECT OF LIGHTING PICTURE GALLERIES BY GAS.

The commission, consisting of Professors Faraday, Hofmann, and Tyndall, Mr. R. Redgrave, R.A. and Captain Fowke, R.E. appointed for the purpose of reporting to the Lords of the Committee of Privy Council on Education on the lighting of picture galleries by gas, and on any precautions (if necessary) against the escape of gas, and the products of its combustion, having met at various times and considered the subject referred to them, now make the following report.

There is nothing innate in coal gas which renders its application to the illumination of picture galleries objectionable. Its light, though not so white as that of the sun, is equally harmless: its radiant heat may be rendered innocuous by placing a sufficient distance between the gas jets and the pictures, while the heat of combustion may be rendered eminently serviceable in promoting ventilation.

Coal gas may be free from sulphuretted hydrogen compounds, and in London is so at the pre-

sent time: it then has little or no direct action on pictures. But it has not as yet been cleansed from sulphide of carbon, which, on combustion, yields sulphuric acid gas capable of producing 22½ grains of sulphuric acid per 100 cubic feet of present London coal gas.* It is not safe to permit this product of the combustion to come in contact with pictures, painted either in oil or water colours; and the commission are emphatically of opinion that in every system of permanent gas lighting for picture or sculpture galleries, provision should be made for the effectual exclusion or withdrawal of the products of combustion from the chambers containing the works of art.

The commission have examined the Sheepshanks' Gallery as an experimental attempt to light pictures with gas, and are of opinion that the process there carried out fulfils the condition of effectually illuminating the pictures, and, at the same time, removing the products of combustion. According to the indications of the thermometer required and obtained, it does this in harmony with, and in aid of, the ventilation, and does not make a difference of more than one degree Fahrenheit at the parts where the pictures are placed, between the temperatures, before and after the gas is lighted.

Certain colour tests, consisting of surfaces covered with white lead, or with vegetable and mineral colours (especially the more fugitive ones), and in which also boiled linseed-oil, magypl, and copal varnishes were employed as vehicles, had been prepared, and were, when dry, covered one-fourth with mastic varnish, one-fourth with glass, one-fourth with both mastic varnish and glass, and one-fourth left uncovered. Sixteen of these have been placed for nearly two years in different situations, in some of which gas has been used, in others not. They give no indications respecting the action of coal-gas (except injury from heat in one placed purposely very near to and above the gas-burners), but seven of them show signs of chemical change in the whites, due to either a town atmosphere or want of ventilation. The most injured is that from the National Gallery, Charing-cross; and the next is from a country privy: the third, much less changed, is from the House of Commons: the fourth is from the Barber Surgeons' Hall; the fifth from the Bridge-water Gallery; the sixth from the Royal Society's Rooms, Burlington House; the seventh from the British Museum.

The remaining tests hung in—

1. Sheepshanks' Gallery, South Kensington;
2. Secretary's room at South Kensington, where no gas is used;
3. Mr. Henry Drammond's drawing-room, at Albury Park, Surrey;
4. Sealed up and kept in a closet in the secretary's room, at South Kensington;
5. Lambeth Palace, vestibule of the staircase;
6. British Institution, Picture-gallery;
7. Windsor Castle, room with a north aspect, without gas;
8. Mr. Thomas Baring's Picture-gallery, 41, Upper Grosvenor-street, frequently lit with gas;—present no observable change in this respect.

Though apart from the especial subject submitted to the Commission, the members cannot resist a recommendation that this kind of trial, which is especially a painter's experiment, should be continued for a longer period, and, indeed, be carried out on a more extensive scale.

The Commission think it right to state that they were unanimous on all the points to which their attention had been called, or which are referred to in this report.

(Signed)

M. FARADAY.

A. W. HOFMANN.

JOHN TYNDALL.

RICH'D. REDGRAVE.

FRANCIS FOWKE, Capt. R.E.

South Kensington, 20th July, 1859.

ELEVATION OF BUILDING OPERATIVES.

AMONGST the principal causes that have combined to necessitate reform amongst the building operatives, stands the want of unity and co-operation between them: never were they less united than at the present time; and the result has been described by Mr. Scott Russell in his lecture "On what mechanical workmen should be taught," at the Brompton Museum, a report of which appeared in the *Builder* of the 11th ult. He stated that he was obliged to get his best mechanics from foreign countries: at the same time he remarked, that the English workman had been at the head of the workmen of Europe.

* Hofmann.

Thus, he proves that the position of the British mechanic is retrogressive, whilst the age is progressive. Is not this state of things a disgrace to the mechanic, the employer, the architect, and the Government? Where is now our much-vaunted civilization? The time is come for us to arouse ourselves from our lethargy, not only by reducing the hours of labour, and increasing the hours of study, but by adopting the suggestions of "An Architect and Well-wisher to the Body of Workmen," which appeared in the *Builder* of the 26th of February last. Masters and men must unite for the mutual improvement of their respective professions; emulate the architects, and the medical profession,—and follow the example set by their fellow-workmen in Victoria (Australia), who are about to build a trades' hall in Melbourne, and whose government has granted 15,000*l.* to purchase the land to build it upon. This is what is required in England; a kind of university, through which every mechanic should pass, and in which every mechanic should receive a certificate, first, second, or third class, according to his skill in his trade, but not according to the amount of material he should destroy; for some of the work turned out is nothing less than a wholesale and sinful destruction of material. These certificates should determine the rate of wages to be given; for it is nothing but fair that the best and most skilful workman should receive more wages than the negligent, careless, and unskilful workman, who, like the lower animals, has strength without the necessary qualifications to apply it. Therefore, like those animals, if not carefully watched by a superior, he would soon create extra work for his fellow-workmen. Amongst carpenters and joiners there are at least four classes of workmen. The first, who are but few, and bear a proportion of perhaps 1 to every 150 or 200, are superior men in every respect. Their scientific knowledge is extensive, their powers of reasoning are unsurpassed, and their minds are vastly contemplative; they are thoroughly acquainted with their profession, can manufacture any thing of wood, whether bounded by straight or curved lines, and ever so complicated; and though their knowledge of the sections and developments of solid bodies, they can do their work with the least quantity of material, and in the quickest and readiest manner. All foremen ought to be, and are sometimes, chosen from these. The second-class workmen, of which there are about 20 or 25 per cent. are sometimes erroneously called first-rate workmen; but though they can do anything circular in plan, they do not understand that which is circular in plan and elevation at the same time: they are not so studious as the first-class workmen, but are good, sound, careful workmen, and, under really efficient foremen, may become tolerably fair substitutes for what I call first-class mechanics. Of third-class or ordinary workmen, there is, doubtless, the greatest number: they are often ignorant men, and if driven, or paid by the piece, some of them will turn out their work disgracefully; though when treated well, and having plain working drawings carefully set out by the foreman, they will turn out plain work as an Englishman was wont to see it turned out. The men I shall call the fourth class-workmen, are those who seem almost brainless: they are sometimes put to good work, but are only fit to mend an old floor, or nail a ledge-door together; yet no distinction is made between them and those I placed first on the list: this must be wrong in every respect, and tends very materially to aggravate the evils from which we suffer, and, aided by competition, it gives rise to the complaint of Mr. Scott Russell before mentioned. According to the present vicious system, that every man shall be paid alike—as though it were a moral impossibility for one mechanic to be superior to another—there is no stimulant to urge the mechanic to study and acquire excellence in his trade: he knows that he is as likely to be a loser as a gainer by it, and even more so, for it is so fashionable now-a-days not to have the right man in the right place, that there are a great many inefficient foremen who are chosen from those workmen I have placed in the third class, on account of their glibness of tongue and their canting dispositions, and who, consequently, cannot endure a man better than themselves. A really efficient foreman fears no man: he has confidence in himself, and is beloved by his men.

The panacea for all the evils from which the building operatives of the United Kingdom are now suffering is to be found in the establishment of an institution with which every person connected with the building profession must be connected, and through which every mechanic

must pass for examination as often as he pleases, in order that he may receive the certificate which will determine his rate of wages. All will be thus united, and the results will be power and influence, contentment and prosperity, national excellence and social progress, and above all mutual good fellowship between every member and every branch of that noble and beautiful profession, and the general prostration of vicious and rapacious competition.

I am not so sanguine of the results of the hours of labour being reduced to nine instead of ten hours per day as some; neither do I view it with such alarm as Mr. T. L. Donaldson: the effect will be but trifling to all parties concerned; but I wish to urge the necessity of reform in the right direction, believing the time has come for us to be up and doing, if we wish to maintain our elevated position amongst the nations of the earth.

THOMAS T. SMITH, Joiner.

THE SANITARY ASSOCIATION OF LADIES.

THE first annual meeting of an association for the diffusion of sanitary knowledge, formed by a few ladies, has been recently held. Although this society is managed by and altogether formed of ladies, the Earl of Shaftesbury took the chair on this occasion, and several other gentlemen of influence were also present. The reason for the establishment of this association is the belief of the founders that in the majority of cases the cause of a low physical condition is ignorance of the laws of health. The report stated that the committee had issued upwards of 20,000 tracts upon the management of children: they had also devoted their attention to improving the pattern of children's clothes, but from the want of funds they had not been able fully to carry out the intentions of the association.

We are glad of the formation of this society, because we believe that, even amongst a large number of educated women, sanitary laws are little cared for, and less understood; and that, if this society be properly supported and carried out, it will be imitated in other towns, and be the means of saving a large number of the one hundred thousand lives destroyed each year by preventable diseases.

During a long experience we have often noticed with pain the loss of life which has resulted from the neglect of the most simple sanitary laws: it is through want of this knowledge that numerous children are smothered by wrapping them in bed-clothes, shawls, &c.: the atmospheric air is kept from them, and they are poisoned by their own breath. Ignorance causes nurses and mothers to swaddle up infants in tight bindings, which prevent the proper action of the heart and lungs, which leave the chest exposed to the weather, and allow young children in the hot sunshine to be exposed to the burning rays. Hundreds of young children even among people who are well to do, are killed annually by improper feeding. Some are fed with animal and vegetable food before the teeth have appeared and the stomach has become sufficiently strong for the reception of such matters. Others are suckled for long after milk has ceased to be sufficiently nutritious, nay, has become injurious to health. Again, opiates, if they have the effect of producing temporary quietness, surely act injuriously on the constitution. Medical men in large practice amongst the middle and poorer classes, say that on the night after Christmas-day, they do not expect to have much rest, in consequence of being called to attend upon children seized with convulsions, in consequence of improper food. If knowledge of these matters were general, parents would surely not risk the lives of their children through mistaken kindness.

It would be a means of saving many lives if it were more generally known what portions of vegetables and fruit are indigestible, and must, by lodging in the stomach, produce dangerous diseases. A hundred instances might be given of deaths caused through ignorance of the right laws of health. Young mothers are persuaded by ignorant monthly nurses that large quantities of stimulating drinks are actually necessary when nursing infants: this has led to mischief, and caused the ruin of many.

The management of sick rooms, the proper ventilation of rooms of all descriptions, a knowledge of those gases which destroy health and life, and the means to be taken to counteract or prevent their effect, the ventilation of schools, the danger of damp, and many other matters on which the welfare of the community depend, ought to be made matters of female education.

We know that much good has been done by some of the most intelligent of the medical profession directing the attention of their patients to the sanitary conditions by which they are surrounded: as much, and often even more, good may be done by discovering and directing that sanitary defects of a dwelling should be removed, than by giving medicine; and when ladies visit the homes of the poor, both in towns and villages, they might, while doing other good, often save life by quietly directing attention to neglected and erroneous sanitary arrangements.

All who know the sanitary evils, and want of knowledge, which exist, will rejoice, as we do, at the formation of the Ladies' Association for the Diffusion of Sanitary Knowledge, and wish earnestly its success.

DRY CLAY BRICK AND TILE MACHINERY.

WE mentioned last week the machine patented by Messrs. Bradley and Craven (not Madeley) and exhibited by Mr. H. Chamberlain. This and other machines exhibited by the same gentleman received the highest reward the judges could bestow.

The following from Mr. Chamberlain will interest our readers:—

"In introducing this system of brick and tile manufacture, which is no doubt novel to many readers, I must make a few remarks on the advantages they offer over the old plan. Brick-making has been hitherto carried on during a limited season of some six months in each year, or during the long days; as the bricks could not be dried in the winter, and frosts would totally destroy them. The result of such a system presses very hard upon the brick labourer, who only finds full employment for one half his time. Again, a large stock of bricks is obliged to be made, to meet the demands for the winter months, and if trade is not very flourishing the manufacturer has to hold them, or sell them at a great sacrifice. On the other hand, it often occurs that works are seriously delayed in the spring, from the make of the previous year being exhausted, and no further supply can be obtained until the new bricks of the current season are ready for use. The dry clay machines meet these emergencies, for all they require is a shed in which the clay may be stored as it is raised from the earth, a machine house, and kilns. If the clay-shed holds sufficient material for a month or six weeks' consumption, the works can be kept on uninterruptedly during the whole year, giving constant employment to the labourer, and enabling the manufacturer to meet any demand. In districts of the country where coals are cheap the bricks are dried on flues throughout the winter; or where my improved brick-works are erected, they are dried both in winter and summer, by the waste heat of the burning kilns. In use of flues, the consumption of fuel is considerable for this purpose, and therefore greatly increases the cost of manufacture. The saving of labour in making the bricks from dry clay is immense. When made in a plastic state, the clay must be tempered and worked, at great labour, into a perfectly homogeneous mass, and after manufacturing the bricks they have to be spread on drying-floors, or walled on drying-ground, to evaporate the water that it has taken so much trouble to thoroughly mix and work into it. As the drying ground for a large work is necessarily extensive, the labour of the several removals must entail a costly process, while on the dry clay making nothing more is necessary than to throw the rough earth into the machine, when it is delivered out a perfect brick for removal to the kiln at once for burning. The difficulties that arose during the first trials of this system were several, and many expensive experiments were carefully conducted before the machines were sufficiently perfect to introduce to the public. The first serious drawback was the difficulty of expelling the whole of the air from the clay, as the latter made a perfectly tight joint round the pistons before the whole of it was expelled, and the result on its release from pressure was a series of laminated cracks on the face of the brick, caused by the expansion of the air on being released from pressure. This is now entirely mastered in the following machines. Another difficulty also presented itself, viz. that a machine which would make a perfect brick from a strong plastic clay if quite dry and very finely sifted, was quite useless if the clay was damp. The machines I now introduce have overcome these defects, and will work equally well with clay dry or damp, coarse or finely sifted. In practice it is found advisable with strong clays to use a portion of sand with

the earth, the same as in plastic clay manufacture. The pressure can be regulated to anything desired, so that bricks can be made of the densest description for engineering purposes, or they may be made of as open a texture as the hand-made brick, by giving less pressure, and the addition of sand to the clay.

For fire-brick making these machines are particularly adapted, and in case of existing works that have proper grinding mills, the machine only is necessary."

THE NEW THAMES GRAVING DOCK COMPANY.

The shareholders in this company (of whom, by the way, there are but few), with their friends and a number of gentlemen interested in shipping and scientific improvements, were present by invitation at the new docks, adjoining Victoria Docks, Plaistow, on Wednesday last, to see a ship raised and to inaugurate the company.

Under the old plan of graving docks, it is necessary, as our readers know, to excavate each dock to a depth sufficient to float the largest ship intended to be repaired, and to construct at the entrance of each dock a flood-gate, or pair of gates, to keep the water out.

For ships of the size now in common use, the depth of a repairing dock must be about 24 feet; causing a heavy expense for excavation and retaining-walls of masonry, independently of the cost of the tidal gates.

An entry into docks of this construction is effected at, or soon before, or after, high water. The gate is then closed; and at low water, on a tidal sea, the water is allowed to run out until the ship is left dry for examination or repair in a sort of pit, always damp, and, in winter, soon dark. In needless seas a graving dock must be emptied by the slow and expensive process of pumping.

These difficulties and expenses are diminished, and in some instances removed, by the plans adopted in the New Thames Graving Docks.

Twenty-eight acres of land, owned by the company, are distributed, besides wharfage room, into narrow water-channel, about 30 feet deep, in which the hydraulic lift is erected, and an open shallow basin, and eight separate shallow graving or repairing docks, around which shipwrights will set up their sheds and shops.

The hydraulic lift consists of two parallel rows of sixteen cast-iron columns, each 5 feet in diameter, and 60 feet in length, sunk into the ground, under the water, about 12 feet. These columns are 20 feet apart in each row, and the clear space between the two rows is 60 feet.

Each column contains a hydraulic press 10 inches in diameter, and of 25 feet stroke, the top of the press being at the ordinary level of the water. The ram of each press carries a small crosshead, from which are suspended, by means of descending rods, two wrought-iron girders 60 feet in length, which extend entirely across the dock to the corresponding column and press on the opposite side. There is thus a series of thirty-two suspended girders extending entirely across the dock, and when the presses are lowered, lying at the bottom of the dock, in 28 feet of water, these really form a large wrought-iron girder, which, by means of the presses, may, with a vessel upon it, be raised out of the water or lowered at pleasure. The vessel to be docked is not raised directly upon the gridiron, but upon a wrought-iron pontoon, proportioned to the size of the ship to be docked. This pontoon is first placed on the gridiron, and sunk with it to the bottom of the water. Then the ship is brought between the columns and over the pontoon, and a 50-horse engine working the hydraulic presses, raises the gridiron, the pontoon, and the vessel altogether, until they are clear of the water. At this stage of the proceedings the pontoon empties itself of water through valves provided for the purpose, the valves are then closed, and the gridiron being again lowered to the bottom, the pontoon with the vessel seated upon it, is left afloat on the surface. The shoring of the vessel (a work of difficulty and cost under the old plan) is accomplished by large moveable frames or sliding wedges, which, while under water, are drawn into close contact with the vessel, so that she sits on a huge timber cradle without possibility of being strained.

In less than forty minutes, a vessel drawing 18 or 20 feet of water, is thus left afloat on a shallow pontoon, drawing only 4 or 5 feet, and may be taken in one of the eight shallow docks, where convenient workshops, with tools and shelter for the men, will be provided for working, close up to the bulwarks of the vessel.

The company was founded in April, 1857, and the first contract for works was accepted in July of the same year. It appears from a statement made by Mr. Stephenson, M.P. at the second general meeting of the company, that experiments with one pontoon had been carried on during the months of November and December, 1858, and in March of the present year they had let one dock and one pontoon to a respectable ship-building firm, at a fixed rent, and a charge of 6d. per ton for every ship lifted. Up to the date of the meeting eighteen ships * had been lifted without the slightest accident of any kind, and the earnings of the previous six weeks had produced an average of over 50l. a week, with one pontoon only.

The ship raised on Wednesday was the *Jason* of Aberdeen, of about 100 tons burden, and the whole operation was performed in the most satisfactory manner, without the slightest hitch of any kind.

At a luncheon, which followed, Sir Joseph Paxton proposed the health of the engineer, Mr. Edwin Clark, under whose patent the company is established; and Mr. Clark explained how the arrangement had grown out of his experience in raising the tubes of the Britannia-bridge. There were also present Sir Morton Peto, Mr. Betts, Mr. G. F. Young, Mr. Macdonald, Mr. Stokes, Mr. N. Gould, Lord Clarence Paget, Mr. George Berkeley, Mr. Le Neve Foster, Mr. W. Haywood, and others. Mr. Samuel Sidney is the secretary.

HEALTH AND THE SEASON.

WITH the extraordinary heat the mean height of the barometer during the second week of July being 30.058 in. the mean temperature of the week was 71 degrees, which is higher by 9.3 degrees than the average of the same week in 43 years; the thermometer reached at one time the high point 92.5 degrees in the shade, and in the sun it reached 116 degrees, the death rate has increased 300 beyond the average deaths which the second week of July should have produced. The chief cause of the extra deaths is diarrhoea: taking four weeks, the deaths from this cause have been 34, 58, 132, 264, and it is worthy of notice that out of those 264 deaths, 245 occurred to infants before they were two years old: it thus seems that only 19 deaths happened above two years of age. Besides the deaths from diarrhoea, 25 are attributed to cholera or choleraic diarrhoea, all amongst children except two. The increase of the deaths from diarrhoea, which generally takes place at this time of the year, is often attributed to the eating of fruit and vegetables. When we learn, however, that so many cases have been fatal to children who were barely able to eat, it shows that the deaths have been generally caused by some other agents. It is remarked that this disease has been most fatal in districts rather removed from the Thames. In St. Pancras there were 28 deaths. These facts agree with the opinions we have often expressed, that although the Thames is both dangerous and unpleasant, there is far more danger where stagnant drains and cesspools are allowed to fester below or close to dwellings.

THE DRINKING-FOUNTAIN MOVEMENT.

MR. AND MRS. GURNEY have presented a fountain to the city of Norwich. It is of pink granite, with trough for cattle, &c. and is to be put up on Tombland. A subscription is on foot at Gravesend for the purchase and erection of four cast-iron fountains, at a cost of about 100l. A free supply of water for one in West-street has been offered by a Mr. Nettleingham. Subscriptions are being obtained for a fountain at Southsea, to be erected on the common at Fore Barn. A fountain has been erected in Market-street, Oxford. The front is of Portland stone, and the back of white veined marble. The design was furnished by Mr. Galpin, surveyor to the Street Commission. The mayor of Chester has undertaken to erect a fountain at the junction of the five roads in Bridge-street. Another is to be erected by the City Council in Boughton. Dog-troughs will be added. A fountain has just been constructed, at the cost of Mr. Alderman Heywood, for the Manchester city council. It is intended to be erected at the junction of Swan-street and Oldham-road. Its base forms an equilateral triangle, on the angles of which are three cast-iron ornamental pillars, from which spring three arches, united in the centre at the top. Depending from these there is a branch of ivy leaves, and from whence issues the water,

* Since that date to the present time (27th July) about ten additional ships have been lifted.

which falls into the granite bowl. The surplus water then passes interiorly into a trough, formed in one of the sides of the stone pillar which supports the granite bowl, and is there intended for the use of dogs. Messrs. Patteson, marble cutters, were the makers. The first public drinking-fountain for Carlisle has just been completed. It has been provided by the corporation, and is placed at the corner of Rickergate and Corporation-road. It is a mural fountain of red granite. Fountains are now rising in all directions, in railway stations, in the poor neighbourhood of St. Giles's, and elsewhere. We hope while this work is going forward that the margin of the Thames will not be neglected. On or near the steam-packet piers a glass of cool pure water is often a necessity. Father Thames would look awfully black by the contrast, but he must be so well aware of his condition, that he could not possibly feel offended at the introduction of what he is no longer able to supply. A drinking-fountain has been erected in Endell-street, by the Messrs. Wills, and is the gift of Mr. Marmaduke Langdale. It comprises columns and arch in polished red granite and serpentine and alcove of white marble. At Weston-super-Mare, a drinking-fountain is in course of erection at the end of the Esplanade, from the design and under the direction of Mr. Charles Phipps, architect, of Bath. It is Gothic in style, and built of Bath stone, with Devonshire marble columns, and inscriptions in Minton's encaustic tiles. It will stand about 10 feet high, and have three outlets for the water: the cost will be about 50l.

CHURCH BUILDING NEWS.

Putney.—On Thursday, the 21st instant, the new church of St. John the Evangelist, at Putney, Surrey, was consecrated for divine service by the Bishop of London. This church is on a site to the west of Putney-hill, presented by Mr. John Temple Leader, late M.P. for Westminster, who also subscribed the munificent sum of 2,500l. towards its cost, which will be about 4,600l. The design is in the Early English style, having clerestory, aisles, transepts, and chancel, with open timber roofs, and poppy-headed open seats. The exterior is faced with rag-stone, with Bath stone dressings. There are sittings for 500 adults, without galleries. An organ has been put up by Messrs. Hill and Son in an organ chamber, erected over the vestry. Mr. Charles Lee was the architect, and Messrs. Avis and Sons, of Putney, were the builders.

Llangedmore (Cardiganshire).—The parishioners are about to remodel their church, and refit the whole interior, from plans prepared by Mr. Withers, architect. The present edifice was erected about thirty years since in the fashion of those times, wood window-frames, high and irregular pews—now all going fast to decay. These are to be replaced by Bath-stone windows. Open benches and chancel stalls, a vestry, and other improvements, also form part of the proposed work. The contract for the whole has been taken by Messrs. Davies and James, builders, of Cardigan. Some cartoon memorial windows to deceased parishioners are being painted by Messrs. Lavers and Barraud, of London.

THE THORNTON WINDOW, ST. NICHOLAS, NEWCASTLE.

In a recent number of the *Builder*, I notice a quotation from a local paper, showing that it is proposed to alter the east window of the famous church of St. Nicholas, in Newcastle-upon-Tyne.

In that paragraph it is mentioned that the window was erected in the fifteenth century by Roger Thornton, a man of whom this northern town has reason to be proud. He came there a poor boy, and by his ability and integrity raised himself to the position of a wealthy merchant, and in course of time he became a great benefactor to the town. The memorial to such a man should be considered sacred. Moreover, this window was a good example of the style of architecture of the period at which it was erected. It is very likely that Roger Thornton's memorial window was decorated with stained glass, recording particulars: this may have been destroyed. I remember, when the revival of glass-staining was commenced, about twenty-five years ago, that some stained glass, which was at the time considered remarkable, executed by a townsman, was placed in the window, but so great have been the improvements in this art that it is considered to be contrary to good taste.

The report says that, in conjunction with the Ions Memorial Committee, it is determined

to put new stone-work into the window, with a view of having it filled with stained glass as a memorial to the late Dr. Ions. It is also said that the "new window will be considerably higher than the present one, and will be filled with tracery retaining the features peculiar to windows of the perpendicular period." It thus appears that not only is the memorial window of Roger Thornton to be devoted to another purpose, but its very shape and the peculiarity of its architectural features changed. Few know better the musical ability and worth of the late Dr. Ions, and would more gladly do him honour, but I do not think that this should be done by removing the traces of a man who was greatly distinguished by his charitable and other deeds. Moreover, it seems to be a matter of doubtful taste to alter the size and shape of an important feature in an ancient church. Hundreds of times I have admired the picturesque effect of the choir of St. Nicholas's Church, the peculiar depth and richness of its light and shade, and this will be in some measure changed by the alteration in the size of this important light. The removal of the mightily screen and organ, and one or two other matters, would be the means of making this one of the most spacious and beautiful parish churches in the kingdom.

A NEWCASTLE MAN.

THE STORY OF CHICHESTER CROSS.

ONCE upon a time—that is to say, three centuries and a half ago—there lived in this quaint, quiet, old town of ours, this dear old Chichester, a certain bishop whose name was Edward Story. And the people loved him, not because he was their bishop, but because he was such a kind-hearted, good, old man. Good cause had they to love him; for he was their staunch friend. "Friends of the people" are plentiful as gooseberries now-a-days (particularly at election times); but they were "few and far between," indeed, in those old times of which we speak—in the year of grace 1500. As the bishop passed along the street children stopped in their play and knelt to receive his ready blessing. The merchants laid aside their dealings, paused in their chaffings for higher prices, out of respect to their ecclesiastical father, and uncovered as he passed along. All harsh words or angry looks faded away; in fact, the bishop seemed to be surrounded by an atmosphere of calm and happy religion, which influenced all who came into his presence.

He had passed the prime of life when he first came to the town, full twenty years before; he had laboured all that time in doing good to all around him,—in proving that true religion lives in our deeds far more than in our words; they had seen his hair grow whiter year by year, till now 'twas as the driven snow; and they had seen those manly shoulders bending more and more with age and infirmity. All knew he could not last much longer; but a gloom spread over the whole town when the news passed from mouth to mouth that the good bishop had given orders for his tomb to be prepared, and with heavy hearts they soon heard the sculptor's chisel chipping away the marble to form a plain but solid monument. That table tomb still exists; but how few among us think of the mouldering remains beneath—of the mere handful of dust which now represents all that was mortal of him who was one of the best Christians the town ever knew.

But the old man did not die yet. He had done much already for the good of the townspeople. The founding of the Grammar School in West-street was one of these good works; but there was one other which he wished to see completed—one upon which he had pondered, and which had filled his large heart for years. Often had it sorely grieved him to see the poor peasantry come wearily trudging into the town from the village of Bosham with fish, or with vegetables from those hamlets among the forest-covered hills, and obliged to offer their wares in the open streets, exposed to the glaring sun in summer, to the drenching rains of autumn, or shivering amid the ice and snow of winter. He determined to build them a market-house; some say he drew the design with his own hand, and I believe it, for bishops were often their own architects in those days. He bought a piece of ground of the corporation, for 10*l.*—a much larger sum than that now. Ruskin tells us, and we all know it to be true, that men worked with their whole heart in those times: whatever they found to do, they did thoroughly. A barn would have served the purposes intended; but they could not do things in that style. If they had a building to erect, they made such a one as future ages might look upon with pride and pleasure—they made it a "thing

of beauty" which should be "a joy for ever;" and in spite of the bad taste of the Goths of the last century, who added that lantern at the top, and put that hideous iron fencing round it, the cross is still one of the greatest ornaments of the city. Here the poor people could sell their goods exempt from tolls, and protected from the weather. One of our city chroniclers tells us, also, that the bishop left an estate worth 25*l.* at Amberley, to keep the cross in repair. He further tells us that the corporation sold this estate a few years afterwards, in order to buy one nearer home. Can any one tell us where the estate is which they bought, or ought to have bought? Some one fond of searching among dusty old records might do good service to the town by ascertaining what amount of truth there is in this statement.

So much, then, for the previous history of our City Cross. Its present state, we all know. And now I have a hint to throw out as to its future use, a hint which there are many good men and true who are ready to act upon at once. Its only use at present is to record the flight of time, and even this simple duty it very imperfectly performs; for one has to find the mean between the four dials before he can satisfy himself as to "What's o'clock." What I would beg to propose is, that it should be converted into a DRINKING FOUNTAIN. Let there be a seat where the wayfarer could rest himself, protected from the rain or from the fierce rays of the summer sun, and let there be a constant supply of filtered water. All who have seen how greatly these drinking fountains are appreciated by the working classes of the metropolis and the large towns of the north will, I am sure, gladly come forward to support such a plan. Let us not be left behind in this age of progress, but unite at once in doing so good a deed. A comparatively small amount will make this the most perfect thing of the kind in the kingdom. Its position, too, is just adapted to such a purpose. Let us not refuse the healthful and refreshing draught to the tired and thirsty wayfarer, but come forward at once and convert this beautiful structure into a drinking fountain, and so, in the spirit of its good founder, finish "The Story of Chichester Cross."

CARL.

ARCHITECTURAL COPYISM.

HOLLOWAY AND WEYMOUTH.

SIR,—In the interests of art and honesty, I should like to be informed how it happens that St. Luke's Church, Holloway, by Mr. Lee, not yet quite finished, is so exactly like, externally at any rate, St. John's Church, Radpole, Weymouth, that I should conclude they had been erected from the same drawings. The latter church was built in 1850, and is attributed to Mr. Talbot Bury. I enclose you the means of judging as to the correctness of my assertion.

TOO BAD.

VENTILATION OF SCHOOLS.

COMMITTEE OF COUNCIL.

SIR,—It was only a few days ago that my attention was directed to Mr. Beattie's letter contained in your journal of the 11th of last month; otherwise I should have taken earlier notice of his criticisms upon the Hyde warming and ventilating apparatus.

Mr. Beattie's difficulties are not new to me; they are generally suggested by those who have thought at all on the subject of ventilation, but who have failed to apprehend at once the entire principle of this apparatus.

If your correspondent will look again at the paper sent to him by the Committee of Council, he will see that he has omitted to notice the fact that the supply of fresh air to the school is from the heating-chambers (as they may be called) connected with the stove; and that the fresh air therefore enters the room at a very high temperature, far higher than that of the vitiated air ascending from the children. The consequence is, that a large volume of fresh air, thus rendered specifically lighter than the vitiated air, is continually rushing up into the upper part of the room, and as it cools, descends till it meets with and greatly dilutes the much smaller volume of vitiated air that is generated in the room. So considerable is this dilution that the air breathed by the children in a school warmed by this apparatus is found to be sufficiently pure for health and comfort, and, in fact, as pure as we can probably hope to obtain it in a closed building.

Towards the close of his letter, Mr. Beattie evidently contemplates fresh air being admitted into the room through ventilators in the floor or skirting-board. But if he will write to the manufacturer, Mr. J. Carter, High-street, Winchester,

for a full description of the stove, he will see the paper that will be sent to him a direction for the careful closing of all the customary ventilators while the stove is in use; as the only fresh air admitted into the room, with the exception that supplied by the leakage of windows and doors, is intended to find its way through the heating chambers. Moreover, he will see that provide as far as possible against the ventilating drains being supplied with fresh air from the doors and windows, rather than with air from the room, care is to be taken that these outlets be placed in the floor that they shall not lie in direct line between the fire and a door or window for every current of cold air entering the room will rush by the shortest path to the fire, and will, therefore, not turn aside to enter a drain whose outlet does not lie in such path.

It is suggested by your correspondent that "the air for feeding the fire should be conveyed by pipes having their openings close to the ceiling;" but he will now see, from what I have said above, that this would be a mistake, for we should then be drawing off the purest air in the room and leaving the worst unaided in its escape.

In the plan which the manufacturer will forward to Mr. Beattie, and a copy of which I enclose for your own inspection, the drain-outlet are not in the best position. They are as originally placed in the school-room of this parish; further consideration has shown me that the ought to be in opposite corners of the room, and in the extreme distance from the fire.

The experience of about ten years has so fully convinced me of the merits of the apparatus, that I cannot but rejoice to hear that "the system is getting into practice." The manufacturer is frequently applied to for stoves for fresh schools in localities where they have been for some time already in use. Surely this may be regarded as satisfactory proof that they are not found to be inefficient in "practice," although the principle on which they are constructed may, at first sight appear to be "wrong in theory."

W. WILLIAMS.

Tearage, Hyde, Winchester.

THE TENDERS FOR MR. SPURGEON'S TABERNACLE.

ARCHITECTURAL COMPETITIONS.

SIR,—May I be permitted to call your attention to the list of tenders for the erection of the New Tabernacle for the Rev. C. H. Spurgeon (as reported in your journal of last week), which seem to me to expose the present fallacious principle and practice of architectural competition.

There were thirteen tenders, the highest of which was 26,370*l.* and the lowest 21,500*l.*

Taking the lowest of all the tenders, the figures stand thus:—

For the carcass	£13,000
" finishing	7,000
Total, if executed in Bath stone	20,000
Add, if in Portland stone	1,500
	£21,500

There is also the contract for the earthwork and drainage, which has to be added to this sum, the tender for which amounted to 593*l.* which makes the total cost for the building of the tabernacle 22,093*l.*

Nor is this all, for the conditions upon which architects were invited to compete, were as follows:—"The total cost, including architect's commission, measuring, warming, ventilation, lighting, boundary-walls, fences, paths, fittings, and every expense, to be about 16,000*l.*"

The architect's commission and clerk of the works' salary, &c. have therefore to be added to the cost of the building: these will, no doubt, amount to 1,550*l.* which will make the cost 23,643*l.* or say with extras 24,000*l.* or just "half as much again" as the prescribed amount.

Now, my object in writing this is to bring forward another proof that in making out designs for competition, architects do not restrict themselves to the conditions imposed upon them, either from ignorance of the cost of building, or from there being so many chances against their being the successful competitor, the question of cost is lightly considered, or perhaps only guessed at, by the majority, the main object being to design something attractive, which, if successful, must afterwards be pared down (if it can be pared down) to some lower amount than the estimated cost.

Such a system is greatly to be deprecated. It is unfair and unjust, both to those who invite architects to compete, and to those architects who

desire to compete fairly, and to make out a design which shall be executed at something approximating to the restricted amount. Nor can he feel happy but that the author of the first premiated design ought (as an act of justice) to be called upon to furnish estimates for his design, seeing that the tenders for the second premiated design are so far in excess of the prescribed amount.

JOHN BELCHER.

COMPETITIONS.

Maidstone.—The committee for building the New District Church of St. Paul, Maidstone, invited five local and two London architects to submit designs for their new church. The committee ultimately selected the design of Messrs. Peck and Stephens as the one most in accordance with their views, and awarded the sum of 30*l.* to the best, and 20*l.* to each of the two other competitors. It is proposed, as soon as funds are obtained, to build a parsonage adjoining the church.

Independent College, Taunton.—Sir: I have to inform you of a new class in competitions, originated by the committee of the Taunton Independent College. This committee issued instructions to architects stating that certain accommodation was required, and that no designs would be received which could not be executed for 4,000*l.* On examination it was clear to myself, as it must have been to every competent estimator, that no such accommodation could possibly be provided for that amount; but, supposing that this would be clear to the architects, and that the most feasible designs would be accepted, I did, after considerable labour, submit a design.

Now comes the point. The list which has been published, and which you refused to insert, wherein the authors of designs with certain mottoes are required to give addresses, to which such designs might be forwarded, "such designs not being adopted," would lead to the inference that other designs were adopted, though the mottoes were not given. I regret, however, to assure you that the published list contained the mottoes of all the designs submitted. And these are all set aside.

If we are to suppose that excess of cost and nothing more has led to this, then from whom but the competitors did the committee learn to estimate? And on this point, if no other, the premiums ought to have been waived.

COMPETITION.

BUILDERS' BENEVOLENT INSTITUTION.

YESTERDAY (Thursday) the twelfth annual meeting of the subscribers and friends of this society was held at the London Tavern, Bishopsgate-street, for the purpose of receiving the report for the past year; for the election of president, auditors, treasurer, and directors, for the year ensuing; and for other matters connected with the welfare of the institution. Mr. George Bird, treasurer, occupied the chair, owing to the absence of Mr. Thomas Piper, president, through pressing and important engagements.

The minutes of the previous meeting having been read and confirmed.

The Secretary proceeded to read the report for the past year, as follows:—

"In appealing to the public for their continued aid and support, the directors consider that there is not amongst the numerous institutions for the relief of the necessitous one perhaps more deserving of support than that which has for its object the relief of those connected with the building interests, whom age and distress render utterly unable to assist themselves.

As has been before urged, the nature of the building operations are, from the never-ceasing struggle of competitive energy and various causes, rendered perhaps more precarious than the pursuits of other classes, and which your directors conceive to be a strong claim upon the generosity of the wealthy, and those whose efforts have been crowned by success.

The directors take leave to advert to a subject explained in the last report, viz. the termination of the Guarantee Fund obtained at the dinner held in 1855, by which, at the close of the year 1860, the income of the institution will be reduced 120*l.* 15*s.* per annum. This contingency they are in part endeavouring to meet by not filling up all the vacancies occasioned by the decease of pensioners; and they do hope that, at the annual dinner in October next, the number of subscribers will be sufficiently augmented to prevent such a precautionary measure being necessary, and to make up for the deficiency. They assure their kind friends and supporters that the most pleasurable portion of their duties is an election of pensioners, and the greatest drawback their inability to elect more from want of sufficient funds.

The subscriptions and donations for the past twelve months amount to 1,036*l.* 0*s.* 6*d.*, and the trustees have purchased 883*l.* 7*s.* 2*d.* Stock, Three per cent. Consols—457*l.* 19*s.* 1*d.* for the Relief Fund, and 125*l.* 8*s.* 1*d.* for the Building Fund.

The total sum now invested is 6,683*l.* 7*s.* 2*d.* Stock, being 4,557*l.* 19*s.* 1*d.* for the Relief Fund, and 2,125*l.* 18*s.* 1*d.* for the Building Fund, with a balance at the banker's of 218*l.* 14*s.* 6*d.*

The directors have the satisfaction of informing the subscribers and donors, that the acting trustee, Mr. G. Spencer Smith, has succeeded in obtaining from the Commissioners of Inland Revenue all the sums, amounting to 49*l.* 5*s.* 2*d.*, which had been previously deducted from the dividends on the Stock invested in the Three per cent. Consols, which they gratefully attribute to the energy and perseverance of that gentleman.

The following pensioners have died during the past year:—Robert King, elected November, 1849, died May, 1859; Joseph Martin, elected May, 1859, died June, 1859; Ann Fagan, elected August, 1853, died March, 1859; Phæbe Paxton, elected November, 1855, died June, 1859.

An election of two pensioners—one male and one female—was held at the London Tavern, in May last.

The eleventh annual ball, which took place at Willis's Rooms, St. James's, as usual, kindly superintended by the honorary secretary, Mr. Joseph Bird, produced the satisfactory profit of 98*l.* 14*s.* 6*d.* and donations amounting to 2*l.* 1*s.* making together a total of 100*l.* 15*s.* 6*d.*

When we take into consideration the amount of wealth and intelligence which characterises the trades for the relief of the decayed members of which the institution was established, the directors still hope and expect that ere long it will be one of the most numerous and flourishing in the metropolis, and that all those connected with the building interest who have not yet contributed their support will now, when it is so much needed, come forward and assist in alleviating the distress of their less fortunate brethren.

In conclusion, the president, vice-presidents, and the directors feel assured the objects of this institution have only to be better known, and it will be more liberally supported. They therefore anxiously solicit the co-operation of all charitably disposed persons to increase the funds, and thereby extend its benefits.

Mr. George Smith, of Pimlico, has kindly consented to become the president of the Institution for the ensuing year."

The balance-sheet from June, 1858, to June, 1859, showed the receipts to have been 1,911*l.* 1*s.* 7*d.* and, after the payment of all expenses, leaving a balance of cash in banker's hands of 218*l.* 14*s.* 6*d.* and in the hands of the Brighton secretary, 4*l.* 12*s.* 8*d.* making the entire balance 223*l.* 7*s.* 2*d.*

The report having been unanimously received, the Chairman in reference to the balance-sheet, said he exceedingly regretted the figures were below the receipts of the previous year, except at the ball. He was afraid that, instead of progressing, they were receding; but he hoped the ensuing year would be better than the last.

Mr. J. Thorne said the building trade was not so prosperous. The diminution, however, was not very great; and, under all circumstances, they ought to congratulate themselves on their receipts being nearly as good as might be expected.

Mr. Cozens (the founder of the institution) begged to call the attention of the meeting to the fact of the loss which they would sustain, in 1860, by the Guarantee Fund, and urged upon them the necessity of taking time by the forelock. He was particularly desirous to provide for those who could not assist themselves. There were now fourteen waiting to be elected, yet he was afraid they would be unable to have another election in November. It therefore behoved all to assist in realizing a small amount.

The various officers were then elected; and after several complimentary votes and acknowledgments the meeting separated.

BUILDERS AND MERCHANTS' ACTIONS.

BINGHAM V. JONES.

THIS action, at the Brompton County Court, was brought by Mr. Bingham, a marble and stone mason, of Amelia-place, Fulham-road, Brompton, to recover 25*l.* 18*s.* of the defendant, a builder, of Richmond. Mr. W. B. Davies appeared for the plaintiff, and Mr. George Keene for the defendant.

From the evidence on the part of the plaintiff, it seemed that the defendant had a contract to complete several carcasses of houses in St. Margaret's-terrace, Richmond, and to this end the defendant contracted with the plaintiff to supply the chimneypieces and cisterns, and furnished sixteen Sicilian marble mantelpieces at 2*l.* and the stone cisterns for 4*l.* 18*s.* the amount now claimed.

Mr. Keene having elicited that there was a written contract, and that the document did not bear a stamp, contended that the plaintiff had put himself out of the pale of the law, through omitting to have the contract stamped, and cited several law reports and decisions in support of his objection.

Mr. Davies, on the other hand, argued that as part of

the goods supplied came under mercantile dealing, no stamp was necessary, for if such were the case, a brick-maker, supplying a thousand of bricks, or a stone merchant a ton of granite, would be compelled to run to the Stamp Office for a stamp whenever he did not get ready money for his goods.

The Judge was of opinion that the contract did not require a stamp; upon which Mr. Keene elicited from the plaintiff that the defendant had sent a letter respecting the chimneypieces not being of a certain size; and Mr. Bingham denied that he had agreed to supply the marbles at the sizes mentioned in a letter inquiring the prices, &c. The witness admitted that four of the mantelpieces were not up to the contract, but that he had offered to fetch them from Richmond, and supply others to the satisfaction of the defendant, but this offer had been refused.

Mr. Davies said it was only when payment was demanded that the defendant made his objections, he having up to that time said the mantelpieces and cisterns would do.

The Judge (Adolphus) gave a verdict for 21*l.* 18*s.* deducting 4*l.* for the mantelpieces complained of. Upon inquiry as to Mr. Bingham's right to have the goods condemned returned to him, it transpired that Mr. Jones, having completed his contract, had no further control over the plaintiff's goods, which were put up in the houses, neither could he remove the mantelpieces.

The Judge upon this, to the astonishment of all in court, the defendant apparently not excepted, altered the verdict to another for 10*l.* thus leaving the plaintiff without goods, money, or after redress.

Upon what grounds the Court so acted no one present could understand.

Books Received.

Fifth Annual Report of the London Diocesan Church Building Society and Metropolis Churches Fund. 1859.

THE committee of this society report a much more satisfactory state of affairs during the last year than in the previous one. Eleven churches had been consecrated and many designs for further church extension had been begun, or were under consideration. The committee regretted, however, to state that the receipts of the last year for general purposes (after deducting from those of the preceding year, the 10,000*l.* voted from the crown land revenue), had been 900*l.* less than those announced in the last report. They trusted this decrease would only be temporary. The committee express their satisfaction in being able to state that the owners of building land are showing an increasing disposition to afford facilities for the acquisition of sites for churches in the midst of incoming populations.

Exercises in Mensuration, with their Solutions. By FREDERICK CALDER, M.A. Longmans and Co. 1859.

MR. CALDER is the author of "A Familiar Explanation of Arithmetic," of which we have already had occasion to speak in commendatory terms; and the present little volume appears to be one possessed of similar merit, and forming, what it professes to be, a key to all the exercises in the third part of "Lund's Geometry and Mensuration."

VARIORUM.

THE *Freemasons' Magazine*, and *Masonic Mirror* has assumed a new and enlarged form. The first number of the new (quarto) series was published on the 9th of July. One advantage among others from the change is, that it can now be sent abroad by post for newspaper postage (1*d.*). The Magazine will not be confined purely to Masonic subjects, but architecture, archaeology, and other sciences will receive attention, as will the proceedings of scientific bodies, the news, &c. and it will be illustrated by engravings. The number before us contains an interesting paper on Stained Glass, read before the Birmingham Architectural Society in March last, and a large quantity of Masonic and other intelligence.—No. 17, of the second volume of the *Geologist* (Simpkin, Marshall, and Co.), shows that this new periodical is getting on. The number in question contains, amongst various other matter, an interesting article, by Mr. S. J. Mackie, with plates and woodcuts, on ripple-marks, rain-marks, sun-cracks, and even wind-marks, &c. in the oldest stratified rocks, and another by Dr. G. D. Gibb, on what he calls "Fossil Lightning," that is on branching tubes and stalks of flint, forking into sands and sandstones, and pavement flags, and produced at some more or less ancient time by the action of lightning.

FALL OF A ROOF AT WILLENHALL.—The roof of the house at New Junction, fell in recently while the occupants were in bed, or rather, it "fell off," for, dividing in the middle, one part slipped down on one side, and the other upon the other side, only a very small portion falling in the interior. No one was hurt.

Miscellaneous.

NORTHERN ARCHITECTURAL ASSOCIATION.—The ordinary quarterly meeting of the Northern Architectural Association was held on the 19th inst. in the rooms of the Society of Antiquaries, in the Old Castle, Newcastle, Mr. Thos. Austin in the chair. The secretary (Mr. Oliver) having read the minutes of the last meeting, and a large amount of preliminary business having been disposed of, gentlemen were elected in connection with the Association. A special meeting was afterwards arranged to be held, to hear a paper read by Mr. Austin, on the "English Architecture of the Twelfth Century." The annual excursion meeting of this society was held at Finchale Abbey and Lumley Castle, on the 6th inst.

THE LATE SMITHFIELD MARKET.—In the Commons last week, Mr. K. Seymour asked the Home Secretary whether it was the intention of Government to adopt so much of the site of Smithfield market as reverted to the Crown for the enjoyment and recreation of the public. Sir G. C. Lewis said a plan was in preparation by the City according to which a considerable portion of the ground would be dedicated to the use of the public for recreation and enjoyment. The plan in question involved a portion of the ground belonging to the City, and also a small portion of the site belonging to the Crown, which would be used as a dead-meat market.

CHARING-CROSS AND SOUTH-EASTERN RAILWAY BILL.—A proposition was made by the promoters of this bill to give the trustees of St. Thomas's Hospital 10,000*l.* to build a new wing in place of the one to be rendered unfit for hospital purposes, by the railway contiguous to it, but this was declined. The chairman said the committee considered that the hospital would be damaged by the new line, that it would render the north wing totally unfit for the purposes of a hospital, and that it ought to be removed. They considered that the London-bridge Railway Companies should have entered into some arrangement for the purchase of the hospital, but they must leave the question of compensation to be settled by the parties as the law provided. The clauses were gone through, and the bill was ordered to be reported to the House.

ELECTRO-TELEGRAPHIC.—The Folkestone and Boulogne telegraph, now laid, is submerged at Boulogne, thence traverses the depth of the Channel, and emerges at low-water mark opposite Lydden Spout station. From this it passes under the beach to the zig-zag footpath, ascending the cliff to the station, and is thence carried on by an underground wire to an office in Folkestone, near the pier lately occupied by Messrs. Chinnery. It is connected with Dover by means of a wire, from its junction at Lydden Spout to the company's office, passing at a considerable height above houses from Archcliff Fort. The cable weighs 6 tons to the mile.—Gold medals have been prepared for the New York Chamber of Commerce, to be presented "to those engaged in laying the first Atlantic cable." The medals are of two sizes, nine of the first-class, and forty-eight of the second. The first are for the projectors, and the active promoters of the work. The second are for those who were principally engaged in the laying of the cable. It is somewhat amusing to note that neither the engineer (Bright), who was knighted by her Majesty, nor the electrician (Whitehouse), are included either in the first or second class, though both of them had assuredly something more to do with the original promotion of the cable than most of the Americans and others to whom the first-class medals is to be given, while even second assistant engineers in the British men-of-war, and third assistant engineers in the States men-of-war are on the list for the second-class medal. The commanders of these vessels receive the first-class medal.

GRANITE TRAMWAYS.—I read with pleasure the letter of your correspondent, "Mr. D. F. Walker," in your last number, in reference to tramways. I have also observed with him the pavement in Friday-street, Cheshire, and lamented that the material required should lie useless in the possession of the heir to the Crown. There is enough granite to supply the seaboard of the whole nation, at least, at Dartmoor, that might be wrought into blocks by convict labour, and shipped at Plymouth at small comparative expense by tram or railway, as there is one continual declivity from Dartmoor to Plymouth, a distance of less than twenty miles. Any further information I should be glad to give, if desired.

PLYMOUTH.

"SOUTH KENSINGTON MUSEUM."—During the week ending 23rd July, 1859, the visitors have been 5,654 in number; from the opening of the Museum, 987,922. At the Museum of Patents the number of visitors for the week has been 1,715.

THE NATIONAL GALLERY.—In the House of Commons, last week, Mr. Coningham moved that it is the opinion of the House that the system of management which now exists at the National Gallery is highly unsatisfactory, and is detrimental to the public service. He said that during the last twelve years upwards of 90,000*l.* had been expended in augmenting the National Gallery, and appealed to any one who had a knowledge of pictures whether, since the advent of its present administration to office, the exhibition had not positively deteriorated. He contended that the system of management was bad, and therefore he hoped that the House would interfere and put a stop to it. Hon. gentleman might show impatience (there had been sundry manifestations of that feeling all through the hon. gentleman's speech), but he could assure them that the country looked at the result of this question with very great anxiety. They looked upon the way in which the Government had dealt with this question as a test of their sincerity in the work of reform and retrenchment. He concluded by moving the resolution; but there being no seconder, it fell to the ground.

THE REPAVEMENT OF LONDON-BRIDGE.—On Monday last this work was finished by Messrs. Mowlem, Burt, and Freeman, of Grosvenor-wharf and East Greenwich, who have undertaken the remainder of the carriage-way contract for paving, since the demise of Mr. James Chadwick. Twelve days have been occupied in its completion, during which time 5,000 tons of material have been removed, and as much new granite, in 3-inch Aberdeen and Guernsey cubes, with massive trans and worked kerbs, of the best quality, direct from the quarries of the firm, have been laid. Some difficulty was experienced in consequence of it having been decided that half of the bridge only should be paved at once, leaving the other half as a margin for the traffic. Mr. C. Cave was clerk of the works, and Messrs. Murray and Webb were the foremen.

BALLOONING: PREPARATIONS FOR A TRANS-ATLANTIC VOYAGE.—A trip from St. Louis to the sea-board, previous to an attempt which appears to have been seriously entertained of crossing the Atlantic, is thus described in an American paper:—"Friday evening, at twenty minutes past seven, the balloon *Atalantis* left St. Louis for a trip to the sea-board: Messrs. Wise, La Montaine, Gager, and Mr. Hyde, of the *Republican*, were the passengers. The balloon landed near Adams, Saturday afternoon, having travelled 1,200 miles in nineteen hours. The balloon travelled over the whole of Lake Erie, from Toledo, across Long Point—passing between Buffalo and Niagara Falls. Just before reaching Rochester, the balloon encountered a violent hurricane, which swept it from its course and carried the voyagers over Lake Ontario. It was their intention to have followed the Central Railroad, as near as possible to Albany, and but for the storm of Saturday they would have been successful." The balloon was dragged for fifty miles across Lake Ontario, and almost in the water all the time. It was afterwards destroyed in a forest. The highest point attained during the voyage was a little over two miles. The balloon was charged with 75,000 feet of gas at starting. This balloon was the one constructed at Lansingburg, for a voyage across the Atlantic. The aeronauts are said to be "well satisfied with their trip, and confident that aerial navigation for great distances is entirely practicable." The trip cost Mr. Gager alone some 2,000 dollars. The "*Atalantis*," it is to be feared, runs the risk of disappearing in the ocean like Plato's Island of the same (in this case) not very auspicious name. To travel 1,200 miles in a balloon, however, is at least a step in advance, and nineteen hours shows what may yet be done, were there only means of guidance available. The projectors in this case feel assured of a west to east air current at a certain height in the atmosphere to waft them safely across the Atlantic.—For the raising of balloons, we may here note, a correspondent of our own, Mr. C. M. Dick, senr. proposes heat from coal ignited on a fire-tile furnace, such as recently described in the *Builder*; and the balloon he proposes to be of silk made impervious to air or gas by vulcanized india-rubber, the texture being similar to that of light waterproof silk top-coats and cloaks. The caution, he says, will withstand over 200 degrees of dry heat.

ROMAN REMAINS AT WITCOMBE.—A Roman villa has been discovered at Witcombe, near Bath. It is situated on the estate of Lady Cromie, and consists of tessellated pavement in various devices, and several baths are attached to the building, the largest of the kind that are known. It was discovered by some labourers while in the act of rooting up an old ash tree, which disclosed a doorway leading into the villa. In the interior were found hatchets of flint, ploughshares, steeple-lamps, coins, and various other Roman relics, the whole of which are to be preserved in the British Museum.

DOCK PROPERTY.—The St. Katherine's Dock Company has just announced a dividend for the last half-year of 4*½* per cent. free of income tax. The tonnage which entered the dock in the first six months of the last three years, was as follows:—1857, 93,781 tons; 1858, 93,636 tons; 1859, 97,962 tons. The total shipping which entered the port of London in the half-years ended 30th June, 1857, 1858, and 1859, respectively, was as follows:—1857, 4,378 ships, of 1,116,850 tons; 1858, 4,899 ships, of 1,295,840 tons; and 1859, 4,639 ships of 1,195,240 tons.

THE STEPHENSON MONUMENT, BY MR. LOTCH.—We understand that the monument consists of a bronze figure of 10 feet high, upon a gradually decreasing quadrilateral base springing off a square area. The height of the supporting mass will be 15 feet. The figures of four athletic workmen, modelled from the life, fill up each corner of the area, and they each are typical. First, a forge worker, a common blacksmith, with his implements of trade, on whose labour all the grand works of the mighty engineer were based; a second bearing a sample of the smooth rail; a third with the locomotive engine; and a fourth with the safety lamp, or, as the miners call it, "Geordy."

DEODORIZING THE THAMES.—Dr. McGregor Croft proposes to turn the river steamers to account. He says, "The liquor *soda chlorinata* is well known as a powerful deodorizer; and I propose that these vessels carry a zinc tank, capable of holding a hogshead of this liquid, and a pipe from the tank should empty the contents (regulated of course) beneath the sterns. The constant evolution of the paddle-wheels would effectually mix the fluid with the sewage. I need not remark how thoroughly the object would be gained without detriment to any property, and I may be considered bold in asserting (nevertheless it is true) I could remove in forty-eight hours by this process all stench from the river; and it can be easily repeated."

FRAUDS IN THE SALE OF GAS.—The value of gas sold in this kingdom is estimated to amount to 5,000,000*l.* per annum; and yet its measurement is left without any legal provision with respect either to accuracy or fraud. For the want of a legal criterion and inspection, what is called a cubic foot of gas measured by meters of one manufacturer, differs as much as 3 per cent. from the cubic foot as measured by the meter of other manufacturers. Gas meters are capable of being managed so as to register for or against the consumer to a very important extent, in many instances varying from the true measure as high as 25 to 50 per cent. or upwards; and instances, it is said, have been found of meters actually at work registering as high as 30 per cent. variation from the true measure! The gas-consuming public have therefore at present no remedy against fraud or error in the measurement of gas, but must submit to every imposition; but if a proper legal standard of measurement were established, an inspectors appointed to enforce its observance there would soon be an end of this long-standing evil.

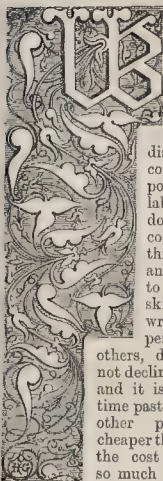
SUNSTROKE.—It may not be amiss to remind your readers, that in Eastern and tropical climates the practice is to protect the head, particularly the back of the head, from the sun by a heavy turban, or by a solar tope or planter's hat, consisting of many plaits of straw lined with white over—a massive affair. The practice here seems reversed, by either wearing a light cap or a light straw hat—no protection at all, or a deplorable only than the senseless Turkish fez, which produces the ophthalmia so prevalent—not protecting the eyes. A word on modern dress,—a subject to which you have more than once alluded. It requires to be easier, lighter, and more flowing. The present condition of dress as regards the female part of the community is such as to reduce them to a comparative state of helplessness, destructive alike of comfort and of health. Labourers in the field using a stooping post should wear the "planter's hat" to protect head and neck.—COMFORT.

A GOOD GAS FITTER AND BRASS
FINISHERS EMPLOYMENT AGENCY
STREET, FALMOUTH, CORNWALL.

The Builder.

VOL. XVII.—No. 861.

The Strike.—Condition of Workmen.



WHILE it must be acknowledged that in some trades the introduction of machinery, the attempt at competition by united family labour, and other circumstances, have caused distress to individuals, in consequence of the temporary depreciation of their labour, it can scarcely be doubted that the general condition of the workman in this country has improved, and long may it continue to do so. The wages of skilled engineers, millwrights, ironfounders, carpenters, painters, and

others, during late years, have not declined; rather the reverse; and it is certain that for some time past * bread, vegetables, and other provisions, have been cheaper than they were formerly: the cost of clothing has been so much reduced, that the wives and children of industrious work-

men are enabled to dress in a manner which they would not have thought of thirty years ago; the duties have been removed from tea and other articles required for home comfort; the price of malt liquors is also less; and newspapers, periodicals, books, and education of a superior description, are more easily attainable than they were.

All must regret the decline of the Spitalfields weavers, and their present bad state. But what is the cause? The market has been overstocked with this description of labour by the heads of families rearing their sons and daughters to the trade; and, in spite of what has been done elsewhere, they have persisted in the use of the old-fashioned hand-loom. In the Lambeth and other potteries, the old potter's lathe has been superseded by steam-power and improved machinery, and the result is that many more potters are employed, at largely increased wages; and that this description of commodity finds a ready sale in many parts of the world. If the present race of potters had determined to continue in the course followed by their fathers, instead of sending immense supplies abroad, we should have had our markets supplied with this description of goods from other countries, and the English potters, instead of being in a prosperous condition, would have been a miserable, perhaps extinct race.

The watchmakers of Clerkenwell complain of decrease of trade and foreign competition. If, however, instead of grumbling at this, they were to set vigorously to work and improve in scientific construction and artistic form, and use a little more system in the manufacture of English watches and clocks, they would have less cause to fear. Grumbling or no grumbling, however, the price of labour must, as a sure consequence, be governed by the extent of the demand.

Ability such as that possessed by Sir Christopher Wren, Sir Joshua Reynolds, or George Stephenson, is very rare, and, consequently, commands a worthy price; and, in their degrees, the sculptor, architect, artist, and workman, each in the generality of cases, obtains a fixed amount of remuneration. The skilled carpenter, bricklayer, and stonemason, in consequence of the comparative scarcity of the skill, can command a better price for it than

the ordinary labourer. Besides the claims of ability and labour, capital, and the right application of business-habits, have also their rights. It is said that capital without the means of employing it in labour of different kinds would be as useless as the gold when within the mine; and while admitting this, it must also be acknowledged as a truth, that in large and artificial communities the labour would be very impotent without the capital. A mutual link binds all; and they are the wisest who, either in their position of master or man, do their duty in a fair, kind, and brotherly manner one to the other. Masters, either in a large or small way of business, will, in nine cases out of ten, find it most to their profit to show that the interest and welfare of the men are the same as their own; a similar spirit should be shown by the workmen. There is not sufficient communication between the employer and those employed; a friendly kind of intercourse would often cause the settlement of disputes, and lead to the prevention of strikes, which are generally ruinous to all.

The cost of strikes has been enormous. They waste and render unproductive the time of man (which is money); they also cause loss and waste of capital. In some instances combinations have been made by the employers for the purpose of depressing the men; and, on the other side, societies have been formed to beat down the masters; and so, instead of a mutual good feeling, there has grown up a spirit of antagonism between one class and another.

The effect of strikes has been to cause the loss of thousands, the ruin of many families, and the breaking up of hundreds of happy homes. Seldom has any real good been done to any of the parties concerned. Several obstinate strikes have been made by the coal-miners of Northumberland and Durham. In these cases on some points the men were wrongly treated. There were portions of their work considered a hardship by them, which the principals did not take the trouble to inquire into and understand; the coal proprietors had an association which not only forced certain conditions upon the men, but also limited the supply, and fixed the price of coal to the public; and, notwithstanding, they objected to allow the men to combine together for the support of their interests, and refused to attend properly to the pitmen's complaints. Sad scenes occurred, the parting with furniture for the purpose of supplying families with food; the destruction of valuable machinery; the calling out of soldiers and constables; the turning out of men, women, and children from their homesteads, to seek shelter by the hedge sides and on the commons. In those strikes, in others which have been made against the introduction of machinery, in the manufacturing and agricultural districts, in the strikes which have occurred in the metropolis and other large towns on the part of the engineers and other trades, the money which had been accumulated by patient saving has, together with other far larger sums, been speedily spent, and but little real advantage has been the result.

The disastrous strike amongst building operatives which has already commenced in the metropolis (and is threatened in the provinces but on different grounds*), has excited all classes to a great extent, and has led to an unmistakable expression of opinion on the part of the public. Workmen have an undoubted right to discontinue working if they please, but they have no right whatever to prevent others, who may be willing to work, from doing so.

Events have moved very rapidly since last week. Immediately after the meeting of masters reported in our last, the men lately in the employ of Messrs. Trollope and Sons held a meeting, and, led by the secretary of the nine hours movement, resolved:

"That the meeting is of opinion that all the workmen in the employ of Messrs. Trollope and

* At Bristol, we believe, the men have struck in some establishments for 2s. a week additional. At Dorchester a meeting of carpenters, joiners, and cabinetmakers, held last week, resolved—"That, in the opinion of this meeting, it is desirable to obtain an increase of wages, and we pledge ourselves to use every legitimate means in our power to obtain it."

Sons should fetch their tools from the shops and jobs on Friday morning at ten o'clock." And

"That regardless of the resolution come to yesterday by the master-builders, this meeting is of opinion that no man should resume work in the establishment of Messrs. Trollope and Sons until they concede the nine hours as a day's work; and if the employers think well to shut up their shops, then the men are determined to prosecute the nine hours' movement to a successful termination." Further,

"That this meeting is of opinion that an open air demonstration be held in Hyde-park on an early day next week, consisting of all the building operatives of London, to consider what further steps should be taken to obtain the nine hours per day."

The masters, on their part, have met again, have instituted in self-defence a "Central Association of Master Builders," and published their determination, which will be found elsewhere. Even those who have ever been the staunchest friends of the working man, and have desired to aid his progress upwards, have spoken strongly against the present proceedings. Thus, in the House of Lords, on Tuesday,—

Lord Brougham called attention to the strike which was expected to take place in the building trade, and which was creating much excitement throughout the metropolis and the country in general. He was of opinion that the demand of ten hours' pay for nine hours' work was most absurd, and in giving his advice to many of the working classes he had stated that such was his opinion. He wished to know if the Government intended to take any steps in the matter? For many years he had been the advocate of the working-classes, and he was of opinion they had a right to strike if they pleased, provided they allowed their fellow-workmen to act as they chose; but, as in the instance that had occurred at Sheffield, where a foul murder had been committed, such conduct could not be allowed. The noble lord then referred to the court in France, which had been highly successful in arranging the differences between the employer and the employed. The last report of the *Conseils des Prud'hommes*, in connection with such cases, showed that in a given period there were in various departments in France 28,000 cases as between master and workmen, cases of strike as they were called: out of these, by arbitration, there were settled 27,000 cases, leaving only 1,000 unsettled. He considered that if something of a similar character were instituted among us, much misunderstanding might be avoided. He understood 90,000 men would be affected by the strike.

Earl Granville said he was pleased to see the subject had been referred to in that house by the noble and learned lord, who was so well able to deal with the subject, and he thought it was very much better to throw a light on the affair than hastily to proceed to legislate on the subject. In the present instance he thought the strike was most unjustifiable. The alleged reason for the proceeding was, that there were a great many men at present unemployed; but such a proceeding on the part of the men in employment would not afford them the means of obtaining a single shilling extra, and it was impossible that such a strike could succeed. If it did succeed what would be the result? Wages could only be paid out of the capital belonging to the employers, and by diminishing the number of working hours and paying the same wages the employer could not afford an extra shilling to those who were now out of work. He believed that the men raised the objection that the master builders were making too large a profit. If that were so, did it not invariably follow that when persons engaged in a particular trade were making too large a profit other capitalists came into that trade? The result was that the competition for labour was increased, and the workmen were perfectly certain to have the wages to which they were entitled. If, on the other hand, they forced the capitalist to receive less than the profit made in other trades what was the result? Other capitalists were deterred from coming into that trade, some who were already in it went out, and the whole available capital for carrying on that trade was diminished, while the workmen were injured. If these 90,000 workmen received on an average 17s. a-week, the loss both to themselves and their employers from these strikes must be very great. He, however, trusted that what had fallen from his noble and learned friend (Lord Brougham) would be attended with beneficial effects.

The Earl of Donoughmore said it was impossible

* Some will remember the extraordinary price of bread and other necessities of life at the close of the great war against the first Napoleon.

to prevent these strikes, and they could only look for a better course to the larger experience of the workmen, to their better information and increased intelligence. The rate of remuneration could not be regulated by arbitrary rules. It depended upon the law of supply and demand; and to endeavour to defeat those laws by any contrivance would be vain.

The Lord Chancellor entirely concurred in what had fallen from noble lords as to the intility of strikes. It would appear that certain agitators got a majority, but not content with regulating their own conduct they proceeded to coerce the minority, and oblige them to abstain from labour unless the masters complied with the demands of the majority. These contrivances were against law, and ought to be put down. As to the effect of these strikes they were most injurious to all parties concerned.

On Wednesday evening last a meeting of operatives connected with the building trades was held in Hyde Park. A report of the proceedings will be found elsewhere. Much was said on that occasion against the masters for requiring the men to sign a document. The truth is, however, as had been extensively advertised, that the masters have resolved to content themselves with a verbal assent to their memorandum; and, though of course this makes little real difference, it is desirable to be correct.

Several working men have addressed us, deprecating the resolution of the masters to close their shops to all alike on Monday. One who signs himself "A Joiner," writes:—

"Surely, it must be a most unwise act of the builders to close their establishments, even for a single day, against the non-unionist men. It is punishing the innocent with the guilty. These men having no funds to fall back upon will feel so exasperated, that I am quite sure, from the great dissatisfaction already expressed, that it will tend to immeasurably augment the numbers, and, consequently, the strength of the Union."

Why could not an arrangement have been made at once to admit the non-unionists to work on the 8th of Aug. st., as well as after, compelling them to suffer deprivation in common with the guilty. Nothing that has ever taken place, has been so calculated to give stability to the Union as this suicidal act on the part of the builders."

It is to be hoped that the masters will reconsider this determination. Messrs. Trollope write to us as follows:—

"We should be obliged if you would kindly notify in your journal that our works will be opened on Monday morning next for the engagement of such workmen as are willing to make the required declaration, and that we shall commence our different works as soon as a sufficient number of men are obtained."

The following circular has been addressed to architects:—

"I am requested to hand you a copy of the resolutions passed by the Council of the Royal Academy of Arts, on 27th July, relative to the demand of workmen for labour only nine hours and seven and a half hours' pay."

It is felt to be due to the architects as a body to address this official letter, and respectfully solicit their co-operation. The time has arrived when it is imperative that the masters must make a stand, not simply to resist the nine hours movement, but to try and break up the system whereby the dishonest and dissolute society can interfere with the labour of the working man. I may confidently assure you that as a body the metropolitan builders earnestly desire to promote the welfare and happiness of their workmen. It is considered that a liberal rate of wages is paid in London at the present time, but ten hours' labour is demanded, and it is a fact that it would be a very equitable benefit for the workmen to leave off work at five or six o'clock, as proposed by the nine hours movement.—I am, Sir, &c.

G. WATSON, Secretary."

We have received a pile of letters on the subject, but must restrict ourselves on the present occasion to two. The first is from an operative who feels and writes strongly on the subject:—

Sir, Many of the building operatives appear to imagine that when a strike is censured, the right of a working man to strike is denied him. Many long arguments have been needlessly founded on this point; but as every man has the right to cease work when he deems proper, providing that in doing so he break no legal contract, the further discussion of the subject is useless, and we should confine ourselves to the expediency of a strike. Of all means of obtaining redress for real or supposed grievances, strikes are amongst the most dangerous, and should only be

resorted to in extreme cases, and even then the utmost precaution should be observed to ascertain whether there is any probability of the measure proving successful. In the present unhappy strike these points have been disregarded, consequently it will in all likelihood prove most disastrous to the best interests of the operative. The plea for the Nine Hours movement, while to a certain extent very reasonable, is not at all a sufficient basis for a strike, because the disadvantages arising from such a course are more than will be counterbalanced by any good which may possibly arise. Certainly, taking into consideration all the evils and dangers which now beset the men, it needs something more reassuring and convincing than the last arguments of Mr. G. Potter to prove that the present strike is both safe and proper. He would by means of a strike strive to solve many of the social questions which have agitated the world since mankind first associated in towns and cities. Can he not take warning by the experiences of the past, and reflect on the fable of the dog and the bone? To sacrifice the solid substance for an empty shadow is folly indeed, and I fervently trust that my poor fellow toilers will take heed in time, ere the avalanche of ruin and disaster overwhelms them.

JOHN PLUMMER.

Sir,—It would appear that a struggle is about to commence between the master builders and their workmen, a struggle that must be attended by great pecuniary loss and inconvenience as regards the masters, by great suffering as regards the men, their wives, and children, and by feelings of estrangement and hostility on both sides very much to be deplored.

A bystander often sees more of a game than the players, and a disinterested person is more likely to come to correct conclusions than the parties to a strife.

As a disinterested bystander, unconnected with the building trade, allow me to make a few observations upon the present state of affairs.

The workmen have combined and agreed to certain regulations for their own guidance, in connection with their trade.

The regulations which they have made are such as the masters cannot agree to without putting a yoke on their own necks, which no man individually would for one moment willingly wear.

The workmen have erred through ignorance of certain laws of political economy: they are to be pitied, and they will be the chief sufferers; but we ought not to forget that it is only lately that these laws of political economy have been fully understood by the most enlightened men of our time; whilst, therefore, the masters make a firm stand against undue assumptions on the part of their workmen, let us not unduly feelings of business have prevalence.

The masters, also (I venture to think), have much for which to blame themselves, because their arrangements have led almost inevitably to the combination among the workmen of which they now complain.

Why do the master builders persist in fixing the rate of mechanics' wages at a given sum per diem, irrespective of the skill and character of the workman? Why not give a mechanic who is worth it 7s. a day, or more, instead of giving to every man, indiscriminately, 5s. 6d. although many are not worth 3s.? Is it to be supposed that a man who could earn his 40s. a week, by his rapid, skilful labour, would link himself in a combination with men who could only earn a guinea? But, by the existing arrangements, a so-called, first-class mechanic, in a better condition, and cannot place himself in a better condition, than the chattering fellow, who may be actually a hinderer of other men on the scaffold and in the workshop, although, of course, it is especially great in the parlour of the public-house.

I think that the existing practice is a fundamental error, and for the sake of masters and men would gladly see it altered. How many thousands of skilful, sober men have would rejoice at being freed from the thralldom of the Society, and would free themselves from it did they know that they could be paid according to the skill and industry, and would, therefore, feel themselves truly independent men. When a man comes to be hired let the master say, "Show me how you mean work, and I will give you what you are worth." What a stimulus would thus be offered to the workman,—a healthy stimulus, which he now wants.

Again, I would suggest that in all practicable cases arrangements should be made for protecting the men employed on out-door work against the weather. The practice of "knocking off" at an

hour's notice is open to great objections. Not only do men lose a portion of their wages, but they are compelled to loiter about the rest of the day, and a great part of the reduced sum which they receive goes (I might almost say) necessarily to the publican. The deteriorating effect of this practice is so obvious, that it is well worth considering whether some change cannot be made therein.

Again, I would ask, why not upon all practicable occasions agree with the men that they shall work during the continuance of a job? In such a case no workman would dare to leave his work; and I would also suggest the adoption of a practice by no means infrequent in brickfields, viz. the reservation in the hands of the master of a portion of every week's wages until the completion of the works, the reserved sum to be forfeited in case of misconduct. This would be strictly fair towards the workman, and would give the employer a strong yet legitimate hold upon him.

I am aware that the arrangements which I have suggested would at first involve some trouble, and would not be free from difficulty; but surely in so important a matter as that under discussion it is worth while to take some trouble, and I feel a strong conviction that, by some such arrangement, great discouragement would be given to the combination societies, which, although they have a strong hold upon many workmen who feel that it is only through their instrumentality they can better their condition, hold others who could and would act for themselves and trust to their own energies under a tyranny from which they would be delighted to escape.

JAMES HOPGOOD.

P.S. Perhaps I may be thought Utopian, but I would ask why should not periodical trials of skill amongst mechanics take place as amongst agriculturists, and prizes be given? The grand object to be gained is, to make the workman feel his individuality and self-dependence.

Unless we are wrongly informed, Mr. Hopgood is in error in attributing to the masters the uniform rate of wages. If we understand rightly, the masters would gladly act differently, but the men decline any other arrangement.

We look with fear and trembling to the events of the coming week.

THE DESIGNS FOR THE FOREIGN OFFICE AND INDIA OFFICE.

The drawings which now fill the House of Commons Library, setting forth Mr. Scott's amended design for the Foreign Office, and the design for the India Office, made in conjunction with Mr. M. Digby Wyatt, include the principal details, and fill more than 120 sh. ets. There is, moreover, a large model. The drawings, which involve a very large amount of consideration, have been produced in a marvellously short space of time, and deserve attentive study. The model, although valuable as conveying an idea of the general arrangement and proportions of the masses to those who cannot read plans, and these are many, is not calculated, we think, to advance the interests of the design as a work of art. The drawings show it much more advantageously.

We engraved a view of Mr. Scott's original design in our volume for 1857 (xv. p. 495), and gave some descriptive particulars. We shall, in an early number, lay before our readers illustrations of the design as now submitted.

Below will be found an exclusive report of the proceedings of a deputation of Members of Parliament who saw the Prime Minister last week on the subject.

The following is a list of tenders received for the erection of the Foreign Office, in accordance with Mr. Scott's design:—

Kirk and Parry	£250,000
Myers	252,900
Little and Son	240,986
Baker and Son	217,666
Jay	246,956
Lee and Son	246,800
Rigby	241,300
Smith	236,765
Lucas, Brothers	235,000
Piper and Son	235,000
Holland and Hannan	234,900
Cubitt and Co.	232,500
Keik	232,024

THE ROYAL ACADEMY. Sir Robert Smirke has resigned his place as an Academician, so that there are now two vacancies in the list. Mr. Sydney Smirke, it is rumoured, will succeed his relative.

LORD PALMERSTON ON ARCHITECTURE.
THE NEW FOREIGN OFFICE.

On Friday, the 29th ult. a deputation of members of Parliament interested in the adoption of the Gothic style of architecture for the new Foreign Offices, waited by appointment on Lord Palmerston at Cambridge House, Piccadilly. The deputation, which comprised upwards of forty members, was introduced by Lord Elcho.

Lord Elcho said he had been requested to lay before his lordship the views which were entertained by the deputation, and the object with which they had sought this interview. In the first place, he had to return the thanks of the gentlemen present, and also in his own name, for the ready attention with which his lordship had received their application; and he thought he might best describe the feeling by which they were actuated, by saying that they were anxious his lordship should not be led away by the impression that there did not exist in the House of Commons any feeling in favour of Mr. Scott's design: on the contrary, there was a considerable number of gentlemen in that house who were anxious that that design, or at least that a design by Mr. Scott, should be adopted. The presence of the deputation itself proved the existence of such a feeling; and there were a great many gentlemen not present who likewise shared in that desire. He might mention the names of such gentlemen as Mr. Stirling, who was one of the judges; Mr. Buxton, who was not only a member of Parliament, taking a deep interest in this question, but who was himself one of the competitors, and had received a prize for his design; together with Mr. Monsell, Sir W. Somerville, Mr. Pollard Uquhart, and there were a great many other gentlemen to whom he might refer. There was no doubt that in the discussion which had taken place in the House of Commons, more had been said against than in favour of Gothic architecture; but that discussion, he must recall to his lordship's mind, was merely an incidental discussion. Mr. Tite had the advantage of stating his case very fully; but, as often happened, many gentlemen who felt strongly on this subject, and who were anxious to put forward their opinions, were prevented from doing so by some other gentleman, who had a notice on the paper, getting up immediately after, and giving the subject of the debate a turn wholly foreign to that which had been under discussion. In considering the principal objections which had been raised to Gothic architecture, they found that the first question which arose was as to who should or should not be architect; and then the subject diverged into the question of style. As regards the architect, it would be remembered that the committee to whom the decision was left had come to the conclusion that one of the first three premiated architects should be selected to erect this building. That was the feeling of the committee, and they had not thought it necessary that the decision should be according to the order of precedence; indeed, the impression had existed, whether rightly or wrongly, in the minds of the committee, that it would not be desirable that the first premiated design should be the one chosen as that to the author of which the execution of the work should be entrusted. They had considered that the Government was free—that the form of competition had left the Government perfectly free to select the architect whom they thought best fitted to erect this building; and he could not help thinking that there had existed in the mind of Mr. Tite, when he first raised this question, a desire that this building should be erected by a gentleman who had not competed at all.—He referred to Mr. Pennethorne. This, he maintained, had been the feeling of the committee, and he appealed to some of the gentlemen present to state whether such was not the case. In proof that it had been as he stated, he would refer to the statement made by another distinguished member of that committee, Sir B. Hall, who admitted that the feeling was in favour of a design which, indeed, was not the first, but the second on the list for the Foreign Office. But if what he had recently heard were true, this question with regard to the architect was, in a great measure, set at rest. At least, he had been told that it was not his lordship's intention, nor that of the present Government, to depart from the decision of their predecessors, as regarded the architect to whom the erection of this building was to be entrusted. He was delighted to hear that such would probably be the case. There was no point in which men differed so much as on that of taste, and in matters of taste there were no questions with regard to which men

entertained more contrary opinions than with reference to rival and conflicting styles of architecture. He did not, therefore, propose to enter into any discussion with regard to the comparative merits of the Palladian or Gothic styles; but he did think it desirable to call his lordship's attention to one or two points which had arisen in the course of the discussion to which he had already referred. He found that the objection which had been taken on that occasion to the Gothic style of architecture, as well as to Mr. Scott's design, by Mr. Tite and by the other gentlemen who had taken part in that discussion, might be classed and considered under four different heads. These were, first, that Gothic architecture was not suited to public buildings on account of its not being cheerful,—“light without and gay within,” he believed had been his lordship's expression. Secondly, on account of its being costly. Thirdly, by reason of its being incongruous. And fourthly, because the style was supposed to be associated with a peculiar religious sentiment,—“representing the views of a certain religious sect,” was the phrase used by Mr. Coningham. With reference to the first point on which Mr. Tite had been very sensitive, the alleged unsuitableness of Gothic architecture for public buildings, he would remind his lordship that when Gothic buildings were originally erected in England and in other countries, the style was not confined merely to churches, but was extended to houses and public buildings of various kinds, and prevailed in edifices of that kind for a considerable period. With regard to the objection that they would not be light and serviceable for public purposes, this committee clearly came to a contrary opinion. His lordship would remember that Mr. Tite at the time stated that this branch of the subject had not been gone into by the committee, but he held in his hand an extract which would corroborate the statement, which, as a member of the committee, he was now about to make, namely, that they had gone very carefully into this inquiry, and that the result of their examination was stated in the following passage, which was to be found in their report:—“Some of the prize designs being in Italian architecture and some in Gothic, your committee particularly directed their inquiries to ascertain whether, apart from considerations of taste, there were equal advantage in cheapness, commodiousness of arrangement, or facilities for lighting and ventilation; and the result of our inquiries is, that in these respects no material difference exists on either side.” And with reference to the objection made by Mr. Tite, that the Gothic windows did not open, and that the building did not, therefore, admit of ventilation as capacious as in that at Whitehall, it had been proved by Mr. Scott that his arrangement was precisely similar, and that his windows opened by sashes in the same way. With regard to the question of cheapness, he believed the estimates which were taken had shown that the Gothic style which this building adopted was no more expensive than any other. And then as regarded the other objection of incongruity; no doubt a Gothic building erected in the vicinity of the Treasury was so far incongruous that it would not be in the same style as that building; but with all due deference to those who hold that view, he thought there were many instances in which incongruity such as would be here exhibited, and diversity of form, would, instead of constituting an objection, be in reality a great advantage. Anybody who had been in Venice must, he thought, confess that much of the beauty of that city consisted in the fact that at every turn the eye met with different kinds and styles of buildings,—at one moment Palladian and at another Gothic; yet who had ever returned from Venice complaining of the mixture of both Gothic and Palladian? Unquestionably, also, as regarded light, the Gothic windows were much superior in construction, for they let in a much larger flood of light than the Palladian, or what was commonly called Italian. If they wanted congruity they would find it at Berlin, and he appealed to everybody who knew Berlin whether it did not always exercise the most monotonous influence. If they took the case of Paris, much as it had been benefited of late years by the Emperor of the French, still he was often disposed to regret the magnificence and splendour which had been created there, for the sake of the beauty and variety of form of that capital, which had to a great extent ceased to exist. Nothing almost was so monotonous as the grandeur of the Rue de Rivoli, for it was a type of the whole of Paris; and it not only did away with much of the charm

and variety, but it had the effect of diminishing the apparent size of the city, for whereas one had always imagined that there was a considerable distance between the Louvre and the Palais Royal, one found now that there was but fifty yards at most. This question ought to be taken into the consideration of the House of Commons and the Government, before any final step was adopted. He did not know whether it would be necessary to touch on the extraordinary objection put forward by Mr. Coningham, that this building “represented the views of a particular sect,” but if it were requisite to do so, he would refer to an hon. member near him, and ask him his opinion with regard to the nature of such an objection.

One of the Deputation—If I am appealed to I would say that this style of architecture is becoming national, not sectional.

Lord Elcho said, he had felt the importance of having an unprejudiced opinion on that point. He believed he had now gone through the objections, and he had read over the debate very carefully, which had been urged both by his lordship and Mr. Tite: unquestionably he believed that much of the opposition had arisen from the appointment of the architect equally with the question of the architectural style. If it was true, therefore, as had been announced, that the question of the architect was settled, one of these objections was done away with, or at least considerably modified. But what he could not help thinking must have exercised a very material and important influence on public opinion, was the fact that the building in which Parliament assembled was of a Gothic character; that he believed had been at the bottom of the whole thing, and persons had run away with the idea that if they were to have a Gothic building, they would have simply a repetition of the Houses of Parliament. Whether they looked on the House of Commons as convenient or the reverse, he did not wish to detract in any way from the merits and ability of Sir C. Barry, because they all knew that foreigners, coming to this country, greatly admired the building which he had erected; but they could not fail likewise to be well aware that the patience of the House of Commons had been worn out by the enormous expenditure on that building; and, like children who had once burnt their fingers, and had a dread of fire, the country felt very unwilling to engage in any new building which they heard was to be in the Gothic style of architecture. Since the discussion to which reference had been made took place in the House of Commons, by the members of that house, the public had been afforded opportunities of judging, by a model which was placed in the library, in what the merits of the design really consisted. The Gothic style had its disadvantages no doubt, but it had likewise its advantages; and one of the greatest of these, in his opinion, was the facility with which provision was made for the entry of light. He could not but regard Mr. Scott's design as a happy medium. However, he was told that, if it were suffered to proceed, it would be built of Portland stone, which was the same as that of which Somerset House was composed, and which was found, in the atmosphere of London, to have proved the most durable; and that it was to have polished granite columns and different coloured marbles let in to a certain extent. He believed, therefore, that it would be essentially cheerful in its aspect, and that it would be a great ornament to the metropolis.

Mr. Ellice, M.P. said he had been asked to accompany his noble friend (Lord Elcho) and the deputation on the subject of this building. He was not about to trouble his lordship with any dissertation on matters of taste, but would simply state his own opinion. He had gone to see the model which was now being exhibited in the library of the House of Commons, and, in order that he might have some friend on whose judgment on such points he could rely more than his own, he had taken with him his friend Sir Joseph Paxton, whose opinion on such a matter was worth having, and who had been very much disposed to think that this model of Mr. Scott's comprised every thing that was essential to a building of this description. He (Mr. Ellice) went over the plan very carefully and examined it in all its points, and he must say, without going into the question of exterior architecture, that he had never in his life seen a building which appeared to be more confused in its internal arrangements, and so little fitted to do credit to the country, particularly when it was remembered that it was intended for the reception, not only of a minister and his establishment, but of the entire Foreign Department, which was so constantly beneath the eyes of the natives of other countries.

He did not know whether the office and the residence of the Foreign Minister were both to be erected, and whether they were to be in the one building or separate: that was the first thing to be determined. The next thing, about which he had no doubt differences of opinions would exist, was as to the propriety of having rooms for the purposes of public reception. Having had some acquaintance with the buildings of other countries, it appeared to him that if these two objects were to be effected, it would be better that they should be effected in some connection with each other. His lordship had seen, he believed, the Foreign Office lately erected at Paris, and nobody who had enjoyed that opportunity could fail to have admired it, or to have appreciated its successful adaptation to the purposes for which it was intended. There were what was called the *Petite Appartement* for the residence of the Minister, and the *Grande Appartement* for the reception of the public and for all State occasions, conferences, and meetings of that description. There were also kitchens and offices connected with these public apartments: the large kitchen was not always required for the use of these public reception-rooms; but the arrangement was such that all the offices for one set of purposes in the building were made use of together, and they were all connected. In the plan of the building, as laid down by Mr. Scott, however, the residence for the Minister was in one quarter, the library in another, and at the very end lay the public departments: they were at as great a distance as possible from each other, and, of course, a distinct set of offices for each was thereby necessitated. He had asked Mr. Scott to be good enough to give him an explanation of this point, and the reply he received was, "Oh! at all events you must have two sets of offices; because the clerks and the other gentlemen employed require refreshment occasionally." Surely, these apartments might be put more together: everything connected with the living department ought to be in one place. As regarded styles of architecture, he would not enter into competition with his noble friend, but he would express his own opinion that in this country everything else ought to be sacrificed to the desire of obtaining for our buildings the light of heaven and the air we breathed. We had already sacrificed sufficiently in England to bad taste in the matter of public buildings: he was not now going into the question of the Houses of Parliament, but he was sure nobody who had the honour of dining with Mr. Speaker, could help feeling that these buildings were a disgrace to the country. What they ought to do on the present occasion was to build something that would be really creditable to the country: they ought not to sacrifice everything to the desire of having an elegant frontage. The course which they ought to adopt with regard to the architect was to say—"Plan the building, and afterwards see how many rooms you can give us;" but, "Let us have a building which shall contain so many apartments." There were other countries in the world which had succeeded in their attempts at architecture, whilst England had almost universally failed: there was scarcely a building from the time of George III. which had arisen in this country which was not unsuitable for the purpose for which it was designed. The Government, he contended, ought to take an independent course in this matter: if Lord Palmerston was ready to receive deputations with respect to the proposed Foreign-Office, plenty, doubtless, would come before him. The present deputation attended for the purpose of assuring his lordship that they were entirely of opinion that Mr. Scott's taste was right: he (Mr. Ellice) could bring before his lordship another deputation which would be in favour of a Grecian building. What he would humbly suggest would be, that his lordship and the Cabinet should themselves take the subject into consideration, decide on what was right to be done, and carry it out on their own responsibility; in which event they would doubtless have something worthy of the country. He would now allude to another branch of the subject. This new Foreign Office was, he perceived, to be connected with the new India House. Now the India House they had at present was, with all its defects, a very good one. The minister was certainly obliged to go to the other end of the town, but with that exception the office was an excellent one, and the library, museum, and different departments were perfect of their kind; and at all events, for the present, there was no pressing emergency for its removal to the vicinity of the other Government offices. He would, however, state to the noble lord a reflection which was beginning very much to occupy the minds

of the members of a committee on which he had sat—namely, that it would be very desirable that some mode might be adopted for bringing the several branches of the military department under one roof. Under the present system it was requisite to keep up a constant correspondence and to maintain an innumerable number of clerks in the offices respectively of the Horse Guards and War Department: and evidence has been given before the committee that the business of these departments could be materially lessened, and a considerable saving effected to the public purse by such a consolidation as that to which he alluded.

Lord Elcho said he was not prepared to make a statement positively, but he believed his honourable friend's (Mr. Ellice's) positive objection to the internal arrangements and want of proper communication between the interior portions of the Foreign Office, as laid down in Mr. Scott's plan, was very readily to be accounted for, and in a way that would acquit that gentleman from blame. The plan as originally designed by Mr. Scott made no provision for any India House, or for public reception-rooms: it was subsequently determined that these should be added, and he had been forced to introduce them into the building the best way he could.

Mr. B. Cochrane stated that the original plans when first drawn, embraced official reception-rooms on a magnificent scale: these were afterwards reduced, and last year, on the recommendation of Lord Elcho and other members, who suggested that these reception-rooms should not be built, they had been altogether abandoned. The parties at the Foreign Office considered that an arrangement might be made under which the ordinary duties of the Foreign Office might be discharged in these apartments, but that on extraordinary occasions they might fulfil the additional duty of reception-rooms. Mr. Scott was accordingly instructed to introduce this idea into his plan, and he accordingly did so, going over the entire building very carefully for the purpose. This had not been his original suggestion at all, but he had been forced in consequence to rearrange his plan, and to make considerable alterations in detail. He believed he might say that Mr. Scott's plans had the support of all the authorities, both permanent and temporary, at the Foreign Office; and even down to the minutest details the public convenience had been studied.

Mr. Bruce said he fully agreed with Mr. Ellice, that the first object to be considered in the new building was its convenience; but the deputation had attended with a view of requesting his lordship, at the same time, to do somewhat for the beauty of the metropolis. He could not tell by what feeling Mr. Ellice might have been actuated in his attendance that day, but the great majority of the deputation were present to express a hope that the beautiful would not be altogether lost sight of. As to the mode in which they believed that object would be most satisfactorily carried out, the decided majority were in favour of the Gothic style of architecture; but if that were objected to, they trusted that, in any event, a building that would be an ornament to the metropolis would be raised, and that no niggardly spirit of economy would be allowed to interfere with such a desirable aim.

Mr. Dudley Fortescue having made some observations in support of the claims of Gothic architecture,—

Lord Palmerston, addressing the members present, said,—Gentlemen, I shall take, in the first instance, the point which was first mentioned, as to the choice of the architect. It is quite true, as Lord Elcho says, that there was a good deal of discussion on that subject. When this matter was first talked of in the House of Commons, in regard to the choice of the architect, I felt vexed with the Government of that day for having chosen Mr. Scott. However, when we came into office and made inquiry, I found that Mr. Scott had received a formal appointment from the Board of Works, by the authority of the Treasury, constituting him the architect for the construction of the Foreign Office, and that he had received a similar appointment with regard to the India Office, from the India Board; and therefore, it would not have been fair towards Mr. Scott, even if it could have been done,—and I do not know that it would be legally competent for the Government to do so without granting him compensation—to have cancelled, or at all events to have changed, the nature of that arrangement. I consequently gave my acquiescence to that decision. Mr. Scott is a man of great talent and ability, and I have no doubt he will produce a very good building. With regard to style, or

rather to internal arrangements, to which my hon. friend Mr. Ellice has called attention, I may state that in reference to that half of the building which is to be devoted to the Foreign Office, I thought nobody could be more competent to give an opinion on that subject than Lord Clarendon, who was for many years Secretary of State for Foreign Affairs. He naturally pointed out those details to which Mr. Ellice has alluded—how inconvenient and unnecessarily expensive many of the arrangements would be; and there are some things wholly uncalled for: I may mention in particular three kitchens,—one kitchen for the ordinary residence of the Foreign Secretary, whoever he may be; another for those dinners which are to be given on great occasions; and a third kitchen for the accommodation of the clerks. Well, surely, all these are quite unnecessary: a combination of culinary arrangements might be made, and that will at all events save some expense. Then the reception-rooms are not in connection with the living rooms: some are downstairs, and some are upstairs: that may very likely have arisen from the fact of Mr. Scott having, in the first instance, been required to make a plan not including a residence, which of course, when introduced, affects the entire arrangement. These are matters which no doubt, upon communication with the different departments, he will be able to rectify, but in a different shape. With regard, however, to style, it is quite manifest that a man of Mr. Scott's ability can put any face he pleases to a given ground-plan and to a given work; and, therefore, it is perfectly competent for Mr. Scott to give a different elevation from that which he has placed in the library of the House of Commons. With regard to the general question, it is quite true that everybody has a right to have his own opinion in matters of taste, and that everybody has a right to differ from those who take a different opinion. For my own part, I entirely differ from numerous hon. gentlemen, including many of those whom I have the honour to address. I think the Gothic style totally unsuitable to a building such as is now in question; and that in the position in which it will be placed, instead of being an ornament, it will disfigure the metropolis. I think likewise, that we must remember the opinion of the great majority of members of the House of Commons, who were present when that discussion took place. It was impossible to misunderstand that the feeling of that majority was decidedly against the Gothic style. I think, therefore, and I take the liberty of saying, that, after such an expression of opinion as then took place, I did not expect that the late Government would have gone so far as they had done in making preparations for erecting a building in a style which certainly did not appear to be in accordance with the general opinion that was expressed. Mr. Scott has made an altered plan, and he has placed a model of it in the House of Commons library. I must say, that, with all deference to those who differ from me, a more frightful structure it has not often been my misfortune to see. I think such a building as that would be totally unsuitable to the place in which it is proposed to erect it: it is monastic, really. I am not now meaning to imply that those who are for that style are so from any malicious propensity, when I say that it would be a very admirable building for a Jesuit college or for a monastery; but in my opinion it is totally inapplicable to a public office. Now everybody who has seen the Speaker's house says it is most inconvenient in point of arrangement. Lord John Russell dined there at the first dinner which was given in it: I was there also; and when we got into the Speaker's drawing-room, he said very naturally that it was all very well for our ancestors to fit up rooms and apartments in that way because they knew no better; but why should we who do know better make buildings so inconsistent with the purposes for which they are intended? If you have the outside of a building in a particular style, of course your architect will put in furniture to correspond: all the internal details, therefore, will be Gothic, and we see how utterly inapplicable these are to modern use, and more especially to the modern requirements of a public office. It was said in the debate,—and that was the great point on which those who are for Gothic rested, though it has not been referred to to-day,—that the main recommendation of Gothic architecture was, that it was the national style—that it was the English style. Now, I take leave to say that it is anything but the national style: it is a foreign style, which at a particular period was imported into this country, which did not live long in this country, and was succeeded after a certain time by the Tudor

style, when it was itself abandoned; and at present, it certainly is not the national style either in its origin or practice. If you talk of a national style, you talk of a style invented by a nation, or used by a nation: well, it is neither the one nor the other. I want just to consider what is the character of the present buildings. There is a great variety, a great number of beautiful buildings—I am talking now of buildings for civil and secular purposes—in different parts of the United Kingdom. Now, are they Gothic? Take London: I am now mentioning the buildings that are not Gothic, but are in a different style, either Greek, or Palladian, or Italian, or in other styles. You have the Bank, the Mansion House, the East India House, the Royal Exchange, Somerset House, the Custom House, the British Museum, the Banqueting House, the National Gallery, University College, and the Post Office; and Chelsea Hospital on the one side, and Greenwich Hospital on the other, though they are not exactly in London, are sufficiently near to be included. None of these are in the Gothic style of architecture. Take Edinburgh: there are the Registry Office, University, Halsted's Hospital, the High Schools, the Library, the College of Physicians and Surgeons, Holyrood Palace, Royal Academy, Royal Institution. None of these are in the Gothic style: they are either plain or in some other style of architecture. Some of them are good, and some of them are bad; but so far as these two capitals go, Gothic is not the national style. Take Dublin: you have the Bank of Ireland, Custom House, the Four Courts, Trinity College, Post Office, and the Rotunda—all these are buildings beautiful in their different ways: I am sure, Mr. Pollard Urquhart will not repudiate his country; but they are all of different styles to the Gothic. Take the University of Cambridge: there is the Fitzwilliam Museum, there is the Observatory, and the same may be said of the colleges.—Downings, and some others: even the collegians are not Gothic in their taste.

A member of the deputation asked,—Is not Corpus Christi Gothic?

Lord Palmerston.—Some of them are of course, but the majority are not. There is one building at St. John's which is the work of a Quaker. Take also the case of Manchester: there they are not very favourable to this view. There is the Royal Institution, the Athenaeum, the Exchange, Commercial-rooms, and Museum,—all of which are in different styles. In Liverpool there is St. George's-hall, the Royal Exchange, the Custom-house, the Town-hall, and other structures; and at Oxford there is Queen's College, Radcliffe Library, the Printing-office, and the Observatory. I need not mention the towns in the provinces. Clifton is a beautiful town. All the new buildings about London, all the buildings in the course of erection, beautiful as they are and full of ornamentation, are not Gothic; and, therefore, it is not consistent with the facts to recommend Gothic as the grand national architecture of England. There are some specimens of Gothic architecture which I think are not altogether commendable. There is Sir Walter Scott's monument at Edinburgh, which I think the most enthusiastic lover of Gothic would not recommend. It must be remembered that the new Foreign Office would be in connection with a large number of buildings which are not Gothic, and the only thing to be said against that is, that if you were to pull down all the buildings between Downing-street and Westminster Abbey and the Houses of Parliament, and then, if you covered that space with other buildings, you would perhaps acquire a range which would exhibit congruity of architecture from Downing-street downwards; but I must say that my own opinion is, that it would be a great eyesore instead of being an ornament to the metropolis. Then, in regard to expense, this building, at least the half of it which, according to the model, is to be the Foreign Office,—I do not know the dimensions of it,—but the estimate for that half alone, exclusive of the architect's commission, exclusive of payments to the clerk of works, and exclusive of all furniture and fittings, is 270,000*l*. I venture to say, before that building was finished and ready for occupation it would not cost much less than 300,000*l*. Well, assuming then, that the other half would cost as much, there is 600,000*l*. for a building which would form a very small portion of the area of the Houses of Parliament. The Houses of Parliament are thought to be enormously costly. They cost about a million and a half; but I venture to say that, taking the area they cover, and comparing it with the area which this public office is to occupy, it will be found that the Houses of Parliament are cheap in comparison with the ex-

pense of this proposed building. Now, the Foreign Office at Paris has been mentioned. It is a beautiful building: the plan, not only in the exterior, but the interior, is beautiful. It is gorgeously fitted up: there are immense rooms for receptions,—handsomer than those of Buckingham Palace; and it is altogether built in a mode which, as a residence or place for receptions, is equal to any royal palace that you could see. In addition to that, there is an immense range of buildings running down a whole street from the quay, and with a return at the end for the different departments. I believe the number of clerks at the French Foreign Office is two or three times as large as the number in the English office—fully that—or in the proportion of thirty or forty to our twenty. I asked the French Foreign Minister, when I was in Paris last autumn, what the office had cost, and I admired the building very much, and Count Walewski told me that it had cost an enormous sum,—equal to 300,000*l*. of English money. I venture to say that there is far greater accommodation there, that the building itself is a greater ornament, and of much more masterly construction than that which is proposed for the English Foreign Office. Well, that being the case, I could not undertake to propose to Parliament a vote this year for the cost of a building which, in the first place, I really could not take on myself the responsibility of recommending to Parliament. I allude to a structure such as that which has been recommended; and I have no hesitation in saying to you that whether in or out of office, I shall do my best at all times to prevent a Gothic building being stuck up in that part of London. I think the Italian style would harmonize better. It admits of great variety, and will harmonize with anything in its vicinity, being simple in its construction; and I should imagine that it is capable of being made as light as any other style of building will admit of. One advantage in point of light which the Gothic style possesses is, that it is light from the time that the sun rises, and the Speaker complains that his windows are so constructed that there cannot be any shutters put to them; and when he goes to bed at 3 o'clock in the morning (as he probably did to-day), there is the sun pouring full into his bed-room, and he has no chance of repose except what a green baize curtain can afford him. I quite admit that you can get as much light as you please, and that one style of architecture does as well as another in that respect, but the Italian would in my opinion be cheaper. Of course, if you have a number of towers and pinnacles, and put up fanciful ornaments on the roof, it becomes necessary in time to pay for them. What is to be done to-day in the House of Commons is this. On consultation with Mr. Fitzroy, the Chief Commissioner of Works, I have had put into the estimates the sum of 30,000*l*. for the foundations. Well, the foundations may be laid—a foundation will do for one elevation as well as another, assuming that the internal arrangement is made convenient. You will not be able to do more than that until next session. I will request Mr. Scott in the interim to apply his mind, which no doubt is capable of any effort, to sketch out something in a different style of education. I am very sorry that this is necessary: it must be a great mortification to a man like Mr. Scott, who has devoted his mind entirely of late years to Gothic architecture, and who thinks he has made a Gothic of his own which is an improvement on every Gothic that ever was before, and who has for several months given his mind to the production of a plan, and has at length succeeded: it is of course a mortification to such a man that it should not be carried out. But at the same time, when you are dealing with a building which is to cost a very large sum, though I hope not so large as is imagined, and which is to last for centuries, the personal feeling of an architect ought not to enter into competition with what is best adapted for the public service and what is most compatible with the ornament of the town. The course I propose is this, to take a sum that will be sufficient for the foundation, and to request Mr. Scott in the meanwhile to devise some elevation that shall be in a different style, more cheap, more light, more cheerful, and better adapted, I think to the position and purposes of the building, because nothing will then be done till next session; and if my noble friend next session can succeed in convincing the House of Commons that the Gothic style which he proposes would be most suitable, he will have an opportunity of doing so before any proceedings are taken to raise the fabric. There is one difficulty applicable to all the plans, which is this, that the soil is so shaky,—down to a considerable depth,—in some places

as much as 30 feet,—and some doubts have been expressed whether we can begin the foundations of a new building without endangering the very frail edifice in which the Foreign Office is now lodged; and it may, therefore, be necessary, before building the new offices, to provide some temporary structure for the business of that department. But that is a question merely of detail. With regard to the Indian Office there is this consideration: it is exceedingly inconvenient for the purposes of business that the Indian department should be in the city. The Secretary of State for India is required at cabinet councils in the House of Commons and for other purposes, at this end of the town. I believe that the present building in Leadenhall-street might be sold for a sum which would be nearly sufficient to cover the expenses of the new building: at least it would go some way towards it, so that that building would not be an addition to the burdens of the revenue to the full extent of the cost which its erection would require. I do not know that it is necessary for me to allude to anything further; I may be thought to be a Goth, but I think that the Goths are the other way. But, *de gustibus non est disputandum*. Unless the House of Commons interposes, I certainly shall wish to see erected there a building somewhat in keeping with the other styles which are found in different parts of London, and in other portions of the kingdom.

Lord Elcho expressed a hope that the public would be afforded an opportunity of judging next session of the merits of the new plan to be drawn by Mr. Scott, before any decisive step was taken to carry it into effect.

Lord Palmerston.—Oh, certainly: in fact, it would be necessary to do so.

The deputation then withdrew.

THE EXCAVATIONS AT WROXETER.

THE discoveries on the site of the Roman city of *Uriconium* or *Viroconium*, have been so clearly described by Mr. Wright, and have been so far noticed in our pages, that we have little to add as the result of a recent visit to the excavations, beyond a report of their steady progress. The most interesting discoveries as yet, comprise, chiefly, large quantities of bones and the horns of animals, the human remains being found in curious situations; tiles for paving, and for lining walls, drains, and flues, and bonding in masonry; pieces of roof-covering of the material analogous to slate, and which were apparently laid and fastened much in the same way as ornamental cut slates in the present day; fragments of red Samian, and Romano-Salopian pottery, and of glass; and of stucco, in some cases slightly ornamented; pavements of *tesserae* in simple patterns, and others of bricks, laid herring-bone fashion; and numerous articles in iron, which were parts of the fittings of buildings, and resemble, in many cases, what are now manufactured,—besides coins, and articles of domestic use and personal adornment. Little has yet been done to determine what was the original plan or purpose of the chief buildings of which portions have been brought to light. It is to be regretted that the ground first excavated has unavoidably been again required for agricultural purposes, so that the excavations have been filled up; and it is still more to be regretted that there should, in the adjoining ground, be difficulty in preserving the remains of the hypocausts there from the mischievous propensities of the people of the neighbourhood. Scarcely any portion of the piers of these hypocausts, and flooring above, remains as discovered. So far as the results can be retained by plans of the walls and apartments, and the preservation in the museum at Shrewsbury of the articles exhumed, everything appears to be done by the Excavation Committee and those under their direction; and a small volume by Mr. Wright, with plates, is on the eve of publication, which, doubtless, will afford full information of what has been discovered to the present time. The discoveries, so far, have been interesting rather to ethnologists and ordinary antiquaries, than specially to architects; but, noticing how very small is the area of the ancient city that has been examined, it cannot be doubted that, if the excavations can be carried on with increased activity, discoveries will be made such as might be compared with those in the city of Pompeii.

It is true that the art-work of *Uriconium*, appears to be of the inferior order, which might be expected. The best work yet found is in tessellated pavements, and in some coins; ornamental details of architecture, such as capitals of columns, so far as they can be made out, are of the debased character of the later Roman work, though not

without marks of effort at both richness and novelty. This may be best remarked in the capitals which have been placed on *frons* of shafts, at the entrance to the churchyard at Wroxeter. These capitals are distinct from Corinthian capitals, but they bring to mind many forms which have been figured by Piranesi. In the mouldings of which they are composed, nearly all enriched, they belong to the class of decadent art of which the commencement may be said to be exemplified in the "Arch of the Gildsmiths," and the work of the time of Septimius Severus; but there is this difference, that the interstices of the ornament in the best of the Roman work of Italy are deeply cut, the ornament forming the profile of the moulding; whilst in the present case the ornament appears to have been marked by incised lines on the moulding. The large capital now in the museum at Shrewsbury, has Corinthian character, but has been rudely executed.

It may be useful to notice that Septimius Severus visited Britain with his sons in A.D. 208. He died at York three years afterwards. Previously by about eighty-seven years, Britain had been visited by the Emperor Hadrian, who ranks as an architect. Soon after the death of Septimius Severus, or whilst Alexander Severus was emperor, Britain may be considered to have attained its highest state of civilization under the Romans. The architecture of Baulbec and Palmyra, is perhaps half a century later. We have the date A.D. 305, as that in which the Emperor Constantine died at York, and the date 368, in which Theodosius defeated the Picts and Scots, and repulsed the Saxons; and it is to this period of the beginning of the fourth century, or we may say a century previous to the final division of the empire in 395,—but after Byzantine influence, as well as the Romanesque, distinguished from the Roman manner, had begun to prevail,—that we should expect to have to ascribe whatever artwork may be discovered by the excavations at Wroxeter; and this view which we have taken from architectural character so far as it can be discerned, would be corroborated by coins found, which, most of them, bear representations of emperors of the family of Constantine. In 411, the Constantine, the usurper, who had been proclaimed emperor in Britain, died there, and immediately afterwards the Romans became unable to maintain their power; civil wars and foreign incursions ensued; and Uriconium probably fell with the "remains of fire and slaughter, that have been so vividly presented to the mind by the positions in which skeletons have been found."

In connection with the question of the date of the destruction of the city, mention should be made of the discovery of human remains of a peculiar character at a spot distant from the site of the present excavations, but just within the walls, and near to what might have been the entrance of the invaders, since the spot is close to the Watling-street road, and to the ford, or bridge, over the Severn. Not only was the ground at this spot,—in contradistinction to the practice of the Romans as to place of burial,—"literally filled with human remains," in the words of Mr. Wright, and "which," however, "did not appear to have been interred with any funeral rites," but the majority of certain skulls which were obtained, exhibited a peculiar deformity, inasmuch as "the face must have looked at you in a manner obliquely, one eye advancing more forward than the other;" and in two out of four skulls, the obliquity was from a different side of the head from the other two. A supposition is, that the deformity may have been characteristic of race in some of the invaders of Britain; and that at the spot in question, a great slaughter of the natives occurred after their entry into the place; and that the bodies were interred where they fell, by the survivors, ere they left the burning town.

The excavations now in progress extend over but two acres of ground in the centre of the area of the city, and south of the line of the remnant of wall of a Roman building, standing above ground. The original line of enclosure must be of greater extent than might be inferred from our report of the paper read at the Bristol Archaeological Association; that is to say, the circuit laid down from the private survey of the Board of Ordnance, and which is defined by a continuous mound, must have been five times the circumference. This area is entered at the north-east, by the Watling-street road, which, after passing close by the site of the present excavations, crosses the Severn near the southern extremity, before referred to, of the ancient city. People living near the river say they can discover remains of a bridge when the water is low. Several objects of interest have been discovered at different

times, at places distant from the present locality of the excavations; but difficulties are at present in the way of examination of those which are the most interesting. The area now and lately in process of excavation includes the foundations of the long building, lately mentioned by us, of which the original purpose can hardly be conjectured; the hypocausts and other portions of baths, of which the discoveries are now somewhat extensive; a square space which may have been an atrium, and has several small square chambers at its sides; and some other remains of pavements and walls, as to which the work is not sufficiently far advanced for description.

The mass of Roman masonry already alluded to, and long known as the "Old Wall," is about 60 feet in length and 20 feet in height; and is built of stones varying in size,—but being in the average, cubes of 6 or 7 inches,—laid in with bonding courses of large tiles, the latter two courses together, at distances which vary as the height increases, from 3 feet 6 inches to 2 feet. Arches are turned in the masonry; and there may have been several apertures in the wall; but the chief of these are at present broken into one wide opening, which only affords opportunity for peering, from the overhanging mass, the great strength of the mortar. This wall is 3 feet thick. There are others in foundations 4 feet. In the excavations southward, no less than five spaces have been discovered, and four of these in immediate connection with one another, arranged as hypocausts. One of these has a semicircular recess at the end, and the walls above the other hypocaust, which are lined with flanged tiles, are supposed to have enclosed "a heated chamber or bath,"—probably it was a sudatorium. Next to the hypocaust last-mentioned, but level with the floor which was above it, is a piece of hollowed stone, thought to have formed a portion of a private bath. On the opposite side of the hypocaust is a small square apartment with herringbone pavement. The hypocaust, we have said, is at a lower level than the floors of apartments separated by it, and the walls, for the height of the piers, are lined with cement, as though the space in this instance had been contrived to hold water. If the earth and rubbish after being sifted could be removed clean out of the excavations, and the floors and spaces swept, and if mischief could be prevented, the objects of the exploration would be facilitated; for, at present, there is considerable difficulty, and especially as to levels of pavements. The uses of the several apartments might then be conjectured from what is known of the plans of Roman *Thermae*, the class of building, and not any portion of a house, to which the series of hypocausts would belong. Ventilating flues and drains have been found, built or laid with tiles; and the drains seem to have had drips like those of a modern roof-gutter. The tiles, except those of which the piers of the hypocausts are built, were scored with lines as a key to the mortar; and the largest tiles, for the tops of the piers, have a small hole in the centre. Many of these are marked with indentations from the feet of animals or the fingers. For the reasons mentioned, we cannot state, except from information given, the exact arrangement of the piers; but they seem to have corresponded nearly in all particulars with those which are still preserved at the Coal Exchange in Thames-street, and at No. 117, Bridge-street, Chester. The floor of the sudatorium there, over the hypocaust, we believe is composed of concrete 9 inches thick, carried on tiles of 18 inches square and 3 inches thick, which are perforated with small holes 6 inches apart. The piers, speaking from recollection, may be about 2 feet apart. The hypocaust at Wroxeter appears to have been about 4 feet in the internal height, made up of piers of tiles of 8 inches square and 2 inches in thickness, bedded with clay in place of mortar,—this for about 3 feet 6 inches of the height,—and the remainder of a plinth tile of 11½ inches square and 2½ inches thickness, and three tiles at the top, increasing in size so as to form a complete support to the flooring, which was of concrete of fine and pounded brick 15 inches in thickness, with, in some cases, a layer of tiles inserted. The tiles are all very well burnt; the largest used in walls are about 1 foot 11 inches square.

The material used for roof-covering is micaceous sandstone, or flag, from the coal measures. It was cut into hexagons, that is to say pointed top and bottom; but if the pieces had proper bond and lap, they would appear as lozenges rather than as they are shown at the Shrewsbury Museum, finishing as hexagons and without any lap.

The practice of building has not made very great advances in the fourteen or fifteen centuries elapsed since the building of Uriconium. We do not equal the Romans in the manufacture of ordinary tiles, and in the composition of mortar, concrete, and stucco. We find that they had our ironmongery and something of our plumbers' work; they raised blocks of stone by the lewis, and they glazed their windows with glass; for, all these points are to be made out from the remains at Wroxeter, and many others. Whatever the value of the art unfolded, as compared with that of Pompeii, it cannot be doubted that there is the opportunity offered of learning at Wroxeter facts as interesting to the people of this country as those which can be gathered from any other spot; and it is evident that the pains and care of one or two energetic individuals, and the comparatively small sums under their control, may not enable us to get at all, what might within a few months be discovered and recorded on paper, under the action of Government.

INCREASE OF THE PRICE OF MODERN PICTURES.

IX times gone past, a very large number of those who bought pictures did so rather with an idea that they were accumulating furniture which would at any day realize a certain and considerable sum in the market, rather than for love of art. This feeling has not yet passed away, but it does not exert so much influence as formerly. Sixty or seventy years ago, the fashion almost entirely ran upon paintings by the old masters: wonderful prices were often paid for indifferent or doubtful works, while pictures by Reynolds, Hogarth, Wilson, and other leading artists of the English school sold for a comparatively small sum. But as years have passed, the value of works of the best of both the living and dead English painters has increased immensely. Pictures which had been originally sold for 50*l.* have brought more than 1,000*l.* No doubt, the choice gems of art of all periods will keep a standard value; but we find, at the sale of Lord Northwick's pictures, a three-quarter length, by Van Dyke (we take the artists' names from the printed list) of the Earl of Stafford, sold for 30 guineas; a portrait of Dr. Lock, the founder of the Lock Hospital, sold for 60 guineas; a Cypriote sold for 145 guineas; a Raffaele landscape with Martyrdom of St. Sebastian, a composition of ten figures, 88 guineas; a Rocky Landscape, by Salvator Rosa, a fine cabinet example, 50 guineas; a Wynants, 94 guineas; a copy by Velasquez of his own picture of the Four Philosophers, 36 guineas; a Rubens cabinet landscape, 60 guineas; Nicholas Bergham, "Rural Felicity," a grand landscape, with shepherds surrounded by their flocks, a fine work, painted in 1617, for the Burgomaster of Dort, the engraved picture, 145 guineas. In one day's sale of the works of the old masters, the highest price seems to have been 300 guineas for a group of family portraits, by Gonzales: the amount of this day's sale came to 3,300*l.*

On another day eighty-two modern pictures were offered, and sold for 7,000*l.* "The Breakfast, or the Dunces Punished" by Mr. Webster, R.A., was knocked down, after a spirited competition, to Mr. Flaton for 1,095 guineas; and "The Conquest of Waterloo," by W. Mulready, R.A. (engraved for the Art Union of London), sold for 1,180 guineas.

PROGRESS OF RAILWAYS ABROAD.

THE works on the line which is to unite Saint-Lo with the main line from Paris to Cherbourg are nearly terminated between the point of junction and the extensive lime factories of M. Mossemen, at Roque-Genest. On the bridge which the company are to construct over the canal leading to these kilns a great number of hands are employed. The unfavourable nature of the soil, and the works consequent thereon, have rendered this structure one of importance. An immense quantity of piles are being driven on which the bridge is to stand; and, by the time it is finished, there will remain nothing to be done but to join together some of the cuttings at work between this point and the bridge of the Vire, at the hamlet of La Buissonnière. This latter is up to the springing, and the stones being dressed for the arch, it will be rapidly put up. The slopes of the cuttings and embankments have yet to be dressed, but that will not delay the opening, inasmuch as the bridges, except those mentioned above, are all completed. The ballast (first layer) is being put on the line, also the permanent-way has been

begun; and there is some talk of the line being open to the public in October next. Very shortly the timbers will arrive for the stations, cut to dimensions, and ready to put in their places.

The local journal, the *Aranchin*, assures us that the Western Company of France intends to commence shortly the works of the Paris and Granville Railway in the section of Argentan, near that town.

The line from Ecussines to Erquelines (centre of Belgium), will soon be in working order throughout its length. At Ecussines, the station, the only unfinished work on the line, is being pushed forward with great activity, so that the line may be open at the end of August.

From Baume to Marchienne (lately conceded to the company) the works are shortly to be commenced; already the land required for the line is being worked out on the ground. When this last section is completed, the group of railways conceded to the Central Belgian Railway Company will be indubitably one of the most useful, and at the same time one of the best paying, lines in Belgium.

On the 14th instant (July) was to take place the official opening of the first section of the Italian railway (*Chemin de fer d'Italie*) by the valley of the Rhone and the Simplon, between Bonduet on Lake Lemman and Martigny, with intermediate stations at Vouvry, Montry, St. Maurice, and Crionnaz. Provisional correspondences are to be established between Genoa and Milan.

The works of the branch line from Isarsko-Sélo to Krasno Sélo are carried on very actively. Its length is twelve versts. The earthworks, which have been done by the soldiers of the regiments of the guard, are entirely finished, as are also the road diversions and level crossings. The masonry is in good progress: seven culverts and one bridge are built, and the works of the iron bridge advance also. The rails have been all delivered from England, and are ready to be laid. The first locomotives, ordered at Carlsruhe, are on their way. Twenty-six carriages, of which twenty have arrived from England in pieces, are being mounted in the workshops of the company. The branch line, which unites the Peterhoff line with that of Warsaw, was finished last year.

The Government of Holland appears disposed to advance the sum of 1,420,000 florins to the Amsterdam and Rotterdam Railway Company. This loan is given without any interest. The line is permitted to have the same gauge as that of the lines with which it is to join.

On the "Elizabeth" Railway, in Austria, 187 kilometres, from Vienna to Linz, were opened for traffic on the 15th December last. From Linz to Lambach, 15 kilometres, will be open during this summer, and from Lambach to Frankmarkt, 37 kilometres, will be ready by the end of this year. The remainder of the line—a section of 47 kilometres—could be terminated and open for traffic in the beginning of next year, if the point of junction between the Munich and Rosenheim Railway and the "Elizabeth" Railway, were definitely arranged. From Linz to Passau all surveys and plans have been completed for work. The expenses incurred for construction up to the end of 1858 were 30,352,446 florins. The line from Vienna to Salzburg will cost 52,000,000 florins, and that of Wels to Passau, 8,000,000 to 9,000,000. The net receipts of the Bodweis-Linz-Gmunden line for 1858 have been 327,619 florins. The Vienna and Linz line, having been open for only fifteen days of last year, the receipts will be included in those of the current year. The total sum paid up towards the capital of the "Elizabeth" Railway amounts to 20,341,300 florins.

Letters from Vienna announce that the Southern Austrian Railway has recommenced the passenger traffic, and that the goods train service will be promptly re-established. Since the 17th of July, third-class passengers have been able to proceed to Luxemburg, Vöslau, and Gloggnitz, and the mail-trains have taken passengers to the principal stations between Vöslau and Vienna. It is very probable that the Austrian State Railway Company, which, on account of the depreciation of the value of paper-money, and in virtue of their rights conferred on them by the Act of Concession, had raised the rates of traffic 25 per cent., will lower the tariff to its usual scale.

Sicily appears to be actively occupied in establishing a group of railways. A company has been formed under the patronage of the Prince of Santa-Elia, on the proposals of a Hollando-Belgian contractor. They propose to construct a group comprising the Licata and Cattaniassetta line

(which establishes direct communication between the sulphur mines and the coast), and the lines from Cattaniassetta to Catana, Catana to Messina, and Messina to Palermo.

In Sardinia a decree has been issued approving of the convention passed between the Minister of Public Works and the Stradella Railway Company. Instead of buying up all the shares (as was the original intention) at a yearly interest of 24*fr.* 50*cs.* per share (which would be equal to 30*fr.* per share if proper allowance were made for the difference between the values of public funds and private speculations), the State simply undertakes to construct and work the line, dividing the net profits among the shareholders.

In Spain, the survey between the provinces of Murcia and Andalusia are being vigorously carried on for a line of railway. Royal orders have also been issued authorising the surveys of two new lines of great importance for that country. One, starting from the environs of Seville, and abutting at the town of Huelva, passing through La Algaba, Gevano, Campo di Tejada, Manzanilla, Palma, Villoroso, Melias, and San Juan del Puerto. The other, from Benifayo to the town and port of Cullera, passing through or near Salermo and Suca.

The *Madrid Gazette* of the 16th ult. publishes an order, applying the law of the 14th November, 1855, to the police force on the whole of the Spanish railways.

COMPETITIONS.

Birmingham.—Several architects having been invited to send in plans, under motto, for the new Congregational Chapel, Moseley-road, Birmingham, the committee selected "Faith," which proved to be the design sent in by Mr. Edward Holmes.

Baptist Chapel, Bristol.—The designs of Messrs. Medland and Maberly, of Gloucester, architects, have been selected by the committee of the new Baptist Chapel, in Stoke's Croft, Bristol; and the works are to be carried out under their superintendence.

METROPOLITAN BOARD OF WORKS.

Main Drainage Works.—On 29th ult. the Board opened tenders for the Acton branch of the main drainage works. The following were the amounts, viz.:—Thirst, 9,890*l.*; Dethick, 10,500*l.*; J. and E. Bird, 9,945*l.*; W. H. Roe, 10,640*l.*; Yeoman, 10,157*l.*; W. Hill, 10,123*l.*; J. and S. Wilkins, 10,200*l.*; George Aston, 9,351*l.* 10*s.*; R. Robinson, 9,454*l.*; Walker and Travers, 8,850*l.*

The last tender, being the lowest, was accepted by the Board, subject to the usual inquiries.

State of the Thames.—A letter was read from Dr. Miller, of King's College, to the effect that the measures directed by the Board for the deodorisation of the sewage before its entry into the Thames were being continued with decidedly good effect, and that, in his opinion, the state of the river had greatly improved.

THE ART-UNION OF LONDON EXHIBITION.

THE works of art selected by the various prizeholders have been gathered together in the Suffolk-street Galleries, and will be opened at first to the subscribers and their friends, and afterwards to the public, without tickets, on Monday next, the 8th instant.

The following are amongst the works selected, in addition to those already given:—

Highland Sport, by G. W. Horlor (R.A.), 150*l.*; Ophelia, by A. Ercole (R.A.), 100*l.*; The Way to the Mill, by H. J. Bodington (S.B.A.), 60*l.*; Canthian Almsgiving, by J. E. Burgess (R.A.), 60*l.*; Cavalier Cavalry, by H. J. Bodington (S.B.A.), 40*l.*; Bold and Bashful N.W.C.S., 75*l.*; Roslyn Chapel, by John Chase (N.W.C.S.), 40*l.*; Repose, by G. A. Williams (I.F.A.), 40*l.*; Net Profits, by H. P. Parker (I.F.A.), 32*l.* 10*s.*; Kelp-weed Gatherers on the Coast, by G. A. Williams (I.F.A.), 30*l.*; Wat Awlie, by A. Provis (R.A.), 30*l.*; Isola di San Giallo, Lago d'Orta, by J. Bell (R.A.), 30*l.*; Poachers Dividing their Game, by H. P. Parker (I.F.A.), 30*l.*; Ruins of Netley Abbey, by W. Shayer (S.B.A.), 30*l.*; Approaching Footsteps, by J. Bouvier (S.B.A.), 25*l.*; Near Llanellied, North Wales, by Walter Williams (I.F.A.), 25*l.*; The Tranquil Stream, by H. B. Gray (I.F.A.), 25*l.*; The Palehood, and Mother's Admonition, by J. M. Barber (I.F.A.), 25*l.*; Summer, by S. R. Percy (R.A.), 25*l.*; View on the Dee, Wales, by J. C. Ward (S.B.A.), 25*l.*; Child's Play among the Rushes, by P. W. Hulme (R.A.), 25*l.*; Good News, by J. Henzell (S.B.A.), 25*l.*; Salmon Pool, Elen Follen, by P. T. Nafrel (W.C.S.), 25*l.*; For Sale, by J. Thorpe (I.F.A.), 20*l.*; The Village of Torino, Lake Como, by George Pettit (I.F.A.), 20*l.*; Preparing for the Combat, by Matthias Robinson (I.F.A.), 20*l.*; Little Houses, by T. Moggridge (S.B.A.), 20*l.*; A Peaceful Nook, by W. W. Gosling (S.B.A.), 20*l.*; View from the Island of Bute, by J. C. Ward (B.I.), 20*l.*; Evening Meal, by G. W. Horlor (B.I.), 15*l.*; The River, by R. W. Buss (S.B.A.), 20*l.*; Preaching in the Crypt, by

George Hodgson (W.C.S.), 20*l.* 5*s.*; The Buller of Buchan, by James Giles (R.S.A.), 20*l.*; Evening—a Yorkshire Road Scene, by W. Carter (R.A.), 20*l.*; Canchas, by Miss Motrie (B.I.), 20*l.* 5*s.*; Harvest Time—Evening, by G. A. Williams (I.F.A.), 20*l.*; The Fisherman's Departure, by C. J. Lewis (I.F.A.), 20*l.* 10*s.*; Prior Aymer and Sir Brian de Bois-Guilbert, by G. H. Laporte (N.W.C.S.), 20*l.*; A Storm on the Hills, by T. P. Wainwright (S.B.A.), 20*l.*; A Mountain Stream, by C. L. Coppard (S.B.A.), 20*l.*; Idlers, by Charles Dukes (I.F.A.), 20*l.*; Near Reigate, Surrey, by S. R. Percy (S.B.A.), 20*l.*; Sheep in a Meadow—Early Summer, by John Thorpe (I.F.A.), 20*l.*

FREE DRINKING-FOUNTAINS.

THE METROPOLITAN ASSOCIATION.

THE Metropolitan Free Drinking-Fountains Association has an excellent purpose in view, and is prompted by an undeniably good spirit. Its proceedings have not in all things satisfied us, and we have said so; but we are quite willing to admit the excellence of its intentions, and to show the public what it is doing. We have accordingly engraved representations of a number of the designs for fountains which the Association awarded premiums to and are about to erect, and we proceed to state the particular objects which a street drinking-fountain is required to attain in the opinion of the Association, and the conditions to which the attainment of these objects is subject. They are:—

1. To yield a small stream of continually flowing pure and cool water, most easily accessible to the greatest number of people.
 2. The Metropolitan Fountains Association has decided, in accordance with the opinion of eminent medical officers, to increase the purity of the water by a process of re-filtration, and this must be done in the fountain itself; therefore, each fountain must be so constructed as to contain a filter which shall be easily accessible at all times.
 3. In accordance with the inflexible requirements of water companies, each fountain must be also provided with a ball and cock cistern, as this operates to destroy the force of the water, consequently it must be placed above the point of the water in the cup.
 4. The pipes, filter, &c. must be insulated, so as to preserve the water from the extremes of heat in summer and cold in winter.
 5. The fountain must occupy the least possible space. The necessity of this consideration is obvious, seeing that most of these fountains are intended to occupy space in the greatest thoroughfares of the metropolis.
 6. The upper structure of the fountain should as little as possible intercept the street view.
- To attain these objects, fulfilling their various conditions, was the problem which the design of the street drinking-fountains had to solve, with the further requirement that the structure should be such that its object would be immediately and obviously apparent to all.
- From the foregoing it will be at once apparent that the popular idea of some fountains, ornamental by reason of copious jets and lavations of water, must be entirely abandoned.

The accompanying designs were selected out of a large number of competing designs as those which best fulfilled in the opinion of the Association the requisite conditions with the greatest regard for external effect. The vase above contains the ball-cock cistern properly insulated. The body of the fountain contains, in most cases, the filtering apparatus, with room for insulating it and the pipes.

The fountains are made of iron, as the material, which with the greatest strength occupies the least room.

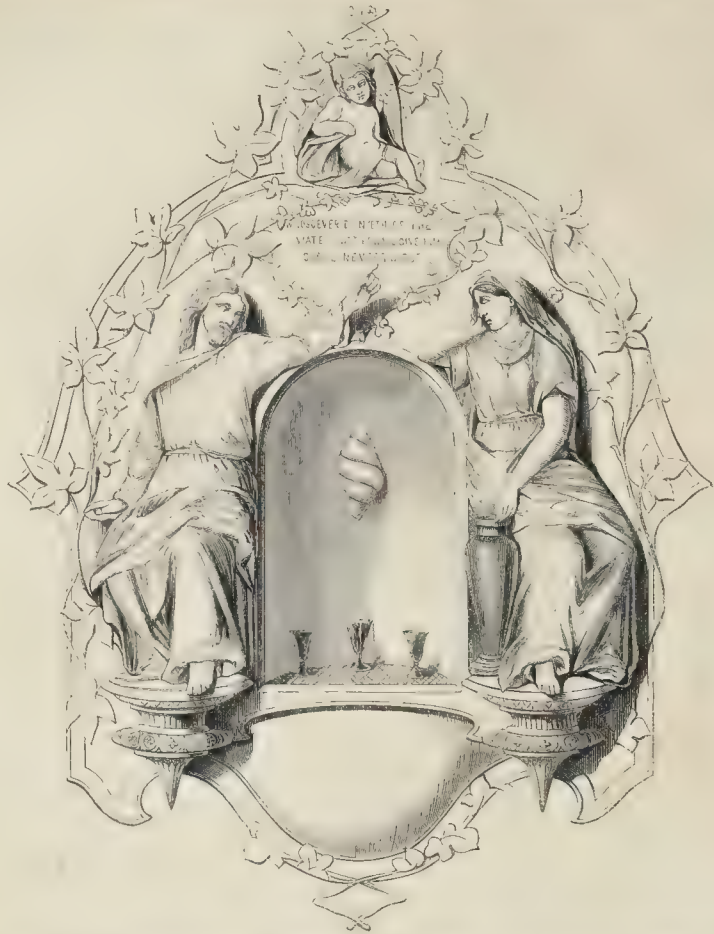
The purpose of the structure is made obvious by having the cup the prominent object, and the first which strikes the eye. This is particularly desirable when the stream is necessarily so attenuated as to be invisible at a little distance.

The designs are chiefly by Messrs. Willes.

There will be differences of opinion as to the merits of the designs as works of taste and art, but none as to the importance of the free provision of pure drinking water.

"The prevailing vice of this country is intemperate drinking," say the Committee: "more than nine-tenths of our pauperism and convicted crime together with a large proportion of mental and physical maladies proceed from this cause. It is therefore worthy of consideration by all, and particularly local bodies elected by tax-payers,

* Each stream not thicker than an ordinary lead pencil costs about 5*fr.* per annum.



A MURAL DRINKING-FOUNTAIN. — Selected by the Metropolitan Free Drinking-Fountain Association.

that every social improvement that promotes temperance must diminish the taxation which is so largely due to pauperism and the repression of crime. It is indeed scarcely possible to fully estimate the amount of practical good which will, most surely, though perhaps indirectly and silently, flow from the general establishment of suitable drinking fountains.

Several considerations moreover distinguish, and particularly commend, this benevolent object. 1. It can offend the scruples of none. The giving to the poor 'a cup of cold water' is such a pure and simple act of charity, that it must be free from every possible objection which may withhold many from contributing to other charities. 2. When once established, little pecuniary aid will be required to maintain it, so that in thus promoting what will be a permanent source of great good, the public are only asked to give once for all. 3. The practical good results will, to a large extent, be immediate, and patent to all; every contributor to the Association will be amply repaid by the pleasure of immediately beholding thousands of poor daily allaying their thirst at the fountains he aided to erect."

At Stratford a committee has been formed to erect a drinking-fountain, as a memorial to the memory of the late Samuel Gurney, esq. of Ham House, Upton Park, in this county. Mr. John Wilson, C.E. submitted a plan for a fountain-pump, by which means water would be raised at one temperature throughout the year. Mr. Wilson says of this pump, that it is "on the non-suction principle, and also acts as a filter;—a very important improvement, whether considered in refer-

ence to raising river water from tanks or spring water from deep wells, as it will raise it free from the impurities which pumps of the ordinary description cannot obviate." The pump is also to act as a fire-engine in any locality where it may be erected.

Islington proposes to erect a fountain of some cost at the southern extremity of Islington-green, on the site of the police station. It will consist of a sculptured pedestal, inscribed "To Sir Hugh Myddelton," and supporting a statue of that enlightened citizen. The water will fall from a head (a common mistake) on the south front of the pedestal into a large shell, and flow over to a trough for dogs below.

At Worcester the fountain which was offered to the city by Mr. Walker Rennick, has been put up in the wall of St. Michael's churchyard, in the College-precincts. A pillar of Bath stone, with a pyramidal top, has been placed upon the low wall of the churchyard. In the front of this is fixed a slab of polished red granite from Aberdeen, bordered by a moulded bronze rim. Out of this slab a head projects in bold relief. The head is surrounded with a profusion of ivy-leaves. Beneath the bronze is a polished semicircular basin of red granite, to receive the water falling from the mouth of the bronze head. On each side of the basin is chained a metal cup for the use of drinkers.

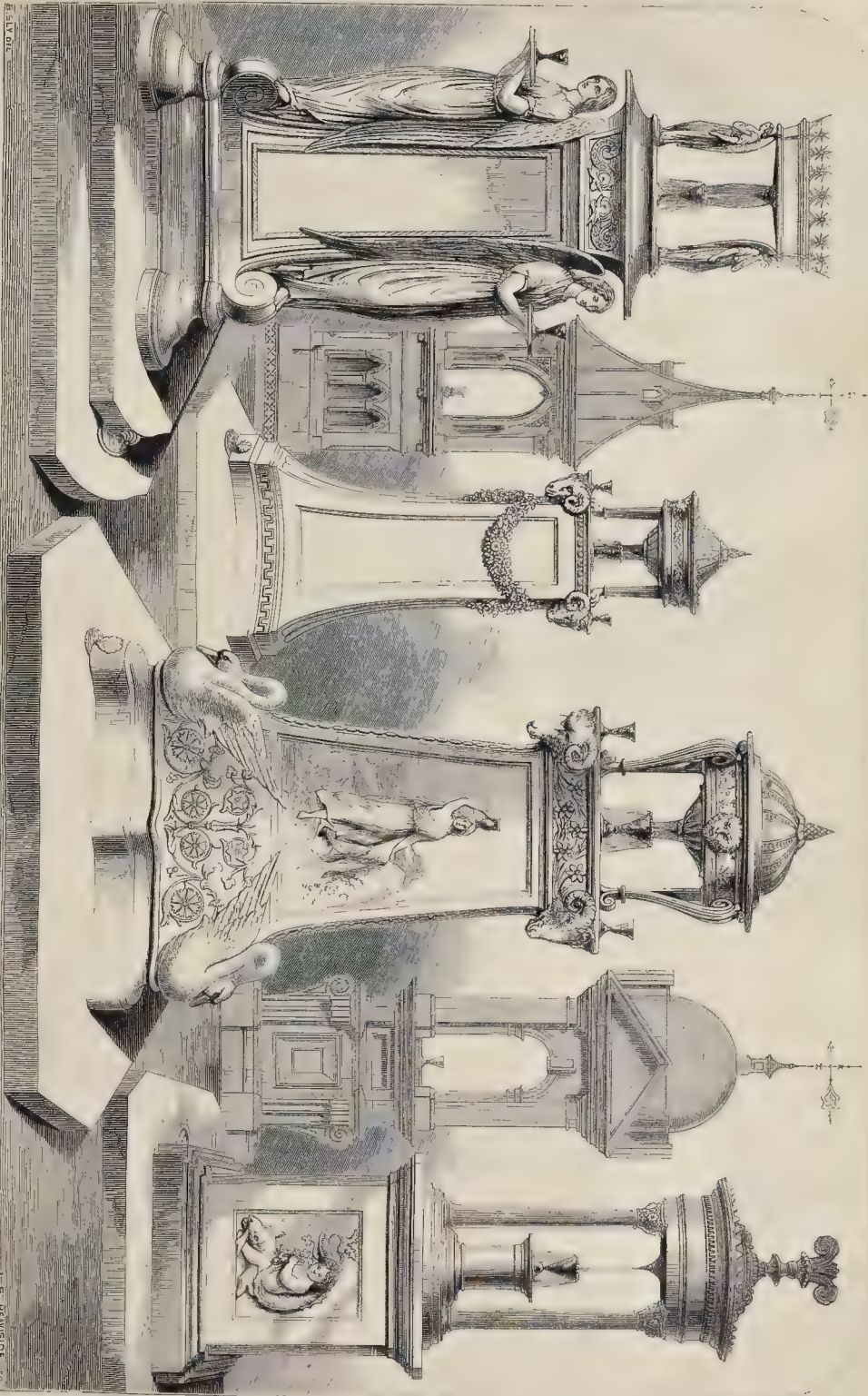
In Banbury, one of the public drinking fountains has been erected under the combined auspices of the Board of Health and the Temperance Society in Bridge-street. It is a plain unpretending affair, duly provided with metal cups attached by chains to the basin, for the use of bipeds, and

a cistern beneath for the benefit of the canine species.

A second fountain has been set up in Oxford, in Market-street, at the cost of the Market Committee. It is placed in a recess in the wall that has been made for the purpose. The frame of the fountain, so to speak, is of Portland stone, while the back is of marble. Some attempt at ornamentation has been made in the stone-work, and there is a cluster of leaves in the centre of the marble-slab at the back, from which the water flows. It has been erected by Mr. Gardener from the design of Mr. Galpin. At nights, the fountain will be enclosed by a shutter, in order to prevent any injury being done to the circular knobs or other ornaments.

In the east-metal pillar fountains which have been supplied by Messrs. Dixon, Brothers, for Brighton, there is a lever handle on each side of the pillar to work the valves which are attached to a water meter, fixed inside, allowing exactly one gill to be discharged by each movement of the handle, and this is registered on suitable dials.

Several fountains are in progress in Bristol. One has been completed in the outside of the wall enclosing the church of St. Augustine, College-green. It takes the shape of a Gothic niche, with a flat canopy. The basin is of marble, and there is one below for dogs. The water runs from a shell stuck against the back of the niche, a puerility which should be elsewhere avoided. Although the carving might be better, the character of the whole is not unsatisfactory. It is inscribed,—"Presented by a native of this parish. 'Fear God, and worship Him that made the fountains of water.'—Rev. xiv. v. 7."



DESIGNS FOR DRINKING-FOUNTAINS.—Suggested by the Metropolitan Free Drinking-Fountains Association.

J. S. HAYWARD.

THE ARCHEOLOGICAL INSTITUTE IN CARLISLE.

THE congress of the Archaeological Institute as opened on Tuesday, July 26th, in the Grand Jury Room, of the Crown Court, Carlisle. The proceedings of archaeological congresses have fallen into such a regular routine, that the account might be almost stereotyped. The mayor and corporation, at the opening meeting, welcome the body, and Lord Talbot de Malahide, as president, expresses its gratification at the reception. The Dean speaks for the Church, and then the members proceed to the castle or the cathedral, as the case may be. The next day comes the dinner; several meetings and excursions follow, and votes of thanks and mutual compliments pleasantly wind up the week. The various steps have been satisfactorily passed through on the present occasion, at the opening meeting, the address, engrossed upon vellum, which was read by the Town Clerk, said,—

"With an antiquity stretching far beyond the period of which historic record extends, and lost in the dim and misty ages of legend and tradition, Carlisle has been to the Romans, Saxons, Danes, and Normans, successively a habitation or a stronghold, and bears imprinted on its stones the evidences of their occupation. Through the edifying hand of time, and the still more destructive effects of ruthless violence and wanton spoliation, as well as so-called modern improvement, have come much to deprive our city of its most interesting features, yet amidst the ruins of the past, built in the city and the surrounding district, to awaken the interest and engage the attention of the historian, the antiquarian, and the architect."

To the constitutional historian of our native country, Carlisle must ever be an object of interest. Within its walls the Parliament of England has been assembled, and here was passed the Statute of Carlisle, which is still in force, and of the laws upon which we now live. We trust that the proceedings which will take place during the coming week may be of use in adding to the already accumulating stock of information which we now possess respecting the manners and customs of our forefathers and the history of the times, and of our common country; and in awakening an increased interest in the minds of the community at large, and especially in this corner of our Isle, in the studies and pursuits which bear an important part in civilizing and elevating the mind, and withdrawing it from the too exclusive devotion to merely present and temporary concerns."

The effect of the extension of such knowledge, we feel assured, will be to make Englishmen more sensible of the blessings they enjoy in the present day, as compared with the days of their forefathers; and to fill their minds with gratitude to those sterling men who in stormy and perilous times laid deep and sure the foundations of that noble edifice of civil and religious liberty upon which we now repose, which, under the blessing of God, has made our country what she is—the envy and admiration of her neighbouring nations, and which it is our duty, but with irreverent hand, to strengthen and adorn, and hand down to our undimmed and unimpaired to our children."

The president, in his address, said,—First and foremost in importance to our northern antiquary the interest attached to that great monument, the Roman wall. It is connected with the early history of this country, and is in itself so grand and stupendous a monument that it is impossible to be too well illustrated. We have been deeply indebted to those who in times past—from the days of Horsley down to those of Dr. Collingwood Bruce—have spent so much time in illustrating and explaining the details of that great, gigantic, I may say national monument. But it was reserved for the Duke of Northumberland, with that princely munificence which distinguishes his actions, to embark in this matter in a manner which will, I hope, make his name immortal among antiquaries. By means of the survey which has just been completed, the minutest details of that ancient monument have been illustrated in the fullest manner, and every pains have been taken to place before us—whether we can examine them or not—the greatness and the details of this important work. Another work of considerable interest, which is at present in course of progress, the excavation at Wroxeter. I need not explain at this ancient city is now being excavated by the exertions of the Shropshire antiquaries, and already most valuable and interesting results have come to light. This city appears to have been destroyed in that fearful time when the country was overrun by foreign hordes, which spared neither age nor sex, but destroyed all indiscriminately. This is one of those instances in which has been most graphically shown to us the manner in which they destroyed old cities. No historical account has come down to our day describing the proceedings, or the precise date when this occurred, but there is sufficient evidence in the spot to show that the destruction of the city, which from its extent must have been an important one, must have been by an act of violence; and numerous skeletons have been found of individuals who were sacrificed on that occasion. The sword and the engines used to destroy the city, and it was reserved to our time to find in British Pompeii which is throwing so much

light on circumstances under which England groaned in the time of foreign invasion. There is another subject, perhaps not so much connected with this country, but of great interest for these societies—for such societies to be useful, and to embrace their full scope, should not be confined to our own land. It is impossible, for instance, for any antiquary fully to understand the remains of Roman art found in Britain without comparing them with similar objects found in other countries under Roman dominion. Were it not that the study of Roman art has derived assistance from collections on the Continent, it would have been difficult to explain in a complete manner the interesting remains found in this country. At the same time, although I fully admit the necessity of directing our principal efforts to the illustration of native objects, no branch of archaeology is alien to our proceedings. It is important that we should occasionally have the means of illustrating the most interesting relics of Grecian art. And here I may mention a curious illustration to show that even Grecian art is not so unconnected with us as we might imagine. It is a curious circumstance that some of the earliest coins of Britain—those of the time of the ancient sovereigns of the Cymri—are imitations of ancient coins of the Continent; and these coins which have been the ancient prototype of British coins, are not derived from what was the most natural source, the Roman, but from Greek coins. Many of these coins are distinctly traced to be imitations—very rude and barbarous if you will, but still imitations—of coins of the time of Philip and Alexander of Macedon. However, this is a digression, but I think it right to mention the fact to show that a Grecian subject is not antagonistic or inappropriate to a meeting like this. But we hope to have a subject brought before you of most commanding interest—one of the most interesting subjects connected with Greek art. It is the subject of that noble monument, said to be one of the wonders of the world—I mean the mausoleum erected by the queen Artemisia to her husband, Mausolus the king, or tyrant if you like, of Halicarnassus. Mr. Newton, long connected with the British Museum, and subsequently engaged in Asia Minor, where he has been of the greatest possible use, has exerted himself in the most praiseworthy manner, and with the greatest zeal in rescuing everything relating to ancient art. It is through his means that considerable portions of this mausoleum have been transported to England. They were embedded in a Turkish fortress in Asia Minor, at Bodrum, which is the ancient name of Halicarnassus. These sculptures were in the Turkish fort, and very difficult of access, in consequence of the jealousy of the Turkish authorities. However, through the influence of Lord Stratford de Redcliffe, they have been carried to England and deposited in the British Museum. They are fragmentary to a certain extent, but there is sufficient of them to show that they belong to the best period of Grecian art. Mr. Newton has carefully studied its features, and I understand he will be prepared to bring before this meeting a description of the full restoration of that great monument."

At the Castle, Mr. Hartshorne elucidated. He said,—It stood before them mutilated by recent repairs, the money of the country having been recklessly expended in making the old stronghold into a modern fortification, which could be of little or no use in the present system of warfare. It could not therefore be seen in that state of perfection as an ancient work which was desirable. It was built as a barrier to the constant incursions of the Scots, who destroyed everything like a fortress which they came across: its defenders had been frequently driven out and it destroyed, and it did not therefore present that complete character as an ancient castle which was to be seen in others in the south of England which had not been subjected to such constant rough treatment. The plan of the castle was undoubtedly arranged by William Rufus, but it is more than doubtful whether he erected the building, or at least whether he completed it. However, in the reign of Henry I. the works were continued, and made so strong that in 1135 it sustained a siege, when it was taken by David I. King of Scotland. It remained in the hands of the Scots until 1157, when Henry II. undertook its reduction, and, driving out the garrison, immediately afterwards placed it in a state of repair. There are various entries, in the great Roll of the Pipe, of works carried on in strengthening it in this reign. It was again attacked by the Scots under William the Lion, in 1173, who were valiantly repulsed by Robert de Vallibus, the governor. We find it again in decay in the reign of King John, who

repaired it in 1206. The Scots again captured it, and finally lost it a few years afterwards, when it was taken possession of by Arthur de Grey, Archbishop of York. In consequence of these struggles it fell into great decay, and in the reign of Henry II. it was in a state of great dilapidation. When his son Edward I. came to the throne it needed repairs, and it was committed to the keeping of a very valiant Bishop of Carlisle, John De Halton, to whom, and a Michael De Harcla, sheriff of Cumberland, there are a number of entries of expenses and allowances in the "Liberate Rolls" for the maintenance and repair of the castle. In 1314 an estimate was made of the sum that would be required to render it efficient, which amounted to as much as would represent 9,000, of our present money. It would be seen, said Mr. Hartshorne, that there were not 10 feet of the building which did not show a change of masonry, owing to the constant destruction and constant repairs which it had to undergo. In Queen Elizabeth's time (1577) it was in a state of great disrepair—indeed, the distinguishing characteristic of Carlisle Castle seems to have been that it never was in a state of repair, which accounted for its want of uniformity in design and building. Internally, the ashlar was of a different size from those of the exterior, and the south side is different from the north in the same way. Owing to the destruction to which it was so long subjected, very little of the original masonry remains. Only a portion of the western side of the keep remains of the earliest period; and undoubtedly the stones with which it was built were brought from the Roman wall. It must have been erected at the close of the reign of Henry II. All the other parts of the keep were built during its tenure by John De Halton. In the inside there was a singular abundance of masons' marks, which are of a very much earlier period. The stones with which the interior was built are from the Roman wall, and the building was of the time of Henry II. from the fourteenth to the twentieth year of his reign. As John De Halton held the see of Carlisle from 1292 to 1324, there can be no doubt that all the Edwardian portions of the castle were done by him; so that three-fourths of the keep, a great portion of the *enceinte*, and the whole of the barbacan, were the work of this prelate. Some elegant panelling yet visible on the outside of the keep is of his time. The ornamentation of the inner gateway was of the time of Edward II. (between 1332 and 1352), and was probably the work of a very enterprising architect of that period, who had left many such instances of his skill. The outer gateway is an admixture of the styles of Edward II. and Henry VIII.; and the general outlook and enclosing walls are of the time of Edward I."

The town clerk, Mr. Nanson, gave some interesting extracts from the monuments of the corporation. In his preface he said,—“There is every reason to believe that Carlisle, like London and other ancient cities, was originally a self-governing municipality, and that the forms of self-government which remained in the middle ages were originally derived from the Roman government of this country, the same as those of the small boroughs of Italy, of which we have been lately told by the reporters of the *Times* and other papers who have been following the immense armies which have lately met in that country, and of which we are told that they preserve the same form of government that they had in the times of the Roman emperors, and in the times previous even to the birth of Christ. Carlisle, as a borough and city, consisted only of the free meeting of citizens without any acknowledged head at first; and we find that the first charter and first grants from the crown are made ‘to the citizens of Carlisle,’ not to the mayor, or bailiffs and citizens. Afterwards they were incorporated under the title of the mayor and citizens of Carlisle; and later, in other documents, they are styled ‘the mayor, bailiffs, and citizens,’ and so on. These citizens had the fullest liberties. In Saxon times they were nearly independent of any other power; they had power to make their own laws for good government, and by the common law of England that power is preserved down to the present time, and it is now confirmed—in some respects extended, and in other perhaps abridged by Act of Parliament.”

Amongst the earliest papers read were one on “Belted Will,” by Mr. Coulthart, junior; and a dissertation on Local Names in Cumberland, by the Rev. W. Monkhouse.

The Western Part of the Roman Wall

Was the subject of the Rev. J. C. Bruce's communication. He said the Roman Wall consists of three parts. First, the stone wall itself with a deep trench on its north side—or a fosse, as it is

called—the material being often thrown on the north side, so as to make an additional rampart against the northern foe. Besides the stone wall and its fosse they had to the south—at various distances, perhaps at an average distance of 70 yards—an earthen fortification generally called the *vallum*. This generally consists of a deep ditch with one rampart on the north side at about the average distance of 24 feet from it, another rampart on the south edge, another at the distance of 24 feet. In addition to these two which run from the eastern side of the island to the western, invariably we have a road going between them. He could not help thinking that the road was the principal part of these great fortifications. The Romans sheltered themselves behind those strong walls on the same principle that they carried a shield to protect their body. They did not depend upon these fortifications, they trusted chiefly to their own valour and personal energy. These works run from the eastern and western side of the island, and were garrisoned by auxiliary troops: each station had a cohort of auxiliary troops. The legions were kept within the wall. The legion which commanded this country was the 6th legion, located at York. In times of difficulty and trouble word was sent to York, and the Roman roads which came into York spread out like a fan, so that the soldiers of the empire might be brought and concentrated at any moment upon any point of this great fortification. He was strongly impressed that the roads were really the strength of the wall, and there was little in the wall itself. It was to protect and cover the roads, and the soldiers passing along them. They had stations at an average distance of four miles along the line. These Roman camps have evidently been built before the wall was. At Birdswald the northern angles are rounded; at Borcovius the same; the same at Great Chesters or Esica. Generally speaking, the stones of the stations are smaller than the stones of the wall. They are of such size as they could be carried by the hand. He conceived that the stations were on the spot they fortified themselves. Further, the stones of the wall on the western side of the island are larger than those on the east. At Birdswald they are much larger than the stones of the wall in Northumberland. Nearly all the mile castles can be traced at the present hour; but almost every turret has been destroyed: they would, however, get some slight indications of one at Birdswald; and then again there is another placed just behind Hare-hill—the hill just in front of Lanercost. These are the only two turrets we know of, although many of them remained in Horsley's time, about 130 years ago. Thus we see how complete a fortification it was. He had mentioned the roads running along the wall. Besides these there was a short cut from the Chesters on the North Tyne to Carvoran. There were, moreover, roads running northwards and southwards. There is one on the east coast. There is Watling-street, which can be traced now: the stones are good for miles; and at Carvoran you have a way coming from Carvoran to Amboglana, and working its way past Bewcastle. At Rosehill the railway and wall come again into immediate contiguity. In making the station at Rosehill the top of the hill was taken off, and in doing so antiquities of great value were discovered. One of these was a flying Victory. Victory is a goddess whom the Romans worshipped—Victory is represented bearing the palm branch, with wings outstretched, her garment flying behind her, and treading on the globe. In this instance, however, Victory is represented as flying through the air. This also is at Rockliffe. There is a common idea that the wall was built to keep out the Scots; if so, we would not have had the gate so placed. We have north gates in all the stations, and so far as we know there has been a bold aperture northwards in all the mile castles. We have gates which have been closed by folding doors of 10 or 11 feet wide. There are camps far to the north of the wall as Bremenium on the Rede Water, where you have coins down to the latest period of Roman occupation.

When the members went to the cathedral, Mr. Purday and the Rev. Canon Harcourt gave some particulars. The latter said, as to the recent decorations, that the ceiling was coloured blue under the advice of Mr. Owen Jones; but it was scarcely fair to criticize it in its present state, seeing that the design was not yet fully carried out. It was intended to bring the colouring down to the windows above the clerestory, and also to add a number of other decorations. He hoped this would some day be done.

The mayor, Mr. Ferguson, received the members of the Institute at a conversation. The first excursion was to Birdswald, Lanercost, and Naworth; Dr. Bruce acting as *cicerone* for the most part.

On the fourth day (Friday) the different sections met in the Courts, Lord Talbot de Malahide presiding in the Crown Court. An interesting paper was read by the Rev. H. M. Searth on "The Excavations at Wroxeter;"—after which Sir Charles Broughton, on behalf of the Wroxeter excavation committee, appealed to those who felt interest in the subject for pecuniary assistance.

The Rev. E. Venables then read a paper on "Remains in the Isle of Wight," by the Vicar of Carisbrooke.

In the Civil Court a paper on "The Churches of Cumberland" was read by Mr. Cory. He said:—"In drawing attention to the churches of this county, I cannot speak of them as specimens of architectural magnificence, for perhaps in no part of the kingdom are the rural churches so devoid of elegance or grandeur; but they forcibly tell a tale of the state of the country, and, if all historical documents had perished, they alone, like the monuments of ancient Egypt, would enable the archaeologist to read its story. Their distance from each other tells of a scanty population: the meagreness of decoration shows that the inhabitants were occupied otherwise than in peaceful pursuits: their constant repairs were not, as in many southern counties, endeavours to make good buildings better, but the necessity occasioned by their partial destruction; and frequently the church has been erected as much for the safety of the body as for the benefit of the soul. As this peculiarity is very characteristic of the unsettled state of the country, I have selected those churches which I think worthy of notice on this account, for in them the defensive or warlike element is strongly marked." Speaking of Newton Arlosh church, not many miles distant from Burgh, he said:—"This appears more like a fortress than an ecclesiastical structure. The main doorway is but 2 feet 7 inches wide. All the windows are more than 7 feet from the ground, and none, not even the east end window, above 1 foot wide and 3 feet 4 inches high. The lower story of the tower is arched in the same manner as Burgh, and probably had a similar defensive door. The bottom part of the wall has been pulled down, and the steps altered. The first floor of the tower is very interesting, for it has the unusual feature of a fire-place, and also a small room or closet in the thickness of the wall. The upper part of the tower was rebuilt some years ago when the church was enlarged, the whole building having been allowed to go to ruin. I will not occupy your time by speculating on what may have happened in these fortress churches; on the savage attack or gallant defence; or the barbarous oaths of revenge at the sight of wanton destruction of property; but I wish to draw your attention to them as monuments of a state of society now happily passed away, which are homelies to all who possess intelligence to read them."

Some remarks and memoranda as to the subsoil, debris, and ancient remains discovered in cutting the sewers in the city of Carlisle, were read by Mr. Hugh McKie.

The chief attraction of the day was Mr. Charles Newton's discourse on the discoveries at Hali-carnassus and Cnidus, the pith of which we shall give hereafter separately.

At the evening meeting, in the Coffee House, Mr. Vulliamy read a paper by the Rev. J. Maughan, A.B. rector of Bewcastle, "On Traces of the Ancient Britons and Romans in Cumbria."

Mr. Coulthard resumed his memoir "On the Life and Times of Lord William Howard," and an interesting notice by Mr. Way, of several golden crowns recently found near Toledo, and now in the Musée de Cluny, at Paris, was then read by Mr. Franks.

On Saturday a number of papers were read, including one "On the Abbey of Holme Cultram," by the Rev. J. Simpson, and one by the Rev. J. Maughan, of Bewcastle, "On Traces of the Anglo-Saxons and Norwegians in Cumberland."

The latter paper said,—"This relic consists of two imperfect pillars, the one of them, perhaps, originally designed to be placed at the head, and the other at the foot of the grave, but now standing almost close together, each on its own small pedestal. They are somewhat smaller in shape, being of an elliptical form in the lower part, but drawn nearer to the rectangular shape in the upper portion. The one is taller, but more slender than the other—the taller being about 6 feet high. The west side of the shorter pillar contains the inscription, the corresponding part at the back having a double scroll. The sides are of

the same shape, but narrower than the back and front, and have scrolls similar, but not so deeply cut. The taller pillar is a little out of the perpendicular, but quite firm on its pedestal. Its surface is more weather-worn than that of the shorter pillar, and does not show any signs of an inscription. Each cross is thickly crusted with the cryptogamia of several centuries, the moss or lichens being in many parts nourished, as it were, into a crispy fatness, and this grove of vegetation almost conceals the sculpture with which each, on close examination, is found to have been decorated. Although every inch of surface to which the chisel could be consistently applied is covered with Saxon carving, yet we find no trace of interlaced work or other curious ornament,—nothing starting into the resemblance of any thing mosaic, fabulous, or grotesque, such as might afford an interesting study for artist or antiquarian.

Mr. Newton continued his observations on the Mausoleum; and then there was an excursion to Corby Castle, where Mr. Philip Howard entertained the members with much good feeling. The grounds here are singularly beautiful. Some lines from "L'Allegro," inscribed on one of the seats, suggest their character:—

"Straight mine eye hath caught new pleasures,
Whilst the landscape round it measures
Russet lawns and fallows gray,
Where the nibbling flocks do stray,
Mountains on whose barren breast
The lab'ring clouds do often rest,
Meadows trim and daisies pied,
Shallow brooks and rivers wide."

Monday brought an excursion to Brougham Hall. The first place visited was King Arthur's Round Table, near Emont-bridge, where Mr. William Brougham explained what had been done with a view to discovering the remains which might give a clue to this mound. These excavations had not been attended with any satisfactory result, and the general idea was that the mound formed part of a sacred grove. At Yanwath Hall, Mr. Parker explained the points of interest. He pointed out that the hall had one of those *peel* towers, the local name for a square tower or fortification, which, from the disturbed state of the border, was found the most convenient form of building. Yanwath Hall was probably of the fourteenth century, as might be supposed from the battlements and parapets, although it was rather a difficult point to decide whether the architecture is that of the late fourteenth or early fifteenth century. After leaving Yanwath Hall the visitors proceeded to Ashkham Hall, which was inspected, and then proceeded to Brougham Hall, where they were received by Mr. William Brougham. Here there was a luncheon prepared, and the only regret felt was that Lord Brougham was not himself present.*

LEICESTERSHIRE ARCHITECTURAL SOCIETY.

The fifth annual general meeting of this society took place on the 27th ult. in the Town-hall, Loughborough. The attendance of visitors at the museum in the afternoon was rather small. The members of the society and friends proceeded to the church at half-past twelve o'clock, and examined the edifice. The Rev. Mr. James said he appeared as the substitute of Mr. Scott, who was expected to have been present to give them a sketch and history of the church, but that eminent architect was detained in London with sending in his plans of the Government Offices. The history of Loughborough church was a very simple one when its size was considered, and its erection was connected with two dates, the first being about 1830, when its size was not very considerable. It consisted of a chancel, a nave, a north aisle, and a double aisle on the south side. The great features which struck the beholder at first were the simplicity and massiveness of the style: although it might be taken as belonging to the Decorated period, the church was as undecorated as possible, there being only one piece of sculpture visible, and that a small corbel head. The grandeur of the church rested entirely upon its proportions,—the boldness of its outline, the moulding and plinth of the arches, and the height of the pillars. If there was any fault to find it was in the monotony of the arches, and the same mould and style extending to the windows. But it was a great question if the windows were all of the same period: the east window and the one in the north transept appeared to him to be the only original ones. In the others it would be seen that the mullions were cut away. He should have liked to have had Mr. Scott's opinion on this point, and hoped, in the

* A fuller report of many of the papers read will be found in the *Carlisle Journal*.

coming restoration, that the original outline would be adhered to. In this view he hoped to be supported by Mr. Goddard and Mr. Bloxson. He next called their attention to the chancel, as showing the second period in the church's history, which he fixed in the fifteenth century—the perpendicular date. If they looked at the east window and jambs, they would find that they had been inserted, and the pilasters, which partook of the same character, were, no doubt, of the same date. The priest's door in the chancel and the sedil which had been partly opened, also tended to prove this period of the church's history. They had then the exact ground plan of the church, in the nave, transept, and chancel, as it stood in the fourteenth century. The west tower was of a later date, somewhere about the fifteenth century, but its beauty was entirely destroyed by the large window being filled up. There was a doorway in the eastern side of the chancel, and it had been suggested that it belonged to an earlier church, or to a smaller edifice.

The Rev. H. Pearson afterwards pointed to one of the pillars which was very much out of perpendicular, caused as some supposed by the gallery leaning against it. Such, however, was not the true cause; the injury to the pillar was occasioned by the numerous incursions within the church, there being not a pew without a dead body underneath it. There was a monument in the chancel erected to one of his predecessors, on which was a request in Greek that no more bodies might be interred within the church, yet the very next vicar, in defiance of such wish, requested to be buried in the chancel; and that, he was happy to say, was the last funeral that had taken place within the church.

At the general meeting in the afternoon, the fifth report of the Society, for 1859, was read (and is reported at length, together with the whole proceedings, in the *Leicester Advertiser* of 30th ult.). The report stated that the Society's funds were in a fair condition. At the dinner in the evening, Mr. J. Cartwright occupied the chair. After dinner a public meeting was held in the Corn Exchange, and the Rev. J. M. Gresley read a paper on the Monumental Crosses of Leicestershire, the Rev. T. James one on All Saints's Church, Loughborough, and Mr. John Nisbitt one on Ancient Heraldry and its application to Architecture. The Rev. Mr. Gresley then described the brass rubbings on the walls.

Next day a party made an excursion through Dishley, Hathern, Kegworth, Ratcliffe-on-Soar, Kingston, Sutton Bonington, Leake, Stanford, and Cotes. The Rev. T. James officiated as cicerone, and gave explanations as to the architectural features of the churches.

MEETING OF OPERATIVES IN HYDE-PARK ON THE NINE HOURS MOVEMENT.

A GREAT meeting of the United Building Trades was held on Wednesday afternoon in Hyde-park to protest against the "document," as it was styled, which the masters have resolved shall be agreed to in future as a condition precedent to employment, and which requires the men to declare that while so employed they will not belong to any society, the object of which is to interfere with the regulation of wages or the hours of labour.

The meeting was held in that part of the park midway between the Marble-arch and the Serpentine, and several thousands were present, the great majority of whom were connected with the trades which have enrolled themselves in the nine hours league. A few chairs were brought to the ground by the persons who appeared to regulate the proceedings of the movement, and upon these the speakers mounted.

A placard, of which the following is a copy, was also circulated at the meeting:—"The nine hours movement.—Fellow workmen, scorn the idea of signing the proposed 'document,'—a shame to those who have introduced it, and a disgrace to the age in which we live. Let peace, law, and order, be your motto to-night. George Potter, secretary."

At half-past six o'clock the chair was taken by Mr. Pacey (painter), who observed that the object of calling the meeting that evening was not to argue the right or the wrong of the nine hours movement, but to prove by their presence that the working classes, one and all, so far as the building trades were concerned, had the nine hours movement at heart, and were determined to make it successful; and also their determination not to submit to the degrading conditions which the employers sought to force upon them. Aspersions had been thrown upon those who had taken an

active part in the movement. He was there to appeal to all who knew him if he had not risen as early in the morning as any man there? And after his day's work was done he had devoted hours at night, when most of them were asleep, to the promotion of the cause, without any other reward than the satisfaction of knowing that he was doing a good action. The great object of the meeting was, as he had said, to call upon them to stand up every man of them to resist, by moral and reasonable means, the disgraceful document which the employers wanted to force upon the men. The *Times* newspaper, which had honoured them by some leading articles, ridiculed the notion of their working fewer hours than their forefathers; but their forefathers had won their freedom through blood and death. There was no necessity for that now; the only sword they need make use of was the bright and cutting intellect with which God had endowed them. Their weapons were reason and argument, and their motto was "peace, law, and order;" and they knew that they had as great an interest in preserving property as those who possessed it. Would they give up the rights which the law now allowed them, and sign themselves as soulless slaves by signing this fiendish document? Would they, he asked, do less for the children that were to follow them than their own forefathers had done for them? (No, no.) No, they were not soulless serfs, and they would stand up and show their employers, as well as the Government that was backing them, that they were Englishmen, animated by the same love of freedom as those who had gone before them, and from whom they had inherited the wealth of liberty. For himself, he would rather lay his bones in the street than sign such a document. Their employers had not met them by argument; they had misstated their points and misrepresented their objects. He would not, however, enlarge upon those matters, as other speakers would follow, and it was not the duty of a chairman to anticipate them. He would merely say, that as they could not hold a meeting in the park after sunset without acting illegally, he hoped they would at the close of the proceedings leave it immediately in a peaceable and orderly manner, and by the gates most convenient to their respective homes.

Mr. Cremer (joiner) then moved the first resolution, which was in the following words:—

"That this meeting views with regret the position of antagonism assumed by the employers, inasmuch as the spirit they display is calculated to widen the breach already existing, by endeavouring to trample on the spirit of humanity which originated and still animates the Nine Hours movement; and as the pledge which they would extract from us, by signing the document they propose submitting, would rob us of every privilege of free men and reduce us to the condition of serfs, we determine to use every moral power of resistance, and pledge ourselves to use all constitutional means for bringing the Nine Hours movement to a successful termination."

In supporting this resolution, the speaker observed that the arguments of their adversaries were many and various, and that they were most forcibly set forth in the *Times*, which as the organ of the moneyocracy was sure to be against them. If they were compelled to act in the spirit of bygone ages, it was because their employers had for eighteen months turned a deaf ear to the appeal of injured humanity. They made no answer to claims which had been made upon them in the name of reason and justice, until they suddenly banded themselves together and threatened to throw them out of work for urging their claims. Why should they, he asked, at the bidding of their employers totally abnegate all their rights as free men, and voluntarily place themselves in the condition of Russian serfs. (No, no.) It was said that their forefathers were content to work ten hours a-day, and why should not they? The reply was, that in the time of their forefathers there was not the same fearful competition as there was now, and he was prepared to prove that under that competition they now did double and treble the amount of work a-day that their forefathers did. Should they not be allowed one hour a-day less when they did treble the work? If, for asking the reduction of one hour in the day's work, their employers closed their shops on Saturday next, his advice to them was to go peaceably to their homes; and if they saw anyone attempting to break the peace, they must do all in their power to prevent it, for they might depend upon it the employers were moving heaven and earth to entrap them into the commission of a breach of the law, in order that they might be visited with the penalties of the law. Their motto throughout the struggle must be,—"Peace, law, and order."

Mr. Bloomfield, bricklayer, seconded the resolution. The question they had to decide was, whether

they would rather exist as free men or consent to be slaves? In reply to their request for a reduction of the hours of labour, their employers had asked them to sign a document which would reduce them to the condition of bond-slaves. If they signed they would be "ticket-of-leave men," with this difference, that the ticket-of-leave man's ticket showed freedom, while they were to have their tickets to send them into slavery. They had heard a great deal about political economy from editors of newspapers and their employers, and it was a very curious thing that whenever any attempt was made to improve the position of the workman, it was always opposed to what was called "political economy." Who could define political economy? If political economy was opposed to them, let them be against political economy. The masters, or rather the employers, said it would be disgraceful to ask them to sign a document, but they were to make a declaration, and then they would get a ticket with their number on it. Was that political economy. Political economy was first introduced in 1819, for the purpose of bringing down wages, and the great object was to get men to act singly and not in bodies. Why?—because when any one man went to ask for an improvement, he was met at once with "Oh, you are a grumbling, discontented fellow. Begone—be off with you!" and thus all chance of improving their condition was destroyed. Well, the masters had told them that they must not any longer belong to societies. The gauntlet was thus thrown down to them, and they were prepared to take it up and defy the masters. Well, but the masters were going to be so very kind to them. They were going to start a benefit society, and deduct so much a-week from their wages. Why, already Piper had stopped 2d. a week from his men's wages. Peto, Brassey, and Betts, the large contractors, stopped as much as paid for the keep of all their horses. But was it not kind of the masters to stop the payments, and then bury them with their own money. Sooner than submit to that, he would rather tramp all over England, and be buried at last by the parish. They were told that if the building trades held out for the nine hours movement, the employers would shut up their shops. Well, if they did they would soon open them again. If not, there were two places to go to—the working men had the workhouse to go to, and the masters had the Bankruptcy Court. The masters told them that the societies were to be broken up; let their answer to the threat be, "We will make them stronger." Let there be no shrinking, and his last words were, the nine hours movement for ever!

Mr. Osborne (plasterer) said that the great number of persons connected with the building trades present at the meeting was a conclusive proof that the day was not far distant when they would achieve the object they had in view, namely, nine hours as a day's work. The agitation had brought the societies and the employers to a fatal stand, and the newspapers had pictured to them the sufferings to which their wives and children would be subjected, but he had no doubt they were as much prepared to meet and brave those sufferings, if need be, as the masters themselves. If the employers did carry out their threat, and close their shops, he believed they would be the first to repeat that step; but, however that might be, the workmen were determined to show that they knew they were the producers of wealth in this great nation, and that they were resolved to share in its profits. He advised them to be firm in resisting the "document." Let them remember what was the result of the shoemakers' strike in 1832, against a similar document. The employers were compelled to give way and withdraw it, and that would as certainly be the case now if the building trades were but true to each other, and firm in their resistance.

Mr. Pacey (mason) supported the resolution, and expressed his surprise at the employers having assumed their present position, after the repeated experience of the failure of all similar attempts. Had they forgotten the great strike against documents at Liverpool and in the north of England? In the first strike at Liverpool, only two men out of many thousands signed the document. In the great strike of 1847 not one single man signed. The next "document strike" in that part of the country included the whole of the building trades of Lancashire and Yorkshire. The employers in these two great counties entered into a combination to annihilate the whole of the trade societies. They called upon the men to sign a document, stating that they would not belong to any society instituted for the purpose of protecting their labour, on pain of the workshop being closed against them. What was the consequence? Some

did close their shops on the day named,—but they took care to open them next day: others were merely kept closed for a week or two: and after that the most extensive builders in that part of the country were in the *Gazette*.

Mr. Potter (joiner), Secretary to the movement, next made a long statement, in the course of which he said that they had received promises of assistance and union from eighty of the chief cities and towns in the United Kingdom,—that a meeting in favour of the movement was to be held at Oxford that evening; that another would be held at Manchester the next night, and that nothing could exceed the unanimity and sympathy which the London trade had met with in the provinces. He strongly urged upon the men not to sign the "document," but to resist the aggressive movement which was to be inaugurated on Saturday next in the workshops of Messrs. Trollope and Sons.

A miniature scaffold was then raised above the crowd, from which was suspended a copy of the *Times* newspaper. It was received with cheers and groans, and at length burned amid loud acclamations.

A vote of thanks was then passed to the chairman, and the proceedings terminated. The great majority of the men walked down Oxford-street in procession, and in an orderly manner.

STRIKE OF GASMEN.

On Saturday before last, at the works of the Chartered Gas Company, a sudden demand was made by the men for an advance of 5s. per week on their wages, and a reduction of labour from twelve to ten hours per day. Ultimately the managers were induced in the emergency to accede to these demands. This success, it is believed, emboldened the employees of the Imperial Company, whose district comprises nearly the entire north of the metropolis, as on Wednesday they sent in a demand to have their wages raised from 30s. per week, at present paid to stokers and retort-house men, to 38s. per week; and even the coal-barrow-wheelers demanded a rise from 21s. to 27s. per week, together with a reduction of labour per day from twelve to ten hours. The managers, however, had telegraphed to Yorkshire and other places, and the men were told that they could at once leave work, but would never be permitted to come upon the premises again. Some 150 men belonging to the St. Pancras works at Maiden-lane then turned out. A number also struck at the company's works at Haggerstone. A previous communication had been made to the Secretary of State, and the Commissioner of Police (Sir R. Mayne) on the subject, and detachments of police were in readiness at the various works to prevent any interference on the part of the turnouts with those willing to remain or engaged to take their places, and hence no disturbance occurred. An additional demand of these men was that they should have a day's holiday once a month, the company having recently given them a holiday, with conveyance and a dinner and tea, at Epping Forest. The company also subscribe 250*l.* a year to their sick fund, and otherwise treated them very kindly, it is said. They receive, in addition to their wages, an allowance of 6d. per day each man.

Since the above was written we have had an opportunity of hearing from several of the men who were connected with the metropolitan gas works, who are now on strike, and feel it a duty to lay their statements before our readers. The majority of the men are without that amount of education which would enable them to put their real or imaginary grievances into such a shape as to express their meaning. The information from these men is as follows:—

"We are informed that the Equitable and Chartered Gas Works pay per week,—Firemen, 1*l.* 18*s.*; scoop-drivers, 1*l.* 17*s.*; men horsing scoops, 1*l.* 15*s.*; coke sprayers, 1*l.* 8*s.*; coal wheelers, 1*l.* 7*s.*; besides, they have a holiday once in every four weeks, 'the greatest boon of all.' We work seven days in the week; horses have their weekly rest, but we have none. At the Imperial Gaslight Company's Works, in Maiden-lane, we make a quantity of gas, say equal to 120, whereas at the Equitable and Chartered Gas Works, they only make 80. Why should they be paid at such a price, and make less gas, while we who make far more gas are less paid."

No doubt the large rise of wages elsewhere led to the strike, which will prove an injury to many families, and possibly cause much unnecessary inconvenience to the public. The great body of the gas-

makers, advised probably by a few, made the demand which led to the strike. They "would have their rights." In asking some to define these "rights," they said that one man had no business to be paid more than another. They had not considered that sugar bakers, an employment which required as much if not more skill, and was attended with as much heat and damage to health, were paid from 24*s.* to 26*s.* a week. It did not occur to them that the sugar bakers would be glad to exchange their smaller stipend for a larger one if they had the chance.

They should have considered, before making the demand for such a large increase of wages, that porters at the neighbouring railway were only being paid at the rate of from 16*s.* to 1*l.* a week, the dock labourers a small and unremunerative sum, and that the business of gas stoking, although attended with heat, does not require a large amount of intelligence. It appears that the gas-men have been originally costermongers, or employed in various kinds of unskilled labour, and that it does not require much time to train a man in the most difficult part of the business. We believe that if these matters had been carefully explained to the men,—if they had been made to understand the principles of demand and supply which regulate all prices, they would have been more moderate in their views; and it is probable that a request for an increase of 5*s.* a week would have been acceded to. Moreover, arrangements should certainly be made so that the men may have a holiday in, at any rate, each alternate week. Men should not be condemned to unceasing drudgery.

On visiting the St. Pancras station of the Imperial Gas-Light Company, in Maiden-lane, our informant found the managers earnestly endeavouring to prevent the mischief which would arise from leaving the neighbourhood in darkness; and certainly, although this strike has caused them great anxiety, and the labour of both night and day, he heard no unfriendly word said of the men who had left work. It is to be regretted that the men acted so rashly. As might have been expected, others have come in from various parts. A number of German sugar-bakers from the east of London have fallen readily into the work. The labour of gas-making consists in wheeling the coal and placing it in an iron scoop about 12 feet long, held by four men by iron handles: another man bears the scoop behind. At the entrance of the retort into which the coals are intended to be placed the fireman stands, and removes the iron opening: the scoop is rapidly passed into the retort, the coal delivered equally along the retort: the scoop is then withdrawn, and the fireman, with all possible despatch, closes up the aperture. The labourer is relieved from time to time by fresh men. This work is very hot; so is that of drawing out the coke. It is stated as a fact that the amount of sickness, &c. happening to those employed in the houses is less than happens to the men the company have at work in the streets repairing the gas-pipes. This may be partly accounted for by their being more exposed to damp and the fumes of the gas, than they are in the house.

EXTENSION OF THE BATTERSEA PARK AND BRIDGE ROAD TO CLAPHAM, STOCKWELL, &c.

This extension is so great a desideratum, and so obvious and natural as well as unceasingly a continuation of the southern improvements, that, doubtless, it is only a question of time and urgency; and as regards the demand for it, the inhabitants of the populous districts interested do not seem inclined to come short of what is requisite so far as they are concerned. They have already petitioned the House of Commons, and are preparing to petition the House of Lords on the subject, and it is to be hoped that so much required an extension of the new road, from Victoria-bridge southwards, will not be long in being agreed to and carried out. Meantime the new bridge and approaches may be said to lead southward to nowhere, except to the park, and that only from the north side, the inhabitants of Clapham and Stockwell having no direct road, in fact, either to the park or to the bridge. The new road stops short at a parish road between Vauxhall and Battersea, in such a way as to indicate the very intention, now desiderated, of a future continuation a little farther southward, so as to open a direct way from Clapham and Stockwell to the park and bridge at Battersea, and hence to Pimlico and the whole north-west of London. The new railway bridge adjacent to the Victoria-bridge is making progress, and the railway station in Battersea fields will

soon be displaced by the grand terminus on the north side; so that the communications of the whole district are undergoing great changes, and, doubtless, one of these changes will be the inclusion of Clapham and Stockwell, &c. directly within the sphere of all these important improvements. It must come to that, and therefore the sooner the better.

THE TENDERS FOR THE MAIN DRAINAGE.

Sir,—The members of the Metropolitan Board seem to be unfortunate in all their most important undertakings. Some months ago tenders were received for the northern high level sewer, and the lowest tender was accepted; shortly after that Mr. Leslie accused the officers of the board of having given out exaggerated bills of quantities to be estimated from, a consequent loss falling of course upon the ratepayers. Mr. Leslie received a vote of censure from the board, and a terrible reprimand from the chairman, Mr. Thwaites, but subsequent ventilation of the subject proved Mr. Leslie right notwithstanding.

The southern high level sewer seems to be a subject of even greater mismanagement. On the 20th May, thirteen tenders were received, ranging from 268,661*l.* to 193,119*l.* which tender was accepted, subject to a scrutiny of the surties. This terminated in the tender being rejected, but instead of accepting the next in amount, as in fairness they were bound to do, they allowed the amounts to be published and called for fresh tenders. The builders, after the great expense they had been at, felt so indignant at being thus treated, that eight out of the thirteen refused to tender again, and the result of the second competition, on the 22nd of July, is, that the lowest tender is now 12,216*l.* higher than the lowest but one was on the former occasion, and 23,581*l.* higher than the one provisionally accepted, while there were actually six tenders in the first competition lower than the one now accepted. It appears to me that the members of the Board, in trying to be over clever, have over-reached themselves, and said it, the rate-payers, with at least 12,216*l.* unnecessarily. J. H.

PROJECTIONS UNDER LOCAL ACTS.

At Marlborough-street, last week, Mr. George Bubb, librarian, 167, New Bond-street, appeared on a summons obtained at the instance of the vestry of St. George's, Hanover-square, setting forth that he had unlawfully neglected to remove or alter certain plasters forming portions of his shop-front, and projecting two inches upon the footway of the street, by which neglect, it was contended, the public sustained annoyance and inconvenience.

After a long investigation, Mr. Beadon, who, the better to judge of the case, visited the place, said there could be no doubt the erection was an infraction on the public way, and that the vestry were thoroughly justified in the proceedings instituted, and that every means had been taken to prevent carrying out the erection complained of and save expenses. If there had been but one quarter of an inch projection it would have amounted to an illegality, and the order, if procured, must be that the projection in his case must be taken down, but he should hope that would not be insisted on.

Mr. Streeton, who supported the summons, said he should not advise the vestry to order the removal, and all he asked for now was a nominal penalty of the defendant, and 30*l.* costs.

Mr. Beadon expressed his astonishment at this enormous sum, and observing that the builder, through obstinacy had brought all this about, ordered a penalty of 5*s.* and 5*l.* costs, which were at once paid.

MASTERS AND MEN: GRINDING MONEY.

JACKMAN'S HALL.
A CASE of some importance to master builders and their workmen was decided at the Brompton County Court on the 29th ult. The case of the plaintiff, a carpenter, was that having been dismissed without notice, and desiring to take away his tools, he was entitled to the quarter's grinding money (1*s.* 6*d.*). Defendant's case was, the plaintiff, who had been three weeks in his employ, made only twelve days out of the three weeks; that he was paid on the Saturday at four p.m. and on the ensuing week did not come to work until Monday dusk on Wednesday morning, when defendant's foreman told him his place was filled up, being very busy, and that he must take his tools away. He then demanded grinding money, and was refused. Defendant understood that the money was at the bottom of it, and that his own men, forty in number, had, every one of them, subscribed to the plaintiff's case, and had been before the court.

The judge, on hearing evidence, told it that any carpenter who did not keep to his work regularly until he was discharged was not entitled to the quarter's grinding money. It was a serious inconvenience to a master

builder, he observed, to be called out of his business by a man who neglected his work 21 days and was discharged, and then summoned his master for a quarter's grinding. He had the least proof of the Society being at the bottom of it, he would give the whole of the costs; but as the man had no evidence but his own, and it was a question of principle, he would give defendant costs for one of the witnesses he had subpoenaed, and the man's loss of time and his other expenses he thought would be sufficient; therefore he should give in favour of the defendant.

MEMORIALS, MONUMENTS, AND STATUES.

The committee for promoting at Birmingham the erection of a monument to the late Mr. David Cox have resolved that the memorial shall assume the form of a bust, and the amount of subscriptions, though not nearly adequate, is regarded as sufficient to justify a commission for the work being given to Mr. Peter Hollins.

The committee of the Wallace Monument have resolved that a meeting of committee should be held in Glasgow during the first week of September, for finally adjudicating on the various designs submitted in competition, and awarding the premiums.

The monument to the memory of Lieutenant Burnes, who was massacred at Lucknow during the Indian Mutiny, has been erected in the vestibule of the Old Church at Montrose. The monument bears a suitable inscription, and has been erected by his brother officers.

The statue of Handel, which has been erected at Halle, the native city of the great composer, was uncovered on the 1st of July. It is in bronze, and ten feet in height, and stands upon a pedestal of marble raised upon granite steps. The composer is represented in the costume of his time, leaning on the music-desk, on which lies the score of the *Messiah*. In his right hand he holds a roll of music. In front of the pedestal is inscribed in characters of gold the name of "Handel." On the opposite side are the words, "Erected by his admirers in Germany and England in the year 1859."

At the inauguration of the statue of Czar Nicholas at Petersburg, the *Telegraph* says,—"Alexander II. led his troops past the bronze statue of his iron father. Was it not as though the dead 'Commandatore' were reviewing once more his faithful troops, on the same place where he had so frequently given them the word of command? On appearing at the head of his soldiery before the presence of his departed father, the Emperor waved a sword in martial salutation, inclining at the same time his head, as an obedient son in duty would do in the presence of an honoured parent. Then swept along the iron battalions, the intent gaze of every man directed on the stern fil features of the dead autocrat."

Miscellaneous.—It is intended to raise, by public subscription, a memorial in honour of Vice-Admiral Lord Lyons, G.C.B. to be erected in St. Paul's Cathedral, or elsewhere, as may be determined upon.—A mural monument to the memory of the late Mr. Daniel Grant, of Manchester, merchant, is about to be placed in St. Andrew's Church, Ramsbottom, near Bury. The monument, which is of Carrara marble upon a base of black Galway, is 8 feet high, 5 feet 6 inches wide. It is in the Gothic style, and has been executed by Messrs. J. and H. Patteson, sculptors, or Mr. William Grant, a nephew of the deceased gentleman.—The statue of Dr. Johnson has been replaced in the market-place of Lichfield. Mr. Lucas, the sculptor of the work, made a model, and entrusted the execution of it to a stone to a person many years employed by the Duke of Devonshire. Mr. Lucas pointed out certain defects in the large statue, and undertook their remedy. Improvements at the back of the statue are also designed, and a drinking-fountain has been offered by the South Staffordshire Waterworks Company, to be erected on the site, which for two or three hundred years was characterized by a conduit.—Workmen are erecting a marble tablet in the parish church of Panbribe, sent from Italy by Prince Metidoff, as a tribute of respect to the memory of the late Colonel Maule. The monument is of Gothic design, having buttresses on each side, with a crocketed canopy above. The whole is carved out of a block of Carrara marble.—Dr. Rogers, of Stirling, has visited Etrick and Yarrow, to look out for a site for the monument to be erected in the memory of James Hogg, "the Etrick Shepherd," and to raise funds for the work. He was accompanied by Mr. Currie, sculptor, who has been entrusted with the execution of the design. It was resolved to place the monument at Mount Benger, on the centre of a ridge, a few yards to the west of the house which Hogg occupied while he was at Mount Benger, and of which a small

portion remains. The monument, which will consist of a representation of the poet seated on a pedestal, will be about 16 or 18 feet high.

NINE-HOURS MOVEMENT.

Sir,—During the past week a meeting has been held by the master-builders to take into consideration the necessity of reducing the hours of labour from ten to nine hours. On reading its report, I see no plan proposed to meet the crisis, but, on the other hand, an extreme resolution was adopted, that of closing the shops to all those that will not make a declaration. What will be the result of this? A general strike—the curse to employer and employed. The hand and mind not being employed, the floods of political discord will be opened, domestic distress aggravated, and the breach that now exists between master and man widened. As to the declaration, what honest and thinking man would assent to it? Where is he whose heart does not pant for the time when his hours of labour shall be shortened, so that all may find employment, and time given him to bask in the literature of the day. No difference of opinion exists on the question of reducing the hours of labour, but to the way by which the boon is to be gained. Is there no plan to be suggested to meet this impending calamity? Cannot the masters and men compromise the matter by each sacrificing—the masters in time, the men in wages?

May I ask your influence, as the leading journal of the building trade, to suggest some plan to meet the case, knowing as you do the monetary position of the master and the perseverance of the men, that neither of them will give in until both are injured. By doing so, you may cause the dark cloud which now hangs over us to pass away, and thereby secure the happiness of England's industrial classes. All we wish for is, that those out of employ may gain employment and time for educational purposes. Are the discoveries of a Herschel, the researches of a Brewster, and the penetration of a Huggins, to be unnoticed by us? No, sir, you will not deny us this privilege: we long for this era to dawn, to make us happier and more contented citizens. W. GLOVER.

Books Received.

Description of a Breakwater at the Port of Blyth, and of Improvements in Breakwaters, applicable to Harbours of Refuge. By Michael Scott, M. Inst. C.E. Edited by C. Manby, F.R.S., and James Forrest, Assoc. Inst. C.E. 1859.

Observations on certain portions of the Reports of the Royal Commission on Harbours of Refuge. By Michael Scott, C.E. 1859.

THE first of these is a very valuable pamphlet, which has been printed by permission of the Council of the Institution of Civil Engineers; comprising, excerpt minutes of proceedings of that Institution, vol. 17th, Session 1858-9. Besides the paper by Mr. Scott, the pamphlet contains an abstract of the discussion on it.

In the second, which is in the form of a folio tract, Mr. Scott states that having recommended, in the evidence which he gave before the Royal Commissioners on Harbours of Refuge, the adoption of his new system of constructing breakwaters, he finds that while the commissioners acknowledge the importance of his system, by the prominence they have given to his plans, their report contains conclusions so much at variance with the evidence, and arising from such obvious misconception, that he feels it incumbent on him, once more, to put the truth clearly before the public. For this purpose, while advertising merely to the more prominent points, he refers the reader, for minute information, to the evidence annexed to the Report, and to the paper on Breakwaters, read by him at the Institution of Civil Engineers, and to which we have already referred.

Miscellaneous.

CITY POLICE STATIONS.—In a report on the Police Stations in the City, it is mentioned that with the exception of Station No. 1, District Moor-lane, the buildings have been or are being adapted to their present uses, and all that the present nature of the buildings admits of has been done; but notwithstanding this, the Stations No. 2, District Smithfield, No. 3, Fleet-street, and No. 4, Bow-lane, are still very incomplete and inefficient, and are in every way unfitted for police stations. There is in them no sleeping accommodation, a deficiency of cells, and no place to muster the men. There also exist very great evils in the internal arrangements of all the six establishments. The cells and water-closets being within the building, and some of the former within hearing distance of the charge-room, which is highly objectionable. The offices for the business of the station are small, inconvenient, and inadequate. Moor-lane station, although built for the purpose, was done so at a time when the subject was but little understood. The committee advise that instead of the six stations, three should be erected in the best and most commodious manner in suitable situations.

GAS.—The Gasport Gas Company have reduced the price of their gas from 6s. to 5s. 6d. per thousand cubic feet; with 6d. per thousand for the meter,—it will cost the consumer 6s. instead of 6s. 6d.—The Worcester Gas Company have declared a dividend of seven per cent.

LOCH KATRINE WATERWORKS FOR GLASGOW.—It is considered probable that Her Majesty will be present at the opening of the Glasgow Waterworks at Loch Katrine in October. At a meeting of the Glasgow Town Council, it was resolved to take steps to invite Her Majesty to "tap the loch."

FOUNDATION FOR A SEAMEN'S SCHOOL AT SHIELDS.—The late Dr. Winterbottom, a native of Shields, has left about 22,000*l.* to establish a marine school or college in South Shields, for the education of seafaring men, free of cost, in nautical astronomy and the higher branches of navigation.

ACCIDENT.—Three lads, residing at Stoke Newington, were playing in an old clay pit in a brick-works, when the earth suddenly gave way, and upwards of three tons of earth and new clay bricks fell upon them. Their cries brought assistance, and they were with great difficulty extricated, much injured, one so dangerously that he was conveyed to St. Thomas's Hospital, where he now remains in a dangerous state. The two other youths were conveyed home much injured.

THE VIADUCT AT MARYKIRK, MONTROSE.—It has been stated, says the *Montrose Review*, that the viaduct at Marykirk is in an insecure condition, and that it has been condemned by the Government inspector; indeed, that a condemnatory opinion of nearly all the wooden bridges on the railway has been expressed by that gentleman. The railway authorities here deny the truth of the rumour. It is, however, desirable that an official contradiction should at once be given to a rumour so calculated to excite alarm in the public mind.

THE NEW LUNATIC ASYLUMS.—We understand that steps are now being taken by the Lunacy Board for the construction of the first of the asylums proposed by the new Act. A large piece of ground near Inverness, extending to nearly 180 acres, has been purchased, and on this site an edifice capable of accommodating 400 patients is to be erected. This building is for the Inverness district, which includes the counties of Inverness, Nairn, Ross and Cromarty, and Sutherland. The designs for the asylum are to be obtained by a competition restricted to three; and we understand the following architects have been selected as competitors:—Mr. Matthews, Aberdeen; Messrs. Peddie and Kinneir, Edinburgh; and Mr. F. Jones, York.—*Scotsman*.

GLASSMAKERS IN TROUBLE.—Twelve men engaged at Watton, Bell, and Co.'s plate-glass works, Stourbridge, have been summoned for leaving work without notice. The defendants had objected to a foreman, who is a Frenchman. Five of the defendants were looked upon as the ring-leaders, and the charge therefore was not pressed against the others. The only defence offered was, that by the custom of the trade, no notice was required. They admitted that they had been punished for leaving a former place without notice. It was proved that the custom of the trade was (where there was no special agreement) to give notice according to their "reckoning," where they were paid weekly—seven days notice, and fourteen where the payment was fortnightly. The defendants present were then committed to prison for fourteen days. They asked for a fine instead, but their request was not granted.

HIGHLAND MANSIONS.—Belladrum House, in the far-north of Scotland, as now altered by the present proprietor, Mr. James Merry, M.P. under Mr. Bryce's superintendence, consists of two large towers at either end, with high sloping roofs, like those of the Houses of Parliament, having a central building between them containing the vestibule, dining-hall, and principal rooms, and with numerous windows of various forms and sizes. The patterns of the ceilings are just now in course of being blocked out. The main entrance is on the north side, but there is also another on the south elevation, leading down from the drawing-room and library to a level lawn. Several terraces lead down to a flower-garden, having a large pond or water-lilies and other aquatic plants in the centre. A broad gravel-walk, flanked by a low wall, runs along the top of the bank, which is terminated at either end by open square turrets, with high French roofs. The successive flights of masonry have had placed on their copings long lines of terra cotta vases, filled with flowers; and there is a gradation in the size of the plants in the different terraces.

ASCENDING SALISBURY CATHEDRAL SPIRE.—A somewhat daring feat is described by the *Sherborne Journal* as having been performed by a man named Matthews, employed by Mr. Fisher (Salisbury), builder. Matthews ascended the spire of the cathedral from the outside, by tightly grasping a large number of iron handles, which are firmly fixed at short distances from each other on the exterior of the spire. The summit being gained, he oiled the vane, which is about 404 feet from the ground. After this he mounted the cross above the vane, and stood upright upon it. Matthews has mounted the spire occasionally for some years past.

THE CALEDONIAN CANAL.—The annual report of the commissioners of this canal says:—The total receipts of the canal from all sources from the 1st of May, 1858, to the 1st of May, 1859, amounted to 5,080*l.* 1*s.* 6*d.* and the total payments during the same period to 6,951*l.* 9*s.* 11*d.* being an excess of payment to the extent of 1,871*l.* 8*s.* 5*d.* The sister (Crinan) canal has been "overwhelmed by a great disaster" since the last report. A reservoir burst; the banks of the canal of course gave way, and a general débâcle was the consequence. The estimate of certain proposed improvements, according to Mr. Walker, civil engineer, is 80,000*l.* but whether this cost will be incurred remains to be seen. Notwithstanding the disaster, by which the traffic of the canal has been almost wholly suspended for three months of the year, the receipts of the canal from the 1st of May, 1858, to the 1st of May, 1859, amounted to 2,238*l.* 1*s.* 6*d.* and the payments to 2,149*l.* 15*s.* 10*d.* showing an excess of receipts of 88*l.* 5*s.* 8*d.*

TEMPERANCE PERMANENT LAND AND BUILDING SOCIETY.—It appears the progress of the society whose name is at the head of these remarks has been very gratifying. From its establishment to the present time it has issued 8,400 shares, received in subscriptions and deposits more than 110,000*l.* and advanced upon house property alone more than 72,000*l.* It has also erected a number of cottages and villas for its members, besides having purchased an estate at Stratford, consisting of 227 freehold plots, most of which have been disposed of, and several built upon, an addition thus being made to the register of voters of a number of persons who by their provident habits are justly entitled to such a privilege. From the amount of business done during the last six months, it appears quite probable the ratio of increase will be as great as in past years, viz. double that of the preceding year, as we find the total receipts from January, 1859, amount to about 35,000*l.* against 17,000*l.* of the same period of 1858.—*Stratford Times.*

THE POSTMAN'S COSTUME.—With the sun beating upon the dry streets, and the glass up to 120 degrees, it is an uncomfortable sight to see the letter-carriers in their scarlet coats, moving wearily along at the rate which enables them to get over a distance of from fifteen to twenty miles a day. Some of these hard worked and useful public servants ask to be allowed to wear in the summer a light coat, which might in some way be so marked as to distinctly show their office. The hats which are supplied to the postmen are heavy and inconvenient, weighing about seven ounces. Some more ingenious than others have drilled this head-covering with holes. The dress of the policemen is still more inconvenient for summer wear. They are, according to their regulations, obliged to keep the coats closely buttoned. The stiff stock adds still more to their discomfort, which is increased by the heavy and ill-ventilated hat. Will the day ever come when common sense will rule in such matters?

DESTRUCTION OF THE COLOGNE THEATRE.—The Stadt-Theatre, the principal theatre of Cologne, has been burnt to the ground. On the night of the 22nd ult. some fireworks which were stored in a room under the roof exploded with a loud report, and set fire to the building. The streets in the neighbourhood were so narrow that the firemen were unable to work their engines with advantage, and although a shower of rain came to their assistance, the fire gained a complete mastery over the building, and burned so intensely as to consume the smoke. The German paper from which we are writing this account says that the clear flames lit up the city as if it were day. "It was a fearful spectacle, and I can scarcely understand now how it was that the conflagration was prevented from spreading. Had it not been for the rain and the absence of wind, we should have had a second fire of Hamburg, for the theatre was situated in a narrow street and a crowded neighbourhood. The wife of a man connected with the theatre was burnt to death, and Fraulein Deutz was injured by the fire."

BELL FOR LEEDS.—The hour-bell for the clock-tower of the town-hall, Leeds, has been cast by Messrs. Warner. Its diameter is 6 feet 3 inches; weight, supposed to be about 44 tons. It is spoken of as an excellent piece of casting.

THAMES GRAVING DOCK.—In our notice of the raising of the ship *Jason*, we said, at a guess, it was about 1,000 tons burden, but the printer made it 100 tons. The ship is registered at 877 tons.

FOREIGN OFFICE AND WAR OFFICE.—Mr. Stirling has moved for a return of all money disbursed by the Treasury on account of the plans for the Foreign Office and the War Office, of the block plans for laying out the adjacent ground, and other objects connected with the architectural competition and exhibition of 1856-7, including prizes, fitting-up Westminster Hall as a place of exhibition, and all other contingent expenses.

Kew Gardens.—It is said and justly, that a drinking fountain or two, for these fine public pleasure grounds are now, from the very great numbers flocking to them, very much required; though till the want is supplied, a glass of pure spring water may be had (gratis) by all visitors, of the official attendant in charge of the lower room of the New Museum, opposite the Palm-house in the Botanic Gardens.

THE TRAMES.—The *Lancet* states positively that "much illness, and indeed death, has occurred in the neighbourhoods of Westminster and Bermondsey the last few days, owing, most unquestionably, to the putrid and disgraceful state of the river, aided as it is by the intolerable heat, whilst in the low neighbourhood of Bermondsey, amongst the wharfers and journeyman tanners, sudden seizures whilst at work are of daily occurrence."

REGENERATING STEAM.—A peculiar arrangement of apparatus whereby the waste of exhausted steam of steam-engines of all kinds may be returned to the boiler and used again in working the engine, and thus preventing any loss of steam, has been patented for a correspondent, by Mr. J. H. Johnson. The used steam is conducted by a pipe to a closed vessel, in which it is allowed to expand and lose a great portion of its original pressure. From this vessel it passes to a surface condenser, and thence it is pumped into the boiler.

THE SOUTH WALES INSTITUTE OF ENGINEERS.—The annual general meeting of the members of this institution was held in the theatre of the Royal Institution, Swansea, on Friday and Saturday before last. The attendance of members was not quite so large as on previous occasions. In the room were exhibited many drawings, diagrams, and models. The first day's proceedings were mostly devoted to the nomination of office bearers, &c. On Saturday the proceedings commenced by the secretary reading a paper upon "Wheels," by Mr. Murphy, of Newport, Monmouthshire. The second paper read by the secretary was one by Mr. G. C. Greenwell, of Radstock, upon the "Iron Ores of Somerset and Wilts." The third paper was by Mr. G. Robson, manager of the Cefnnewydd Collieries, Pyle, upon "The Working and Ventilation of the Steep Measures of South Wales." The last paper was by Mr. Ogden, of St. Mary's, Manchester, and was entitled "The Self-acting Steam Break for the Prevention of Accidents by Over-winding."

THE FINE ARTS ASSOCIATION IN SCOTLAND.—The Royal Association for the Promotion of the Fine Arts in Scotland held their annual meeting in Queen-street Hall, Edinburgh, on Saturday before last, the Lord Provost presiding. From the report which was read it appears that since the formation of the association, twenty-five years ago, 106,000*l.* have been expended in the purchase of paintings and sculpture, pictures for the National Gallery, and engravings and illustrated works for the members of the association. The fund subscribed during the past year is 4,176*l.* or about the average, taking one year with another, since the commencement of the association. The committee have purchased, at a cost of 2,200*l.* sixty-three works of art, recently exhibited by the Royal Scottish Academy, consisting of fifty-seven paintings, four water-colour drawings, and two pieces of sculpture. They report, amongst other matter, that Mr. Geo. Harvey has placed in their hands for engraving, and for the copyright of which he has been paid 200*l.* five paintings illustrative of the song "Auld Lang Syne;" and that they have arranged with Mr. Joseph Noel Paton, R.S.A. for six oil paintings (to cost 600*l.*) in illustration of the Border ballad, "The Dowie Dens of Yarrow." The report was unanimously adopted, and the prizes were then distributed.

TENDERS.

For alterations and extensions at the house and offices, Naseby Woolleys, Northamptonshire, for Capt. G. A. Ashby. Mr. E. F. Law, architect, Northampton:—

Myers, London.....	£4,915 0 0
Thompson and Ruddle, Peterboro'.....	4,880 0 0
Clark and Barrett, Northampton.....	4,850 0 0
Thomson.....	4,850 0 0
Bramwich, Rugby.....	4,458 0 0
Broadbent, Leicester.....	4,150 0 0
Clifton, ditto.....	3,757 0 0

For the enlargement of the Manor-house, Morton Pinkney, Northamptonshire, for Mr. Edward Sempill, Mr. E. F. Law, architect, Northampton:—

Hill and Son, London.....	£3,850 0 0
Grimsley, Bicester.....	3,702 8 0
Messenger and Porter, London.....	3,653 0 0
Young and Co. Oxford.....	3,440 0 0
King, Sheffield.....	3,357 0 0
Roberts, Weedon.....	3,340 0 0
Davis, Banbury.....	3,250 0 0
Cosford, Northampton.....	3,134 0 0
Kemberly, Banbury.....	3,050 0 0
Green, Northampton.....	2,795 0 0

For erecting two houses at St. Leonards-on-Sea. Mr. Henry Carpenter, architect. Quantities not supplied:—

Carey and Avery.....	£2,995 0 0
Kenwood.....	2,970 10 0
Baker.....	2,902 0 0
Howell.....	2,869 0 0

For the finishing of a pair of semi-detached cottages, for Mr. W. G. Aimé, at Teddington, Middlesex. Mr. J. H. Rowley, architect:—

Childs.....	£400 0 0
Powell.....	340 15 0
Jacklin (accepted).....	340 0 0

For the works for vestry of St. John, Hampstead. Mr. John Douglas, surveyor to the vestry:—

Clowser, Hampstead.....	£3,900 0 0
George.....	3,669 0 0
Dethick.....	3,563 0 0
Batterbury.....	3,560 0 0
Messenger and Porter.....	3,543 0 0
Abbott and Hopwood (accepted).....	3,492 0 0
Rowe.....	3,488 0 0
Kent.....	3,472 0 0
Walton.....	3,329 0 0
Pickett, Hampstead.....	3,296 0 0
Gardener.....	3,199 0 0
Cole.....	3,185 0 0

For new Wesleyan Primitive Church, Jackson-street, Birkenhead. Messrs. J. W. and J. Hay, architects. Quantities taken out by Mr. Cornelius Sherlock:—

William Cameron.....	£3,624 0 0
Isaac Roberts.....	3,490 0 0
Henry Fisher.....	3,432 0 0
Henry Pooley.....	3,400 0 0
Kilpin and Montgomery.....	3,310 0 0
Parker and Son.....	3,300 0 0

Altered plans for the same.

Henry Fisher.....	2,990 0 0
Henry Pooley (accepted).....	2,360 0 0

For Foundry, the Grove, Southwark, for Mr. Whitehouse. Mr. William Nunn, architect:—

Day.....	£870 0 0
Downes.....	820 0 0
Wills.....	763 0 0
Wilson.....	730 0 0
Chutter (accepted).....	693 0 0

For alterations at Mr. Edmeston's, 59, Strand. Same architect:—

Brass.....	£550 0 0
Turner.....	545 0 0
Nolley.....	530 0 0
Day.....	527 0 0
Wills (accepted).....	498 0 0

For the drainage of Colonel Joshua Simmons Smith's building land, Lawrence-hill, Bristol. Mr. J. A. Clark, architect, Bristol:—

C. King.....	£407 0 0
D. Davis.....	350 0 0
W. Smith.....	322 0 0
R. Wilkins.....	315 0 0
W. Abbott.....	249 0 0
J. N. Brown.....	245 10 0
W. Cowlin.....	194 9 3
W. Brown.....	159 0 0
W. Dowling.....	142 10 0

For new school-buildings at Swindon (exclusive of boundary-walls and fittings). Mr. Edward W. Mantell, architect:—

Major.....	£1,700 0 0
Barrett.....	1,665 10 0
Phillips.....	1,657 10 0

For additions and decorations to Canterbury Hall, Lambeth, for Mr. Charles Morton. Mr. Samuel Field, architect. Quantities supplied:—

Patrick and Son.....	£479 0 0
Cock.....	470 0 0
Reynolds.....	467 0 0

For carcassing and covering in three pairs semi-detached villas at Loughton, Essex, for Mr. John Mills. Mr. Wm. D'Oyley, architect. Quantities supplied:—

Estall, Walthamstow.....	£1,678 0 0
Rivett, Stratford.....	1,423 0 0
Cushing, Enfield.....	1,276 0 0
Ball and Son, Loughton.....	1,265 12 0
Carter, Woodford.....	1,058 0 0

The Builder.

VOL. XVII.—No. 862.

Appeal by Strike.



RE strikes and quarrels necessarily the same thing? If so, the world of industry grows rapidly and every year from bad to worse:—if not, strikes are as yet misunderstood. We incline strongly to the latter view, and would take the present opportunity of urging their true nature and value.

A strike occurring, the first impulse both of master and servant is one of personal irritation: the master thinks the servant insolent, the servant thinks the master oppressive. Nothing is more natural on either side, but meanwhile nothing is more probably a mistake. A strike, as a strike, is no more a question of feeling than is a double equation. It is merely a commercial crisis; a mode of readjusting the value of labour from time to time; a question of pure science.

But not only is it a mode, it is practically the only mode. No value is or can be stationary while civilization progresses, and wages must frequently be revised to suit changing demand. But how to effect this revision? For, on the one side, it may be assumed that no master will raise his rate of wages until compelled, and, on the other, that no workman will or ought to neglect any opportunity of obtaining the highest price for his labour.

It is said, "the thing would arrange itself; a man underpaid would go into a pursuit paying better." This is quite true; but, in the first place, how is the man practically to discover whether or not he be underpaid? It is no light matter to change one's craft. Previously to doing so, common sense would make every effort for increasing its rewards. Nine men out of ten would be ruined by a change: they have invested their lives in their trades, and would need a new life for a new business.

How, then, can the man force his master to exhibit plainly that he is giving him all he can, and not taking advantage of his ignorance or helplessness to pay him less than the just value of his industry? How, we repeat, can this be practically ascertained except by striking? The master replies to the demand for higher wages, "I cannot afford it." How is the man to know what this means? Does it mean that the master will not retrench his own private luxuries, or that he cannot pay more, and make a fair profit by his occupation? or that he erroneously believes he cannot? How is the servant to know?

As long as he works at his old wage the problem remains unsolved; and if, after very serious deliberation and due search of all other channels of information, he becomes convinced that the labour-market of his craft is not too full, and his master decidedly underrating his value, he must make up his mind to a present sacrifice for a future good,—he must determine to try the issue by leaving work altogether. If the master has been paying him fairly, rightly, and at a natural rate, though at a lower one than he desires, his substitute will be easily found, for labour will be abundant and cheap.

If, on the other hand, the master has been underpaying, he will be obliged to raise his scale of wages, and concede his servant's demand, for labour will be scarce and dear, and substitutes hard to discover.

In each case the question will have been

answered in the only convincing and final manner, and the balance, unsettled by avarice or error, becomes restored to its natural equilibrium. The experiment is certain but expensive, and should be commenced by none not thoroughly sure of his case before appeal, lest the loser be condemned in costs.

The appeal by strike is frequently as desirable for the master as the servant. He, however, is unable to discover the precise amount of shillings which a day's work is worth by any less rough-and-ready way. He may be paying too much. And, in point of fact, a strike, or the principle of a strike, is of perpetual occurrence in all transactions of exchange. Suppose a question of cotton or sugar-value instead of labour-value, how does the seller know whether he is selling too cheap, except by refusing to sell at all below a certain higher rate? If there is but little cotton or sugar, as of course he suspects, or affects to suspect there to be, he will sell what he chooses at his own figure; but if not, he must take the buyer's price for it. Now the fixed price about which the transaction halts is the *strike* of the seller against the buyer—of the supplier against the demander—and provides the only practicable means of arriving at the fair value.

No calculator ever made or born could take into account the million and million-fold component elements which should fix abstractly the real value of a single bale of cotton, a single cwt. of sugar. The action and reaction of demand and supply through all the world of men and things, for may be five or ten years preceding, would require separate consideration and precise appraisalment. Storms and sunshine, winds and waves, ships and crews, planters and negroes, risks and insurances, wear and tear, rents and buildings, coals and machinery, hands and hours, these would be the mere obvious heads of classification for such multitudes upon multitudes of facts, events, and details, as never could be exhausted, as never yet were brought together, and as never could, if brought together, be estimated, welded, and compared. The thing would be abstractly impossible; and a strike is the practical and proper solution. The engine provided for the conduct of commerce is brought into play. Man's individual interest does what his collective reason would fail to do—establishes actual values. The highest possible becomes the fixed price; the standard which no investigation could ever settle or discover. Self-interest, pure and simple, unbiassed by benevolence on one side, or by passion or obstinacy on the other, this is the moving spring of commerce. Pure mere self-advantage is the commercial impulse, and is satisfied only by the highest price.

But reason is indispensable for the conduct of this invaluable selfishness to safe and permanent conclusions.

Everybody admits the maximum of reward to be the sole rule of pure commerce. Everybody admits that supply and demand must regulate the figure at which this maximum shall stand at any given period; for that determined by self-interest each man has gone to this or that pursuit and supplied it or not with his labour as seemed good to him.

But what everybody does not admit, is the relative proportion between demand and supply at that particular period. And this it is which, in the inadequacy of all other tried means of information, a strike is sure to disclose.

It is simply and merely a question of facts, and calls for no more than unprejudiced observation and experiment. Feeling and temper should be, therefore, diligently avoided by all reasonable men. A pure question of science has been propounded, and is in process of solution. As soon, soever, as this is settled, the real commercial strike is at an end. Every day that it is further prolonged is due to anger, and not reason. The question of "Which can wait longest?" is introduced; one wholly irrelevant as well as superfluous, and the answer to which could at best only throw light upon long past conditions of industry. The pause in production, while the buyer looks round him to see whether he or the seller is right, is extended to meet no useful purpose, but only

to enjoy revenge, till the old fable of the belly and its members becomes the just exponent of the state of things.

Strikes, then, we conclude, when properly undertaken, are but ordinary and natural commercial crises, and by no means events to alarm, so long as anger be kept out of them. Divest them of the unnecessary and perfectly illogical bad temper which generally accompanies them,—the *argumentum ad hominem* so favourite with men unused to sound discussion,—and they remain the natural barometers of industry,—a means for estimating the fluctuations of labour superior in accuracy to any possible other. Their more frequent occurrence is but the sign of a quickly extending civilization and rapidly altering and varying demands, and neither of a grinding rapaciousness among rich men, nor a dangerous communism among poor.

With regard to the present strike in the building trades, with a view to which we have made the foregoing observations,—if these be admitted as just, a speedy decision is obtainable.

The peculiar form of a "nine-hours movement," it is not essential to consider. Influenced by views which may or may not be sound with regard to excessive physical toil and the necessity of less labour—questions sanitary or moral, and by no means influencing a purely commercial calculation, or likely to figure in the pages of a ledger,—the leaders of the movement have put their demand in a rather novel shape. They say, "We, as sellers of time, cannot let you have more than nine hours for say 5s. 6d.: ten hours is 10 per cent. too cheap;" or, "We, as buyers of wages, cannot afford to give more than nine hours for 5s. 6d.: ten hours would be 10 per cent. too dear, and upon that we stand."

This, though a novel way of putting it, is no more than the usual demand for higher pay. It is a perfectly fair occasion for a stand, *if it be also a wise one* and likely to be supported, judging from the just aspect of the labour market,—otherwise a wanton or insane foolishness.

But, in fact, however incredible, the strikers have really struck their own case to pieces in the very stating of it—for they assign as one prominent reason for the tithe they claim—the abundance of unemployed hands!!

Philanthropy cannot be brought into the question. It is just as rational to demand compassion and benevolence, nay, *alms-giving*, (for it comes to this), of pure commerce, as to pray a falling tile to refrain from hitting an infirm old woman.

The commands of religion and philanthropy are not to be sought in ledgers—more than the laws of commerce on the walls of churches. Each and all are profoundly true, and, rightly practised, not contradictory. Their conclusions should, and do modify each other's; but their processes must never be confounded.

We have endeavoured to put the matter in a common-sense point of view, without any reference to our wishes and hopes, but with strict regard to laws which prevail, and which will prevail.

And we are disposed to believe that if the great mass of honest, right-wishing men will think for themselves in the matter, they will arrive at our own conclusion,—that, however, soon hereafter it may be, the time as yet is evidently not ripe for a just and wise appeal by strike.

The daily papers, metropolitan and provincial, have described so fully the progress of the present unhappy dissension since our last that it would fatigue our readers to go again over the ground. A large number of the principal builders closed their establishments at the time arranged, and wait till Messrs. Trollope's shops are again filled before they will re-open even to those who will assent verbally to the "declaration" determined on. Amongst the establishments closed are those of Messrs. Myers, George Smith, Freeman, Ashby & Sons, Rigby, Thomas Cubitt, Falkner, Freeman, Jay, Jackson & Shaw, Nixon, Brown & Robinson, Moxon (the main-drainage contractor), Piper & Son, Bowley, Hill, Lucas, Williams, Wilson, Patrick, McLennan & Bird, W. Cubitt & Co., W. Jackson, McKelly, Wardle & Baker, Lawrence

& Sons, G. W. Heath, Gale, Poole, Rider, Peto & Betts, W. Downs, Waller & Son, W. Norris, J. Jacob, J. Drew, White, T. Mills & Son, and E. Gammon. Many important works are, of course, stopped in consequence, including the Patriotic Asylum at Wandsworth, the new wing to the House of Correction at Wandsworth, the Church in Baldwin's gardens, the Artillery Barracks, and numerous Governmental works at Deptford and Woolwich, on which at present between 3,000 and 4,000 men are employed, the Grenadier Guards' Barracks in Rochester-row, considerable alterations to the Bank of England, works at the Houses of Parliament, the Westminster Palace Hotel, the Middle Temple Library, large warehouses in New Cannon-street, houses in different parts of the metropolis, the Duke of Buccleuch's House, Whitehall, the Training College, Stockwell, and the works of the Metropolitan Railway Company.

It is expected that by this Saturday the Messrs. Trollope will be at work again, and then the doors of other establishments will be at once opened; with what success remains to be seen. Judging from the best information obtainable, the number of men thrown out of work would seem to be about 30,000.

On Monday a deputation of master builders attended the Secretary of State for the Home Department, without, as it would seem, any special result. Particulars of the interview will be found elsewhere.

The workmen, replying to some strictures on their claims and their position in some of the daily journals, have issued "An Appeal to the Justice of the English People," in which they say:—

"The workmen in the building trade who have discontinued work, have, in accordance with the fundamental principles of free trade and free economy, exercised their legal and moral right of appraising and disposing of their labour, 'which is their own property,' at what they conscientiously believe is its fair and just value. 'The disposal of their own industry' is a 'sacred and indisputable right.' This right they have exercised, and they have done no more than exercise this right. The masters, as they (the men) believe, have no right, nor has any power in existence a right, to arbitrarily fix the price of their labour for them. The men have said to their employers, 'we conscientiously consider our time and labour worth 5s. 6d. per working day of nine hours. This would leave you a fair profit, and we will not sell it to you at the rate of ten hours for 5s. 6d.' The masters having refused to purchase the men's time and labour on these terms, the latter have declined to sell any more of their labour and time at the rate of 5s. 6d. for ten hours. The men have also, as they have a legal as well as a moral right to do, advised their fellow-workmen to take the same course. By way of reprisal for the exercise of this legal and moral right, the masters resolved to 'close all their establishments,' and throw all the men out of employ on the 6th of August; thus, in seeking to crush the exercise of a perfectly legal and moral right, bringing upon themselves, in its fullest extent, all the inconveniences, a portion of which they so loudly complained would be caused by a portion of the men discontinuing their work. This is the workmen's case, the simple unvarnished truth. For refusing to sell their labour, which is their 'own property,' at less than they believe it is worth, for exercising a right more 'sacred and indisputable in our country, and in our time, than any other,' namely, 'the disposal of their own industry,' they have been overwhelmed with abuse, and charged with fraud and conspiracy. The workmen appeal to the good sense of the English people against these unrighteous imputations."

In this it will be seen the men put aside the sophistry with which up to this time they have weakened their cause, and come simply to this one assertion, that their labour is worth more than they are now receiving for it. Two or three gentlemen, including Mr. Thomas Jackson, formerly a contractor, have offered their services as mediators, but have not succeeded in gaining the confidence of both parties. It is very much to be desired that a mediator, who has that confidence, should be found. Sir Page Wood has been mentioned, and we would suggest Lord Shaftesbury as likely to be of use if he were disposed to interfere.

A proposition made in our pages, some time ago, that workmen should be paid by the hour, has been revived, and is decidedly popular; while other writers, including some workmen, think the difference might be satisfactorily adjusted by the employers offering the Saturday half-holiday.

A meeting of society masons was held on Wednesday afternoon, notice of which will be found on another page; and on Thursday a meeting was to be held of non-unionists. The Association of Master Builders have issued an address to their workmen, wherein they say, speaking of the unions:—

"Organization and machinery so complete, members so vigilant, principles so captivating to visionary, inefficient, and talkative workmen, whose sole object is to get the greatest amount of pay for the smallest quantity and worst quality of work, must either be put down, or they will put down you and us. They threaten to draw within their folds the whole working classes by that 'organization of labour' which seeks to appropriate every vacancy in our works to themselves—to exclude from the common privileges of industry all who are not 'legal members of the craft, and to intimidate all who indulge

in the luxury of individual judgment. They declare a war of classes, and threaten to surprise and overwhelm all who are neutral or stand upon their independence. A great question of public liberty is involved in the uncontrolled right of every master to contract for the services of any British subject he likes. A great principle of social morality is perilled in the prohibition of any member of the body politic from earning his livelihood by the pursuit of any honest calling: a solemn controversy of State policy arises in the consideration of whether every classification of labour is to be permitted to hedge itself round with a wall of separation, which shall vest in the initiated the exclusive monopoly of employment. It is idle to call the present strike 'temporary'—to be met only by a temporary defence. A strike, or the threat of it, is always impending—in every shop. Masters taken in detail—the discipline of establishments undermined by secret negotiations with workmen—orders to 'withdraw' enforced by the suborned treachery of men to masters, and subscriptions to a subsistence fund, really form the mechanism of a strike upon the most refined and subtle system."

The whole of the address, however, will be found in our advertising columns.

COMMUNICATIONS ON THE STRIKE.

THE "impending" strike is now a realized fact, and this day many a man who has not for years known what it is to want a day's work, wakes with the distressing consciousness that he has nowhere to go and nothing to do, and the painful reflection that when the day closes nothing will have been earned; and for what? Would that the painful lesson could be taught with less suffering than is sure to be inflicted. Of all the sad mistakes, too often repeated, there is none so sad as the strike. I have felt, as I walked through my workshops all quiet, very deeply; and have lamented the disruption of many an old associate; and on Saturday I parted with some literally with tears, and I wished that some of the reckless agitators could see the affliction they had caused. The point that most forcibly arrests my thoughts is, how is it that the workman will allow himself to be placed in so false a position as this nine-hours movement involves? I believe it has its foundation in a commendable feeling—the desire to aid his fellow workman; but the misappropriation of it, and the misunderstanding of the principles which regulate all trading matters, lead him astray—and, while resenting rudely and strongly anything approaching dictation from the class above him, he submits to the most abject thralldom from his own compeers. I wish you would address your able pen to the examination of the real bearing of these Societies' restrictions upon the workman himself.

It is a sad evidence of the state of matters that workmen have been known to boast of the evil they had inflicted on their employers by their own intentional bad workmanship. The moral degradation implied in this is sad indeed. The basis of the engagement between master and man is a fair day's wage for a fair day's work; but the wage is taken, and if this state of feeling prevails, the other part of the contract is not fulfilled; nor is the contract fulfilled if the workman deliberately and intentionally does less than a fair average day's work, not to speak of the honest exercise of his best ability, which is the real essence of the bargain. A workman's moral tone is lowered if he allow an irresponsible society to dictate the amount of wages he is to receive; for, if able to do more than his fellow, he is obliged to restrain himself, lest he should be called to account for too active exertion; while, if below the average, he must receive what he knows he has not earned. The master fulfils all the dictates of the Union if he gives only the average wage to the best man, and the inferior workman is displaced as soon as possible because he cannot fairly earn the average wage; thus the one is degraded because his talent is rendered comparatively worthless, and the other depressed from the consciousness that his services will be dispensed with at the earliest possible moment. If no workman is to work for less than the stated wage, the unskilled is shut out altogether, except in case of pressure; and the master and his foreman both unite not to employ a man unless he is worth the stated sum—a grave injustice, for why should not this man have whatever he is fairly worth? What can be worse than these procrustean edicts? Then, again, why should a man be compelled to join a society of which it may be he disapproves either the scheme or the management? but in this he is not allowed his independent choice and free action. And what so degrading, even to the majority, at a given building, as to mob a man by threatening to strike against him unless he joins? And if a man approves the enrolled scheme of a society, why is he to be subjected to the code of additional laws which any manager or committee may choose to impose? One can understand how an ignorant ordinary labourer may fancy there is something clever

in determining that only a certain number of bricks (below the right number) shall be put into a hod, under the impression that another man must be engaged, as all the bricks must be carried up; forgetting how soon and how simply machinery may supersede the whole of this labour; but it is difficult to understand how a skilful and intelligent bricklayer can allow himself to be dictated to as to the use of his hands, and one of them rendered only half his own, as is the case by his being prevented from laying down his trowel. What would such a man have said if such a mandate had been issued from a master? Why, again, is he to be debarred the benefit of his industry if he be willing to work overtime? and, why the advantage of his skill, if he wish to take task-work? Is he to consent to work all his life as a journeyman, and never to rise beyond the position of a daily though skilled labourer? The unprincipled will evade these restrictions, and do so; but the upright man is bound and shackled by them. There is, again, another feature of these societies which is most blameworthy, and that is the utter unreasonableness of the fines they impose. So today, the masons in my employ, though they had left their tools, were ordered to fetch them away, under a penalty of 1*l.*; and I have seen the regulation of the bricklayers' society, forbidding overtime, unless at a ruinous advance of price, under a penalty of 2*l.* for each offence. Any magistrate would hesitate long before he would inflict a penalty of 10*s.* upon a working man for a really serious offence; but these societies mercilessly inflict these severe fines, and enforce them by that most iniquitous exercise of power by which they shut out from earning his bread the recalcitrant though a brother workman. In all grades of life, it is well known that men associated in a committee, and so relieved from immediate personal responsibility, will be guilty of acts from which they would shrink if acting for themselves; and but unhappily among these men it is too notorious that the least worthy are the prominent men in the management of these societies. Now of this nine-hours movement, I have before me the last quarter's accounts, and there I find that, while about 97*l.* have been collected, more than 48*l.* have been expended upon delegates and committees. Is it not degrading, too, to right-thinking men, to be dragged through the mire, by being identified with the reckless assertions and denunciations, and the ignorant assumptions, of the speakers at the recent public meetings?

I pass over the obvious ignorance of the first principles of political economy betrayed in these movements, and with which the working man becomes chargeable; my only object being to excite attention to the evil inflicted on the working man himself by these "societies." There is, however, one point to which I will advert, and that is the effect which must be produced on the amount of capital invested if all these expedients are successful, and the cost of building enhanced as it must be thereby. Thus, a gentleman who concluded some works last week, showed the workmen, at the supper he gave them on completion, that whereas he now obtained seven per cent. for money so invested, he could only get six, if labour so advanced; and, as five was to be had on mortgage without trouble, it would not be worth his while to invest in building.

The gross injustice of fathering these absurd restrictions and interferences upon the Benefit societies is a wickedness to be exposed, and I really think it might be advisable to restrain, by legislative enactment, the exercise of such illegitimate power. Benefit societies are laudable—trade societies unobjectionable; but these secret enactments grafted on duly registered benefit societies are execrable, and ought to be repressed; and, if the working man has not courage to do it for himself, the legislature should lend it aid.

A CONTRACTOR.

REGARDING the nine-hours movement as a great mistake, it appears to me that if the half-holiday on Saturday had been proposed, it might have been obtained, and with some degree of reason, conferring an immense benefit. There can be no doubt that, as a rule, our mechanics work hard and are not over remunerated, although a great noise has been and is made of cheap provisions and the extra 6*d.* per day. Unfortunately, how many men are in receipt of the full wages, who, in reality, by 20 or 30 per cent. are not entitled to them, when compared with others? This is a thing that ought to be a real ground for contention, and not the working nine hours for ten hours' payment. Reverting again to the half-holiday, this, indeed, would be a boon at the

present rate of pay, and ought to meet the views of all concerned. As to the master I doubt whether he would be at all a loser, or the public either; while the employed would have the time for recreation or change of air and healthy pursuits. Then might the National Gallery, the Museum, and such like places be open for the working man's pleasure and benefit, while the following day (the Sabbath) might be spent in rest and quiet—a thing essential and necessary for those who have toiled through the week, and who have again soon to recommence their labours.

There can be no doubt that a great change is necessary in trade and commerce altogether. Our system is corrupt, oppressive, and dishonest. Legitimacy is almost unknown: our buying and selling, and our competing are veiled either in mystery or cunning. The weak is falling beneath the strong; the straightforward is left behind by the artful and designing; and wealth is the iron rod that often, almost continually, is making weakness and poverty still weaker and poorer. There are evils in existence of a frightful magnitude, such as ought to shame a nation calling itself a just and Christian one. All this is beyond dispute: every day and every hour speak it unmistakably: but, as a rule, it is not those who are causing this movement who are feeling its effects. It is the overworked farm labourer, with his 8s. and 9s. per week to support a family: it is the poor widowed and orphan seamstress, who with but 6s. or 8s. per week, and sometimes not that, driven upon the streets to obtain a livelihood, and exposed to the mercy of an unfeeling master—it is such as these, foodless and homeless, who are the ones who might in justice rebel: it is these who have a right to complain against their hard taskmasters,—those who, at their expense, misery, and infamy, are heaping up the riches of which we hear so much, and who are too often looked upon as men of greatness, honour, and Christian feeling. It is not the master builder with his fearful competition and hard work and anxiety who is realizing wealth out of those employed under him, but it is the other class to which I have alluded. It is, however, to be hoped that the matter will be quietly and calmly considered without loss of time, and that the employed will resume their labours, doing so with the conviction that master builders are not at all oppressors, nor for a moment desiring to be such. It is to be hoped at the same time that the employers will be equally eager to do all that is right and reasonable, and have the disposition to promote the welfare and reasonable enjoyment of those in their employ; that business may resume a better and more prosperous condition; and that competition, that curse of trade and the pest of good and honest feeling and action, may at least be materially diminished, is the earnest wish of your obedient servant,

V.

Sir,—I believe the masters will find numbers of men willing to work, provided that they pledge themselves not to discharge these new comers on the return of the unionists to their jobs.

E. N. T.

Sir,—I would venture to suggest through your columns the desirability of calling a meeting of architects, either through the agency of the Institute or otherwise, to consider the very serious position which the differences between the operatives and employers have assumed; and to see if any course can be suggested which will prevent a result that will be alike injurious to employers and employed, and ultimately react on the building public and ourselves.

THOMAS C. CLARKE.

Sir,—I venture, as an entirely disinterested person, and a sincere friend of the working classes generally, respectfully to suggest that in order to meet, as nearly as seems practicable, the declared wants and wishes of both parties (the employers and employed), the Nine Hours movement should be modified to the nine hours and a half; the reduction of the half-hour's labour to take place three months hence, so as to afford time for the further consideration of the measure by both sides, in that spirit which becomes Englishmen holding the almost equally responsible position of intelligent workmen and enlightened gentlemen of property, and thus breaking the fierceness of the collision now (it is to be feared) likely to be precipitated by the obstinacy of the contending parties. In three months more might be said and done also to convince masters and workmen that their interests are identical, especially for the consideration of the important fact, that what is unnecessarily taken from the workman, of the time requisite for the refreshment of his body and the improvement of his mind, is also ultimately the loss of the master in the earlier diminution of his (the workman's) powers, both corporeal and mental, and the consequent accelerated descent of his family into the injuries and temptations of poverty, and then, perhaps, their irrevocable dependance on parish relief and its undeniably deteriorating effects, both on the physical and mental powers. From this the whole commonwealth

suffers, and in his proportion the erroneously selfish employer. It would seem impossible in this enlightened age to deny that all classes should equally benefit from the employment of machinery; such discoveries as lead to those expeditious modes of operation being unquestionably designed by a benignant Providence for universal good, and were surely especially intended for the amelioration of the condition of those who are the producers of wealth. But time should be given for the operation of just and generous sentiments in the minds of masters, for by such concession, what is now sternly and proudly refused would be most likely granted in the true spirit of manly and enlightened consideration of the wants of our people. Much has been done for the relief of the labouring population, but who shall deny that much more remains to be done before we can consider our state, as a nation, either happy or safe?

I trust these few remarks, offered with great deference on this most important and (for good or evil) deeply affecting movement may be allowed a place in your truly valuable and influential paper.

S. E. M.

Sir,—Will you be good enough to state, in your next that I am not the G. Day whose name appears in the list of the Builders' Association? I am not a member of that association, nor do I intend to be, unless the document is withdrawn.

I do not advocate the nine-hours movement; but, at the same time, I think the builders have done wrong in their endeavour to crush all combination on the part of the men, when it is well known that the masters, in all trades, do the same thing; and I sincerely wish they were more united than they are.

I say to the masters, "You have made a mistake in introducing the document. Withdraw it, and you will strengthen your cause tenfold."

GEORGE DAY, Rodney-street, Pentonville.

THE EXHIBITION OF BUILDING INVENTIONS AND MANUFACTURES, CONDUIT-STREET.

This Exhibition, now open at the Galleries of the Architectural Union Company in Conduit-street, well deserves a visit. It includes, indeed, many things that have been before exhibited and have been mentioned by us; and the retention of several of these, in the places which they occupied in the Exhibition lately closed, may lead to the impression at first that there is less matter of interest in the collection than there really is. The principal gallery and the north gallery are well filled, and the eastern gallery contains the specimens of tiles and tessellated pavements by Messrs. Maw, and other objects. Amongst those whose works have been previously exhibited we may give the names of Messrs. Minton, Hollins & Co. who show a selection of their encaustic tiles; the Poole Architectural Pottery Company, whose lithographed designs are in better taste than their executed specimens, wherein the prevalent blue colour is generally inharmoniously introduced; the Lizard Serpentine Company's chimney-pieces, vases, and specimens of the material; Messrs. Eastwood's bricks, tile-crests, and other articles, of which a larger assortment in their yard may be conveniently inspected from the Surrey approach of Hungerford-bridge, and including the Ewell dull black bricks; Messrs. Fayle & Co.'s bricks and moulded blocks, manufactured at the Newton Works, Dorset, and which are applied in the manner of red brick and light-coloured stone; Mr. Blanchard's terra-cotta; Messrs. Norman's ornamental bricks, and other manufactures, from the St. John's brick, tile, and pottery works, near Brighton; and Mr. Ransome's patent siliceous stone. The last-named article has obtained the best testimony on the score of its hardness and durability, colour and texture; but improvement is wanted in designs for which it is used: forms and proportions in some of those in the exhibition are bad; and the ornament is unsatisfactory—or wanting in precision of outline, and in relief. Compare with all similar works of manufacture, the ornament which is exhibited by Messrs. Jackson & Sons, in their carton-pierre. It is greatly superior to the work of the same class near to it, by Messrs. White & Parby, in every requisite of effect. The works exhibited by the last-named firm are new in Conduit-street: though several of them have been mentioned by us in notices of the buildings for which they were prepared. The designs are by several architects. Messrs. White & Parby's imitation of the Gibbons manner of ornament, testifies to their skill of hand: but the manner is not one to be now imitated. A large rosette or central flower, by Messrs. White & Parby, comes nearer than their other works to the conjoined desiderata of architectural character, novelty, good taste, and precision of finish; though even in this case, the delicate indentations of the leaves would not tell, as intended, in a ceiling. The perception of the special requisites for architecture, which is manifest in Messrs. Jackson & Sons' work, and the relief, and the precision in execution, are creditable to English art. Martin's cement is well known. It is now manufactured by Mr. J. C. Part, of Drury-lane and Derwent Mills, Derby. The scagliola of Mr. Vincent Bell-

man is displayed in several well-finished pedestals. We may also mention samples of Scott's cement, as cast into various forms. The specimens of paperhangings by Messrs. John Trumble & Co. the designs by Mr. Owen Jones, and those by Messrs. Williams, Coopers, & Co. remain nearly as in the last exhibition; and there are also paperhangings by Messrs. Turner & Co. Messrs. Arrowsmith exhibit specimens of their solid parquetry flooring, priced one shilling the foot; and the exhibition also contains the works in metal of Messrs. Johnston, Brothers, some of which, as scarcely up to the mark of present taste, might have been removed with advantage; the wood-carving and ecclesiastical furniture, by Messrs. Cox & Son, in the opposite recess; and the metal-work of Messrs. Hart & Son, with street lamp; that of Messrs. F. A. Skidmore & Co. with a panel of the screen of Ely Cathedral, slightly enriched with colour and gold, and altogether in excellent taste; and that of Messrs. Cottam & Co. of different character of architecture. There are also to be found Mr. Pierce's well-known stoves and fire-lump and cottagers' grates. The material for moulded enrichments and figures, manufactured by Desmochy & Co. is represented as before, in the specimens chiefly from the designs by Mr. Owen Jones. The case of locks by Messrs. Hobbs, Ashley, & Co. remains. It contains a mortise lock for thin doors, priced 6s. 6d. which should be examined; and Messrs. Tann & Sons' patent reliance guarded lock, made by Messrs. B. & P. Walters, of Wolverhampton, is exhibited by Messrs. Gibbons & White, of Oxford-street. Mr. Stevens exhibits specimens of his glass mosaic-work, which is too well known to require description or encomium. Messrs. Lambert & Son, and Messrs. Hayward, Tylor & Co. exhibit in their departments. Mr. Jennings is an exhibitor as usual of a considerable number of excellent inventions and applications. They include Taylor's patent facing bricks, as used by the sappers in building their huts at Chatham, along with backing of gravel or concrete; and Jennings's bonding bricks, applied so that a hollow wall may be at the same time perfectly effectual for prevention of damp, and may be properly bonded. The same inventor's water-waste preventer, applied to closets, already mentioned by us, is most ingenious. The model of Wright's Patent self-acting closet also should be looked at, as well as the "marmolite" for decorative covering to walls, for direct application to the brickwork; Fox's chemically silvered glass; "The Adamantine Clinker," from the Little Bytham Works; and Bunnett's self-supporting fire-proof floors; though some of these are known to our readers.

THE NEW INFIRMARY: ASHTON-UNDER-LYNE.

THE first stone of the Ashton Infirmary has just been laid, with great ceremony. Since our notices of the designs, considerable alterations have been made in the selected design by Mr. Lindley, the architect, under the advice of Mr. Robertson, of Manchester, Mr. Aspland, of Dukinfield, and others, with the express object of securing as nearly as possible the advantages of the pavilion principle, or those generally which we deemed requisite in hospital construction. It will be recollected that prior to the competition, architects who applied for instructions were referred to the articles which had appeared in our journal. Our subsequent notices, we find, were reprinted by the local press. The site at Chamber Hills has been retained, and the general arrangement of the plan appears to be the same as at first, namely, that of the offices surrounding a court, and two wings to contain the wards to be first provided—their staircases, however, connected to one another by the general corridor. The important alterations are in the removal of obstructions to the light and air of the court. The washhouse and laundry no longer enclose this court at the end, but form a prolongation of the southern side; and a staircase which projected has been removed, and in its place there will be an opening, with iron gate, opposite the main entrance, for the sake of free current of air. Instead of the central staircase, a private staircase for the surgeon and matron will be placed at one end. The main corridor will be 12 feet in width instead of 7 feet; and at its ends nearest the wards, passages leading to the grounds at the back, will be formed, in order that convalescents may have ready access thereto. The dead-house and post mortem room are to be detached, and at the north-west angle of the grounds, instead of as part of the main building, beneath the washhouse and laundry. Each ward

is to contain ten beds, as first designed; but the width between the walls has been reduced to 26 feet. The cubical contents will still greatly exceed 2,000 feet per patient. The closets attached to the wards have been greatly improved. They now project in a central position from the end of the wing containing the ward, in each case,—or as described by us at Blackburn,—so that a current of air, by opposite windows, can be maintained, intersecting their passages of entrance. The walls of the wards will be lined with Parian cement.

The frontage will now occupy a length of 280 feet 6 inches, and there will be a depth in the centre of 97 feet. The height of the front, to the eaves, will be in the centre 38 feet; and that in the wings will be 34 feet. Above these heights will be lofty roofs; and there will be a clock-tower in the centre, and an arcade and balcony on each side the principal entrance. The decorative details of the design, called Elizabethan, have, we hope, participated in the general improvement.

The building, with the two wings, or four wards, will still accommodate, in the first instance, only forty patients; or, adding the accident wards and other apartments, in all forty-eight patients. This is for the very populous district within a circle of three and a half miles from the town of Ashton. There can be no disputing the expensiveness of the pavilion system in ground and building. But the question is,—what is that which is demanded for the object? And if it be the fact, as now is abundantly proved, that the old sites and arrangements of plan do not assist the cure of disease, but engender disease, it may be simple economy and matter of humanity to provide nothing less for alleviation of suffering, than whatever area of ground or cubical contents of a building are essential in the pavilion principle, which, as we lately explained, will not be absolutely carried into effect, even at Blackburn, any more than it will be at Ashton, as we yet understand, though the advance made in both those cases will be very great.

BIG BEN.

I FIND, Mr. Editor, that Big Ben is striking one when he should strike two, the coward; and, when reproached with his delinquency, says if those who object were to walk up stairs and look at him, their only surprise would be that he goes on so well as he does. He says something about not being able to hold his hands before his face, because they are so heavy,—and no wonder if the Commissioner of Works be right in his statement, that one of them weighs 3 cwt. Now, Mr. Editor, I have a solid-looking metal watch-chain, which weighs something less than nothing. It is made of the metal you early assisted to make known—*aluminium*;—and what I write for is to inquire whether this metal might not be well employed in making Big Ben useful, and giving us a clock that will keep time. There is something wrong about the affair I am afraid, shown by a disposition to shift the blame, but it is to be hoped that all will go right in time for the sake of those concerned, the public, and our character for science.

CONSILIIUM HILL.

THE DRINKING FOUNTAINS OF THE METROPOLITAN ASSOCIATION.

SIR,—Where are our architects? Where is the particular architect who ought to guide the choice of our "Metropolitan Free Drinking-Fountain Association?" I am induced to ask these questions from seeing engraved, in your last week's number, one monument to a butcher and poulterer, one ditto to a butcher only, two tombs of departed greatness on their right, a church steeple and a something stolen from the inside of a church on the left, facetiously described as "Drinking Fountains," selected by the "Free Drinking-Fountain Association."

Are these sepulchres to give an additional chill to the more enthusiastic of water-drinkers who venture within their shadows? It would seem so. For my own part, give me for a *drinking fountain* something which shall, from its beauty of design, lend a charm to the water which sparkles from it,—something which shall cause the weary and thirsty traveller, of whatever rank, to partake of its hospitable draught, and not to shudder as he passes by. Lend your powerful aid, Mr. Editor, and rouse the lethargic lion of London from the sleep which always comes upon him directly he has scraped together a large sum of money in a good cause, and spending how it is wasted, or how differently it is spent from its legitimate purpose. Do not let the association convert our thoroughfares into one vast cemetery: rather transport

them to Woking, where they can immortalize themselves and the association, with the consent of the Necropolis Company, without being a nuisance. JONES.

THE DRINKING-FOUNTAIN MOVEMENT.

Bourn, Lincolnshire.—On Tuesday evening last a meeting was held at the Angel Hotel, to take into consideration the subject of the erection of a public fountain in the market-place, with the double object of commemorating the late J. Lely Ostler, esq., and promoting the welfare of the poor. Mr. Ostler having been mainly instrumental in the establishment of the Bourn Waterworks (a description of this extraordinary spring we gave in our numbers of the 21st and 28th August, 1858), it was thought that a drinking-fountain supplied from this water, and made sufficiently ornamental to be worthy of the object in view, would be a very appropriate manner of commemorating him, and that all classes would subscribe to the memory of this gentleman, who had done much in promoting a line of railway from Essendine to Bourn (shortly to be opened), and the establishing of infant schools in the Eastgate. A committee was formed to obtain designs and estimates of the probable cost to erect this memorial in the centre of the market-place, and to report to a subsequent meeting. Mr. Edward Browning, of Stamford, architect, has been solicited to furnish a suitable design.

In a publication lately there was an account of an artesian well at Bourn, where a bore of only 4 inches in diameter—the total depth being 92 feet—yielded an enormous supply of water; when gauged in 1856 by Mr. Filbrow, the engineer who executed the work, it was found to amount to 567,000 gallons in 24 hours. The height it rose at the Town Hall was 39 ft. 9 in. the level being nearly the same at the well itself. No engines, pumps, or reservoirs are required. Fire cocks or hydrants being placed on the mains, in case of fire, a jet of water is thrown into any house by its natural force without aid of a fire-engine. The supply, by this simple means, is copious, cheap, and pure. Even if wells be used, is the round shape essential? and would not an inverted pyramidal form be cheaper? PROBE.

KENT ARCHAEOLOGICAL ASSOCIATION.

The annual meeting of this society took place last week. It was held at Rochester, in the Town-hall. The usual business was gone through, when an accession of sixty members was announced, making a total of 700! Forty candidates for election were also announced.

After the meeting the members were conducted over the Cathedral by the Rev. the Provost of Oriel, A. B. Hope, esq., and Mr. R. C. Hussey. The information and discussion were very interesting; but from the multitude of very councillors it is not easy properly to report the result in a condensed form.

On leaving the Cathedral the members went on to the Castle, on the history and antiquities of which an address was delivered by Mr. Arthur Ashpitel, F.S.A., which will be found in another part of our columns.

After this the members adjourned to the Cathedral, where a fine choral service, entirely from Kentish composers, was performed. The anthem "In that day," of Dr. Elvey, attracted great attention. It is a very fine work, and was admirably rendered.

No room in Rochester being large enough, a cold dinner was served in a fine marquee in the castle grounds. The Marquis of Camden presided, supported by the Earl of Stanhope (whose brilliant speech was enthusiastically applauded), the Earl Darnley, Earl Amburst, Lord Brockwell, and the *élite* of the county. Every place was filled. Nearly 300 sat down, of whom we may safely say one-third consisted of the fair ladies of Kent.

The festival ended, the guests proceeded to the Denney to inspect the fine museum, collected from various Kentish sources, and ably arranged by Mr. C. Roach Smith, F.S.A., who discoursed upon it. We do not attempt any detailed report of the meeting: its success was so great that now and then it resulted in confusion; so true it is that extremes meet.

THE KENTISH MUSEUM.—During the week ending 6th August, 1859, the visitors have been as follows: On five days and evenings, 3,331. On students' days (admission to the public 6d.), and one students' evening, 128. Total, 7,955.

ON THE NORMAN CASTLE, PARTICULARLY AS REGARDS THAT AT ROCHESTER.

AFTER the general meeting of the Kent Archaeological Association, a very large concourse of members assembled at the Castle, and called on Mr. Ashpitel to make some observations on the same, who said, as time was so short, he would condense as much as possible the remarks he had to make on the noble and interesting ruin now before them. They would be divided into two heads—the consideration of the peculiarities of plan and design of the Norman Castle, and a short sketch of the history of the building under consideration. In this last division his labours would be much shortened, as a paper would be read on the life of its founder, the great and good Bishop Gundulf; and another on one of the most stirring incidents of its history, the siege in the reign of King John.

It would be unnecessary to dilate, in an assemblage like that before him, upon the events of the Norman Conquest; but he must crave their attention a moment to the fact that the success of the invaders was not so much to be attributed to their greater courage, as to the superiority of their weapons. The Saxon Thane in his short tunic, with a small round target, and light javelin, was no match for the mail-clad Norman, with the kite-shaped shield and long lance; and, more important still, the small bow of the Saxon infantry was as nothing compared to that long bow, afterwards the defence and boast of England, but at that time peculiar to the Normans. It was, in fact, to the former what the Minie bullet or the rifled cannon are to the old clumsy musket and lumbering cast-iron gun. It might be a lesson to every country which would wish to preserve its freedom and independence, and not only so, but to remain in peace at home, and deter the invader from attempting its shores, that it should possess the best possible instruments of war, and place them in hands well practised how to use them.

The number of Normans who possessed the country was comparatively small. There was no general immigration, no colonization; no attempt at establishing arts, commerce, or manufactures; in fact, there was no middle class. The land was held by the different barons, each of whom had at his back a small, but admirably armed and equipped, body of retainers. These men could rapidly traverse the land whenever they wished, spoiling and plundering as they pleased, capable of defeating easily any small bodies, and fearing only the population should rise against them *en masse* and overwhelm them with numbers. To have a series of strongholds to retreat to for self-preservation, and also wherein to store their plunder, was the object of these castles. Mr. Ashpitel then cited, from several early authors, accounts of the cruelties of the invaders, and the sufferings of the English.

The first great object was to erect a building, which might hold the light-armed and exasperated populace at bay, who might surround and besiege it in vain till assistance might be brought up by some neighbouring barons. For this purpose, first, the walls must be thick enough to resist any battering ram or engine of war known at that time, and so high as to be beyond the reach of scaling-ladders; secondly, the gates, the only vulnerable point, must be so placed that the besieged could easily rain darts, stones, melted lead on the heads of the assailants; and thirdly, that the winning one place should not necessitate the loss of the whole, but that it should be easy to defend work after work, entrance after entrance, floor after floor, till the whole was won. In fact, so strong were the defences of the Norman castle, that they were seldom reduced but by the slow operation of famine.

The first thing was the choice of ground. This almost invariably was a hill, more or less steep, commanding the adjacent bay, with land about it inclosed by a wall, for the purpose of feeding cattle, and for exercise. The external defence was almost universally a moat and high wall with flanking towers, and gates with similar defences, and those outworks we now call barbicans. The inclosure within this was called the bailey or baillieu. In some castles there were two distinct consecutive lines of defence, forming the upper and lower bailey. Rochester Castle seems to have had but one such bailey. It comprehended, however, only a few acres of ground, while at Newcastle and Lincoln more than twenty acres seem to have been inclosed within the outer walls of each castle. In the centre of these, and on the highest ground, stood the keep or donjon, which is what is more

generally called the main tower, or the castle. This outer arrangement of lines of defence is common to most military buildings of the mediæval period. But the Norman keep, from its peculiar requirements, had great peculiarities of construction, and these should be shortly described.

He would begin with the ground-story. This had no access whatever from without, and very often no windows whatever. The small arrow-slits are said to have been made subsequently. The walls, as the members may see, are of immense strength, 12 feet thick: any ram or catapult known at that time would make no more impression on them than on the solid rock; while the height of the tower, 104 feet, laughed to scorn any attempts at escalade. This lower story seems to have been devoted to stowing away provisions and plunder, or, perhaps, to confine prisoners of war. But there is one feature here of saddening interest: let the members look at that small door,—it leads to a dungeon a story deeper. Here is a low vaulted space about 20 feet by 12, without light, and with only such air as might enter by the chinks of the door. In this horrid hole were those prisoners immured whose wealth was coveted by the lord of the castle. Here the Jews' teeth were torn out, and at Newark, in a similar hole a bishop is said to have been imprisoned three days without food, light, or air, till exhaustion compelled him to give up the larger part of his possessions.

Mr. Ashpitel then called attention to the holes in walls where the timbers were inserted that carried the floors of the different stories, which, including the lower story already described, are four in number, without reckoning the four chambers above these again, at the four angles of the building. The first story was that occupied by the garrison. The small chambers in the thickness of the walls are supposed to have been the sleeping-places of the officers.

Attached to the main tower, as we see, is a smaller square tower on the northern side. On the ground story it forms part of the stowage places, and on the first story the entrance-hall to the castle. The main door, which is very elegantly ornamented with zig-zag mouldings, is raised, of course, 12 or 14 feet above the ground, and can only be approached by going up an inclined plane. To attack the door the assailant must pass along the inclined plane mentioned, a length of about 50 feet, exposed to a frightful shower of missiles, falling from a height of 100 feet on his unsheltered head; but then he has not reached the door, for the plane ends, and there is a vacant space of 12 feet crossed by a drawbridge, which, however, rises in his face on its hinges, and closes the entire opening of the outer door. There is nothing for it now but to bridge this space with timber as hastily as possible, and to rush at the doorway and hew it down with axes, or batter it in by the shortest possible means. But between this hall and the main building is another door, with a huge portcullis, through which the garrison discharge arrows and darts, and thrust their lances. This must also be won by the same desperate means the outer door was broken in, and then, if the garrison be defeated, they retreat rapidly up the winding staircase, which they block behind them with timber and stones, and the same work has to be done again and again, floor by floor, till the battlements themselves are won.

He then called attention to the next story which covers the whole area of the castle, except, of course, the passages in the thickness of the walls. This formed the hall of state, a chamber about 40 feet square and 32 feet high, divided across the middle by a screen of massive column and arches, richly ornamented with the zig-zag moulding. There are two ranges of these passages in the thickness of the walls, and, round the hall, one above the other. In these are numerous small windows with embrasures, in which archers and cross-bowmen could stand in case of a siege: in fact, the object seems to have been to make the upper part of the castle full of such apertures, regardless of the use of the apartments within; just as the portholes are pierced in a ship without taking into account the subdivisions of the cabins. The upper story has evidently been considerably subdivided. Here were the apartments for the ladies and their attendants, the bowers, and the bower women. Probably here, too, were the sick and wounded tended during the siege. Above this was the roof, which covered the centre of the building in two spans; round this were the battlements, a walk of the width of the thickness of the walls; with a parapet to defend the archers, and embrasures through which to discharge their shafts. At each angle is a tower about 12 feet square, intended, probably, to shelter the warders,

or for prisons for those on whom they did not intend to inflict the horrors of the lower dungeon. In one of these is the vestige of a stair, which probably led to the beacon-light. Within the walk of the battlements, close to the gutter of the roof, are a double series of small holes, which are common in Norman castles, and have been conjectured to have been the nests of pigeons. After a siege of some weeks, and constant feeding on salt meats, anything fresh must have been very acceptable.

This led Mr. Ashpitel to speak of the wells of these castles, which were as indispensable to the holding them as food. Scarcely any Norman castle is without one. They are concealed in the thickness of the walls, that the besiegers should not find them in case they got into the lower part, and they ran up three stories. At Carisbrooke is one more than 300 feet deep. The chimney-places, the smoke from which goes directly through the wall instead of up a flue, were then described. The chapel was then pointed out. There is no doubt the apartment over the entrance in the side tower served for this purpose. The arch, and the evident vestiges of an apsis, formed the choir. The chapel is mentioned in the "Registrum Roffense" as the King's Chapel.

Mr. Ashpitel then gave a sketch of the history of the castle, which our limits prevent our reporting at length. He supposed, however, that when it was said its construction cost Gundulph 60*l*.—a sum considered totally inadequate to complete such a work even in those days—there was a misapprehension. The wages of a mason were then 1*d*. a-day, represented now by 5*s*. or sixty times as much. If pounds sterling were meant, the cost would be only 3,600*l*. of our present money. But the pound sterling was not in general use till the time of King John. He supposed, therefore, the pound weight of silver was meant, which at the present rate would represent a sum of 13,000*l*. which, considering the proximity of the material, would not be so much out of the way.

In conclusion, he often thought and had said nothing seemed to give so true and intelligible an idea of the parts and uses of the Norman castle as the passages relating to that of Front de Boeuf in "Ivanhoe." Sir Walter Scott—a thorough antiquary and profound judge of human nature—had depicted scenes that might have passed in the castle before us. We may almost fancy them realized. In the lower chamber are the stores of all sorts, not the least considerable the Gascony wine the friar seeks for. On the main floor are the free lances and the baron's retainers, carousing. In the state-hall above are Cedric and Athelstane, watching the passage of the sun across the window, and waiting for noon. Above, again, is the fair Rowena, in the bower, weeping over the news of Wilfrid's wounds and captivity. Above, again, at the height that dizzies us to look down, are the Templar and the Jewess; while, in the horrid hole beneath, are the Jew and the savage baron. The actors have passed away, but, with a little restoration, the castle would be complete and the scene before us perfect as it was seven hundred long years ago.

Thanking the members for their kind attention, Mr. Ashpitel concluded, and the party passed on to the cathedral.

THE MAUSOLEUM OF HALICARNASSUS, CNIDUS.

FROM Mr. Newton's two discourses on this subject at Carlisle, already referred to, we obtain the following particulars. He said the first traveller I am aware of who noticed Budrum was Thevenot, who about the year 1560 called attention to the fact that there were in the walls of the Castle of Budrum certain slabs with figures of horsemen cut in relief. From this time, as far as I know, the place was unnoticed by travellers till about the middle of the last century, when these same slabs with reliefs noticed by Thevenot were drawn by an Englishman named Dalton, and published in the volume of Ionian antiquities of the Dilettanti Society, long known to archaeologists, and were reasonably supposed to belong to the Mausoleum; the more so that in contemporary and authentic accounts of the building of the Castle of Budrum by the Knights of St. John it stated that the castle was built out of the ruins of the Mausoleum. A great many English travellers visited the castle, subsequently to the publication of these engravings, and ultimately a representation having been made to Lord Stratford de Redcliffe, then our ambassador at Constantinople, he obtained a firman for the removal of these slabs. They were subsequently presented by Lord Stratford to the British Museum in the year 1846.

Though they were always supposed to belong to the Mausoleum it was never fully proved. In 1852 I went to the Levant; and one main object I had in going there was to visit Budrum and see whether anything more of the Mausoleum could be found. Various circumstances prevented my visiting Budrum till the year 1855. In that year I had the opportunity of going to the castle, and the first thing that struck me on the outside walls was certain lions' heads. It immediately occurred to me that from their style these lions' heads must belong to the Mausoleum. I lost no time in acquainting Lord Stratford de Redcliffe, and, after various delays on the part of the Turkish Government, I obtained a firman giving me general leave to dig. In the autumn of 1856, being in England, I had the opportunity of submitting to Lord Clarendon, then Foreign Secretary, my opinion as to the character of those lions; and Her Majesty's Government, with a liberality that I hope future governments will imitate, ordered excavations to be made on an extensive scale, and sent out a ship of war with a body of sappers, an officer of the Royal Engineers, and a competent architect. With that we set out in the autumn of the year 1856. My object was, of course, not only to remove the lions' heads from the castle walls, but to discover the site of the Mausoleum if possible. Then came the question—What possible clue is there to this site? Now it so happens that of Halicarnassus we have a description by an ancient author, Vitruvius. He says that Halicarnassus is shaped like a theatre; that it has two horns, on each of which is a public building; that in the centre of the semicircle, half-way up the hill, is the Mausoleum, and further up is the temple of Mars. All that is very clear and distinct. In 1847, in furtherance of these researches, Sir Francis Beaufort, then director of the hydrographical survey for the Admiralty, sent Capt. Spratt to make a new survey of Budrum, with directions especially to look for the site of the Mausoleum. Capt. Spratt, following the statements of former travellers, looked for the site on a mound, which he found in the centre of the town. When I was there I proceeded to excavate this mound, but I did not find the Mausoleum there. There was another site which Mr. Hamilton and Dr. Ross pronounced to be the site of the Mausoleum from its commanding central position. Before I touched that I was determined to try a third site, never noticed, as far as I am aware, by any traveller except Professor Donaldson. It is to Professor Donaldson, whose knowledge of architecture is so well known that I need not refer further to it—it is to him that the credit is due of having remarked while travelling in the East some thirty years ago, that there was a particular spot where all the walls of the houses and gardens were built from fragments of what he described as a "superb Ionic edifice." Professor Donaldson was kind enough to communicate to me, some years ago, out of his manuscript journal, the account of these facts; and following his observations, I looked for and found the site, and commenced digging there. That spot is the true site of the Mausoleum. On the 1st of January, 1857, I commenced digging on that site, and before I had dug there two days I found a fragment of moulding and a piece of a foot from a frieze, and I knew that the moulding was a piece of the frieze of the Mausoleum which had been taken to the British Museum by Lord Stratford de Redcliffe. I then felt convinced that I had found the true site. I proceeded with the digging, and found confused masses of columns and fragments of sculptured frieze, and a large collection of sculpture, which I cannot give you an account of now—you will find them under the portico of the British Museum. The details of these discoveries you will find in a parliamentary paper entitled "The Discoveries at Budrum," published last year, and I hope the remainder of the documents on this subject will be shortly printed. I shall now proceed to describe the general character of the Mausoleum. Some of you are probably aware that we have in the case of the Mausoleum certain very valuable measurements given us by Pliny. It of course is a matter of notoriety that the Mausoleum was a tomb erected by Artemisia to the memory of her husband Mausolus, which rivalled in point of decoration the great temples of Hellenic antiquity, combining the massive character of the Oriental and Egyptian tombs, and the refined beauty of edifices like the Parthenon. We have two useful measurements to start from, given by Pliny—the general area and the height. The general area is said to have been 411 feet, leaving for each of the four sides something more than 100 feet, so that in digging the ground my first object was to find

a corner of this area, and to my delight I did so. By a singular coincidence I began at the southwestern end of the building, and then proceeded to follow the two lines in two directions; and to be sure it was the Mausoleum. I measured from the northward 105 feet, and dug until, to my great delight, I came to the corner. I so proceeded until I got the square. When I speak of the building, I must tell you it is in a peculiar state. The Mausoleum was a temple standing on a lofty basement, built of green rag stone, bound with iron, 65 feet in the air. Not only has the temple itself, but the basement also been completely removed by the Knights of St. John to build their castle, as any one may see from these alabs. The castle is built mostly of that basement of green rag, and the sculpture which the knights found was used as ornaments. It appears that at first the architect of the Mausoleum, wanting to have a sure foundation, took what I conceive to be an ancient quarry, where the rock was partly quarried away, and proceeded to fill up the various depths, and made the foundational base so until he was on a level with the ground—till he got a general surface, filling up with green rag stone, and making a quadrangle rather larger than Pliny gives. If you can conceive the basement, imagine it *rase* with the surface, and then the knights went on scooping it out, getting a slab here and a slab there, till they came to the actual rock of the quarry, and left two or three courses; and then, I conceive, to the deep quadrangular pit, which I found full of masses of various kinds. It was in this pit that I found all sorts of architectural and sculptural details, but the most important part of my discovery, the part which has attracted the greatest notice, was this, namely, the stones of the pyramid, portions of two horses from the quadrangle, and the statue of Mausolus himself was found further to the tomb. It appears from Hyginus that around the tomb itself was the *peribolos*, or sacred precinct, surrounded by a wall; and digging on I came to a wall behind which, after removing a mass of rubble, I found a number of steps from the pyramids, lions, portions of statues and other things, and two immense fragments of horses lying in a confused heap. I have no manner of doubt but these things were hurled from the top of the pyramid by an earthquake or some other such force, and deposited there. It is a curious fact that the bronze bit was in the mouth of the horse still, and the bronze clamps by which the parts were bolted together, were still sticking in the stones. A vase was found at the foot of the stairs which, upon examination, was found to have upon it cuneiform characters. Copies were sent to England, and one was submitted to Dr. Birch, and another to Sir H. Rawlinson, and without consultation both said at once it contained the name of Xerxes in Egyptian and Persian characters. The only way we can explain this singular fact is that this staircase was the one going down to the level of the lower line of the building for the express purpose of taking the body of Mausolus down to the tomb. The body having been deposited in the tomb, the entrance was closed up by a stone. The stone weighed ten tons, and was dropped into its place like a portcullis with bronze bolts fitted into sockets; in fact, it had all the appearance of a stone portcullis, such as we see used in the Egyptian pyramids to close up for ever the entrance into a royal tomb.

Going a little more fully on the second occasion into a description of the building, Mr. Newton said he was about to mention certain facts which had come to light from the excavations, and which coincided in a most remarkable manner with the statements of Pliny. In order that they might perfectly understand his description, it would be well to state generally the account of the building as Pliny had given it. Nothing could be more vague than the descriptions by the ancients of their buildings. Unfortunately they had left no illustrations like ground plans or elevations, but simply measurements, and those measurements being written in Roman numerals were constantly altered in transcribing, so that the totals and the details seldom agreed, and, therefore, architects in working out their own theories were apt to set aside the dimensions given by the ancients if they interfered with their own notions of what the building should be. In the case of the Mausoleum this practice had been carried a little too far. They had in Pliny certain dimensions, first as regarded the area of the building, and second as regarded its height. The area Pliny gave as 411 feet. The quadrangular area, which he (Mr. Newton) laid bare, was rather more than 470 feet, but, of course, the hollow quadrangle cut out of the rock, on which the foundation of the

building stood, would be considerably broader than the base of the building itself measured, as he presumed it would be measured, on the stylobate of the columns on which it rested. Pliny spoke of a portion of building which he called the *terron*: it was peripteral and measured 63 feet in length from east to west, and was shorter at the sides. Cockerell, in a very ingenious paper, which formed part of a memoir published about ten years ago on the Mausoleum, thought that Pliny's measurement referred to the *peribolos*, and that the 63 feet represented the length of the building itself. But the excavation had shown that they must take a much larger area for the precinct or *peribolos*, and that the 411 feet of Pliny did refer to the actual measurement of the basement; consequently, the smaller measurement of 63 feet from east to west referred to the shorter sides, from north to south, and to the cella or interior building around which the columns stood. With regard to the height nothing could be more difficult than the language of Pliny. Pliny said the building was composed of this *terron*, that is to say a cella, or walled temple surrounded by columns. This was not built, as was usual in Greek temples, with a roof, but was surmounted by a pyramid, above which was placed the chariot, so that Pliny's measurement referred to the height of the building surmounted by columns surrounded by the chariot. Pliny said this *terron* was 75 cubits in height, or about 37½ feet English measurement; and the pyramid and chariot were also 37½ feet, inclusive of the height of the chariot; so that the whole height of the building was 140 feet. Now 37½ added to 37½ made 75, so that they had 65 feet to account for; and architects, in restoring the Mausoleum, had paid very little attention to that 65 feet, supposing that there was some error in transcription which they had nothing to do with. He would now state the facts which were placed beyond all doubt by the excavation. First, as regarded the temple part, because in treating of the building they must consider that this lower part which Pliny called the *terron*, was simply the body of a Greek temple, and they must consider this pyramid as the roof. In the *terron* they had found an immense quantity of architectural fragments, which they found of great advantage, for by building up these fragments they got at the "order" of the temple. The results were most remarkable, though here he was rather anticipating what he hoped Mr. Pullen would give to the world in a more mature form. Having put together the base of the temple and several parts of the order, Mr. Pullen had obtained a height within three or four inches of the 37½ feet asserted by Pliny. That was a fact which must be called a decided coincidence. He pointed out two or three drawings by Mr. Pullen, which, he said, would give his audience some idea of the beauty of the Greek architecture: he believed that even in the Parthenon itself no architecture has been found so delicate in execution. The whole of these beautiful monuments were coloured. In many cases the colouring was adhering like a cake, perfectly fresh. There were two colours used—the brightest blue, a pigment equal in intensity to ultramarine, and a red, like vermilion or some pigment of equal intensity. All the Greek architecture of the highest order was coloured. Pointing to the drawings of two lions' heads, he observed that as specimens of architectural decoration, they were of surpassing beauty, and there was nothing to compare with them except the lions on the cornice of the Parthenon of the Athenian Acropolis. In the course of excavation they had found portions of moulding, capitals, lions in two parts, and an immense number of drums of columns, and by measuring the whole of these, and striking a mean average, Mr. Pullen had obtained a calculation of the height of the column. The height of the column itself was the only point that admitted of doubt: being composed of several drums, they could not get at the height of the column itself. But Mr. Pullen had taken the diameter and calculated the height from other examples of the ancient Ionic order. He need not inform them that in that style of architecture the height of the column was always in a certain proportion to its diameter. Pliny states that in addition to the roof surmounted by the chariot, there were twenty-four steps of the pyramid. Now it struck him (Mr. Newton), that if he could find near the Mausoleum a single step of the pyramid, he should obtain the whole dimension of the pyramid by multiplying that dimension by 24. It was two months before he found that step. Behind a wall he found enormous masses of architecture buried together, he found a marble step which he recognized at once as one of the

steps of the pyramid. The best way he could describe the steps was by asking his audience to suppose them to be enormous tiles, 11½ inches thick, with two flanches, one at the back, with two smaller ones at the sides. They were laid together precisely as Greek and Roman roof tiles were laid together in such a way as to throw off the rain. But the back flanch was the peculiar feature. Very much broader than the side flanch, it fitted into a groove of the pyramid step, and overlapping it, so that they must conceive the whole constructed of a sort of marble tiles overlapping each other, and each being clamped together by copper bolts, which he found in their place. Lieutenant Smith measured these steps, and found them to be 11½ inches, and multiplying that by the number of the steps, he made the whole height of the pyramid to be about 23½ feet. Then came the chariot, which they found to measure 10 feet high. They had the statue of Mausolus complete from head to foot—nothing was wanting. The height of the chariot was long an unknown quantity, when one day on the south side of the building, and 140 feet from the place where he found the other things, he was excessively delighted to find the nave of the wheel of the chariot and portions of the ferrule, from which Mr. Pullen was able to reconstruct the whole. From this a calculation was made which gave them a height of 37 feet 3 in. which was within a very few inches of the measurement of Pliny. Therefore, as two of Pliny's measurements proved to be right, he submitted that there were strong grounds for supposing that the third—the 65 feet—must have existed. He could only look for it in the basement, which, as he stated yesterday, he conceived to be a vast mass of masonry of green rag stone, 65 feet high, towering above the plain of Boudrum and sustaining the magnificent temple of 36 Ionic columns, above which was the pyramid, and high up in air the magnificent classical group of the chariot and four horses, with Mausolus—whom they must consider the deified Mausolus—towering above all. And when they conceived this marble mass, decorated with the most magnificent architecture, picked out with colouring, as seen against the blue sky of Caria, it must have been a spectacle such as the world had never seen before or since, and which justified the judgment of the ancients, who called the Mausoleum one of the seven wonders of the world. Without notes he could not enter into the question of the area of this building. He observed that each of the steps had a line marked upon the upper side, and some of these lines were 9 inches and some only 5 inches from the edge. The part between the line and the edge was completely polished, and the other part was not. It immediately struck him that the polished part was the tread of the step, and the other part that which was overlapped and concealed by the step above. The steps on which the line was 5 inches and 9 inches from the edge, they concluded to be corner steps. He described the way in which they arrived at the area covered by the steps; to this they added the area on which the chariot stood, which was a matter that could easily be calculated because they knew that the horses were 10 feet in length, and they allowed 4 feet for the chariot and a trifling margin for the projection beyond the edge of the pyramid. Putting all these together, Lieut. Smith obtained most curiously a circumference at the stylobate very nearly corresponding with that of Pliny. Consequently they must suppose that Pliny's 36 columns were ranged round a circumference of 411 feet. The inner portion was much smaller, and it was a question whether it was supported by marble beams. It was possible that metal beams might have been used, but that was a question which he left to architects, and on which he did not wish to express an opinion. However, they found, as far as they could ascertain, that the measurements of Pliny were correct, and they were doubtless taken from the books which Satyrus and Phyteus, the architects of the Mausoleum, wrote upon the building. Cnidus was furnished with a double port, for the convenience of vessels approaching from different directions, and connected by a canal. The inhabitants seemed to have been a highly civilized, but quiet people, carrying on commerce with Alexandria, but not distinguished like the Athenians, either for naval or military exploits. They were, however, distinguished for other great things which gave them a great name among great cities for ever. They had in their city the celebrated statue, the Venus of Praxiteles, and it must be mentioned to their credit that when a king of Mytelene offered to redeem their public debt if they would give him the statue, they refused to do so, and would not let it go out of the

city. There is a very interesting notice of Cnidus and of this statue by a tourist, who travelled before the age of Murray's hand-books, and who is not very well known as a tourist—he meant the philosopher Lucian, who lived sometime about the age of Hadrian, and who made a voyage to Cnidus with two companions, their object being to go about from city to city, and look at the works of art. These remarks were the more interesting because he was the son of a sculptor, and was himself bred up to that art. Mr. Newton regretted that the excavations at Cnidus gave no trace whatever of any copies of this Venus, though he had thought it possible they might have found some. The statue itself was taken to Constantinople by Alexander the Great, and was there destroyed by the Crusaders: at all events it was gone; but copies existed on Greek coins in the time of the Roman empire. On first going to Cnidus it was winter, and the place being greatly exposed, he did not make much search; but he made inquiries, and could not hear anything of the lion. But in May, Mr. Pullen searched the coast to the south of the town, and at about an hour's walk from the town he found a great lion lying on a rock, and close to him was a tomb. The lion was 10 feet long and 6 feet high at the head. Mr. Newton immediately commenced preparations for removing him. That was a very difficult engineering operation. It was necessary to construct a road of considerable width for about a quarter of a mile, to drag the lion down on a heavy sledge drawn by a hundred men, and to embark him from the edge of a precipice where it was impossible to make a pier. The effect of that lion against the eastern sky when he was raised from the ground, was the finest sight he had ever witnessed: he seemed to look at them with an angry glance, as much as to say, "Why do you rouse me from my sleep of two thousand years?" In getting him off without a pier the rock gave way, and he came against the edge of the shears. After some trouble they succeeded in passing a ship's cable round him, shoving him off and holding him back in the air till the proper moment, and then dropped him into the ship. He weighed eleven tons. The lion originally stood on a tomb, near to which he was found. The tomb was a small mausoleum—a pyramid placed on a Doric colonnade. The pyramid was what is called a polychron or public monument, where a number of persons who had fallen in battle were buried; and among the stones was found a large buckler, upon which the names of those who fell in the battle were to have been inscribed. He was disposed to think that this lion was rather early, and he considered it one of the greatest works of art that had ever come down to us: it was severer in style than the mausoleum sculpture, and preferable to it, and he was disposed to place its date about 404 B.C. There was a great naval victory at Cos, which took place off Cnidus, at that time; and Colonel Leek was of opinion that that was the only historical event connected with Cnidus to which this monument could be referred with any probability. The architecture was of the Doric order, and half unfinished. He should say it was commenced when a certain party in the city of Cnidus were in the ascendancy, and probably that party was overthrown and the work was never finished. The only sign of intervention was a small Greek vase found at the entrance; but as a specimen of a Greek tomb it was of great interest, particularly as it was a light specimen of what was called horizontal vaulting, that is, when one stone is placed a little in advance of another, each overlapping the other till they came to the crown of the vault. There was an enormous stone weighing five tons, and shaped like the bung of a cask, and it struck him that this stone had been placed in the centre of the horizontal vault as a key stone. The use of lions in monuments might be traced all through the ancient world; they had them in the mausoleum for instance, where they seemed to be used as sentinels. He thought this lion was intended to be a watchman or sentinel looking out seaward. It must have had a fine effect to see it on the headland. As the mariner passed up he would see the Colossus at Rhodes; he would then see this colossal lion; he would then see the famous city of Cos and the mausoleum on the opposite side; and then he would pass the temple of Apollo at Branchidae, and the temple of Ephesus. The route along the shore of the Archipelago would be a succession of magnificent works. He then proceeded to exhibit drawings of several infernal deities he found at Cnidus; among them that of Proserpine, which he identified from the pomegranate which she held in her hand, and which is peculiar to this goddess. He found also

fragments of statues of Terminus, Persephone, and Demeter, besides several heads or fragments of statues, four or five little marble pigs with inscriptions on the basis, dedicated to Ceres; twelve pair of votive breasts, and what was most remarkable at the bottom he found layers of common green glass bottles of the Roman period; and it was remarkable that though immense masses of marble had been thrown in, the bottles were not broken. The whole of the ground in the terminos was strewn with fragments of sculpture and terra cottas, with representations of women carrying pitchers of water, which might represent Danaids, and quantities of lamps which they removed literally in wheelbarrowfuls. Altogether the terminos was a most curious place, and his impression was that the place had been disturbed by an earthquake, and all these materials mixed together by some great convulsion of nature. A very interesting tomb was found—a public monument to a certain Lykothus, the speaker, or as he was called "aphestior" of the senate. Now that word "aphestior" occurred only once in ancient authors. In his "Politics," Aristotle states the fact that the head of the senate at Cnidus was called Aphestior, and 2,000 years after they dug up a stone containing an inscription confirming the extraordinary accuracy of Aristotle. He mentioned this to show the importance of preserving every fragment of Greek inscription.

DESIGN FOR THE PROPOSED NEW FOREIGN OFFICE AND INDIA OFFICE.

THE House of Commons has voted 30,000*l.* for the preparation of the foundation for the proposed new Foreign Office, in Downing-street, in accordance with the plan prepared by Mr. Scott. Lord Palmerston, as our readers are aware, has declared against the erection of the building in the style adopted by Mr. Scott, and proposes to call upon the architect to make a design with "another face." We have, nevertheless, thought it desirable to engrave a view of Mr. Scott's present design, and the plan of the ground-floor. Where the two archways are seen, a correspondingly shaped building, for the India Office, would join on, enclosing a quadrangle, and with its front in Parliament-street. In an early number we shall give a further illustration of the design, and may then make some observations on the question at issue.

The leading characteristic of the arrangement of the two buildings is their union into a single group, and their inclosing a large quadrangle common to the two. This quadrangle measures about 280 feet by 200 feet, having about three-fourths of the area of that of Somerset House. The buildings are separated from one another by a space of 50 feet, which is occupied on either side by arched gateways opening into Downing-street and Charles-street, and tending greatly to promote the airiness of the quadrangle.

The Foreign Office is the smaller of the two buildings, its requirements being considerably less; and, though they present externally much the same general aspect, the India Office is in its principal mass much deeper and more solid; so much so as to render it necessary to have internal courts for light and air (which would tend to its internal beauty and architectural effect), while the Foreign Office is less deep, and the rooms are lighted everywhere directly from the exterior, and its great staircase, instead of being, as in the other case, and as in Mr. Scott's first design, lighted from above, opens directly upon the Park by a range of five very lofty windows. This, we may mention in passing, is the great architectural centre and the leading feature of the interior. It is a modification in its design, of that which was, in Mr. Scott's first design, appropriated to the official residence. It is exceedingly lofty, and its vaulted ceiling is carried by a tall and light central pillar, the lower portion of which is decorated by sculpture, while the upper part consists of a single shaft of marble.

The general plan is excessively simple, consisting in each story of a wide central corridor, into which the rooms open from either side. These rooms have been arranged in groups, according to the practical divisions of the department, and under the immediate direction, we believe, of Mr. Hammond, the experienced Under-Secretary of State, studiously placing each division in the relative position to others which is demanded by its actual uses. To the eye of a person not conversant with the working of the department these practical niceties of arrangement are of course unintelligible; but we

have reason to believe that the demand of everyday business has been the key-note to the whole distribution of the plan.

We observe that one of the members who was present at the deputation noticed in our last, took upon himself to pass some severe strictures upon the arrangement, particularly on the severance of the reception-rooms from the official residence. The same gentleman has said much on this point to others, and has apparently obtained a *prima facie* assent to his criticism. This arrangement was not, however, hastily arrived at, but was the result of difficulties long and thoughtfully balanced.

In Mr. Scott's first design, as in those of all the competitors, the reception-rooms, being used for no other purpose, were, as a matter of course, placed in connection with the residence: he was, however, ordered to remodel his design so as to omit the residence, but, at the same time, so to arrange some of the great official apartments, such as the cabinet-room, conference-room, &c. as to form a grand suite useable occasionally for receptions. At a later period Mr. Scott was ordered to bring in the residence again, though on a smaller scale, but to keep to the system of using official rooms for receptions. It seems to follow from this that the two cannot, as in the first designs, be in immediate connection, for it is clear that the official business cannot be carried on in the house of the Secretary of State. It may be said that the rooms used occasionally as reception-rooms might be placed beneath those of the residence, but it so happens that the practical demands of the department upon ground-floor space are so imperative as to render this absolutely impossible; so much so that even the private dining-room of the residence, which is placed on that floor, was considered to be a serious encroachment upon that part, so valuable for public business. Moreover, this suite of rooms will not be used by the Foreign Secretary alone, but will be lent, from time to time, to other ministers for their public receptions. Suffice it, however, to say, that this arrangement was settled, after much deliberation, at a conference between the Secretary and two Under-Secretaries of State and the architect.

As to the objection raised, too, about the kitchens, it is replied,—There are *three* uses for these kitchens, but there are only *two* kitchens provided (not three, as was stated), two of their uses being concentrated into one, which is certainly the utmost which could be done. The same as regards the library, the position of which was commented on. It is purely official in its uses, and has nothing whatever to do with the Secretary of State's residence, and was placed where it is by the specific directions of those who best know its practical uses.

We mention these points because of the extreme injustice of persons who have not gone in detail into the matters in question, and are unacquainted with the difficulties which an architect has had to cope with, and to devise means of meeting, assuming the position of judges after a few minutes superficial glance at the work which has, perhaps, cost him many weeks of labour, and has been gone over in many different forms, the merits and defects of each having been carefully weighed with the help of those whose intimacy with the actual working of the arrangements renders them best able to form a correct opinion.

The following has been issued as a "further return to an order of the Honourable the House of Commons, dated 21st July, 1859, for copies of the official letters by which Mr. Scott was appointed the architect of the proposed New Foreign and Indian Offices."

"East-India House, 1st January, 1859.

SIR,—I am directed to acquaint you that the Secretary of State for India in Council, has decided that the New India Office shall be built on the site in Downing-street, originally intended for the War Office, adjoining the proposed New Foreign Office, with which it will form one plan.

Lord Stanley has determined to entrust the architectural superintendence of the building to you, subject to the following resolution passed by his Lordship in Council, viz.—

That in view of ensuring the perfect adaptation of the internal arrangements of the New India Office to the requirements of the Secretary of State for India in Council, Mr. M. Digby Wyatt's experience be made available, and that the necessary designs and plans be accordingly prepared by him and Mr. Scott, in communication with each other.

I am, &c.
(Signed) J. COSMO MELVILL.

G. G. Scott, esq.

India Office, 15th April, 1859.

SIR,—The Secretary of State for India in Council, having had under consideration the plans and designs for the New India Office, I am directed to convey to you authority to proceed with the working drawings for the building.

I am, &c.
(Signed) J. COSMO MELVILL.

G. G. Scott, esq."

DESIGN FOR THE PROPOSED NEW FOREIGN OFFICE: FRONT NEXT ST. JAMES'S PARK.—MR. G. G. SCOTT, A.R.A. ARCHITECT.



PORTRAIT OF THE PRESIDENT OF THE INSTITUTE OF ARCHITECTS.

A DESIRE has been expressed that the new meeting-room in Conduit-street, should be furnished with a portrait of Earl de Grey, the president of the Institute, and a subscription has been opened for that purpose.

The removal committee have ascertained from Mr. J. Wood, the artist, that a good copy of an existing picture will cost about 50*l.*; and they think no difficulty will be found in raising this sum amongst a body whose members have received so many proofs of his lordship's interest in their pursuits.

As a general rule we doubt very much the wisdom of constant appeals to the generosity of the members, whereby either the cost of membership is increased beyond the means of some, or feelings of discomfort are induced which are not advantageous. The present, however, is a special occasion, and will, doubtless, meet with a proper response.

NEW TRAINING COLLEGE AT STOCKWELL.

On Friday, the 5th instant, the foundation-stone was laid of a new training college for 100 schoolmistresses, in connection with the British and Foreign School Society, in Stockwell-place, near the Swan, in the Clapham-road.

The building is described as of a plain Italian character. A dining-hall, 60 feet in length, will be provided; and three spacious class-rooms, and a lecture-hall, 40 feet by 33 feet, form prominent features in the arrangement of the ground floor. A broad corridor gives communication with the various parts of the building. On the basement, besides rooms for the use of students, there are kitchens, both for the general purposes of the establishment, and for practising. On this level are also the wash-house and laundry. The sleeping accommodation is provided on two upper floors, in six large dormitories, subdivided into compartments by partitions, which are of sufficient height to secure privacy, and yet allow of the general ventilation of each apartment. It is arranged, also, that each dormitory is to be superintended by a teacher, whose private rooms are so constructed as to secure this desirable object. Each dormitory has, also, its own storage for boxes, its place for obtaining water and discharging refuse: rooms that may be used as infirmaries, and sleeping rooms for the servants of the establishment are on the top story. A range of practising schools for girls and infants are formed in the rear, with exercise grounds, and covered sheds for recreation. The architect is Mr. Beck.

The contract for the completion of the work is 15,572*l.*; but this is exclusive of the land, and a portion of the internal fittings and furniture, for which at least 2,000*l.* must be added, making a total outlay of 17,572*l.*

ELECTRO-TELEGRAPHIC PROGRESS.

THE Board of Trade being about to engage in a number of important experiments with a view to secure the best description of cable for submersion between Falmouth and Gibraltar, with an ultimate extension to Malta, have entered into an arrangement with the Atlantic Telegraph Company, according to which the interesting experiments relating to this object (with which the selection of the proposed new Atlantic cable is intimately connected) will be conducted conjointly by the Government and the Atlantic Telegraph Company. Mr. Robert Stephenson and Professor Wheatstone have the direction of these experiments, as well on behalf of the company as of the Government. The company contribute the assistance of their staff, and the valuable information collected during their extensive operations. The experiments will consist of complete tests, by pressure and otherwise, of the comparative insulating qualities of gutta percha and india-rubber, as well as of the comparative value of external coverings of iron, of hemp, and of hemp and iron in conjunction. A thorough chemical examination will also take place into the respective constituents of india-rubber and gutta percha, with a view to test their comparative durability, as well as the manner in which they are likely to be acted upon by the salts of the ocean, or other influences, chemical or accidental. Out of these experiments others of equal scientific interest will doubtless arise.

Under these circumstances, it is of interest to know something of the sentiments with which the directors of such experiments enter on their task; and, so far as regards Mr. Stephenson, this appears from his remarks while presiding at the half-yearly

meeting of the Electric and International Company. Here he is reported to have stated that his opinion was unfavourable to the durability of submarine cables in their present state; and that, although improvements will doubtless hereafter be introduced, and lines will extend over the whole world, it is absolutely necessary, under existing circumstances, to keep a large reserve to meet the cost of deterioration. Some cables were found to wear out in five or six years: others would last ten, or even twelve, or more; but taking ten as the average, the company, having expended 140,000*l.* on marine lines, ought to lay aside 14,000*l.* yearly. The land lines are kept in repair from week to week, and are, consequently, as good one year as another; but this is manifestly impossible with those that are submerged. In replying to some remarks by a shareholder, Mr. Stephenson observed that he knew no submarine line which of itself yielded a profit.

We may add that Parliament has voted 20,000*l.* to aid in carrying out these very desirable and important experiments. It is gratifying to think that no new Atlantic cable will be formed or laid till the result of such experiments shall be seen, and that the Gibraltar or East-Indian line will also have the benefit of them.

When it was first proposed that the Atlantic Telegraphic Company, after the failure of their cable, should make a renewed application to Government with respect to arrangements for the laying down of another cable, we expressed a hope that the Government would take no further step in regard to the laying down of such cables till they had ordered a thorough experimental investigation to be made into the best form and construction of submarine cables. From a remark by Lord C. Paget in the Commons, we were first led to hope that experiments were about to take place, under the Board of Trade and eminent engineers, with a view to testing the composition of the outer coverings of the cable between England and Gibraltar.

We trust this is but a prelude to the settlement of the entire question of the best form of submarine telegraphic cables in general.

A local paper reports a case at Newport, in which the electric telegraph has been struck (as at Jersey) by lightning, and the wires displaced and disabled. — The American telegraphist, Mr. Hughes, has added another great improvement, it is said, to the science of telegraphs, having invented a telegraph which at once supersedes the whole system of telegraphic signals as now in use. The new instrument, without causing more wires to be used than at present, transmits messages, indicating those messages to the eye by the ordinary letters of the alphabet. It can be used by any person who can spell a message, and is small and portable, so that any railway guard may carry one in his pocket.

THE EXHIBITION OF 1861.

Is there any good reason why this very desirable project should not be revived? There is every prospect of peace, and an International Exhibition, if it were well carried out, would certainly tend to ensure it. A well-known manufacturer of bronzes, M. Barbedienne, of Paris, who has received the highest medals for his works, says, in writing to his correspondent in London, —

"Now that peace appears to become more firm every day, will it not be possible to return to your project for the Exhibition of 1861?"

It appears to us that it is the duty of Commerce and Industry to rely with confidence on the interests of nations, and to discard all foolish and transient causes of antagonism and strife.

In the actual state of things, a Great Exhibition in London would have a double salutary effect, both in the industrial as well as in the political world.

Personally, I will do everything in my power to promote so noble and excellent a cause."

We shall hope to hear that the Council of the Society of Arts are again at work in the matter.

THE BILL OF QUANTITIES FOR THE METROPOLITAN SEWERS.

SOME time ago we drew attention to certain errors, first pointed out by Mr. Leslie, in the bill of quantities for the northern high-level sewer, which had been supplied to the contractors who tendered for its execution, by Messrs. Roberts & Gotto, and we showed what was the result of our own examination of the specification and quantities. On the part of the rate-payers, we called for some satisfactory explanation of the occurrence, and pointed out how materially their interests were affected by it.

The Metropolitan Board of Works referred the bill of quantities to Mr. W. Pole, C.E. and his report, just now submitted, bears out all that we said on the subject, and places the Board in a very strange position in respect of their vote of censure on Mr. Leslie. In the item of concrete Mr. Pole shows an excess to the extent of 22,000 cubic yards over the quantities required by the plans! in six items of brickwork in Portland cement, an excess of more than 80 rods; and in two items of brickwork in mortar, 41 rods. A comparison of quantities of excavation in the lines of sewers shows the surveyors' quantities as furnished, 420,426 yards; Mr. Pole's quantities, adopting the surveyors' assumption of the width of trenches, 380,078; and the quantities, taking the net widths of the work, 326,798 yards!

We now wait to see what steps the Board will take in the matter. The accepted tender, it must be supposed, was made upon these quantities.

Touching the tenders for the southern sewer there have been some mystifications which do not seem quite satisfactory, but we must wait for their solution. The bills of quantities for the southern sewer were made out by Mr. Gotto and Messrs. Hunt and Stephenson, who are to receive for the work, we understand, 1,050*l.*

DEPUTATION OF MASTER BUILDERS TO THE HOME SECRETARY.

On Monday last, a deputation from the Central Association of Master Builders waited upon Sir G. C. Lewis, the Secretary of State for the Home Department.

The deputation, which was introduced by Mr. Tite, M.P. and Mr. Alderman Cubitt, M.P. consisted of Mr. Arding, Mr. Austin, Mr. G. Bird, Mr. Carr, Mr. Downs, Mr. Higgs, Mr. Jay, Mr. Kelk, Mr. Alderman Lawrence, Mr. Lucas, Mr. Mansfield, Mr. Morris, Mr. Myers, Mr. Plucknett, Mr. Piper, Mr. Rigby, Mr. F. Smith, Mr. G. Smith, Mr. Spicer, Mr. Trollope, and Mr. Williams, accompanied by Mr. G. Wales and Mr. S. Smith, the secretaries.

Mr. Tite, M.P. in introducing the deputation, stated that the master builders had thought it right, looking at the state at which matters had now arrived, that the right hon. gentleman, as Home Secretary, should be informed of all the circumstances which had led to the present differences between the builders and their operatives — not that they anticipated the Government would interfere, but that they should be thoroughly informed of the nature of the question at issue.

In 1847 the workmen's hours of labour were shortened on Saturdays by a sort of mutual agreement, the men from that time leaving off work on Saturdays at 4 o'clock instead of half-past 5, as before. At present the men began work at 6 o'clock in the morning, and continued till 8. They then had half-an-hour for breakfast. They resumed at half-past 8, and worked till 12, when they had an hour for dinner. They began again at 1, and continued till half-past 6. Their labour, therefore, amounted to ten hours a day on five days of the week, and eight and a half hours on the sixth. The present movement began by the workmen demanding to be allowed to leave off work an hour earlier than at present, — that is to say, to work nine hours instead of ten, and to receive the same wages. These wages were 5*s.* 6*d.* per day for skilled workmen, and 3*s.* 4*d.* per day for labourers. It appeared to have been agreed among the men that they should strike against individual masters in detail for the attainment of this reduction in the hours of labour, and in pursuance of that system, the strike at present was confined to Messrs. Trollope's.

The deputation then said they wished the right hon. gentleman to understand that they had not waited upon him with any expectation that the Government would interfere, or with any desire for legislation upon the subject, unless circumstances should arise hereafter to render such a course necessary. It must be obvious to every one who considered the subject that this was not so much a builder's question as a public one, because, if a general advance of wages were obtained by the workmen, the employers of the builders — the public — must eventually pay it. Therefore, although as regarded existing contracts the matter was a personal one, it was not so beyond that. The affair had been brought to its present position, however, by the societies of the operatives which were formed for charitable objects, and were registered, being diverted to purposes totally at variance with their ostensible objects, and these had been from time to time pushed to such an extent as to embarrass the proceedings of the builders, and to induce nearly 300 of them

upon the issue of one single advertisement to unite for the purpose of getting rid of the thralldom under which they laboured. The association which had thus been formed would fall to pieces instantly if it were sought to use it as a means of coercing the working man. Its sole object was to rid the employers of the present incubus which pressed upon them, and as soon as that was accomplished, it would cease to be. It was from having ascertained beyond dispute that contributions were being made by all the operatives—society men and non-society men indiscriminately—to support the strike at Messrs. Trollope's, that it was thought necessary, therefore, to close all their works; because, if the combination were successful at Messrs. Trollope's, the same course would be pursued towards the other builders in turn.

Sir G. C. Lewis.—I see; they would take you in detail, you mean. The ground on which you close your works then, is, irrespectively of previous questions, the demand of ten hours' pay for nine hours' work?

Member of the Deputation.—No doubt; but the employers would not have taken such a step but for the cumulative case. He should be happy to answer any questions that the Home Secretary might wish to put.

Sir G. C. Lewis.—I don't know that I have any questions to ask, because the matter is not one in which the Government can interfere. What is necessary is to insure that the contract shall be a free one.

Mr. Alderman Cubitt, M.P. observed, that as the question was one in which the public were deeply concerned, the builders incurred a heavy responsibility if they decided one way or the other. If the masters were inclined to make a compromise, he thought that the men would consent that the rule which they proposed to establish should begin to come into operation a few months hence. That would entirely meet all the present difficulties; but, if the employers were to make such an arrangement as that, it would inevitably impose an additional heavy cost upon the public. The builders would hardly dare to make such an arrangement as that, unless there was some expression of public feeling on behalf of the men. So, likewise, the builders would incur a great responsibility in keeping the men out of work, and he thought, therefore, that they were entitled to an expression of feeling either from the Government or the House of Commons on the subject. If, on the one hand, the public thought that the men should have what they asked, that would be an encouragement to the masters to do what which would eventually be to their profit; because, if the men worked only nine hours, there would be only nine hours' supervision necessary. If, on the other hand, it was thought that the masters were right, they would have the moral support of public approbation. He thought, therefore, that the masters ought to be fortified in whatever course they took by an expression of opinion on the part of the Government or the House of Commons.

Sir G. C. Lewis had great respect for the House of Commons, but he did not think that it could undertake to arbitrate in a matter of this sort between masters and their men. Neither did he see how the Government could interfere.

Another member said that the real question to be considered was, whether the masters were to be allowed to conduct their own establishments, or they were to continue to live under the thralldom of the trade societies. Things had now come to such a pass that really the matter of the Nine Hours, although it was equal to ten per cent. was not of so much importance as securing the right of the master to employ whom he pleased.

Sir G. C. Lewis.—The real solution of the question, of course, must ultimately be determined by the demand and supply. If the workpeople, looking at all the circumstances, can substantiate a claim either for this increase or for any increase of wages, they will, no doubt, after a certain amount of suffering and loss inflicted upon themselves and yourselves, make good their demand. If, on the other hand, it turns out that they are wrong in their estimate of what the present state of the market entitles them to, they will have to give way. It is impossible for the Government to fix the price of labour; as well might they attempt to fix the price of bread or meat. It must depend upon the state of the labour market. The Government must be impartial, and must not appear to favour any class of the community. Of course, it is their duty to preserve order, and to see that all persons have the power of making a free contract.

Mr. Ayrton, M.P. (who had entered in the course

of the interview) said that he had not heard the statement of the working people, and therefore he did not feel competent to give an opinion upon the case; but he did not think that the masters had pursued a wise course in combining, and thus following the objectionable example set by the men. He suggested that by conciliation and the exercise of moral influence more might be effected than by closing the shops and locking the men out.

After some further conversation, the deputation thanked the Home Secretary for the attention and courtesy which he had displayed, and withdrew.

MEETING OF SOCIETY MASONS.

On Wednesday afternoon a crowded meeting of the masons of London, was held at Wilcock's Assembly-rooms, Westminster-bridge-road, "for the purpose of adopting such measures as might be deemed advisable to carry the present struggle to a successful termination."

Mr. John Fitzgerald was voted into the chair, and said he had no doubt they were all aware that they had met to denounce that precious "document" which the masters had so kindly presented to them for their special notice and their signature.

Mr. W. Perham moved,—

"That it is the opinion of this meeting that the document presented to the masons of London, for their acquiescence, either verbally or by writing, is degrading and insulting, and that the master builders, by this act, have shown great inconsistency by denouncing combination on the part of the workmen while promoting the same line of conduct themselves, and denouncing that all the workmen in their employment shall virtually constitute themselves slaves to their dictation; and this meeting pledges itself that it will not resume work except on the unconditional withdrawal of everything in the shape of a document, promise, or agreement."

He said, is there a man here who is willing to place his signature to that document? ("No.") It appears that your employers do not wish you now to do so, but your foreman or timekeeper may do it for you; but to authorize another man to sign for you is the same thing as signing yourself. I have well studied the matter since it has been brought under your notice, and I am wholly disgusted that any employer should have the audacity to place such a document before any body of mechanics, calling upon men who from their infancy have been struggling to support their society, now in their old age to withdraw from it. I am satisfied that you will stand firm and fast, and that you never will relinquish the present contest until this document is totally withdrawn. The society, of which we are proud to be members, has been in existence a great number of years. Our forefathers supported it, and it is our duty to maintain it, seeing the glorious objects which it has in view, supporting us in sickness and accident, and providing funerals when we die. In the last three years our society alone has expended no less than 4,967l. in sick allowances, 1,450l. in relief of accidents, and 2,222l. in funerals. Is there a man among you who would pledge himself to abandon a society of that description? Before I would give my signature to such a promise, I would suffer any amount of deprivation.

Mr. G. Garrod said,—the masters are supposed to be higher in the intellectual scale than we; but I think that they have shown themselves far below us in point of ability in carrying this movement out. I hope that there is not a man in this meeting who would ever think about signing a thing of this kind, or agreeing to it in any shape or form. If we only stick to the rejection of the document, depend upon it that its withdrawal will be the forerunner to a satisfactory settlement of our differences. As soon as that is withdrawn it will be our duty, I presume, to go to work, leaving the nine-hours question to those persons who have undertaken it. Let them do their business, and we'll do ours, and will show a bold front against all documents and declarations whatsoever.

Mr. Joseph Turner further supported the resolution, which was carried unanimously.

PROVINCIAL NEWS.

Wells (Norfolk).—The Earl of Leicester has just completed the reclamation from the sea of 700 acres of the vast tract of low marshy lands near the little port of Wells, Norfolk. For this purpose a great embankment, involving an outlay of some 12,000l. has been carried from the Holkham side of Wells in a straight line towards the sea, which has been shut out by this means from the land to be reclaimed. The embankment is to be called the New Marine Parade. It is one mile and 132 yards in length, and its height at the highest part is 22 feet 6 inches from base to crown. It is cased with clay, and the upper portion, which is 7 feet broad, forms the prome-

nade. The embankment runs from Wells in a straight line due north and south. About two-thirds of the distance from Wells there is a breakwater stretching away from the bank, that is able to ward off the blow of a very heavy sea. The work was commenced in March, 1857, and has recently been completed. The value of the land acquired, it is said, bears little proportion to the sum expended in the work, which has been attended with considerable engineering difficulties. Mr. Isaac Buxton, of Manchester, was the contractor, and Mr. Saunders the engineer. Lord Leicester has ordered the construction of a carriage drive, 30 feet in width, along the whole extent of the new embankment.

Coggeshall (Essex).—The Hitcham Charity School-house here was rebuilt from the plans and under the directions of Mr. Joseph Clarke, not of Mr. T. Clarke, as was stated (by a printer's error), on the 23rd ult.

Bingham (Notts.).—New Wesleyan schools have been commenced at this place. They are plain and simple in style; the material is brick, with stone dressings. Messrs. Clifton and Doncaster, of Bingham, are the contractors. The cost exceeds 700l. Mr. R. C. Sutton, of Nottingham, is the architect.

Melton Mowbray.—A sanitary meeting has been held here, at which it has been resolved "that the sewerage of the town, and particularly the outfalls into the river and canal, are very injurious to the sanitary state of the town, and ought to be remedied;" and other resolutions pledged the meeting to adopt and carry out a survey by Mr. Stephens, C.E. of Leicester, made in 1857. The necessary funds are to be raised by the townwards on the credit of the estate, for which purpose a special meeting will have to be convened. The plan proposed by Mr. Stephens will intercept (with one exception) all the principal outlets by means of a main culvert, to be continued considerably farther down the river. A committee of seven were appointed to assist in carrying out these arrangements, with the assistance of Mr. Stephens. A portion of the river will be cleansed at the expense of the ratepayers.

Oxford.—At the quarterly court of the Radcliffe Infirmary authorities, held on the 27th ult. the subject of the additional building was brought forward, and it was reported that the committee had received tenders from four firms, viz.—Mr. Castle, Mr. Wyatt, Mr. Symm, and Mr. Fisher; that they did not recommend the construction of cellars, but the thinning out of the soil down to the gravel; that deducting the expense of the cellars (which were tendered for separately), the amount of the tenders was as follows:—Castle, 2,150l.; Wyatt, 2,114l.; Symm, 1,989l.; Fisher, 1,910l.; and that they recommended the whole of the plan to be carried into effect at once. It was unanimously resolved to accept of Mr. Fisher's tender, and to provide for the removal of the soil on the site down to the gravel.

Wigginton.—A new school-room has been erected in the small village of Wigginton, near Banbury. The room is 30 feet by 17, with a recess for a gallery, and a class-room, 15 feet by 13. Mr. W. Smith, of London, was the architect.

Bath. The foundation-stone of the new schools for the Bath Blue Coat Trust was laid on the 30th ult.

Keynsham (Somersetshire).—The police station and petty sessions room in this parish, for the division of Keynsham, have just been completed, and they may be described as the most commodious and convenient of any similar building in the county. The building is in the Gothic style, and is situated at the entrance to Keynsham from Bath. The contractors were Messrs. T. and W. James, of Bristol. The architect is Mr. S. B. Gabriel, of Bristol. One portion of the building consists of a commodious room for holding the petty sessions. There is also a retiring-room for the magistrates, and various other apartments for the police. The cells for the confinement of prisoners are well arranged and adapted for such purpose. The entire buildings are fitted up with gas, and the whole of the woodwork stained instead of painted. Adjoining the police-court is a house for the residence of the sergeant of police.

Birmingham.—The first stone of the public baths about to be erected by the corporation, in Woodcock-street, has been laid. The architect is Mr. Edward Holmes. The external appearance of the building will be plain, in the Italian style of architecture, effect being obtained by the introduction of coloured brick. The principal feature in the front elevation is the introduction of a turret over the central entrance. A large ventilating and smoke shaft will also be seen above the front buildings. The frontage occupies a space of

26 feet. The superintendent's residence is placed on the left. There are three separate entrances, the centre one being for the females, and those to the right and left for the first and second-class males. Provision is made in the present arrangement for forty-six private baths, and one large swimming-bath for males, 80 feet by 35 feet. An attendant's room is so provided that, when the whole building is complete, one attendant will have complete supervision of the building. A well is also being sunk in connection with the establishment, which, when complete, will have a bore hole of a greater diameter, taking into consideration the depth, than any yet sunk in this country.

CHURCH-BUILDING NEWS.

Sudbury.—Friars'-street Chapel, Sudbury, has been opened after being altered and enlarged. Mr. F. Barnes, of Ipswich, was engaged as architect, and his plan adopted; the work being executed by Mr. Webb, of Sudbury, builder. The front and back walls of the chapel were pulled down and the roof taken off, and about 30 feet were added to the length of the building, which previously was nearly square, the breadth remaining the same; but the building was made capable of seating nearly 1,000 persons. The front is built of white and tinted bricks, with a triple lancet window under the centre pediment, two smaller ones at the wings, and four doors and a window below, there being separate entrances to the galleries and body of the chapel. The roof is partly semi-circular, in the centre is a sun-light of seventy-two jets under a metal reflector. The pews have been all removed and converted into open benches, with turned ends. At the end of the chapel is an apse, in which stands the pulpit. A new vestry has been built for the minister, and various other improvements effected.

Loughborough.—In accordance with a previous resolution to proceed to the restoration of All Saints Church after architectural investigation and estimates had been made, a public meeting was held on the 3rd instant, when Mr. Scott, the architect, who was expected to be present but was unavoidably absent, sent in a report, with plans and estimate. A resolution to adopt Mr. Scott's plans, at an estimated expense of about 6,500*l.* was passed, and a subscription list opened, subscriptions payable at the following periods, viz.—one-third on or before the 1st of November next, one-third on or before the 1st of May, 1860, and the remaining one-third on the 1st of January, 1861, but this to apply only to subscriptions exceeding 5*l.* The subscriptions already amount to 3,373*l.*

Reigate.—On a site in Wray Park, at a spot near the Town Railway Station, a new church is now in course of erection, the first stone of which has been laid by the Earl of Somers. The new building will be dedicated to St. Mark. It will be in the Early Decorated style, and constructed of local stone with Bath stone facings, and open stained timber roofs to the nave, aisles, and chancel. It will be fitted with open sittings of stained timber, and approached by a porch at the north-east corner, with a similar approach on the south side, and also a third entrance under the tower. The east end of the chancel will be filled in with a five-light window, and a corresponding four-light window will occupy the end of the nave. The architects are Messrs. Field and Hillier, of Westminster, who we understand, give their services gratuitously; and the erection of the building is entrusted to Mr. Carruthers, of Reigate, builder.

Southampton.—The chief corner-stone of the new Unitarian church at Southampton has been laid at Bellevue, near the Ordnance Survey Office. The structure, says the *Hampshire Advertiser*, will be designated "The church of the Saviour." It will stand opposite Carlton-crescent, a little above the proprietary church of St. Paul. The architect is Mr. Philip Brannon, of Southampton. The style chosen is the Early Pointed. It is in five bays, with triplet windows at the sides, varied by trefoil and plain lancet heads, and differing heights of side lights; and it has at the east end a wheel, somewhat plain, but novel in design; while at the west end there is a septet of five lights, and two panels for legends. Mr. G. Chinnock is the builder. The present contract is for 1,850*l.* The carving, warming, fencing, and some other matters are reserved for separate contracts. The works are now advanced to the sill string. The materials used are Corsham Down stone for the dressings; Swanage rubble, hammer dressed, for the walling; intermingled with portions of Tiffon, Tisbury, and Isle of Wight stone: the

lime is either stone or blue lias, and the timber Baltic, with some English oak.

Lynton.—Pennington district church, in the parish of Milford, has been consecrated by the bishop of the diocese, having been entirely rebuilt from the foundation. It is constructed of coloured bricks, with Bath stone dressings, and consists of a nave, chancel, west and south transepts, vestry and porch. The seats are open and stained dark oak. The roof, which is open timber, is surmounted by a bell turret, placed over the intersection of the nave and chancel.

South Petherton.—Mr. Henry Perry, of Crewkerne, is the successful contractor for constructing new roofs to the nave, south aisle, and north transepts of South Petherton parish church, just about to be restored. The roofs will be open. The whole of the church is also to be re-seated.

Bedminster.—The chief corner-stone of a new church at Bedminster, to be dedicated to St. Luke, has just been laid. The site of the edifice is situated about midway between the Bedminster and Bath bridges, on the further side of the New-cut from Bristol. The architect on whose designs it is to be erected, is Mr. Norton, of London. The length of the church, as regards the nave and north and south aisles, will be 107 feet: the nave will be 26 feet 6 inches wide, and the aisles 16 feet 7 inches wide. They will be divided from the nave by six arches on the south side and by five on the north. The main entrance will be from Spring-street on the west in the centre of the nave, while there will be another entrance on the Cut, on the north, in the third bay. The sittings provided will be sufficient for 1,200 persons, more than half of the seats being free. A small gallery will be made at the west end of the nave, but only extend to the first bay. This was done to provide for the requisite number of sittings. At the east end of the church is the chancel, 24 feet by 20 feet, opening into the nave by a lofty arch. The total height of the nave in the interior will be 56 feet; and of the arch into the aisle 30 feet. Opposite each of the arches will be a four-light window, additional height being obtained by throwing up a series of dormers on the north and south sides. The total height of the tower will be 88 feet, whilst the spire, of Bath stone, will be also 88 feet in height. The upper stage of the tower is to be an octagon belfry, flanked by octagon spirettes. The church will be built of the blue Pennant, Bath stone, &c. and will be fitted with low open benches throughout. The contract for the erection of the church, including 28 feet of the tower, has been taken for 5,000*l.* by Mr. J. N. Brown, of Bristol. The labour in making the foundations has been far heavier than usual, upwards of 20 feet of clayey soil, thrown up when the new-cut was formed, having had to be dug up and replaced by solid masonry. The remainder of the tower and the erection of the spire will form the subject of a fresh contract.

Bromsgrove.—The spire of Bromsgrove Church, near the upper sound holes, has become shaky, in consequence of lightning striking it before the application of a conductor. Mr. Brown, of Sheffield, who put up the conductor, and who performed a remarkable feat at Stoke Prior great chimney lately, has been employed to repair it by putting in fresh stones. The ladders for the work were got up, and the scaffolding soon followed, so that the workmen commenced the task of reparation.

Coleshill.—We understand that the whole of the carving in the Coleshill Church restoration was undertaken by Mr. James Forsyth, of London, and executed under his directions.

THE FOUNTAINS AT THE CRYSTAL PALACE.

The directors propose to give several lengthened displays of the entire system of fountains, cascades, and water temples, and to place the display within the reach of all classes. In connection with this intention they have published a brief description of some of the beauties and peculiarities of the great fountains of the Crystal Palace. In the course of this it is stated that when the whole system of waterworks is displayed, nearly 12,000 jets are in operation; a number which, if played singly, day by day, would spread over a period of upwards of thirty years. The water discharged in one minute exceeds 120,000 gallons. As may readily be conceived, the frequent accumulation of this enormous mass of water at the summit of Sydenham-hill requires no inconsiderable amount of previous arrangement and expenditure.

The first source of the supply is an artesian well, 575 feet in depth, sunk in the lower part of the park. This depth exceeds the extreme length of

St. Paul's Cathedral by 75 feet. A further supply is obtained from the springs in the neighbourhood of Croydon, and still further assisted by the mains of the Lambeth Water Company.

To raise the water from the lower lake to the summit of the high water-towers several steam-engines are employed, comprehending together 320 horse-power.

Each tank on the water-towers contains 360,000 gallons of water, the weight of which is 1,576 tons.

The water-pipes and jets vary from 1 inch to 3 feet in diameter. Their length exceeds ten miles, and their weight 4,000 tons. Including the amount required to charge the mains, temples, cascades, and basins, upwards of 6,000,000 of gallons of water are used at each display.

The whole of the waterworks are under the superintendence of Mr. Rose, the engineer to the company.

COMPETITIONS.

Cambridge Guildhall.—The particulars issued by the committee appear to have been carefully drawn up. It is understood, although not so expressed, that the premiums will be paid to the successful competitors, in addition to the usual commission of 5 per cent. upon the actual outlay of the first portion (which is strictly limited to 6,000*l.*) and travelling expenses: it is considered that these premiums are in the nature of payment for those parts of the design that possibly may not be carried into execution during the lifetime of the author. The competition is to be conducted on the motto system, and there are several stipulations with the view of carrying this out in its integrity: all this, however, we need not say is futile,—simply aiding the unscrupulous. Whether this competition will produce a more satisfactory result than competitions generally do we must wait to see: we are told there is a desire that it should do so, and we shall watch the proceedings with interest.*

Liverpool.—The design of Messrs. Oliver and Lamb, Newcastle-upon-Tyne, has been selected in competition for the Welsh Presbyterian Church, to be erected in Liverpool.

St. Paul's Church, Maidstone.—The Committee for building this church invited Messrs. Whichcord & Blandford, Messrs. Peck & Stephens, Mr. Joseph Clarke, and Mr. Robert Pope, to submit designs, and ultimately selected the designs of Messrs. Peck & Stephens as the most in accordance with their views. It is proposed to proceed with the works immediately, and advertisements have been issued for tenders to erect the church.

Blackburn New Workhouse.—The plan by "Utilis," which has been approved, and which had received the premium of 50*l.* was drawn to meet the uneven plot first fixed by the committee, while the other two plans, which received the greatest praise, had not been adapted to the ground selected in the first instance, one, "Chorlton good, Blackburn better," being drawn to a level plot, and the other, "Candour," very nearly so. By removing the site to a level plot, viz. the piece of land adjoining the Shadsworth-road, a saving in the erection of the house would be effected of nearly 3,000*l.* At the suggestion of Messrs. Withers and Stones, the committee have resolved to take a fresh competition for plans, and the successful competitor is to have the privilege of superintending the building and to have four per cent. on the cost of the building as his commission for designs and inspection; the competition to be restricted to the three most approved designs,—namely, "Utilis," "Chorlton good, Blackburn better,"

* A correspondent on the subject says, "I do not complain so much of the particulars so far; but as an architect and an artist, I do complain of the clause that the author's 'handwriting is not to appear.' As a young member of the profession, I have to make my own drawings, and to write my own specifications; consequently, I am thrown out of the competition. It is a great hardship to be obliged to pay money, in addition to one's time, in such chances as competitions are generally. But this is not all; for drawing is the architect's handwriting as much as is the writer's manuscript. Every one knows the drawings of a host of architects; and as you well showed in the Government Offices competition, half at least of the designs sent in will be sure to be known by the 'non-competing architects,' whose opinion and advice is proposed to be obtained by the Council of Cambridge."

Is this clause inserted in order to prevent our well-known architects from competing? If not, the clause should be withdrawn; and I hope Mr. Cooper will take it into his consideration. I do not suppose that my drawings would be likely to be recognized, but possibly my handwriting might be: the prospect is not agreeable of having to spend some five or ten pounds for copying *writing*, when I know that the architect of some other competition design will be recognized by his handwriting. Mr. Cooper had better say that no architect is to make his own drawings, or his clerks to imitate his peculiar style of drawing.—A YOUNGER MEMBER.

and "Candour." The plans are to be sent to the office of the clerk, each marked with a fresh motto, on or before Friday, the 9th of September next. We hope the architects will refuse to compete for the reduced commission.

ON FOUNDATIONS.

SIR,—The foundation of Christ's church was on a rock (*Итровоу* a stone, or rock). St. Peter was firm as a rock, and I believe all foundations of houses, which are our daily churches, are only secure when on solid rock. I have read the searching articles in the *Builder* on "Dwellings for the Working Classes," and I feel convinced that my ideas of improved aerial locomotion will be appreciated in days to come. Edinburgh and many other castles were built on rocks; yea, even in Maoriland have I seen the pabs, or native encampments, on the summits of rocky hills. By improved aerial transit we should be able to cope with the feathered tribes, and have the plains to grow waving corn on. It is alone satisfactory to get at a high standing of morality, cleanliness, &c.

As regards the spreading out of people to till the soil, and avoid large cities or camps, I refer you to Deuteronomy xxiii. v. 13. The "paddle," there mentioned, is the flat-ended weapon the New Zealanders travel with, used both for defence and coming down hills (like Alpen-stock, or Alpine-stick), and the enforcement of the sanitary law of covering excrementitious matter over with earth, and not dropping it into water, is fully pointed out.

I shall now conclude, expressing gratitude for past recognition of my views.

C. M. DICK, Sen.

VACANT SPACE NEAR ST. PAUL'S.

SIR,—As far as the remainder of "the vacant space near St. Paul's" may be fitted and convenient for any ornamental erection, might any be much preferable to a fountain with at least four jets, not "squirts," or else a conduit, its upper centre crowned by a statue of Wren, to which few living would offer any objection?

For decorative portions, as the external beauty of marble is short-lived in our climate, polished granite, of which I believe there are at least three colours—red, green, and yellow—might be very efficacious.

I will venture a brief, certainly somewhat hackneyed, but still "candid" quotation,—

"—Si quis noviss rectus sitis,
Candidus impert; si non, his utere mecum."

The subject, albeit semi-ecclesiastical, would hardly admit, although profaneness is strictly repudiated, a Scriptural one. "I speak as to wise men, judge ye what I say."

A LONDON CANTAB.

THE CASE OF THE BLEACHERS AND DYERS.

MIGHT it not do good if at this present time there were quoted in your columns some real cases of most terrible hardship among the operative classes; cases compared with which the condition of the operative builders must be looked upon as perfectly blissful? Might I take the liberty of drawing your attention to the state of the bleachers and dyers, set forth in "Wrongs which cry for redress?" Their state is almost too lamentably cruel for comment. They have, by meetings, associations, and petitions—in short, by every means in their power but strikes—endeavoured for years to put a stop to the working to death of their wives and children; but not half a dozen people in the country seem to care for them. Circulars have been sent to every editor in the United Kingdom, to every member of the House of Commons, to all our bishops and archbishops, and very largely in other directions. Such efforts gave rise to a few articles, and a few sympathizing letters; a three days' sensation is created in certain quarters; and then all seems to be forgotten. I declare to you, positively, after having given this matter a long and painstaking scrutiny, that the case of the bleachers and dyers—men, women, and children—is so very terrible, that if we were to hear of such suffering among the slave-states of America, from north to south, England would be in a state of indignation. Two or three stern articles, week after week, on the wrongs of the Bleachers and Dyers, would, while greatly aiding a good cause, surely put to the blush the men who are striking on account of such very minor grievances.

T. H.

FOREIGN OFFICE AND WAR OFFICE COMPETITION.

THE following is a return "of all money disbursed by the Treasury on account of the Plans for the Foreign Office and the War Office, of the Block Plans for laying out the adjacent ground, and other objects connected with the Architectural Competition and Exhibition in 1856-7, including Prizes, fitting up Westminster Hall as a place of exhibition, and all other contingent expenses."

For premiums for designs for New Foreign and War Offices, and for block plan for the concentration of the principal Government offices, 5,000*l.*; for cost of fitting up Westminster Hall for the exhibition of the designs and plans, 302*l.* 7*s.* 3*d.*; for attendance of police during the exhibition of the designs, 41*l.* 12*s.* 8*d.*; for cost of advertising, printing, and copying, 542*l.* 9*s.*; total, 5,866*l.* 11*s.* 11*d.*

DECISION UNDER THE METROPOLITAN BUILDINGS ACT.

ALTERATIONS.

AT the Thames police court, on Thursday, the 4th instant, Mr. A. E. Stacey, of 3, Raven-row, Mile-end-gate, builder, attended to answer to the summons of Mr. John Billing, district surveyor of St. George's-in-the-East, who claimed three fees of 1*l.* each, upon the repairs to three houses in Upper King-street, Commercial-road East. The work consisted in taking down and replacing the brickwork of the front wall above the ground-floor windows, to the two upper stories and the parapets. Mr. Stacey contended that there was no alteration, that it was a necessary repair, and adduced similar cases, which he said had been decided by other magistrates in his favour. Mr. Selfe, the magistrate, however, agreed with Mr. Billing, that the repair affected the construction of the wall, and, therefore, brought the work within the provisions of the Act; but he said he could not order the payment of more than one fee upon the single summons: he therefore offered to Mr. Stacey that fresh summonses should be taken out for the other two houses; but as Mr. Selfe apprised Mr. Stacey that he should in that case order the payment of the fees, and likewise costs and attendance fees, Mr. Stacey paid the 3*l.* claimed at once.

ACTION FOR BILLS OF QUANTITIES.

Bolt v. Thomas. — *Oxford Circuit.* — The plaintiff, H. P. Bolt, was a builder at Newport, and he sued the defendant, R. G. Thomas, who was an architect in the same town, to recover damages for supplying to the plaintiff an inaccurate statement of the quantities of work and materials required for the erection of a building which the plaintiff contracted to erect. The defendant advertised for tenders for the erection of a Baptist Chapel, stating that the plans and specifications could be seen, and that the quantities of work and materials would be furnished. The plaintiff obtained from the office a table of such quantities, headed by a statement that it was to be paid for by the successful competitor. From this table the plaintiff calculated his tender, which was accepted, and according to the plaintiff's evidence, but contradicted by the defendant, the latter expressly stated to the plaintiff that he was responsible to him for the quantities. The defendant, however, admitted that in the plaintiff's absence he (the defendant) on one occasion assured the committee that the quantities were correct and that he guaranteed them. There was a second claim made by the plaintiff in respect of a contract for building a gentleman's villa, the bill of quantities being headed "Two per cent. for quantities."

Mr. Huddleston, for the plaintiff, contended that, independently of the computations, there was an implied undertaking in law, that the bill of quantities paid for by the plaintiff should be reasonably correct.

Mr. Wateley, for the defendant, contended that there was no contract between the architect and the builder; that the committee had stipulated with the plaintiff that he should pay the architect; and that the architect was not liable to the builder for any inaccuracy in the quantities.

Mr. Justice Byles, in summing up the evidence, directed the jury that the defendant had stipulated that the plaintiff should pay him for the calculation of the quantities, and having been paid for them by him was liable to compensate him if the bill were not reasonably correct.

The jury, thereupon, found for the plaintiff, it

being agreed that the amount of the damages should be ascertained by Mr. Barrett, the barrister.

FIVE THOUSAND POUNDS FOR A BRICK-MAKING MACHINE.

SIR,—Simultaneously with the appearance of your last number, occurred a general paralysis of not only the building trade, but also of many cognate branches of industry connected with it. I am told that among the dissatisfied are the brickmakers, and that they have resolved to join in the strike. My purpose in addressing you (and through your columns, all concerned in this question) is, therefore, to inquire whether there is any reason why the brickmakers leave off working, the manufacture of bricks should be stopped. I have often heard of brick-making machines, and of the excellence to which they have been brought, but a practical friend assures me that the brickmaking machine which shall supersede manual labour has yet to be invented! I have headed my letter, "Five thousand pounds for a brickmaking machine;" such a sum, if subscribed by the capitalists engaged in the trade, as a premium to any one who would invent a perfect brickmaking machine, would be sufficient inducement, in a manufacturing country like this, to insure the speedy production of the right thing; and now is, I think, the proper time to make the offer. Having started the idea in your columns, I hope that each and all "whom it may concern" will come forward and assist it like "A Brick."

SALES BY PUBLIC AUCTION.

By Messrs. Peter Broad and Pritchard.—Leasehold, two villa residences, Nos. 9 and 10, Kennet-terrace, Richmond-road, Hackney, term 92 years from Midsummer, 1853, ground-rent 12*l.* per annum—sold for 530*l.*—Leasehold residence, No. 36, Burton-crescent, St. Pancras, held for 94 years from March, 1812, ground-rent 31*l.* 10*s.* per annum, estimated annual value 70*l.*—sold for 200*l.*

By Messrs. D. Smith, Son, and Oakley.—Freehold residence (in hand), No. 21, Clarges-street, Piccadilly—sold for 560*l.*—Freehold estate, Winkfield House, near Ascot Berkshire, comprising residence, small farm-yard, with outbuildings, and 29a. 3r. 35p. of land—sold for 4,700*l.*

By Messrs. Roberts and Roby.—Plot of freehold building-ground, Princes-street, and four houses, Nos. 8 to 6, Eagle and Child-court, Lambeth, set at 33*l.* 3*s.* per annum—sold for 340*l.*—Copyhold houses, Nos. 16 and 17, Princes-street, Lambeth, let at 27*l.* 6*s.* per annum—sold for 220*l.*—Freehold house and shop, Caroline-street, near the Canal-bridge, Old Kent-road, annual value 25*l.*—sold for 145*l.*

By Messrs. Winstanley.—Copyhold premises, Vauxhall-walk, Vauxhall, comprising wheelwright's shop, dwelling-house, yard, and a plot of ground, Glasshouse-street, with stable, chaise-house, counting-house, &c. let at 72*l.* per annum—sold for 1,100*l.* Copyhold, two dwelling-houses, and smith's shop, &c. Vauxhall-walk, let at 72*l.* per annum—sold for 900*l.*—Copyhold house, No. 14, Vauxhall-terrace, let at 20*l.* per annum—sold for 300*l.*—Copyhold houses, Nos. 5 to 11, Glasshouse-street, let at 10*l.* 1*s.* per annum—sold for 470*l.*—Leasehold house, No. 1, Wilton-terrace, Park-road, Dalston, term 84 years from Midsummer, 1852, ground-rent 2*l.* 10*s.* per annum—sold for 385*l.*

By Mr. H. F. Murrell.—Freehold dwelling-house, shop, and warehouses, No. 61, London-wall, City, estimated value 200*l.* per annum—sold for 3,110*l.*—Freehold dwelling-house and shop, No. 64, Minorities, in the City of London, let on lease at 45*l.* per annum—sold for 700*l.*—Leasehold residence, No. 14, Spencer-terrace, Lower-road, Islington, let at 40*l.* per annum, held for 904 years from March, 1844, ground-rent 6*l.* 5*s.* per annum—sold for 390*l.*

By Messrs. Farebrother, Clark, and Lye.—Leasehold residence, Waverley Cottages, Tottenham, let at 25*l.* per annum—sold for 225*l.*—Copyhold family residence, near the railway station, Lower Edmonton, let at 42*l.* per annum—sold for 300*l.*—Copyhold, three cottages, Barrowfield-lane, Edmonton, let at 52*l.* 10*s.* per annum—sold for 275*l.*—Freehold, Shootloo's Farm, comprising farm-house and 70a. 2r. 29p.—sold for 1,500*l.*

By Mr. Peake.—Leasehold houses, Nos. 13 and 14, Wellington-street, Dockhead, Bermondsey, let at 36*l.* 8*s.* per annum—sold for 110*l.*—Leasehold, Nos. 25 and 26, Golding-street, let at 33*l.* 16*s.* per annum—sold for 110*l.*—Leasehold houses, Nos. 7 to 9, Hanover-street, Neckinger-road, Bermondsey, let at 35*l.* 2*s.* per annum—sold for 150*l.*—Leasehold houses, Nos. 13 to 17, Hanover-street, Bermondsey, let at 42*l.* 18*s.* per annum—sold for 350*l.*

GALASHIELS.—The committee appointed to take steps for the erection of a new Town-hall here are endeavouring to obtain a site in the High-street, of the town on which to erect the new building.

Books Received.

Fourth Report of the Science and Art Department of the Committee of Council on Education, 1859.

THE Sixth Report of the Science and Art Department of the Committee of Council on Education has been printed and presented to both Houses of Parliament by command of Her Majesty. Besides the Report itself, there are appendices comprising report on the Geological Survey and Museum, on the Museum of Irish Industry, Report of the Royal Dublin Society, and Royal Zoological Society of Ireland, of the Committee of Lectures, Dublin, on the Industrial Museum of Scotland, and Museum of Natural History at Edinburgh, returns from provincial art schools, navigation schools, Edinburgh School of Art, list of art students, and other matter. The Report itself relates to the metropolitan scientific institutions, and aid afforded to schools of art, science, and navigation, &c. the direction of a training school for art teachers at South Kensington, and the Kensington Museum and a circulating art library.

In the summary at the conclusion of the Report it is stated that—

"The results of the working of the Department of Science and Art in all its divisions for the year 1858 show great increase on the previous year in the attendance of the public on the museums, schools, and lectures. The visitors to the various museums and collections in London, Dublin, and Edinburgh, under the superintendence of the department, have been 875,896, being an increase of 192,924 on the previous year. The principle of rendering the South Kensington Museum useful as far as practicable to institutions affiliated to it in all parts of the United Kingdom has continued in action. Numerous objects sent for exhibition to Aston Hall, Birmingham, and the circulating collection of objects selected from the Art Museum has been exhibited at Aberdeen, Dublin, Limerick, Clonmel, and Waterford, and visited by 58,189 persons. The number of objects in the collection in six towns in 1857. At Dublin it was the means of stimulating the bringing together of a large number of valuable loans from private sources, and the number of 1,072,250, was increased by voluntary payments on the occasion. The returns from the science institutions and schools (including those of navigation), with the attendance on public scientific lectures, show the number of students to have been 68,212. The returns from all the art schools give a total number of 79,473 persons learning drawing, being an increase of 8.3 per cent. on those of 1857. The quality of the instruction has been as high as at present, whilst the average cost of the State assistance for each person taught drawing is being lessened year by year; for in 1858 it had decreased to 10s. 14d. each person; in 1857 it was 13s. 14d., while in 1851, before the present system of the department was adopted, it was as high as 21. 2s. 4d. each person. Great numbers continue to attend and prove the accessibility of the Central Museum at South Kensington. They also give the eagerness of the public to avail themselves of the opportunities which it affords for instruction in its several divisions. The total number who have visited the Museum in the past year has been 456,289, of whom 149,016 persons, chiefly of the operative class, have attended in the evenings, apparently enjoying that privilege very much."

We quote some remarks as to the collection of architectural casts and drawings:—

"The collections of architectural and ornamental casts and models have received several important additions. To the gallery occupied by the collection of the Architectural Museum have been added, at the expense of the department, a careful cast of Archbishop Grey's monument in York Minster; a series of details from the cathedral; and a collection of rubbings of brasses, some of which are exhibited in the gallery.

Some re-arrangements have been made with the Classical and Renaissance Casts, the property of the department, in consequence of the suggestions of Messrs. Penrose, Donaldson, and Godwin, who were requested to report on the subject. These gentlemen observe in their report:—

"Looking to the terms of their lordships' communication to us, we would refer to the fact that the Government building contains another large collection of architectural casts, mostly Mediaeval, known as the 'Architectural Museum,' which is under the management of a committee of the body of subscribers to whom it belongs. It is obvious that both collections will become more useful for public instruction if they be classified under the same system, and the specimens arranged in a like sequence, and we venture to hope that means will be adopted gradually to make the collection more perfect, and ultimately to add illustrations and characteristic examples of the use of the semicircular and pointed arch, battlements, windows, &c. and to enlarge the sphere of illustration by specimens of eastern architecture.

The country would then have at a comparatively small cost what has long been desired, a national museum of architecture and architectural decoration, which could scarcely fail to be of the greatest service in an educational point of view, whether as affecting the progress of art in its noblest works, or the improvement of taste in the application of art to the production of our manufactures."

Several interesting additions have been made to this collection. Among these may be mentioned elaborate models of St. Peter's, Rome, and St. Paul's, London, presented by Lord Ravensworth. The casts and models have been illustrated by a

large series of original drawings, engravings, and photographs, framed, and hung in the corridor.

A systematic list of the whole series of casts for the purposes of labelling, both of the Architectural Museum and of the Government, is in course of preparation."

As to the collection illustrating construction and building materials:—

The growth of this collection by donations from the public is much impeded for want of room. Capt. Powke, R.E. the director, reports:—

"Some additional space having been devoted to this branch of the Museum, the entire collection has been re-arranged, and as far as possible classified with a view to its utility for immediate reference.

Considerable additions have been made during the year of raw material, such as building stones, marbles, rough and finished specimens; illustrations of the uses of serpentine and English alabaster; numerous additional specimens of the application of ceramic ware, both to the construction and to the decoration of buildings, including some interesting Italian examples which have been procured by Mr. Cole.

The collection of models has been increased by the addition of several models of fireproof floors, of systems of ventilation, scaffolding, &c. In this branch may also be mentioned a very complete set of German models illustrative of timber framing for roofs of large span, and also models on a large scale of the roofs of the King's-cross terminus as designed and as executed, contributed by Mr. Lewis Cubitt."

The section of sanitary arrangements continues to receive many valuable additions, and some samples of new materials are added from time to time: among these may be mentioned the patent fibrous slab, now used as a substitute for wood in many situations, and the new cement known as Scott's cement, which gives a material almost equal to Portland cement at little more than half the price,—it is said.

Bradshaw's Monthly Continental Railway, Steam Transit, and general Guide for Travellers through Europe. August, 1859. A Special Edition.

THERE is certainly an immense mass of information here for three shillings and sixpence. The volume contains, besides the railway Bradshaw, &c., four guides to all parts of the Continent, including also Algeria, the overland journey to India, &c.; and it is illustrated by a general map of the Continent, and special maps of France, Switzerland, Belgium, the Rhine, &c. and plans of the principal cities.

Miscellaneous.

NEW COPPER COINAGE.—The decimal system is to remain in abeyance for the present, but a new coinage is about to be issued. The metal to be employed is a bronze, consisting of 95 parts copper, 4 parts tin, and 1 part zinc, and the weight of the new coin will scarcely exceed one-third that of the old. The alloy will be harder, more durable, more slightly, and less costly than copper. It is estimated that upon re-coining one-fourth of the copper now in circulation a profit of 94,000*l.* will be realised.

A DEODORIZING CONCRETE.—A new discovery has been made in France: it consists of a substance composed of common lime plaster and coal tar mixed in equal proportions. The mixture is then saturated with olive oil until it becomes a brownish paste, which is said to be effectual in staying the fetid emanations from all decayed animal matter, but particularly in arresting gangrene and putrifying sores, which it instantly deodorises and disposes to cicatrization. The discovery has made some sensation amongst the doctors.

LLANDAFF CATHEDRAL.—A circular, dated from the Deanery, Llandaff, 29th June, 1859, states that, since last report, the work of restoration has been steadily pursued. In the ruined portion of the nave, the arcade has been repaired, the clerestory has been reconstructed, and the outward walls of the north and south sides have been rebuilt with appropriate buttresses and windows. The western front has been restored. The timbers of the roof are already placed both on the nave and aisles, and contracts have been entered into for covering the whole structure during the present season; while the southern tower has been in part rebuilt, but must be left in an unfinished state until the receipt of additional funds. The ruin, however, is now a ruin no longer, although a considerable sum will still be needed to complete the restoration. The treasurer's account shows a receipt of 3,250*l.* 14s. 10*d.* and a disbursement of 3,045*l.* 2s. leaving a balance in hand of 205*l.* 12s. 10*d.* The liabilities of existing contracts are 1,272*l.*

A LOCK, AT LAST, THAT WILL NOT PICK!—A locksmith in Frankfort-on-the-Main has hit upon the idea of constructing a strong box without any key-hole at all, and which even the owner himself cannot open! Inside is clock-work, the hand of which the owner places at the hour and minute when he again wants to have access to the box. The clockwork begins to move as soon as the lid is shut, and opens the lock from the inside at the moment which the hand indicates. Time, dependent upon the owner, is the key to the lock—a key which can neither be stolen from him nor imitated. Very clever, and very useless.

ACCIDENT AT THE LAYING OF A FOUNDATION-STONE.—A dreadful accident occurred on the occasion of laying the foundation-stone of the new Primitive Methodist Chapel at South Shields, on Monday afternoon. According to the *Manchester Examiner*, the chapel is in course of erection near the Jarroo Docks; and it is proposed to use the ground-floor as a school. The erection is built above the second story, and the beams and planks were laid for that floor. At the time the ceremony was about to take place, about 150 persons, mostly pitmen, had got upon this floor, using it as a platform; but as Mr. Alderman Wallis was proceeding to lay the stone, the central beam of the floor where those people were standing snapped, and the whole living mass, with the material, came down with a horrible crash. Probably a dozen people in all were hurt, but at the time that the despatch was sent off, the medical men did not fear that any case would terminate fatally.

CHIEF'S ACCIDENT AT LIVERPOOL.—An alarming rumour was spread upon 'Change, that the Gorse Piazzas, at St. George's Dock, had fallen in. Upon inquiry at the spot it turned out that it was only a portion of the roof of the piazzas, near Water street, that had given way, under rather singular circumstances. It appears that between the flooring of the rooms over the piazza and the ceiling of the piazza itself there is a space, about 18 inches in depth, divided at certain lengths by hollow iron girders, resting on the outer piers, and supporting the main buildings. The roof of the piazza is formed of a lath and plaster ceiling, supported by light wooden rafters. On the floors of the offices of No. 2 Gorse, were small coal cupboards. It is supposed that the rats which infest these warehouses in numbers must have gnawed holes in the flooring of the cupboards. Some time ago, and that for a series of years, the small coal and slack had been gradually "trickling" through these holes on to the frail ceiling of the piazza. At length a portion of the ceiling, in length about 12 feet, suddenly gave way, and between five and six tons of small coal came down with it. No one was hurt.

CESSATION OF THE GAS STRIKE.—The strike among the gasmen, which threatened the metropolis with serious consequences, has terminated, so far as the Chartered Gas Light and Coke Company is concerned, in the return of the men. When the directors had recovered a little from the surprise prepared for them by the men, they tore a leaf out of the "book," to which their stokers doubtless flattered themselves they had nicely brought their masters, and prepared a counter-surprise by giving instructions to take the old hands on for the present at their own terms, so that the men thought they had gained the victory. While they were working and rejoicing in their short-lived success, however, the managers of the gas works were in active communication with the railway companies and other large establishments throughout the country, and succeeded in obtaining the promise of as many qualified men as they might require at this or any other time to meet any possible emergency that could arise. Thus armed, the workmen were called together and offered their original terms on condition that they signed an agreement or contract, pledging themselves not to leave their employment without a month's notice, under forfeiture of any pay due to them, and to observe all the rules and regulations of the company, declaring also that "they are not now, and will not, while in the service of the company, be members of, or in any way belong to, any trade union or association having for its object or endeavouring to procure or effect the increase of wages, the reduction of the hours of labour, or the restriction or limitation of work." This is very similar to the document which the building trade operatives regard as so objectionable. The men saw at once that they had been out-generalled, and, with one exception, all signed the contract at one of the stations, and at the other forty out of ninety at once signed.

DEPTFORD.—The old bridge in this town has been recently taken down, and replaced by a substantial cast-iron one; the removal of the heavy piers in the centre of the river, causing, we are told, a considerable improvement in the flow of the stream. The works have been carried out, under the direction of Messrs. Whichcord and Blandford, architects, of Maidstone, by Messrs. Sutton & Vaughan, builders, of the same town.

"STEAM SUPERSEDED."—A discovery is said to have been made in France by a young workman named Jacob, a turner in copper, the result of accident. While seeking to increase the power of his turning-lathe, a new means of power was suddenly revealed to him, whereby he has been able alone, without assistance, to construct a machine which increases two hundred fold the labour of one man, and may be increased to unlimited extent! The inventor has been sent for to Paris, and has nearly completed a machine, applicable, it is alleged, to every species of industry. One of the great industrial capitalists furnishes the money.

A PRESBYTERIAN CHURCH AT MILLWALL.—On Wednesday, the first stone was laid of a church in the Isle of Dogs. The stone bore the following inscription:—"Presbyterian Church.—Nec tamen consumebatur"—erected by subscription, under a committee, Rev. G. Duncan, Rev. W. Keedy, and A. T. Ritchie, esq. hon. sec. The first stone was laid by John Scott Russell, esq. in the presence of the Presbytery of London, 2nd August, 1859. Thomas E. Knightley, esq. architect; J. and F. J. Wood, of Mile-end, builders. The style of the erection is Lombardic, and is to be carried out, in the external portion, with coloured bricks. The window-frames will be of ornamented iron, and the circular ribs of the roof will be formed of timber laminae.

INSTITUTION OF MECHANICAL ENGINEERS.—The general meeting of the members of this institution was held on Wednesday in last week at the house of the institution, Newhall-street, Birmingham; Mr. Joseph Whitworth, vice-president, in the chair. The secretary (Mr. W. P. Marshall) read the minutes of the previous meeting, and several new members were elected. An abstract was read of a paper "On the Construction of Hot-Blast Ovens for Iron Furnaces," by Mr. Henry Marten, of Wolverhampton (the discussion of which was adjourned from the previous meeting), giving an outline of the origination and early development of the idea of hot-blast, by Mr. Neilson, of Glasgow, in 1829, and noticing the successive modifications and improvements that have been effected in hot-blast ovens. The meeting then terminated. The annual provincial meeting of the institution will be held at Leeds on the 6th, 7th, and 8th September.

POLICE AND POSTMAN'S UNIFORM.—Sir: The heavy hat, the hard stock, and the buttoned-up coat of the policeman, no doubt are uncomfortable, but it is well known that certain ruffians of the "Bill Sykes" school, unfortunately, exist in London and elsewhere, at all seasons of the year, and this is the reason why the police wear, what I may call, this armour: the throat cannot be grappled, the iron-bound hat defends the head against the bludgeon or iron poker; and the buttoned-coat presents difficulties for its wearer to be pulled down. Do not, I beg of you, interfere with their uniform. As regards those welcome and useful members of society,—the postmen,—I cannot see any objection to their wearing a linen blouse, with their number and the crown upon it, and also a lighter hat, as no one ever heard of a postman being attacked by any one;—all being so eager to receive letters.—CENTURION.

OPENING OF THE SILLOTH DOCK, CARLISLE.—This event took place on Wednesday, the 3rd inst. The dock is of ample dimensions. According to the *Carlisle Journal*, it measures 500 feet in length, and 300 feet in width, giving an area of water surface of upwards of four acres, with a width at the entrance-gate of 60 feet. The depth of water in the dock at high ordinary spring tides will be 25 feet, while the depth of water over the sill at high water on ordinary spring tides will be 22 feet 6 inches. The foundation stone was laid on the 18th August, 1857, so that the whole dock has been completed within two years. The estimate of the dock and jetty was about 100,000*l.*; but we believe the actual cost will be a little more. The dock gates, as well as the cranes and shoots, are all worked by hydraulic power, and were supplied by Sir William Armstrong. Sir William himself inspected the works on Wednesday morning, and had intended to be present at the dinner, but a telegraphic message compelled his return home during the day.

TUNNELLING THROUGH THE ALPS.—We have frequently reported progress as to the great sub-Alpine tunnel under Mont Cenis. The enormous expenditure undertaken by Piedmont for an object of European interest was in a great measure warranted by the future results in attracting the whole traffic of Germany, France, and England to Turin. It now turns out that a much shorter perforation can afford railroad passage under the Simplon; indeed, it is estimated, according to the Paris correspondence of the *Globe*, that two years' work can accomplish it.

STAINED GLASS FOR ST. BARNABAS'S, KENSINGTON.—Two stained glass windows have just been inserted in the apse of this church, which has also been decorated in accordance with the style of architecture of the church, that being very Early Decorated or Transition. The centre window contains the figures of St. Barnabas and St. Paul with groups, incident to their lives. The one group is that of "St. Barnabas laying the Produce of his Patrimony at the Feet of the Apostles," and his "Preaching at Antioch with St. Paul," the other is "St. Paul's Miraculous Conversion," with his "Shipwreck" below. Above these is the emblem of the Holy Trinity. The groups and figures are displayed on a gressail back ground, with mosaic ornaments in geometrical forms, each surrounded by a coloured bordering of the same material. The south window is treated in a similar manner, though not quite so full of colour in the mosaic. The figures in this window are St. Luke and St. John the Evangelist, with groups. In the light containing St. John are "Our Lord's Charge to St. Peter," and "St. John writing his Revelation in the Island of Patmos." In the light containing St. Luke are the "Two Disciples at Emmaus," and the "Ascension of our Saviour." In the tracery above these is the "I.H.S." These windows (which are by Thos. Baillie and Co. of Wardour-street, Soho), together with the decorations of the chancel (which are by Harland and Fisher, of Southampton-street), have been carried out under the direction of a committee of gentlemen of the congregation (by subscription), the whole in accordance with the suggestion of the Rev. G. S. Drew, the incumbent. The remaining window, on the north side of the apse, and the two single windows, which will complete the chancel, are being prepared. Messrs. Baillie, we may here add, have lately put up a large window in the parish church of Wandsworth.

THE BUILDERS' STRIKE AND THE PEERS.—In the House of Lords on the 4th, Lord Granville said I wish to make an explanation respecting an observation which I made on a former evening, relating to the unfortunate strike now pending in the building trade. I am informed, although I know not how correctly, that something which fell from me has been misapprehended by the men as conveying an idea on my part that the present strike is likely to exercise a useful influence upon the masters. I wish to explain to the House, in order to correct any misapprehension, that when I spoke upon that point it was entirely with regard to the effect of the anti-combination laws, which, in my opinion, have been most judiciously abolished. I have no hesitation in expressing my opinion that it would be wrong to attempt to prevent combination among honest workmen for the assertion of their rights; but if workmen combine together to raise wages, or to obtain facilities or advantages for themselves, it is quite clear that such a course to be justifiable must be accompanied by certain conditions. In the first place, it must be clear that their demands are just; secondly, they ought, before embarking upon so hazardous a contest, to ascertain that they have a reasonable chance of success in their undertaking; and, thirdly—a most important condition—it is absolutely necessary that they should not in the slightest degree exercise any compulsion towards others as to entering into that combination. I beg to say that in any observations which I have made upon this subject I have referred to the general principle, and they certainly did not bear upon the present strike, which, from the explanations of those who defend it, appears to me to be entirely unjustifiable.—The Earl of Ellenborough understood it to be the desire of those who struck to work nine hours instead of ten, and to receive ten hours' pay. He would not say what would be the effect, if such an example were generally followed, upon the profits of capital. At one blow one-tenth of the manufacturing power of the nation would be annihilated. It would be just as reasonable to diminish the productive power of the country by decreasing the population to the extent of 2,500,000 persons.

VICTORIA BRIDGE, MONTREAL.—It is stated on the authority of the *Canadian News*, that the Victoria-bridge is so far advanced that it may safely be counted upon as being certain to be open for traffic by the 1st of November next. Fears were at one time expressed, we observe, that the progress of the works might be impeded by the high water in the St. Lawrence, and that the opening of the bridge would be delayed till next year. The recent progress of the work, however, has been such as to banish all fears of this kind.

THE IRON TRADE.—Although the late announcement that a treaty of peace had been signed by the Empereurs of France and Austria imparted considerable animation to the iron trade, and an advance upon pig iron was at once declared, upon which some transactions took place, yet many of the manufacturers of merchant iron seemed disposed to watch the course of events on the continent before submitting to higher rates, and the result was that their purchases were only made to supply immediate wants. The recent change in the weather enabled the mill and forgers to resume their work a few days ago, and considerable activity is manifested for the present. Good Staffordshire merchant iron is in fair request, and the cessation of hostilities may probably lead to an increased demand upon the continent. The advances hitherto from the United States have been of a rather meagre character; but as the summer is fast advancing it is not improbable that the "fall trade from thence may be of a more encouraging nature."—*Wolverhampton Chronicle*.

GAS.—A deputation from Bradford, on the subject of the appointment of inspectors under the proposed Act for regulating measures used in the sale of gas, had an interview recently with Mr. Milner Gibson, at the Board of Trade. The deputation consisted of Mr. Titus Salt, M.P. and four other gentlemen, aldermen and councillors. The object was (though contrary to the provisions of the bill) not only to limit the jurisdiction of such proposed inspectors to places under the operation of Lighting Acts, but to make the taxation consequent upon their employment co-extensive therewith and available for the general disbursements (if any surplus should accrue) of town councils, &c. in whose hands their appointment is sought to be placed.—The Banbury Gas Company have declared a dividend of 7½ per cent. free of income tax, besides making an addition to their reserve fund.—The Newcastle-under-Lyne Company have declared a dividend of 7 per cent. The works of this company, says the *Staffordshire Advertiser*, are now in a good state. The mains have been carried to Maybank, to the Spittles and Newcastle Workhouses, to Silverdale, and will shortly be at Keels.—The Stoke, Fenton, and Longton Gas Company appear, from their own account, to be making vigorous attempts to strangle the new and rival company got up to meet dissatisfaction in the district. They have reduced their price, first to 3s. to which point the new company followed them up, and next to 2s. into which although of despond the new company prudently refrained from being tempted by the *ignis fatuus* of the old light. The old company have also dragged the new into the law courts, under pretence of being a nuisance. Failing these excellent measures, doubtless the next process will be suffocation by the hug-amalgamative.

TENDERS.

For the erection of three warehouses in Bermondsey, for the London Leather Warehouse Company. Messrs. Porters & Markham, architects. Quantities supplied:—

Messrs.	J. J. & F. Cole.	Warehouses.	Roadway.	Total.
man* (accepted)	6,360	311	0	6,671
Wells	6,349	328	0	6,677
Messrs. B. Colls and Co.	6,897	350	0	7,247
Holmes	7,666	307	0	7,973
Wilson	7,828	400	0	8,228

* A clause being inserted in the contract, with the sanction of the directors, as to time of completion, to meet the pending labour question.

For erecting and finishing the Caterham Water-works (founder's work and well executed), for Mr. G. Drew, Mr. S. C. Homersham, civil engineer; Mr. R. Drew, architect. Quantities supplied by Mr. J. A. Banker:—

Trollope & Sons	2,086	0	0
Jackson and Shaw	2,950	0	0
Holland & Hansen	2,888	0	0
Williamson	2,784	0	0
Ward	2,750	0	0
Downes & Co.	2,583	0	0

For a warehouse in Market-street, Bermondsey, now in progress, for Mr. George Matthews. Messrs. Porters & Markham, architects. Quantities supplied:—

Messrs. Barker	2,595
Wells (accepted)	2,500

The Builder.

Vol. XVII.—No. 863.

Disease, and the Condition of London.—Ashlin's place, Drury-lane.—Social Science.



DIPHTHERIA is continuing its ravages in England, and some isolated cases of cholera in the metropolis have been noted. Are we doing all that can be done to lessen the power of these horrible diseases? The circumstances which tend to the production of diphtheria have not yet been properly investigated, though it might be thought that its effects had been sufficiently alarming to have led to it. Thus, in the *Times* death-list of one day last week we find,—

“On the 24th July, of diphtheria, in his eleventh year, Horace Radford, elder son; and, on the 5th instant, of the same disease, aged four years, Ellen Maude, only daughter—of Robert E. Simpson, esq., St. Ann's-terrace, North Brixton.” And
“At Lewisham, of diphtheria, Catherine Annie, aged nine years, and Alfred Richard, aged six years, children of Richard Armstrong.”

Surely this is startling enough to lead to systematic inquiry. In one of these cases (we avoid saying which) we have reason to know that the condition of the house in respect of cesspools and drainage was very bad.

In the county of Kent, according to the *Lancet*, diphtheria killed nine out of thirty-three persons at Tonbridge, three at Barham, six at Deal. In Sussex, it killed five persons at Worth, eight at Wyke, four at Midhurst. In the eastern counties it hangs about Essex and Norfolk, killing nine at St. Faith's, eight at Cromer, five at Deporad (four of whom were of one family), and others at Milford and Tunstead. At Bridgnorth, in Shropshire, eight deaths occurred from diphtheria. In Staffordshire, six deaths are reported at Tunstall, four at Burslem, two at Stoke-upon-Trent, six at Brewood, and six at Bilston. In Lincoln, twenty deaths from this cause have occurred; in Sheffield, twenty-six.

We have before now urged the importance of inquiry, and given reasons for believing that the evil condition of houses, and inattention to sanitary requirements, may serve as exciting causes.

There has been a general tendency to disorders which flourish in dirt, vitiated air, and bad water, as is always the case when the thermometer rises, and increased care ought now to be taken.

The cholera is said to have come by its old route from Hamburg: one case proved fatal on board a Hamburg steamer on her passage: another was sent to the *Dradnought*, and died there, also from a Hamburg vessel on the Thames; and a third occurred likewise in a Hamburg vessel on the Thames. The *Medical Times* states that in Hamburg, from the 25th to the 31st of July, there were 424 cases, of which 322 were fatal: this is a large mortality in a city of such comparatively small population. Alarming as this intelligence is, we hope that these cases may prove to be exceptional. There is, however, reason for fear, and need of precautions. Diarrhoea has been fatal far beyond its average; and this is evidently to be traced to some peculiarity of the atmosphere. The writer we have quoted regrets that stricter quarantine regulations have not prevented the importation of these cases. Coming from such a quarter, we are led to

ask if the question of the contagiousness of cholera has been decided? Is it clear that this disease can be communicated from person to person, from ship to ship, and from house to house? This is a matter respecting which there should be no doubt. Experience seems to show that cholera depends very materially on surrounding circumstances. In the suburbs, although there was constant communication between houses, it was shown that the inhabitants of those which were drained and well supplied with water escaped, while those which were differently situated were seriously attacked. Cholera patients were admitted into the hospitals, and yet it was found that the disease did not spread; and in nine cases out of ten the removal of persons in health from cholera-stricken houses and districts was the means of preventing cholera attacks. These facts are confirmed by many reports. Although there is no occasion for fear, the cholera raging at Hamburg, the putridity of the Thames, the terrible condition of the creeks and some of the tributaries, and the state of many districts, are reasons for precaution; and those are wise who set their houses and neighbourhoods in order whether the pestilence come or not.

Some medical men are asserting, after inquiry, that the condition of the Thames is not prejudicial to the public health, and we will not question their assertion. Certain it is, however, that, travelling upon it from Chelsea, to visit the Great Eastern, off Deptford, in the middle of the day, last Monday, the smell was bad enough to produce in us a nausea which lasted several hours.

The condition of many parts of London and the suburbs remains very bad: overcrowding increases, and there is the greatest difficulty in obtaining healthful lodgings at a reasonable rate. One poor man writes to us,—“What is the cause of the exorbitant price we all of us have to pay for our homes. I, with my family, live in a room barely four yards long by three yards wide, for which we pay 3s. a week, unfurnished, and notwith-

standing much floor-scrubbing, bedstead-cleaning, and clothes-washing, we are devoured with bed vermin, through the necessity of keeping a fire close to the beds all day for cooking purposes. The dwellings of the poor are horrible dens of disease and discomfort. The cursed single-room system produces fever and consumption amongst children, and drives parents to the public-house and to sin.”

In the pleasant suburb of Brompton, with its wide roads, admirable museum, good schools, front gardens, squares, crescents, and trees, there are rows of houses just behind all the gay, airy surface, which are absolute hot-beds of disease. Each room is occupied by a family, at a high rent, and the doctor is a constant visitor.

Of another suburb, Kentish-town, we shall treat more at length in a separate article.

In the heart of London abominations maintain their places for generations, and improvements are effected with the greatest difficulty.

On a recent hot Sunday night we passed down Drury-lane. There was no air stirring; the footways were full of women and children sitting and standing about the various courts behind; there was nothing bright but the gin-shops, which were ablaze with gas, and were driving a roaring trade. The condition of the atmosphere was disagreeable everywhere; but on passing the end of a narrow turning on the west side of the way, at the north end, called Ashlin's-place, the effluvia was sickening; and, when led by the nose we passed down it, this became worse and worse. It was too dark to discover much of its condition, so we returned soon after, in the morning, when the accompanying sketch of a block of building in it was made; a building which was doubtless erected before the date of the great plague of 1665.

It is asserted with reference to that terrible pestilence that the first case occurred in Drury-lane, opposite to the coal-yard. Now this house, which is situated in Drury-lane, exactly opposite to the coal-yard, is perhaps the very house in which the plague first showed itself. Without



ASHLIN'S PLACE, DRURY LANE: A LONDON DAIRY, 1859.

care for drainage or paving, it is not to be wondered at that in the parish of St. Giles-in-the-Fields the pestilence carried off so many that it was difficult to find room for the dead in the parish grave-yard; but it is a matter of surprise that, after 200 years have passed by, during which knowledge has been constantly increasing, we should find, exactly on the spot which has such a notorious character in the past, the existence of precisely similar evils in the present.

The upper part of this structure is now ruinous, but it is not long since it was inhabited. All round it the houses are thickly populated, and many in passing will wonder at a place seemingly useless being allowed to remain. A more close inspection will, however, show that, hidden and hoarded up, there are here, in the lower apartments, in darkness visible, from thirty to forty cows, which supply a large number of families with milk. Anything worse than this arrangement cannot be imagined. Here, shut out from the actual daylight, and supplied with food which is unnatural to the animals, they are kept for long periods without proper air or exercise. It is impossible that the produce of these unfortunate brutes can be wholesome. It is, moreover, certain that the bad smells, which come from this and other places similarly situated, are injurious to the health of those dwelling near. There are two gully-holes in this court, not more than four yards apart, which are most offensive. We were, however, told that, bad as the condition of this spot now is, it is better than it was. Not long ago, as we were informed by those who live close by, at least eighty cows were kept on these premises. Some of them were stowed away in a cellar in which there was scarcely a ray of light. Such things can scarcely be credited. As it is managed in several of the metropolitan cow-sheds, the animals are tethered so closely together that they have barely room to lie down, and in this position they are allowed to remain month after month.

The pavement of this court is in a bad state; and, knowing the condition of some of the pumps near, we looked with suspicion at that which is in this court. This is, however, fortunately not for the purpose of drawing water from a surface well, but from a cistern under the ground, which is supplied by the ordinary water-service. Even this is not without objection, for this cistern is liable to all the pollution of the loaded atmosphere. It will be a great advantage when, instead of these pits of stagnated and poisoned water, we can have such neighbourhoods as this constantly supplied from the main.

There are other cow-sheds in this neighbourhood, which should not be allowed. It is cruel to the dumb beasts and injurious to the health of human beings to keep cows in such situations, and many medical officers of health regret that they have no power to prevent this sanitary evil.

Slowly, very slowly do knowledge and experience overcome prejudices and the apparent interests of individuals. It is the duty of all to help in this most desirable object—not merely their duty, but their interest. The National Association for the Promotion of Social Science, which bids fair to aid so greatly in this, will hold its meetings this year in Bradford, between the 10th and the 15th of October; and the Public Health Department Committee have suggested, as subjects particularly requiring additional proof and illustration, the connection of sanitary science with religious and moral culture, with patriotism, and with industrial economy. Seeing that whatever renders the population more healthy, by increasing their domestic comfort and bodily purity, must improve also their domestic morality and moral purity, and must also remove formidable impediments to moral and religious culture; it is important that these effects should be illustrated by examples, with which clergymen, town missionaries, medical officers, and others, who have had opportunities for observation, are familiar. They urge that it is the special interest of the politician to consider the diminution of numbers and strength and working ability of our

countrymen, upon whose industry we depend in peace, and on whose valour in war; and by whose loss or deterioration we must be impoverished, and may be endangered; also, the political danger of a large class living in a state of habitual discomfort and barbarism; prone to folly, crime, and social disorder.

Increase in the size and number of towns they say necessarily diminishes the natural facilities and inducements which the inhabitants of the country enjoy for out-door occupations and amusements, producing both increase in diseases, arising from deficiency of bodily exercise and fresh air, and excess of mental and nervous excitement; and also moral and social evils, from want of healthful, cheap, and harmless recreation. How can this effect of the growth of towns be best counteracted?

The growth of towns diminishes, to continually increasing numbers, constant and easy access to those natural objects of interest and beauty by which all would be gratified and improved; and these increasing numbers are compelled to pass most of their lives amidst dull, gloomy, and monotonous streets, to the injury of both mind and body. Attention should be directed to the need for gratifying and cultivating the sense for beauty, by artistic architecture, a point first dwelt on in our pages, and by obtaining public gardens and walks in and near towns. One great impediment to rendering towns agreeable places of residence is the prevalence of smoke, and, in many towns, of dust, which compels the inhabitants to keep their windows closed. This evil is susceptible of very great abatement, as has been proved in London, Liverpool, and elsewhere, and the best means for abating it should be discovered.

An important subject of inquiry, especially in a manufacturing district, is the direct and indirect influence of particular employments on the health of workers and their families. If health suffer, what part of that effect is due to the employment itself? what to other circumstances, such as the sanitary conditions of the homes and of the district? If the occupation be itself injurious, is it from its nature, or its duration, or from the condition of the places of work? All these are important points, on which, for the sake of society, a speedy determination should be come to.

THE STRIKE.

We have given below an account of some of the proceedings in this unfortunate matter which have taken place since our last, and must note, with great regret, that we see no prospect of an early termination of the dispute. On the contrary, ill feelings appear to have been aroused, pride is being worked on, and a settlement made more difficult.

On Tuesday last a meeting of the Executive Committee of the Central Association of Master Builders was held at the Freemasons' Tavern, Mr. George Plucknett (W. Cubitt & Co.) in the chair.

At this meeting it was unanimously resolved:—

“That, various unfounded misrepresentations in reference to the views of the association being calculated to mislead the workmen and the public, this committee desire to announce that no proposal to deviate in any degree from their original determination has ever been made by any member, or entertained by the association.

That as this association requires nothing of their workmen which ought to wound the self-respect of any honourable man, and as its sole object is to secure the freedom of labour, this committee recommend—

That the course to which the Association was pledged by resolution on the 1st inst. be strictly adhered to.

That, until Messrs. Trollope's works are resumed, no member of this Association re-open his establishment.

That, whenever Messrs. Trollope resume their works, the various members of the Association recommence engagement with their workmen on the basis of the agreement.”

The Committee then adjourned till Tuesday next.

Everything now rests on the supply of Messrs. Trollope's establishment. They have at this time between 80 and 90 men at work “upon the basis of the agreement,” mostly from the country, but these have been obtained with difficulty. A picket is stationed at the entrance to the works, and, as we are told, the men are bought off after they have entered the establishment, and sent back into the country.

It will be seen that at the meeting of delegates, reported elsewhere, it was stated that although the

men generally would resume their work without insisting on the nine hours, if the masters withdrew the declaration, the strike would remain against the Messrs. Trollope until they consented to give ten hours' pay for nine hours' work. We ask the men to use the good common sense they possess, and say if any arrangement be likely on such terms. The masters closed their shops because of the strike on the nine hours' question against Messrs. Trollope, knowing that if the men had been successful there the other masters, taken one by one, must also have yielded. Is it probable they will stultify themselves by a return to the former position?

Say that both masters and men are determined not to yield: the struggle then resolves itself into the question, who can hold out longest? who can afford to waste most money? While the real questions are, 1. Will circumstances admit of paying building workmen for nine hours' labour the wage now paid for ten? 2. Can masters efficiently, profitably, and satisfactorily carry on their business with an over-ruling, unseen power beyond?

Cannot some court of arbitration be agreed on to determine these points, and so prevent the general loss and individual privation, sorrow and ruin, which must result from a long-sustained strike?

The committee on behalf of the “United Building Trades' Conference” have published in some of the newspapers a reply to the address of the “Association of Master Builders,” which appeared in our advertising columns last week, in the course of which they say—“The employers state that the document has been withdrawn, and that they only require a verbal assent to a trade agreement. But why did they not inform the public of the nature of that agreement? Were they ashamed to tell the public that the words of that agreement are identically those of the document? That in each employer's office is to be kept a register and a stamp check-book? That each man, on applying for a job, and ‘verbally assenting to the agreement,’ will be registered and numbered? That a certificate of his having done so, with a number corresponding to the number in the register, will be given him out of the check-book, leaving its stamp counter behind? That his conduct during the time of his employment will be registered; and the reasons of his dismissal? That he will have to produce his ‘ticket’ when seeking employ at another shop; and that at the ‘Central Association's’ offices will be kept a complete register of the whole firms in union, to enable the employers to track and brand any journeyman whose manly spirit shall make him unpalatable to his taskmasters? Why did they not tell the public this, that it might have thoroughly understood how these Christian gentlemen intend to be ‘cruel only to be kind,’ by establishing a system of espionage and slavery more diabolical than any which exists in the southern states of America.”

With reference to the necessity for union on the part of the workmen, the writers continue,—“The man who employs the labour of a thousand men, and gathers the profits produced by their labour, has, through the influence of his capital, as much power concentrated in himself as is in the possession of all the men in his employ. Any individual man among them, then, has only the thousandth part of the power which is centred in the master for competition or resistance. What chance has he, then, without the moral co-operation of the remaining nine hundred and ninety-nine, of making an equal contract with his employer? What power of logic is there that can show that the employed would not be helplessly at the mercy of the selfish employer were it not for the protection afforded by union? That our societies should be governed by laws, and that their members should be requested to conform to those laws, is but natural; and we believe such is the case in all corporations, and every club among the upper classes in Pall-mall and St. James's. These laws are not framed, as the ‘Association’ asserts, for the purpose of restricting the liberties of our fellow workmen, and imposing difficulties on our employers. Their object is to provide rules for governing and distributing the funds accumulated by our thrift—to provide for accidents, sickness, old age, and death. These laws govern all the proceedings of our societies, and we invite any person of any class to come and inspect them. We have no secrets to keep.”

The writers deny what the employers have said,—“The employers state, ‘That if a foreman disobeys the rules of the union in carrying out the instructions of his employer, he is fined the next club night.’—‘That every member is bound by a

document to enforce this in every shop'—'That a restriction is made as to the number of bricks which shall be put into a hod'—'That a bricklayer is never to put down his trowel to lift anything requiring both hands, or to work by the side of his master'—'That we restrict the powers of the skilful workman, and bind him down to the level of the incompetent workman.' All this is untrue; but, that the public may have the testimony of an impartial person, we have placed our rules in the hands of Mr. Nelson, and we respectfully solicit him, as an independent party, to favour us by informing the public whether there be anything in the laws which warrants the employers in making such assertions. Their assertion concerning the 'mighty piquets,' 'the secret councils,' and their proceedings, is the foulest calumny that ever emanated from the brain of untruth. But 'out of their own mouths will we convict them.' They say that we 'annoy, threaten, intimidate, and coerce' our fellow workmen 'into becoming members of our union'; that we 'declare a war of classes, and threaten to surprise, overwhelm, and destroy all who are neutral, or stand on their independence'; and in the following sentence they say, 'It is, indeed, not conceivable that a fourth of your number could assume the regulation of our establishments and your engagements, without the secret sympathy and support or passive consent of the majority of the rest.' By what system of logic will they reconcile these two assertions?

Mr. Wales, the secretary to the Association of Builders, in answer to this reply, says, as to the first portion we have quoted, touching the 'document' and the assumed production of a man's ticket when seeking employ at another shop:—

'There is scarcely one word of truth in this. No 'document' has been withdrawn, because none was ever put forward; no certificate of registration was ever contemplated; and the copy of the 'verbal agreement' handed to workmen to inform them to what it is they have assented they may light their pipe with the moment it has been delivered to them. The production of any ticket was never even suggested, and the whole quotation is a mere tissue of Trade Union rhetoric.

The allegations contained in the Address of the Central Association are so notoriously true and even trite, that I willingly leave the great body of the workmen themselves to deal with the barefaced denial of facts which they themselves have too often verified by painful experience. But, as I perceive the signature of a 'Plasterer' to the answer of the conference, I extract the following passage from that production for the especial consideration of Mr. T. McNamara. Of the rules of trade societies it observes,—

'These laws are not framed, as the association asserts, for the purpose of restricting the liberties of our fellow-workmen, and imposing difficulties on our employers. Their object is to provide rules for governing and distributing the funds accumulated by our thrift—to provide for accidents, sickness, old age, and death. These laws govern all the proceedings of our societies, and we invite any person of any class to come and inspect them. We have no secrets to keep.'

I extract from *Objects and Laws of the General Society of Operative Plasterers* the following passages in the 'preamble':—'Fellow workmen' are 'entrusted to unite to reduce the hours of labour, and to protect ourselves from the vast influx of boys and men, who are not plasterers, who are introduced into our trade by selfish and unprincipled speculators in our labour,' and 'to bring the whole power of the body to bear in protecting every single member.' Rule I. declares its object 'To regulate the price and lessen the hours of labour.' Rule IV. requires every member to insist on 'his lodging and travelling expenses from his employer' (when on country work) 'under a penalty of 3s.' Rule IX. provides 'moneys received to be appropriated to no other purpose than the payment of legal strikes.' Rules XVI. titled 'Application before Strikes,' and XVII. 'Investigation of Strikes,' provide official machinery against 'any attempt to reduce wages, or increase the hours of labour.' Rule XVIII. 'Members on strike' who 'withdraw from employment' are to have '10s. a-week.' Rule XX. 'Others,' are to be fined 5s. or expelled. If any member has misconducted himself by performing any kind of labour on the situation of any strike, he must, 'previously to being initiated, pay 40s. Rule XXII. 'If any member employs any other than a plasterer to do a plasterer's work,—that is, if he employ a labourer to do the work of a plasterer, he shall pay 5s. or be expelled.'

Meeting of Workmen on Plumstead Common.

On Friday evening, the 12th, at seven o'clock, in accordance with placards convening a meeting on Plumstead Common for the purpose of adopting measures to support the operative builders at present 'looked out,' a very large number of the working classes assembled. The proceedings were most orderly, and called forth the commendation of the Rev. W. Acworth, vicar of Plumstead, who addressed the meeting.

The chair was occupied by Mr. Watson, a mason.

Mr. Patcher (a joiner), Mr. Gray (a mason), Mr. Dowling (a plasterer), and others spoke.

The evening hymn was sung by the assembly, and a considerable amount, it is said, was collected at the meeting.

Meeting of Delegates, Shaftesbury Hall, Aldersgate-street.

On Tuesday evening last a meeting of delegates was held as above, on the invitation of the members of the 'Building Trades' Conference.' The object of the meeting was stated in the circular to be 'to take into consideration the best means to be adopted in reference to our present position.'

Mr. Gray (mason) was called to the chair, and stated that the time which had elapsed from the issuing of the circulars had been so short that many of the London trades had no opportunity of electing delegates to represent them. He then called on those present to state which trades they represented, when there appeared the chairman and secretary of the Amalgamated Engineers' Society, the Zincworkers' Society, the Bookbinders' Society (Racquet-court), the Umbrella and Parasol Silk Weavers, Boot and Shoe makers (White Hart, Fetter-lane), Tin-plate Workers' Society, French Polishers (East-end of London), United Society of Labourers, Philanthropic Society of Block Coopers, Gilders, Boiler-makers, London Society of Compositors (from the committee), Operative Brickmakers, United Flint-glass Cutters, Horse-shoe Fund Society, &c.

The Chairman then said the Conference of the Building Trades had called them there in consequence of the position in which they were placed. For the last twenty months they had been agitating for a reduction of their labour to nine hours a day. They had tried to lay their views before the public, but with comparatively little success; and the result was that the question was really but very little understood. They had also endeavoured, but without effect, to convince their employers that the change they proposed was a reasonable one. At last they sent a memorial to a firm, that of Messrs. Trollope & Son, and the result was that one man who was engaged in presenting the memorial was immediately discharged.* The men of the society to which he belonged struck work at breakfast time, and the other trades did so at dinner time. Had this not been done there was no doubt that the other three men who were associated with him in the presentation of the memorial would have been discharged at the close of the day. The result was that a strike took place in that particular shop some days before the time suggested for the commencement of the new system. Other employers thereupon locked their workmen out, and hence the painful position which compelled the building trades to call upon the trades of London to give them their advice and support.

Mr. Potter (the Secretary of the Conference) then gave a brief résumé of the agitation for the nine-hours movement during the last year and three-quarters, each step of which, we believe, has been already described in our columns. They believed, he said, they were justified in appraising their own labour. They had done so, and their right was admitted even by the masters themselves. If they were wrong in asking for 5s. 6d. a day for nine hours' work, that must, in the end, be proved by the result of this struggle. But one point he was anxious to state, namely, that the trades he represented did not think that they alone should enjoy these reduced hours of labour. They believed, with the employers themselves, that, if they succeeded, the reduction must be general. That was his desire. The benefit of machinery ought to be universally and equitably diffused. The contest of the building trades was merely, perhaps, a vanguard reconnaissance, which must be followed up by other trades, in order to enable all to participate in the benefits

* In justice to Messrs. Trollope, we must say, that they have over and over again denied this assertion. They have stated that the memorial was handed them by a clerk, and they never inquired or knew who it was that brought it. They have also stated that the man was discharged simply for not attending to his work.

of machinery. He called on the trades of London, therefore, to aid in the movement.

The Chairman of the Amalgamated Engineers' Society asked, if the other master builders withdrew the document, whether Messrs. Trollope's men would resume their work on the same terms, without insisting upon the nine hours.

The Chairman said,—No. If all the masters withdrew the document, he did not know what might take place as to the nine-hours movement; but at Trollope's they must have it.

The Delegate from the Amalgamated Engineers said he had no objection to the nine-hours movement in itself, but he doubted the propriety of coupling a demand for nine hours' labour with one for ten hours' pay; and he believed that if the building trades had stopped at the first part of their demand they would have had public support and sympathy, while, in the long run, the result as to wages would have been what they wanted. As to the forcing of the document on the men, it was contrary to human nature to expect that such a declaration would be kept. The men of the Amalgamated Engineers, in some cases, signed the document, but they did so with the reservation with which some members of Parliament took the oaths, and so far from the society having been crushed, which was the object the employers had in view, it was now stronger than ever. When that lock-out commenced they had 9,800 members: they had now 17,000 members; and apart from the costs of management, they had, in the six and a half years which had elapsed since that strike, spent 139,000*l.* in the relief and support of members, and had a balance of many thousands in hand.

Mr. Edwards (secretary of the Tailors' Labour Agency) said whatever difference of opinion there might be as to the object of the strike, there could be no difference as to the sympathy which must be felt for those who were engaged in this painful struggle. But it was an unnatural struggle between capital and labour which could not be settled by the hard and dry facts of political economy. In all our social relations there were duties and responsibilities which could not be settled by Act of Parliament, and it was not to be assumed that either masters or men were right simply because they were masters or men. For his own part he believed that both were wrong. If the men thought that they could attain nine hours a day as the measure of their day's work, they had a right to strike for that object, but he had a horror of strikes from past experience in his own trade. And at a moment when there was a disposition to discuss social questions in a friendly spirit, he believed that it was most unfortunate that such antagonism should have been raised between capital and labour. That the trades would assist the building trades in resisting that iniquitous document to the utmost he had no doubt, but at the same time he was convinced that had the men stood on the nine-hours movement alone, they would not have had the support of the trades generally, either in London or the country. But whatever might have been the error of the men in proposing that reduction, the employers had committed a much greater in proposing a document which no honourable or intelligent workman could sign without degrading himself. He was sorry to hear the reply of the chairman to the question, as to whether, if the document were withdrawn, they would resume employment in Trollope's shop. He did not advise them to cease the nine-hours agitation, but they could, in his opinion, prosecute that movement by calm argument and persuasion, and in the end they would triumph by the pure force of public opinion. They had already felt the pulse of the public, they had learned more than they knew before, and he counselled them to withdraw from a position which, however honourable in intention, was not really calculated to achieve the object in view.

Mr. Dunning (bookbinder) concurred in the views expressed by the last speaker. The question of a reduction of the hours of labour was one that was to be gained, if gained at all, by moral suasion, and not by a strike. If Mr. Lilwall and the Early Closing movement had attempted a strike at the commencement of their movement, they never would have gained an hour. Again, he thought it was injudicious to ask for ten hours' pay for nine hours' work, on the ground that the unemployed should have a chance of getting work. All these matters were governed by the inexorable law of supply and demand, and he did not, on that account, think the movement a judicious one. At the same time, it was impossible to concur in the course taken by the employers. The document was totally indefensible, and on that they would have the sympathy of the trades. But he did not

believe they could carry their present movement, even if they had only Messrs. Trollope to contend with, and he advised them to retire from a position which he was sure they could not successfully maintain. He advised that the demand should be withdrawn, even in the case of Messrs. Trollope, always on the understanding that the document on the side of the employers should be withdrawn on their part.

The expression of these views caused some excitement in the meeting, and the speaker was asked if he represented the whole of the body he belonged to, to which he replied that he represented the committee, as there had not been time to call a general meeting; but in stating his own views, he would add that he knew they were participated in by many members of his society and of the committee, and it was far better that they should hear these plain truths among themselves without any excitement, and without any intentional offence, than have to face unhappy ulterior consequences.

Several other delegates having expressed their views in favour of the movement, the meeting was adjourned until Tuesday evening next, a resolution approving of the course taken by the building trades being first carried unanimously.

NINE-HOURS MOVEMENT LOCK-OUT.

SIR,—Will you kindly insert the enclosed in your next issue.—Yours respectfully, on behalf of the United Trades, G. POTTER, Secretary. Paviers' Arms, August 17, 1859.

To the Building Trades of the United Kingdom.

FELLOW WORKMEN, The public press and our communications with your different societies have made you acquainted with the nature of our demand for a reduction of the working day to Nine Hours, agitated by us in a calm, peaceful, and legal manner during twenty months. By the same means you have also been informed that, having failed to induce our employers to grant us an interview, or give the slightest consideration to our appeal, and having exhausted every moral probability of gaining our desires, we had no other alternative left than the workman's last resource. Accordingly the men in the Messrs. Trollope's employ determined to cease working until the nine hours should be conceded them as a day's work. You are aware that the employers of London immediately determined on closing the whole of their establishments, and casting their men in idleness on the streets, with a determination of keeping them there in idleness and misery, unless they consent to give up the benefits of their *bonnet* 8 shillings, and declare themselves slaves, by agreeing to the following declaration.

"No.

G. TROLLOPE & SONS.

I declare that I am not now, nor will I, during the continuance of my engagement with you, become a member of, or support any society which directly or indirectly interferes with the arrangements of this or any other establishment, or the hours or terms of labour, and that I recognize the right of employers and employed individuals to make any trade engagements on which they may choose to agree.

Dated of 18 ..

The stamp counter of this is left in the book, with the name of the applicant attached. To make such an agreement would be to give up our freedom, and to rob us of those benefits which our thrift has provided for sickness and old age. This we are determined not to do, and we call upon you to assist us in opposing the intention of these employers, who have endeavoured by robbing us of the means of living, to rob us through our necessities of our liberty as men. Will you play the parts of Calves and Esau? Can you not see that if you enable them, by the assistance of your labour, to crush us, you will be riveting their fetters more closely on yourselves?

Our cause is your cause: our cause is the cause of truth: our request is founded on justice. Rally round us then; and, by resisting the temptations of evil employers' agents, enable us to gain this boon both for ourselves and you.

Signed, on behalf of the United Building Trades,
R. W. GRAY (Mason),
H. JONES (Bricklayer),
W. McNAMARA (Plasterer),
THOS. G. TAYLOR (Printer),
PETER CURRIE (Labourer),
Geo. POTTER, Secretary.

London, August 17, 1859.

A FEW WORDS ON THE STRIKE BY A LOOKER-ON.

THE pecuniary loss to the country which will result from a continuance of the present dispute between masters and men, great as that will be, is less to be considered than the individual misery it will cause, the evil feelings it will engender, and the permanent damage it will probably do to an immense body of men. The writer of this has not any personal interest on either side or the other, but has observed the position of affairs with that care which should be bestowed on the subject by all who are anxious for the welfare of the industrious classes. Hostile feeling has risen on both sides. The men talk about defending their rights, and that they will not submit to be the slaves or

* Is this the case?—we do not read it so.

serfs of the masters. They say that the agreement which has been proposed by the employers will destroy all freedom. It should, however, be remembered that the men were the first to organize a society which not only endeavoured to regulate hours, but also to prevent any workman, however much he might feel disposed to do so, from exceeding the stipulated time. If a man have seven or eight children, and wish to provide them with a little food extra, or better education, or clothing, by extra labour each day,—if a young man desire to obtain a home for one dear to him, he is not allowed by working overtime to increase his income.

If, like many who have risen, a tradesman in the early days of life have an ambition to rise above his present condition, he is not allowed to labour late or early to provide books or such sort of education in mechanics, art, or science as would enable him to acquire the skill which ensures success; or, if anxious to become a master, he is to be prevented from making extraordinary exertions to increase and accumulate capital. In this way there is a degree of tyranny and hardship caused by the combination and rules of the workmen.

In glancing at the history of the past, there are but few instances in which combinations of either masters or men have been attended with good to either body; and it is shown that the long continuance of such matters is as great a difficulty with employers as it is with those employed. Circumstances occur which are, however, founded on sure principles, to cause competition amongst masters; and the price of labour, in spite of the formation of trade societies, will always find its level.

The ancient guilds of England were formed for the protection of different crafts: they had laws which jealously regulated not only the method of production, but also the number of persons to be admitted. In some companies each "freeman" could take no more than one apprentice, who had to serve for seven years before he could be allowed to work at his trade. Many look back with regret to those days when the principles on which the guilds were established brought masters, men, and apprentices more closely together than now. We had not then those monstrous establishments which separate to such an extent those who labour and those who direct it and sometimes accumulate vast fortunes. It is, however, true, that in England we had, with the present immense increase of population, in the changes caused by the introduction of steam machinery, continued the practices of the ancient guilds, the French, the Germans, the Belgians, the Americans, and others, suiting the intelligence of the age, would long before this have supplanted us in all the markets, and the skilled industry of Great Britain would by this time have been a matter of the past.

In considering this question, it is worth while to take notice that a large proportion of those who have raised themselves by ability, integrity, and industry to a high position, have once been struggling artisans or labourers. This shows that if the masters have increased in wealth, even now great prizes are to be obtained by those who will bravely struggle for them.

Men toiling for their daily bread are liable to look with something of envy to those who work by management and do not seem to labour with the hand; but, as Shakespeare says,—

"Uncasy lies the head that wears a crown;"

so it is often that those who are seemingly in enviable positions have cares and anxieties which keep the mind working through the day and perhaps through portions of the night; and it must be admitted that mental labour is as trying to the human frame as the labour of the hands.

Although great fortunes have been made by manufacturers and those employed in building and other trades, the numerous failures of some of those establishments, where thousands of workmen were engaged, where works of really national importance have been completed, show much uncertainty. Without entering into particulars, many will remember three great firms which have been obliged to succumb to circumstances, and more cases will come to recollection which will prove that in dealing with labour, if large fortunes are gained by employers, others are lost: large or small establishments can only exist by adhering to the principles which regulate all business.

It is unfortunately the case that the peculiar working of capital and labour is not clearly understood by a considerable number of those who are engaged in the dispute. It should, however, be carefully explained by those of intelligence to others, and the masters should not, having generally had far better opportunities than the chief

body of the workmen, let such feelings be exhibited as would make it appear that the interests of the masters and men are antagonistic to each other. The interests of both should be the same; and no doubt, with kindly and conciliatory feelings on each side, all differences might be settled, by the appointment of a congress of masters and men, together with a proportionate number of persons of ability, who would undertake the trouble, such as Lord Brougham, Mr. C. Knight, and others, who are known to mean well to all, and have in times of difference made friendly contending parties.

The principal matters for consideration appear to be these:—It is stated that at present a large number of workmen connected with the building trade are unemployed. Will the lessening of the hours of labour bring those permanently into work?

Would the enforced reduction of the hours of labour, and the fixing of wages at one standard, be fair to those workmen who are highly skilled, and desire to increase their income by extra employment?

At the present time it is said that, owing to the want of employment at particular seasons of the year, the wages of stonemasons, bricklayers, &c. do not average 1*l.* a week. This sum is quite insufficient for the proper support of a family in London. The workman has his employment often at a distance from home: his dinner and other provisions have to be got ready: 4*s.* or 5*s.* paid for rent, and 5*s.* or 6*s.* for bread each week. Would the shortening of the hours of labour increase the average earnings of the men?

Have the workmen a right, by association, to protect that labour, which is to them not only their capital, but a matter of life and death?

If it can be clearly shown that the shortening of the hours of labour would certainly increase and steady the amount of wages,—if it would improve an income which, if the statements be correct, is an income which, it then becomes a duty of the masters to fairly and carefully consider what concession could be made consistently with their obtaining a fair and right profit.

It is plain that the shortening of the hours of labour, in the same way as an increase of wages, would increase the price of dwellings and all other buildings. Sir M. Peto has estimated this at 300,000*l.* a year (we suppose that this refers to the metropolis alone).

What effect would this have in stopping the progress of building, and to what an extent would it raise the prices of the houses of the labouring and industrious classes? How much would it affect the attempts which are being made to improve houses for the use of this part of the community?

It would require no great amount of research to get these particulars; and if it could be shown that by the exchange proposed a great benefit would be conferred upon the workman, without diminished profits to the master, or serious loss to the public, what should prevent arrangements being made?

These are the points which should be fairly argued. Whatever may be the general opinion at present, the voice of both the press and the country will be given on the side which acts with the most fairness and the most wisdom.

A LOOKER-ON.

NANTWICH, CHESHIRE; AND SHREWSBURY.

A RECENT visit to Nantwich, enables us to give some account of works there, lately completed, or now in progress. There is much that is interesting in the town to architects, and we were desirous to learn any particulars as to the sanitary state of the place. It had suffered severely from the cholera in 1849, since which date works of sewerage and water-supply had been carried into effect under the Public Health Act.

The half-timbered houses remaining about the town, are numerous, and most of them are highly picturesque. They appear to be preserved with care. As throughout the northern or midland counties, such houses are painted or coloured black and white, so that they have been vulgarly called "black and white houses." They usually date from the latter end of the sixteenth to late in the seventeenth century. Elizabeth ascended the throne in 1558, and James I. in 1603. There is one house in the market-place at Nantwich which bears the following inscription:—

GOD GRANT OVR RYAL QVENE
IN ENGLAND LONGE TO REIGN
FOR SHE HATH PUT HER HELE TO US
AID TO BUILD THIS TOWN AGEN.

On another part of the front, are the words,—
THOMAS CLEESE MADE THIS WORKE.

And on the opposite side, are the words,—

THE YEAR OF OUR LORD GOD 1584.

This date would be one year later than that in which, quoting from Lysons' "Magna Britannia," there—

"'Chauced,' as it is expressed in the parish register, 'a most terrible and vehement fyre, beginninge at the water-lode, about six of the clock at nighte in a kitchen by brewing. The wynde beinge verye boisterous, encreased the said fyre, which verie vehementlie burned and consumed in the space of fifteen houres six hundred bayes of buyldinges, and could not be stayed neither by labour nor police,' &c.

The damage was computed at 30,000*l*. In 1585 (there is some discrepancy in the dates) a commission was appointed by Queen Elizabeth, "to make a general collection throughout all her realme of Englande, for the re-cliffingeye agayne off this town of Nantwich." One of the commissioners, Mr. John Maisteron, who died in 1586, was buried in the chancel of Nantwich Church, and honoured with an epitaph attributing to him almost entirely the success of the collection, and rebuilding. But for him, the epitaph says:—

"The timber had els growing in woods, which nowesweet dwellings are,
Sce had the seats and plots of ground remain'd to this day bare."

The queen gave 2,000*l*. and timber from Delamere forest.

On a house near the church is this inscription, which, like the other appears to have been re-stored:—

"Richard DalefreeMason
was the Master Carpenter
in makinge this buyldinge
Anno Domini 1611. ion yeardeley."

The architecture corresponds with these dates, and is rude in execution. At Shrewsbury, where the half-timbered houses, some of which have been illustrated in these pages, are much more numerous, as well as generally more elaborate, similar character prevails: though many houses have Gothic mouldings and quatrefoils, along with the slender shafts, or mimic buttresses, found ordinarily in woodwork of the "Perpendicular" period. One house, situated across the Welsh Bridge, and now the String of Horses Inn, may be instanced. The upper story, overhanging, is formed of studding of massive timbers, with the spaces about the same in width as the breadth of the studs. At each intersection of the space by the transom, there is a quatrefoil on the transom; and similar quatrefoils are carved at the feet of some of the studs—not regularly, as in the other case. The ground-story is of brick-nogging, the timbers being much farther apart. In the houses of later date in the same town, besides the ordinary projection of story beyond story, parts of the stories above the ground-story frequently are made to break forward, the projections being terminated by gables. Sometimes the projections are semi-octagonal on plan. In both cases the windows, of slight height, generally comprise the full extent of the front and returns of the projections; and the spaces below the windows are occupied by mimic balusters—the interspaces being filled in with plaster.

The most interesting architectural object in the town of Nantwich, however, is the church, a work chiefly of the fourteenth century, with details of great beauty, though many of them in a sad state of decay. Complete illustrations of the building will be found in the work of Messrs. Bowman & Crowther. Restorations of the main parts have been completed recently under Mr. Scott's advice and direction; and others are in progress. These last, which comprise the chancel, are being executed at the expense of Lord Crewe.

As the church appeared up to within the last few years, both the transepts and chancel were blocked out of view by galleries and staircases, which it seems could not be made available for the parishioners. After the removal of these galleries, and those in the aisles of the nave, sittings were gained to the number of 350. The works in the nave were completed at the end of January, 1857; and those in the transepts, at Whitsonide, 1858. Within the last few weeks, an organ has been placed in the north transept, at a cost of 350*l*. A screen was in progress at the time of our visit, from a design by Mr. Bower, architect, of Nantwich, formerly a pupil of Mr. Scott. The window of the south transept had been filled with stained glass, by Wallis. The cost, 500*l*, was defrayed by Mr. G. F. Wilbraham, of Delamere House.

The plan of the church, cruciform as will have been understood, comprises nave and aisles, 70 feet by 57 feet, of four bays; a chancel, 52 feet by 24 feet 6 inches, of three bays; transepts, re-

spectively about 37 feet 6 inches, and 39 feet 9 inches by 27 feet 6 inches; and the area, covered by the central tower, of about 84 feet square. The whole internal length, west to east, is about 156 feet; and that of the transepts is about 111 feet. Each transept originally was about 24 feet in length: the north transept was lengthened by the addition of a chapel; and the south transept, at a later date, also was lengthened to its present dimensions. The nave at first had a high-pitched roof, and no clerestory windows; the roofs of the aisles being of moderate slope; the transepts had high roofs, whilst the chancel had a low roof and a gable of open work, rising two or three feet behind a pierced parapet, which was continued horizontally from the same feature at the sides. The chancel, internally as externally, is of very rich design, with pinnacles to the buttresses in two ranges, side windows with flowing tracery and crocketed ogee-labels, stone vaulting, and canopied stalls, the last now much injured, and painted black and white. There is a low screen of stone between the chancel and nave, and an excellent stone pulpit combined with the screen. The stalls do not return across the screen as usual, but are continued at an angle of 45 degrees, merely against the clustered pier each side. There are good sedilia, and there were canopied niches, one on each side of the east window. At the north is a sacristy, and there are remains of a crypt below it. The east window, of seven lights, is of "Perpendicular" character in the general forms; but the whole design comprises what may be called a repetition of small windows of flowing tracery. Externally it is crowned with a crocketed canopy intersecting the pierced parapet, over which it is continued in open work. Many of the windows of the church, which are of more marked "Perpendicular" character, are very fine; and judging from old views, the removal of the tracery of the west window, one of nine lights, for the sake of substituting the present tracery of fourteenth century character, was a step concerning which there would be difference of opinion. The gable, also, with which the high-pitched roof added to the north transept is terminated, has a very blank appearance, through the omission of a rose-light or other feature of the kind such as appeared in views of the design first published. The central tower is a very effective composition, octagonal, with slender pinnacles, with a stair turret on one side. There are some remains of a church of the thirteenth century in the western doorway; but generally the building is of the subsequent period, the eastern portions, however, being latest in date. Mr. Scott says:—"The buttresses in particular are of the most graceful and, in some instances, of unique design, and it would be difficult to find any parish church displaying altogether a more perfect and interesting development of the style of the fourteenth century." The high-pitched roofs of the nave and transepts were removed, probably in the sixteenth century. A clerestory and a flat roof were added, and low roofs were placed on the transepts. Mr. Scott's desire to reproduce the old form of the nave was conceded to that of the parishioners, and a clerestory is retained. The space under the tower, which was originally grained in stone, is now grained in woodwork. The original pulpit is not now used, and, we believe, could not in its position be advantageously used.

It is probable that galleries and other excrescences, which were introduced in old churches at a late date, however much to be regretted esthetically, were the result of considerations of fitness, not satisfied in the plan of the mediæval church. Such considerations are those which, as moderns, and even as artists, we have to keep in view in our architecture; and, however tastelessly the mutilations and obstructions by the Puritans and Reformed Church may have been perpetrated or made, or however rightly, remedy should be now effected; the fact that alteration was necessary ought to suggest inquiry whether modern church architecture may not have been going in the wrong direction by its strict reproduction of old designs, and both as regards the uses of a church and true architectural art. This feeling, however, by no means interferes with our commendation of the work which has been done under Mr. Scott's care, and of that which the same architect has now in hand. Let us add that the work in the nave was completed at a cost of 3,450*l*. That in the transept, for which the contract was 1,839*l*, has amounted to about 2,000*l*. Every sitting is free. Mr. Stringer, of Sandbach, is the builder now at work at the chancel under Mr. Scott's supervision.

The only new building which we noticed in

Nantwich was the Townhall and Corn Exchange, built last year, at a cost of about 2,000*l*, inclusive of land, from designs by Mr. Cranston, of Birmingham. It is in the Gothic style, built of red brick and stone, with dark-coloured bricks used to the weatherings of buttresses; and in herring-bone work, to the tympana of window-arches. The building occupies an irregular piece of ground on the bank of the Weaver river. It has a square tower, an enriched doorway, and an oriel window, at the principal end and front; and there is great display of ironwork—as in vanes to the tower; and of window-tracery—the latter, however, of somewhat ungraceful appearance. In the principal flank, next the river, there is a loggia in the lower story, in front of the side windows of the Corn Exchange. The arches spring from buttress to buttress. In the top story there are gables over the alternate windows, the latter being pointed arched, and traciered. The eaves are carried on iron brackets; and the waterpipes descend to a gutter, also on brackets, below the upper range of windows. The upper floor of the building comprises a lecture-hall, which will seat 700 to 800 persons. It has an open-timbered roof, carried partly on iron columns, and without cross-tie. This roof appears very slight. The columns are painted blue and red—a manner of decoration which is too much in the ascendant.

The sewerage of the town is in a more satisfactory state than that of many places in the north which we have lately visited. Only one main sewer flows into the Weaver within the town: the general sewerage has been conveyed by an intercepting sewer to a point at some distance on the stream; and there is no large town within moderate distance. We maintain, however, that these intercepting systems are not the solution of the sewerage question. The water-supply, from a mere, has been of late inadequate. The pipes first laid down, were of earthenware, and failed; but whether from defects in themselves, or from manner in which they were laid, we are not aware. Iron pipes have been substituted; and people of the town naturally are sore on the subject of the expense.

Having mentioned Shrewsbury, we may note as in progress in one of the churches of that interesting old town, namely, in St. Mary's, certain works of restoration. They are in the hands of Mr. Pountney Smith, and include a lofty east window of eight lights, with flowing tracery, in which the old stained glass is being inserted. The western gallery in this church was removed not long since; and the lower arch was opened and the organ removed to the east, a good oak screen being substituted in the arch. There can be no question about the improvement in the effect of the church. The parishioners, however, we have been told, disapprove of the change altogether. Their objections, when looked into, appear to be connected with some diminution of effect which there is in the music. Possibly this defect may be remedied, and they may be induced to admire what is so manifest an advantage other ways; but a hint may be taken from the case by those who are church architects. We had put down other notes of matters in Shrewsbury; but the antiquities of the place, the Castle and walls, the Grammar School, and Town-hall, and others, have been spoken of in earlier volumes, and we met with little that was new architecturally. The Raven Hotel, Gothic, of coloured brick and stained wood-work, is an exception, but not an important one. The Lion Hotel, it may serve some of our readers to note, would not be recommended by us as a resting-place. Restoration of the Abbey Church has been talked of; but the work would be one of great cost and difficulty, and could not but destroy the chief interest which the remnant of the old building at present possesses. We mentioned the museum at Shrewsbury in our notice of the excavations at Wroxeter. Besides the antiquarian remains it contains a choice collection of fossils, which have just been arranged very carefully, by Mr. Baily, some time on the staff of the geological survey in Ireland.

THE GREAT SHIP.

For all practical purposes, the "Great Eastern" steam-ship, now lying off Deptford, is completed ready for sea, and in the course of a fortnight or three weeks will brave the terrors of the deep, and set at rest some questions at present unresolved. All who have not seen this extraordinary piece of construction should visit it forthwith. A pile of statistics conveys no clear idea of it: it is of no use saying that its length "over all" wants but 5 feet of 700 feet; that the height from the bottom of the ship to top of upper deck is 58

feet; that the paddle-wheels are 56 feet in diameter; or that there are 7,000 tons of iron in the hull. Even a sight of the vessel from a river steam-boat fails to make evident its vastness: you must ascend to the deck, and, standing on one of the paddle-boxes, survey on either hand its enormous extent, the fleet of boats hanging on each side, its six masts and five funnels,—and so appreciate properly the extent of the wonderful undertaking. Mr. Scott Russell has just now brought to a close.

The three centre square-rigged masts are of iron. Each is made of hollow wrought-iron, in 8-feet lengths, strengthened inside by diaphragms of the same material. Between the joints, as they were bolted together, was placed a pad of vulcanized indiarubber, which gives a spring and buoyancy to the whole spar. It strikes us, nevertheless, that wood is the right material for masts. The breaking strain of the six shrouds to each of these masts is over 300 tons, which gives ample security for the masts being properly supported, as the weight of each is only twenty-two tons. On deck are four small steam winches or engines, each of which works a pair of cranes on both sides of the vessel. It is expected that with these four double cranes alone 5,000 tons of coal can be hoisted into the vessel in twenty-four hours. The paddle engines are by Mr. J. Scott Russell; the screw engines by Boulton and Watt. The paddle engines consist of four oscillating cylinders, of 74 inches diameter and 14 feet stroke. Each pair of cylinders, with its crank, condenser, and air-pump, forms in itself a complete and separate engine, capable of easy disconnection from the other three, so that the whole is a combination of four engines. A friction-clutch connecting the two cranks is the means by which the engines are connected or disconnected.

The boilers are immensely strong, and have been tested to double the pressure they are required to bear. Their weight, including donkey engine, pumps, funnels, &c., is 210 tons, and they are capable of containing 156 tons of water. Each set has about 8,000 square feet of tube surface, exclusive of flue or furnace, and about 400 square feet of fire-brick surface. Each is equal to supply freely, with moderate firing, steam for an indicated horse-power of 1,500 when working with 15 lb., but with full firing can supply an indicated horse-power of 2,500.

The screw engines have four cylinders of 84 inches diameter and 4 feet stroke. The cylinders are capable of being worked together or separately. The screw engine boilers are in three distinct sets. Their weight is 362 tons, and their capacity for water 270 tons. The probable consumption of coal when both engines are at full work will average 250 tons per day. The screw-engines are called of 1,500 horse power, and the others of 1,000 horse power, but conjointly they can work up to 10,000 horse power. Either can act independently in the event of accident. In the construction of his engines, Mr. Russell had to resist numerous propositions for the introduction of improvements and inventions, as well as his own desires in that direction, but he determined there should be no experiments, considering justly that the vessel was itself experiment enough, in the way of size. The engines are therefore but enormously magnified versions of those made by him previously, and wonderful pieces of work they are. The constructor was rewarded for his self-denial in seeing his engines work without a hitch on the first admission of steam.

The chief saloons—all save one—all have been fitted to a certain extent in a temporary manner. The fittings are handsome and substantial, but the decoration of the iron walls and girders has been reserved until after her first trip, and now they are only painted of a plain white. The absence of elaborate decoration in them, however, is amply compensated in the chief saloon, which has been finished to show the style in which the whole will be decorated when the Great Eastern begins running to the East. This was executed by Mr. Craze, and is very elegant and effective. The kitchens, pantries, and sculleries are all on an extensive scale. The ice-house holds upwards of 100 tons of ice. The berths are, for the most part, roomy and luxurious; there are family rooms, very cleverly arranged, so that a party may be altogether, and comfortably "at home" during the voyage.

The tonnage of the ship being 25,000, and the horse-power 2,500, or one to ten, it is urged that a saving is thus effected by size, inasmuch as in ordinary vessels the power is ordinarily as one to four or one to five of tonnage. The estimated speed of the Great Eastern is fifteen knots, and it is supposed that she will make the voyage to

Australia, for example, in thirty-three days, or about half the time at present required! If this prove correct, it is quite certain we shall have more big ships. The original shareholders have lost nearly all they embarked in her, say nineteen twentieths, but it may be hoped that the new company, who have obtained the ship, on which, if we remember rightly, about 640,000*l.* had been expended, and have made her fit for sea, for 330,000*l.* will get a good return for their money. All concerned, will have entitled themselves to the gratitude of their countrymen for having commenced the solution of a question of vital importance to Great Britain, the queen of the seas.

It needed large hands and a large head to meddle with such a construction as the Great Eastern steam ship.

DECORATION OF THE ROYAL EXCHANGE.

MR. SANG is proceeding rapidly with the decorations of the ambulatory of the Royal Exchange. They are executed in true fresco, only so much plaster being laid on at a time as can be painted during the day, and, it may be expected, will withstand the destroying influences of the neighbourhood longer than the first paintings, which were wholly superficial. The line of which the plaster used is made has been slaked about twelve months.

The panels into which the walls are divided have Raffaellian borders, nicely painted, and, with the ceilings, display the City arms, the arms of the Mercers' Company, and the initials of Sir Thomas Gresham, many times repeated. The mouldings of the ceiling are picked out in various colours, and the whole will form a bright and agreeable piece of decoration.

We must, nevertheless, express our regret that the committee did not go a little further. Had more time been given for the preparation of the design, and a little greater expenditure permitted, Mr. Sang would doubtless have produced what might have been regarded as an art-work. We never go far enough.

FOOD AND ITS CONSTITUENTS.*

Now it is known that the chemical composition of food has a close connection with its action on the human system, the necessity for a knowledge of its composition is evident; and no better opportunity for a general and popular appreciation of the respective qualities and purposes of various articles of food, their relative merits, and the requisite and proper quantities called for by the daily waste of the system under varying circumstances, could well be afforded than the valuable and curious collection in the new museum at Brompton. This collection was originated as part of a plan for an Economic Museum, illustrative of every-day life for the working classes, by Mr. Twining; and, as time runs on, the collection is becoming more and more interesting and important by occasional additions, such as that of the Chinese articles of food and drink sent home by Sir John Bowring, from Mr. Cane, the British consul at Shanghai.

In the food collection two great objects have been kept in view,—firstly, to represent the chemical compositions of the various substances used as food; and secondly, to illustrate the natural sources from which the various kinds of food have been obtained. Where the processes of the preparation of food admit of illustration, these are also exhibited,—such, for example, as the various sorts of bread produced in different countries, from the black bread of Russia to the white bread produced in our own and other countries; and various preserves, confectionery, cakes, &c.; from "home made" to those of Chinese and other foreign manufacture.

It is a singular fact, that all food is found to be composed of the very same materials or elements as the human body. There is even a remarkable identity in the elements of the most apparently different articles of food in themselves, and there may be said to be only two grand divisions of all food, according as it is flesh-producing or only fuel-providing, but many even of these two divisions to a certain extent comprise both in one.

Flesh-producing food, like every organ in the human body, contains three out of the five known gaseous elements of nature,—namely, oxygen, hydrogen, and nitrogen,—together with one only of the many solid elements of chemistry, namely,

carbon, which may be said to be the only solid basis of all organisms, vegetable as well as animal (bones excepted, the basis of which is calcium or lime). Without these four elements of flesh-producing food,—oxygen, hydrogen, nitrogen, and carbon,—no ingredients of food can be of use in building up the wasted parts of the body. The nutritive or flesh-forming ingredients, or proximate elements, of food are called fibrin, albumen, and casein: they contain the four elements just named, in exactly the same proportions, and are found both in vegetable and in animal food. Fibrin may be got either by stirring fresh-drawn blood, or from the juice of a cauliflower; albumen or white of eggs from eggs, from cabbage-juice, or from flour. Casein or cheese exists more abundantly in peas and beans than it does in milk itself. Fibrin, albumen, and casein, whether they are got from vegetable or animal bodies, have the same composition as dried flesh and blood. The growth and support of an animal is now easily explained: when a flesh-eater, like the tiger, lives on the flesh of another animal, it eats, in a chemical point of view, the substance of its own body, and requires only to give it a new place and form. When a child receives its mother's milk, it does the same thing, eating in fact its own mother, the little cannibal, and giving her flesh a new place and form on its own body. The nutrition of vegetable feeders is precisely the same: they find in vegetable fibrin, albumen, and casein the substance of their flesh and blood actually formed, and have only to give it a place and position within their bodies. Vegetables are the true makers of flesh: animals only arrange the flesh which they find ready formed in vegetables. The nutritive value of food depends upon its richness in flesh-forming matter. An adult man, in vigour, wastes five ounces of dry flesh daily, and requires the same amount of flesh-formers in his food.

The flesh-formers of the vegetable world are most abundant in those plants which yield the substantive food of man. These plants belong chiefly to the group of cereal grasses, such as wheat, oats, barley, rice, Indian corn, &c.; and leguminous plants, such as peas, beans, and lentils, or pulse. Wheat is the most important of these yielders, although the pea and bean tribe are so highly nutritious that they, in fact, require, or at least ought, to be mixed with other food, to prevent them from being too heavy or indigestible.

In considering the elements of the body in flesh-forming or in merely fuel-yielding food, it must be noted that oxygen and hydrogen go to make up the composition of water, and that water constitutes three-fourths of the weight of the whole of the human body.

Flesh-formers are indispensable to the very existence of the body, which is now believed to waste so fast that every forty days we may be said to possess a new body. This is certainly fast living, compared with the slow ideas of the last generation of chemical physiologists, who estimated the time for such waste and renewal at seven years; but such is the modern idea, as we have stated, and perhaps the truth lies somewhere in the rather wide interval between forty days and seven years. But although flesh-forming food is thus indispensable, fuel-yielding food is no less indispensable, as the natural heat of the system is kept up by the latter, and not by the former.

Fuel-yielding or heat-giving food must consist essentially of three of the four elements of flesh-yielding food, namely, carbon, hydrogen, and oxygen, the nitrogen not being essential to it as a heat-giver, though often still contained, to some extent, in heat-giving food: and, indeed, neither is the oxygen of use as a heat-giver in the composition of the food, although it is essential as the evolver of heat when it combines, from the breathed air, with the elaborated heat-giving food of the blood, in the lungs, or burns that food as fuel, in so combining with its hydrogen and carbon or its hydrocarbonaceous forms, thus converting these into carbonic acid gas and watery vapour, which are sent up the windpipe, by the expiratory act of breathing, and so expelled, like so much smoke from a furnace, through a locomotive funnel, or a chimney.

The proximate elements or ingredients of heat-giving food are mainly starch, gum, sugar, and fat, each of these containing more or less of the three elements of heat-giving food. Thus fat, sugar, gum, and starch, are of little or no use in building up the structure of the body, or in repairing its waste. The natural heat of the body is 98 deg. Fahrenheit: this must be kept up by the heat-giving food,—easy work for such food in tropical climes, or in summer, but somewhat hard

* A Guide to the Food Collection in the South Kensington Museum. By Edwin Lankester, M.D. F.R.S. Superintendent of the Animal Product and Food Collection. 1859.

labour in the arctic regions, and in winter of the temperate climates. Tropical foods accordingly contain about 20 to 30 parts in the 100 of charcoal; Arctic blubber and fats from 80 to 90. The intense cold of the arctic regions compels the inhabitants to devour large quantities of food fuel to keep up the heat of the body to 98 deg. Arctic travellers state that 20 lbs. of blubber is not an uncommon meal for one person; and a mother fondles her children by stuffing them with blubber till they can eat no more, and then rolling them about like so many blubber-casks, manipulating their stomachs till the cargo is properly stowed away, when she stuffs in more blubber, till every crevice be well filled up. Physiologists have doubted whether disgusting processes such as these are really either gluttonous or supererogatory in the Arctic regions.

Amongst heat-giving foods are potatoes, carrots, and other vegetables, rice, sugar, and the fat of animal foods, the butter of milk, the oils of vegetables, &c.

For the few notes here written down we are mainly indebted to the Sixpenny Guide to the Kensington Museum Food Collection, by Dr. Lankester, in which will be found a store of important and interesting information illustrative of the excellent collection under his charge; and we shall draw upon the store in question once more for the purpose of presenting a very instructive and useful economical list of

EQUIVALENTS OF FOOD CONTAINING THE SAME SUPPLY OF FLESH-FORMERS

An adult labouring man must have five ounces of flesh-formers supplied daily, in food, to restore the waste of five ounces of the organic parts of his body. It becomes important to know what quantities of each kind of food he must consume to supply the normal waste of five ounces, and what would be the cost to him of restoring the waste by the several kinds of food in common use. The different quantities of food here shown all contain the same amount (five ounces) of flesh-formers, and must be eaten as the day's supply to enable the labourer to do a day's work: their relative cost for restoring the daily waste of tissues is the money paid in purchasing the amount exhibited. Experience, however, has taught man that he should mix food so as to ensure a proper balance between the heat-givers and flesh-formers, and not to depend upon one kind of food for the exclusive supply of either.

Five ounces of flesh-formers, being the amount required to restore the daily waste of the body, are contained in the quantities given of each of the following vegetable substances:—

1. Wheat Flour ..	2 lbs. and 1 oz. average cost ..	4d.
2. Barley Meal ..	2 lbs. .. 6 oz. average cost ..	4d.
3. Oatmeal ..	1 lb. .. 13 oz. average cost ..	4d.
4. Maize ..	2 lbs. .. 9 oz. average cost ..	7d.
5. Rye ..	2 lbs. .. 3 oz. average cost ..	6d.
6. Rice ..	4 lbs. .. 13 oz. average cost ..	1s. 2d.
7. Buckwheat ..	3 lbs. .. 10 oz. average cost ..	1s.
8. Lentils ..	1 lb. .. 3 oz. average cost ..	2d.
9. Peas (dry) ..	1 lb. .. 5 oz. average cost ..	5d.
10. Beans (dry) ..	1 lb. .. 5 oz. average cost ..	2d.
11. Potatoes ..	20 lbs. .. 4 oz. average cost ..	7d.
12. Carrots ..	31 lbs. .. 4 oz. average cost ..	2s. 6d.
13. Parsnips ..	15 lbs. .. 10 oz. average cost ..	2s. 1d.
14. Turnips ..	17 lbs. .. 13 oz. average cost ..	1s. 8d.
15. Cabbages ..	10 lbs. .. 6 oz. average cost ..	6d.
16. Tea (dry) ..	1 lb. .. 11 oz. average cost ..	6s. 9d.
17. Coffee (dry) ..	2 lbs. .. 1 oz. average cost ..	2s. 9d.
18. Cocoa (nibs) ..	3 lbs. .. 2 oz. average cost ..	3s.
19. Bread ..	3 lbs. .. 13 oz. average cost ..	6d.

The construction of public dietaries is a matter of great importance. Unless a due proportion is maintained between the heat-givers and flesh-formers, disease and death may be the consequence.

THE SERPENTINE.

To know that measures have at length been resolved on for the purification of the Serpentine is satisfactory, even were those adopted unfortunately not to turn out to be all that could be desired; as, no doubt, the Government, now, as well as the public, will see to the final result, in one way or another, even though at additional or extra cost. In giving expression to a qualified satisfaction on this subject, however, we must protest against the formation of large filtering beds in Kensington Gardens, however "ornamental"—at least, if the water of the Serpentine be still what it has admittedly been for years past, during all which period we did not fail occasionally to call attention to the subject. Mr. Stephenson, certainly, while freely admitting the foul state of the water in former years, maintains that *now* it is very different; but others who seem to have more acute olfactory organs, persist in stating that Mr. Stephenson is wrong on this point, and the fact that the Government and their engineer, Mr. Hawksley, consider filtering beds still requisite, the dirty water from which is to be sent off through the Ranelagh sewer, is corroborative of the fact that the water is not by any means so pure as it is represented by some to be. Neither is it reasonable to believe it possible for a stagnant pond, such as it is, to be sufficiently pure

and fresh to be without properties injurious to health.

On the subject of the 17,000*l.* granted by Parliament for the purpose of carrying out a plan of purification, and of the plan by Mr. Hawksley, C.E. adopted by the Government for that purpose, Mr. Fitzroy made some remarks in the House of Commons, on the 11th inst. of which the following is an abstract:—

Mr. Fitzroy said it was still his intention to proceed with the works proposed by Mr. Hawksley, for *totally and effectually purifying* the water in the Serpentine—not for merely "partially cleansing" it. Great apprehensions appeared to exist respecting this matter, and two distinct questions had been mixed up together; one being the mud at the bottom of the Serpentine, and the other the water. These two subjects were entirely independent of each other, and by the plan proposed he should succeed in imparting a perfectly pure and limpid character to the water of the Serpentine: the mud, losing its organic properties, would no longer evolve any noxious gases, and must cease to be a nuisance and a source of ill-health to the inhabitants of the neighbourhood. It was with the water of the Serpentine, then, he was prepared to deal, not with the mud. He was confident that the estimate was sufficient. That estimate was 17,000*l.* whilst the other plan proposed, which was to draw off the water, remove the mud, and make a new bed, could not be done under 170,000*l.* What he proposed was to erect a small engine in an ornamental building at the Bayswater end, and that, he was satisfied, would not be an eyesore, but rather the reverse. The whole area that would be required to filter 2,000,000 gallons of water per day would be less than three quarters of an acre. The filter-beds would present no annoyance whatever, whether in action or whilst they were being cleansed; and the process of cleansing would be accomplished in the course of three or four hours by means of machinery attached to the engine which was to pump up the water, and the dirty water would then run into the Bayswater sewer. He proposed to erect two engines of ten-horse power each; and the cost of the coal and engine would not exceed 1*l.* a day. As to the water of the Serpentine, he found that the organic matter which was contained in it did not exceed 23 grains per gallon, which was as good as the water supplied to houses for drinking purposes throughout the metropolis. He had taken the best professional advice upon the subject: the highest engineering skill would be employed in carrying it out; and he had not the slightest doubt that he should be able to effect a perfect cleansing of the water of the Serpentine.

Mr. Stephenson, whilst asserting his opinion of the comparatively pure state of the water now in the Serpentine, gave his support to Mr. Hawksley's plan, which he described as in effect productive of a slow and gradual artificial current, which would change the whole body of the water in about every two months. He much disapproved, however, of throwing lime into the water. The result of that was that he saw dead fish floating on the surface, giving rise, of course, to the most offensive decomposition. Now, in all lakes Nature provided a sort of equilibrium. There were the algaecious plants, which were fed upon by the smaller animals, which in their turn were fed upon by the larger. They did that, therefore, with the Serpentine which they ought not to have done. They killed the large animals that lived upon the small; and thus, by putting in lime, they made the Serpentine more polluted than before. The case was very different from that of the Thames. To throw anything poisonous into a lake was entirely contrary to Nature's process of causing an equilibrium between animal and vegetable life.

Sir Joseph Paxton and others agreed with Mr. Stephenson on this point, but objected to Mr. Hawksley's plan. Sir S. M. Peto believed that this plan would produce a perfectly pure lake, and he had never seen an easier solution of an engineering or mechanical problem.

Mr. Hawksley himself says, in a letter to the *Times*, that "neither sensibly nor chemically is there much that is wrong with the water," and that "the little that is wrong may be readily set right by the simple process of filtration," which he, or at least Mr. Fitzroy, as we have seen, conceives, will extract all that is organic and offensive (and that he seems to think is not much) from the mud at the bottom, leaving it purely and merely mineral, or at least innoxious. As to his whole plan Mr. Hawksley says—"The general effect will be that of an Italian flower-garden, with fountains and vases, and four ornamental sheets of water. The machinery will be noiseless and smoke-

less: it will be placed in a lodge-like cottage, forming also the attendant's residence, and will be disposed among the large trees at some little distance from the other works. While on the one hand there will be nothing pretensions or obtrusive, so, on the other hand, there will be nothing to hide." The duck-pond at the head of the Serpentine is to be obliterated. Mr. Hawksley makes special allusion to the plan of Messrs. Easton and Amos, the contractors, who improved St. James's-park water: that plan, he conceives is based on false premises, and would be unnecessarily expensive. Mr. Hawksley's plan is certainly not satisfactory to us.

Messrs. Easton and Amos have published a series of letters chiefly from themselves to members of successive Governments, from 1848 to 1859, in respect to their plan, which essentially consists of arrangements for a continuous supply of fresh and pure water, pumped, with that for St. James's-park lake, from the duck island well which they sank for the supply of that lake. They offered to obtain a sufficient supply of water, and erect the necessary additional apparatus and buildings, lay pipes, &c. for 11,500*l.*, and to contract for the working of the whole system for 700*l.* per annum, or 200*l.* more than the 500*l.* forming the present cost of keeping up the lakes in St. James's-park and Buckingham-gardens. Mr. Fitzroy, however, declined the offer.

A PROPOSITION FOR THE SERPENTINE.

So many are the opinions expressed, and so many the crotchets proposed, for the purification of this sheet of water, that this most simple of all navigators' jobs has become a puzzle and a problem.

Engineers, statesmen, and philanthropic gentlemen determine to differ upon the modes of expurgation as to the volume, and of adaptation as to public uses, of this most important easement for bathers, and of recreation for promenaders. I would ask, has any one of the gentlemen who treated the subject in the House of Commons ever mudded a large pond, or fashioned the ornamental waters of a park? If he has done so, he must be fully able to clear up the question, and to explain the mode of dealing with the fifty acres of pond called the Serpentine.

In an article published in the *Builder* a month back, I showed that it is not necessary to concrete the whole area; that the cost would be 70,000*l.* utterly thrown away; that the margins, to the extent of 100 or 120 feet, should be graduated to a depth of 5 feet, leaving the centre as deep as it may be, or as deep even as possible: this extent would be sufficient for bathers who cannot swim; the centre pool would be more buoyant for those who can: therefore, the inequalities of the margin might be filled up—levelled from the material taken from the deeps; but, in the first instance, the whole reserve ought to be drained, and the mud, the accumulation of centuries, ought to be removed; or if allowed to remain, covered with at least 2 feet of gravel.

The whole basin is composed of a pure and clean yellow gravel; therefore, when the slime and filth are removed, there is no difficulty about the formation of a clean bottom surface; and as there are numerous springs throughout the extent, all these supplies would feed and freshen the body of water: true, it is not enough, being barely tantamount to the daily evaporation from so large a surface; but there are many other springs and sources of supply—one near the Guard-house, hard by the Sub-Ranger's Lodge, and another near Albert Gate.

By sinking, however, in any part of the park, plenty of the purest water can be had, and there is no lack of contractors who would engage to find it; but by sinking in the deepest parts, there is no doubt but, from the nature of the geological substratum, and from the dip of the land for miles, abundance could be had.

It is taken for granted that the Bayswater sewers are diverted from the bed of the Serpentine: if so, then there is no other source of contamination; and the water arising thus from springs must be of the purest and most pellucid description.

To reduce the central depth would but expose the lake to putrefaction. What preserves the mountain lakes of Scotland, Ireland, and Wales,—lakes which, many of them, pour forth but tiny rivulets,—what but the immense depths? The body of limpid water, the product of bottom springs and of mountain drainage, is collected in those profound repositories: the quantity, and the perpetual change and agitation produced by the low temperature of the

bottom springs, resist the tendency of solar radiation, which in shallow breadths of water must in a very short time vitiate and putrefy the whole: to reduce the depth to four or five feet would but assure such a result.

The work of clearing off the foul deposits accumulated from sewage would be very inexpensive, if the manure did not pay for the labour; and the material or superstructure being everywhere yellow gravel, the removal or displacement of so many yards might be counted to a nicety by any barrowman, so soon as the waters were suffered to escape by opening the penstocks. To mud, to expurgate, the whole extent of bottom is absolutely requisite, and it must be laid bare before any engineer, or water doctor, or commissioner, can pretend to form an opinion, much less give an estimate of the cost.

Who knows what are the soundings of the Serpentine? The Admiralty have no charts thereof. Since Queen Anne first planned the waters, when they were in form serpentine, no account has been registered of the number of gravel pits, dells, and furrows, that have been filled in to the level of the pond head at the dry cascade; but that is of no consequence, for the margins only should be sloped or graduated, and the material being withdrawn from the interior, then the centre being deepened, a body of water might be collected sufficient to retain what Mr. Fitzroy terms "lumpidity."

Should there be any difficulty in disposing of the muddy treasure,—the accumulation of sewage, in the depths; or should the munificent vote of 17,000*l.* for this national undertaking prove insufficient to form filtering-beds and engine-house; if, indeed, it be determined thus to supply the lake; surely they must commence the works by expurgation of the bottom. And even in that case, an island might be formed of the mud, which might afterwards be heaped around with the clean gravel so plentiful everywhere: such an object, when shrubbed and judiciously planted, would greatly enhance the beauty of park scenery, not often excelled even in picturesque England; and a ferry-boat, as before suggested by me, opposite the receiving-house, would afford to pedestrians traversing the park a much coveted short cut, as well as a luxury to wanderers of all ages.

For water not intended for drinking, filtration is absolutely useless: the springs to be opened and made available would, as soon as a good central depth was assured, retain the whole body in a wholesome condition; but as to filtering-beds and pumping-engines (if the latter could be dispensed with), they are wholly out of place in pleasure grounds, every rood of which is attaining yearly an inappreciable value.

Try, first, whether you cannot have water enough: you have it at the Round Pond, at the guard-house, as well as *de profundis* in the very centre,—all of it by natural flow! While the lake is full, and that we are in absolute ignorance of its bounteous crystal sources, it is resolved to begin at the end, and create a supply which can only be continued by everlasting pumping!

What is most necessary now is to clear out the mud from the entire basin, then to measure the resources of incoming water, and lastly, and only in the dearth of the natural element, evidences will discover to great engineers what ought to be done. Truly we may distrust science when one great authority states that the engines of St. James's Park are fed by filtration through a solid concrete bottom; and that although the well is sunk in the deepest gravel basin of London!

A good overseer of navvies, with, say 150 stout men, would do, and engage to do, the whole job before November. If the work be done properly, it must be so begun; but, in the name of taste, of common sense, do not begin by erecting costly machinery, by raising unnecessary buildings, by forming slimy and useless filtering beds in the groves which are so essential to our metropolitan repose.

QUONDAM.

THE DRAWINGS BY RAFFAELLE IN THE MUSEUM AT BROMPTON.

Will you call the attention of the Department of Art to the want of some brief explanation of the very fine series of sketches by Raffaele which are now being exhibited at the South Kensington Museum? At present the majority of visitors pass them by, fatigued by a number of disconnected studies, apparently without any purpose or design, while a catalogue, with a brief description of the purpose for which each sketch was made, would render the collection an extremely interesting study. I used the words "each sketch" advisedly, because there is scarcely a drawing of Raffaele's

which does not illustrate some portion of his life, or was made with particular reference to the same work which he afterwards perfected. Among the most notable sketches is (No. 51) a portrait of the artist. Nos. 26 and 42, two studies in chiaroscuro, for the miracle of the wafer in the Vatican; a sketch (33), of the man letting himself down from the wall for the Incendio del Borgo, in the same place; and a charcoal study (107) of the celebrated figure with the vase on her head, for the same fresco. Then there is a sketch for the left-hand portion of the fresco of the Cenacolo (95), in the Museum at Florence, and a very interesting outline of the entombment (144), apparently embodying the artist's first idea, as the body of Christ is nearly straight, and the general disposition of the figures differs considerably from the picture. A small coloured drawing of the Presentation in the Temple is curious, and upsets Mrs. Schimmelpennick's theory about Raffaele having introduced the spiral columns into his cartoon of Paul and Silas at the Beautiful Gate for the purpose of contrasting their false curvature with the uprightness and simplicity of the principal figure, as the same columns appear in this without any apparent reason. No. 43 is a sketch for one of the figures in the last bay of St. Peter's, at Rome, next the west front, which is remarkable for its inconsistency as well as for its graceful drawings.

There is also a clever drawing by Giulio Clovis, the illuminator, and pupil of Giulio Romano, of the ceiling of the Sistine Chapel, and several sketches by Michelangelo. Among others a study from life, for one of the figures for the tomb of Lorenzo de Medici.

It is a great pity, now that photography renders the reproduction of drawings so easy, that steps are not taken for completing imperfect series of studies by photography, or even exchanges might sometimes be judiciously effected between museums. Thus, there are some sketches at the Museo Egittico, illustrating Raffaele's Cenacolo, which might be rendered more complete by the addition of a photograph of No. 95 of the Oxford Collection, which the Florentines might exchange for a photograph of the sketches they possess.

J. H.

VISIT OF ARCHITECTS TO THE PRIME MINISTER.

ON Wednesday a number of architects had an interview with Lord Palmerston, at Cambridge House, Piccadilly, to intimate their concurrence in the views expressed by him with reference to the proposed Foreign Office, and their objection to the employment of a certain style of Gothic architecture for public buildings. Mr. Tite, M.P. and Mr. Coningham, M.P. introduced them, and there were present Mr. C. Barry, Mr. Banks, Mr. Brodbeck, Mr. T. Bell, Mr. Clifton, Mr. Cockerell, Professor Donaldson, Mr. Falkner, Mr. Fowler, Mr. l'Anson, Mr. Kerr, Mr. Lamb, Mr. Law, Mr. Garling, Mr. Mee, Mr. Scoles, Mr. Sydney Smirke, Mr. Thomson, and Mr. Watson, several of whom addressed the Premier at some length.

COMPETITION.

Chapel and Schools, Croydon.—The designs of Mr. T. E. Knightley, of Cannon-street, have been chosen.

THE MANCHESTER INFANT SCHOOL FOR THE DEAF AND DUMB.

THE chief stone of a novel and interesting school has been laid at Old Trafford. This institution will, it is said, be the first of its kind in the world. It is intended to be kept up in connection with the school for the deaf and dumb at Old Trafford, and the building is to be erected in the rear of the parent school, as a detached addition to the buildings.

The new schools, for which the builders' contract somewhat exceeds 4,700*l.* will be assimilated as nearly as possible in exterior to the Tudor style of the time of Henry VIII. which was adopted for the main building. It will cover an area of 577 yards; and it will comprise sheltered playgrounds in the lower story, over which will be a school-room, 40 feet by 25 feet; dining-hall, 29 feet by 20 feet; boys' dormitory, 40 feet by 25 feet; girls' dormitory, 48 feet 6 inches by 20 feet; and all other necessary rooms and conveniences. The dormitories will afford 700 cubic feet of space for each child; and strict attention will be paid to the means of ventilation.

The site is on the westerly side of the school, and the additional building will cover an area of

577 yards; but, from the peculiar position of the ground, only 20 yards frontage could be obtained. The facade will be of stone. Mr. James Redford, of Manchester, architect, has prepared the designs.

GRECIAN STATUE FOR FRANCE.

THE town of Brescia possesses a Grecian statue, representing Victory, which is considered a masterpiece of antiquity. The Minister of State (France) wishing to enrich the Paris Museum with a reproduction of this statue, directed Marshal Vaillant to apply to the authorities of the town for leave to have a cast taken. Hitherto, the Municipal Court of Brescia had always refused a similar request, with a view, no doubt, of preserving the statue from any possibility of injury. The Syndic, Count Valotti, however, has answered the minister's application in the most gracious terms, and has expressed his intention of having a copy of the statue made at the expense of the town, and of presenting it to the Emperor Napoleon as a testimony of the deepest gratitude of all the inhabitants.

ST. SIMON'S CHURCH, UPPER CHELSEA.

IN March last we gave some particulars of the church of St. Simon, erected in Moore-street, Chelsea, under the direction of Mr. Joseph Peacock, architect. The accompanying engraving represents the interior of the church. The total length, internally, is 87 feet 6 inches; the width, 43 feet 6 inches; height, 47 feet 6 inches. It has sittings for 850 persons. The cost of the church complete, exclusive of the site, was 5,250*l.*

The church is arranged to admit of galleries in the transepts. The font, in one block of stone, is an adaptation of the blended triangles. All the staircases to the galleries are of stone, and are entered from the outside of the church.

The site was purchased by some of the parishioners of Upper Chelsea and others, the money being raised through the exertions of the Rev. R. Burgess, rector of Upper Chelsea. The Rev. William Scott Moncrieff, M.A. is the first incumbent.

The church is built of Kentish rag-stone, with Bath stone dressings. It consists of nave, aisles, and transept, with chancel. The interior is of white Suffolk brick, relieved with red and black, and string courses of red are carried round the walls. Each transept is spanned by two arches, supported on marble column with carved capital, the central spandril of which is pierced, giving a light and open effect in the widest portion of the church.

The pulpit is of stone, carved, and is supported at the base with serpentine marble shafts. It has five panels, carved with the sacred monogram and the emblems of the Evangelists. The reredos is of stone, with Sienna marble shafts, and the shafts of the east window over these are of red serpentine marble. All the appointments of the church are effective.

The first stone was laid on the 8th of June, 1858, and the church was consecrated by the Bishop of Carlisle (officiating for the Bishop of London) on the 21st March, 1859.

The history of the church is best given in an inscription on a tablet in the church, of which the following is a copy:—

This Church
with Parsonage
was erected
A.D. 1859,
by
HENRY VICTOR TEDDS
and
JOHN MARTIN,
as one
among other
similar means of appropriating
a munificent Legacy bequeathed
to them by
WILLIAM COLES,
a much respected inhabitant
of Chelsea.
The site purchased by the
Parishioners of Upper Chelsea
and others.
REV. RICHARD BURGESS, Rector.
Built upon the foundation of the
Apostles and Prophets,
JESUS CHRIST
himself being the corner stone,
in whom we also are
built together
for an habitation
of God through
the Spirit.

A site for schools was purchased with the site for the church: these, it is hoped, will shortly be built, as several hundred pounds have already been subscribed.



ST. SIMON'S, UPPER CHELSEA. — MR. JOSEPH PLAYF, ARCHT.

CAMBERWELL DISTRICT
SURVEYORSHIP.

METROPOLITAN BOARD OF WORKS.

On Friday, 12th, the Board proceeded to elect a surveyor for the Camberwell district, under the "Building Act." The following is a list of the candidates:—

Messrs. John Johnson, George Legg, Henry Laxton, Charles J. Badger, T. E. Knightley, Henry Jarvis, Joseph Liddiard, S. Salter, Geo. Elkington, Henry S. Legg, Horace Field, Thomas Morris Charlton, John J. Cole, Edward Roberts, J. Hargreave Stevens, George Morgan, Thomas E. Benham, Henry Dawson, and Edward L. Paraire.

Moved by Mr. Taylor, seconded by Mr. Brooker, "That the number be reduced by one vote to six, that the names be then put *seriatim*, and that the candidate having the least number of votes be struck off at each voting."

The names were then severally put; and the result was as follows:—

No. of Votes.		No. of Votes.	
J. Johnson	16	H. Field	8
G. Legg	17	Thomas Morris	3
H. Laxton	7	J. J. Cole	11
C. J. Badger	0	E. Roberts	4
T. E. Knightley	7	T. H. Stevens	14
H. Jarvis	22	G. Morgan	13
J. Liddiard	10	T. E. Benham	2
S. Salter, jun.	7	H. Dawson	2
Geo. Elkington	11	E. L. Paraire	1
H. S. Legg	14		

Moved by Mr. Harris, seconded by Mr. Brooker, and resolved, "That the appointment of district surveyor be subject to the condition that he shall make no claim for compensation in case a diminution of income should at any time hereafter arise from any reduction or alteration of fees, by the Board or otherwise."

The Board proceeded with the election by show of hands, taken five times in succession, the lowest being struck off at each voting.

Name.	First Voting.	Second Voting.	Third Voting.	Fourth Voting.	Fifth Voting.
Johnson ..	20	16	19	16	13
G. Legg ..	19	18	17	14	..
Jarvis ..	22	22	20	19	21
H. S. Legg ..	14	10	..	..	..
Stevens ..	13	14	11	..	..
Morgan ..	12	12	..	..	..

Resolved, "That Mr. H. Jarvis be the surveyor of the district of Camberwell."

Resolved, "That the tender of Messrs. Hack and Son, for the construction of the Victoria Park Approach Bridge, for the sum of 4,843*l.*, be accepted, on producing sureties to be appointed by the Board."

FRENCH AND ENGLISH ART.

THE "REVUE GENERALE DE L'ARCHITECTURE."

THE following translation of a letter from the editor of the *Revue Générale* will explain itself:—

I have read very attentively the recent notice in the *Builder*, of the fifteenth volume of the *Revue*. It is evidently a thoughtful, courteous work, written in good faith. I receive it thankfully, and did not time fail me, would willingly have undertaken to reply to one or two criticisms, less in order to refute them, than to render the principles on which the *Revue* is conducted better understood.

Undeniably there is a great dissimilarity between the genius of the French and the English. They are most strongly contrasted; but does it result from this that they contradict each other? Must one be false because the other is true? I do not believe it. To me each genius appears as complementary to the other. In the designs of the Divine Providence, I believe they are (as the two sides of an arch), destined to sustain the efforts of the world, and to offer a firm basis for future progress. English and French genius, united, combine all the brilliant and solid qualities of the Caucasian race; and the day when all small national jealousies, founded on a false interpretation of the past antagonism of the two peoples, shall no longer arise to disturb higher-souled men,—that day of impartial judgment of the two nations by the *élite* of both,—that day of which I distinctly foresee the dawn, and of which my *Revue* and the *Builder* bear witness by their love and their practice of international justice,—that day will be the one which the Jewish prophet foresaw when he said, "Then shall they beat their swords into ploughshares, and their spears into pruning-hooks." The idea here expressed seems to me the most beautiful that antiquity has bequeathed to us, with the exception of that

uttered by our Saviour,—“Love one another and God” (who is love and justice) “above all things.”

I rejoice passionately in the Anglo-French Alliance, because it has always seemed to me that of the representatives of the highest qualities of our Germanic-Latin race.

I regret that just now I am pressed for time, for I should much like, in connection with your article, to have expressed my opinion on the special influence exercised by every great people upon the diverse evolution of art in the past, and on the special influence which each of the existing great nations is called upon to exercise on the art of the future in the name of its own particular genius and peculiar position. Thence I should have deduced—to the satisfaction, I think, of the *Builder*—the principles which should animate an Architectural Review in France (although addressed to Europe at large), at the epoch at which we find ourselves, with art in disarray, now looking around for some principle of life superior to the individual phantasy of the artist; anon taking refuge entirely in that phantasy, or in tradition, which is here another phantasy,—the classical archeological artist not separating himself from the Gothic archeological artist, excepting by a name and a date, the two doctrines nearly approaching to that of an impossible resurrection of the past. To draw the dead from their tombs is a miracle. Society does not live, or develop itself, by miracles; that is to say, by the suspension of natural laws; but, on the contrary, by the regular developments of those laws which God has imposed on man, on His work, and on Nature, from the beginning.

To make clearer my meaning, I will particularise two articles in previous numbers of the *Revue*, complementary and not contradictory, the one on “Symbolism,” vol. vii. p. 49, the other on “Liberty in Art,” vol. vii. p. 392. I also gladly point out in the same vol. vii. an article on the Joint Responsibility (*solidarité*) of Industry and Art, wherein I prophesied—in the name of the wants of the future—the inevitable alliance of the two great nations. Not to look farther than vol. vii. for fear of over-taxing you, the article, p. 526, entitled “Journey of Two Artists,—Discussion on Art,” contains (beginning at p. 530) a digest of a discourse delivered by me thirteen years since, in favour of liberty for art and liberty for the artist; not monkish seclusion within a circle of rules, or of traditions elevated into exaggerated importance. This last article will show the species of difficulty that Free Art, springing from a free but cultivated sentiment and the sincere emotions of the soul, encounters amongst us, and how indispensable it is to create the science of modern art to combat the exclusive worshippers of erudition.

The Emperor of Russia has been pleased to name me “Chevalier of the Order of St. Stanislaus.” I have only known it a week.

C. DALY.

THE STUDY OF ART IN THE PROVINCES.

THE SCHOOL OF ART AT LEEDS.

ART is up and doing in the north. Almost every year we see grand buildings arising; either town-halls of great magnificence, as at Liverpool or Leeds, or churches of the good architecture and surpassing richness, as at Halifax, Huddersfield, and various other places. The schools of art are flourishing. Every year we see their influence more widely extended, and their classes embracing new branches of society. In Liverpool, Manchester, Leeds, Edinburgh, Dundee, the number of school children alone who are taught to draw is reckoned by the thousand. The School of Art at Leeds is beginning to send out offshoots as a result of its work in the district. Halifax has established a school for itself, taking as master the second master at Leeds, who previously taught there. But already the work from Leeds, as a centre, is become too great, and an effort is now being made to establish another school either in Huddersfield or Bradford to supply those districts and Keigley with an independent means of art education. For this purpose a prospectus has been issued by the Leeds School of Art committee, stating the end proposed and the advantages offered by art education to all classes. We quote from it:—

“The increasing demand for instruction in drawing and art education generally, both in Leeds and its locality, has induced the committee of the Leeds School of Art to apply to the Department of Science and Art for the assistance of an art master, whose time will be entirely devoted to neighbouring towns. In compliance with this application, Mr. Walter Smith, art master, has been sent and provisionally appointed.

Those who are acquainted with the increasing development of education amongst us must be aware of the important position which drawing is now rapidly assuming in the education of all classes. If we investigate for our-

selves the subjects of the majority of competitive examinations, we shall find drawing usually amongst them. In some branches of her Majesty's army, the possession of a certain power in drawing is a *sine qua non* to admission. In the civil service examinations for home and Indian appointments, drawing is a voluntary subject for many branches of the service. In the middle-class examinations of the Universities, drawing occupies one of the most prominent divisions. In branches of art manufacture, we find the skilled workman who draws able to take a considerably better position than one who is unable to draw. In many instances the foreman or director of the works in factories and workshops, or in the superintendence of buildings, has achieved that superiority by the power of drawing, and of being able to understand the drawings from which works have to be executed. The schoolmaster who draws sufficiently well to teach it to his pupils, has an increase of salary allowed him by the Government for teaching it; whilst the addition of this subject to his range of knowledge must raise his social status. Those who from their social position must ever regard drawing and painting merely as accomplishments, need hardly be reminded how gratifying is the exercise of these powers, and how materially the pleasures of travel and observation are increased by the power of understanding what is seen either at home or abroad; and the art treasures of the world form no inconsiderable portion of the pleasurable sights which are offered to the refined observer. To such it is suggested that the acquisition of the rudiments of art is as necessary for the correct appreciation of works of art, as a knowledge of the grammar of a foreign language is indispensable to the full comprehension of books written in that language.”

In addressing a meeting of Schoolmasters and Pupil Teachers at Huddersfield, Mr. Walter Smith, after explaining the nature of the course of drawing about to be adopted in special classes for schoolmasters, said,—

“In conclusion, allow me to state that I come among you with a full knowledge of the great responsibilities of your position. No one can be better persuaded than I am, how completely the schoolmaster holds in his hand the intellectual advancement of large masses of the people. After every other means has failed to engraft upon our people that taste which we see other nations are possessed of;—after schools of design and artistic academies have failed to do this, the schoolmaster at last is appealed to by the country, and the country is anxiously watching for the response that will be made. Advantages are offered as a stimulus, which in many cases have been embraced. Already large and important schools are taught to draw by the schoolmasters themselves, and many hundreds of pupil teachers are becoming qualified for teaching, and thereby to improve their own positions, and add taste and a love of beautiful forms to the acquisitions of their pupils. I ask you all for your co-operation. My attention will be given largely to increase those opportunities of improvement which the Committee of Council has placed within your reach, and to facilitate your progress in drawing. I feel that we are all workers on the same mission, and therefore need mutual assistance. Our labours are for the direct improvement of our people, and for the national advancement, though the means we employ differ as to subject; but in each and all our end is the same, and that end I conceive to be the elevation and improvement of the lower classes, the development of talent and intellect, and the general good of society.”

THE REPAIRATION OF THE CARBAYIN
TUNNEL ON THE LANGREO SPANISH
RAILWAY.

This important and interesting work was commenced in August 1856, and has been continued ever since. The first symptom of destruction appeared in the side walls of the arch, which, from imperfect cohesion and insufficient thickness, bulged outwards and threatened to fall in several places. A service of repairation was organized to work in the night time, in order not to interrupt the trains, the line being then open for traffic; and in March 1857, 129*m.* 80*c.* of upright walls had been reconstructed. In this state the works were proceeding when a doubt arose as to the stability of the arch itself, in the first 100 metres from the entrance; and such was found to be its state of dilapidation, that a reconnoitering gallery was driven on the very extrados. This heading had the following objects:—1. To discover the real thickness of the arch. 2. The nature of the soil through which the tunnel had been driven. 3. What open spaces or voids had been left by the settlement of the masonry. It reached the length of 67 metres, without the reconstruction of the side walls having been suspended a single moment, when a sudden movement, which severed several of the ashlar blocks of the tunnel face and the massive masonry of the arch and side walls, decided the engineer of the company, with the approval of the Government, to reconstruct the tunnel arch for 100 metres in length. Difficult as was the rebuilding of the side walls, the reconstruction of the arch was deemed such an arduous

task that the government engineer proposed, at once, a suspension of the traffic during the continuance of the works, and an order was issued by the general direction of public works to that effect. In vain the company's engineer upheld his plan for continuing the works without interrupting the traffic: the Government insisted that it should be stopped; and it was only by the interference of the Governor of the Provinces and all the Senores of Asturias, who represented the grievous consequences of paralyzing the commerce of the country, that the Government consented, and the company's engineer triumphed. Coal and merchandise were, however, only permitted in the trains.

Not being prepared for a work requiring half a million of bricks, which were not in the country, and difficult to be procured, this was the engineer's first care, along with sundry dispositions as to the supply of water, sidings, and shelter for the men in winter, all on one line of way, the other being left free. Everything was ready at the end of 1857, and on January 2, 1858, the first key-stone was broken out, and repairing centres begun at each end of the portion to be reconstructed, working in opposite directions. The work was carried on as follows:—Four supporting centres were placed two by two, so that their tie-beams were at a sufficient height to permit coal wagons to pass underneath, leaving a rim of arch, to be demolished 1m. 50c. wide. Two workmen in this space removed with bars the masonry, leaving the natural earth quite bare. This done, and the four centres removed, another centre of proper form, 1 metre wide, was raised, and the arch turned; the half-metre being left for keying and tightening the extrados properly, so as to leave no joints for infiltration. Thus the work proceeded metre by metre. The new arch is 80 centimetres thick.

FRIENDLY SOCIETIES.

THE annual report by Mr. A. Carnegie Ritchie, Registrar of Friendly Societies in Scotland, has just been issued.

In a preface, the registrar offers some words of counsel to members of societies, on the necessity of using all the means in their power to ascertain the basis of safe calculation, and cites one or two cases in which great benefit has resulted from his advice. The report proceeds to state that in many of the societies there has been a considerable increase of funds during the year, showing the value of good management. Within the last two years many of the industrial classes have more carefully and anxiously considered the comparative merits of "yearly and permanent societies," and many who were previously members of the former have become members of the latter. The whole members of several yearly societies have formed themselves into "permanent and annual dividend societies"—that is, they reserve a power to divide among the members a certain portion of their funds, reserving always a certain amount, varying in different societies, sufficient for the carrying on of the society. The registrar considers this a better and much improved state of things to that of "annual societies," but still much inferior in usefulness and in safety to the fully permanent societies. There is a class of friendly societies in Scotland, "The Penny Savings Banks Friendly Societies," increasing in number, and which are of great practical importance and usefulness in training all, from the youngest upwards, to habits of provident care and self-denial. The "Penny Savings Banks Friendly Societies" foster and afford the means of exerting, humanizing, and elevating feelings from very early life: they release the spirit from that hardening selfishness which the necessary contact with an ever-working world and a grinding sense of powerless poverty are so prone to engender. The registrar feels it incumbent on him to press the importance of the formation of female societies, with funds both for provision in sickness, and also during temporary cessation of employment, which would be of much service to many deserving women. A superannuation fund might also, without much difficulty, be added. During the last year there has been a considerable increase of new societies, and an evidently growing spirit of inquiry in many districts into the advantages of friendly societies. There has been the dissolution of only one society, which had existed for nearly a century. A good many old societies exist in Scotland; for instance, two in the town of Borrowstonness—the one instituted in 1634, and the other in 1659: others also continue to flourish, of very considerable age, the members of which are as earnest and zealous as ever for their maintenance and progress. The registrar thinks

that benefit societies, whether instituted for relief in sickness, in suspension of employment, or in old age, or as building societies, are "the true foundation of social progress, and, if vigorously and judiciously encouraged, may, by the growing and ever-increasing elevation of the moral and religious habits of the industrial population of this land, be a sure wall of defence around our country." In the course of his report, the registrar notices the existence of "burial clubs" among our Roman conquerors, and shows how much the law of Scotland is founded on, and how largely its principles are derived from the Roman law.

WORKS IN IRELAND.

A SCHOOL-HOUSE has just been completed in the town of Balbriggan, from the designs, and under directions of, Mr. S. Symes, architect. It is in the Italian style, and contains two large school-rooms; yards, garden, &c. being attached. The external walling is of Milverton country rubble, with wrought dressings, and the chimneys are of brick. Expenditure, about 600*l*. Mr. James Caffry, builder. We understand that this school has been erected at the expense of George Woods, esq. of Milverton Hall.

The New National Gallery is progressing, being now more than half up, and first floor of joists laid. It will be connected with the Royal Dublin Society's house by a Corinthian colonnade, of quadrant form, and similar to that uniting the corresponding wing of the Museum, with the exception that the screen wall between the pillars will be omitted. Without referring to the merits of these new buildings the Royal Dublin Society's premises will surely be rendered more architecturally important by their erection, and that body will have no reason to regret their concession of the site for the 1853 Industrial Exhibition. Messrs. Cockburn are the contractors, and the iron girders, &c. are being supplied from Oxman-town foundry, Mr. W. Turner, proprietor.

The New Bank of Ireland, in Belfast, is progressing. It presents to Donegal-place an elevation of Palladian character, three stories high, and extending 60 feet, the materials being Newry granite for walling, and Portland stone for dressings, cornices, balustrade, &c. The Cash Office is in the form of a blunt cross about 40 feet each way. Mr. S. Symes, of Dublin, is the architect; Messrs. Fulton, of Belfast, the contractors; and Mr. R. O'Brien the clerk of works. Expenditure, about 7,500*l*.

Messrs. Lanyon & Lynn are the architects to the works at Sandford Church, county Dublin, which comprise a new front, in Gothic style, with handsome moulded and arched doorway, great windows with elaborate tracery, circular window in gable, projecting buttresses, and a turret and spire at south-west angle, rising to a height of some 80 feet; and a new open timber roof, of elaborate character, re-pewing, &c. internally.

The Church of St. Mary's, Donnybrook, is to be enlarged by the Ecclesiastical Commissioners. Mr. Welland architect.

A new Roman Catholic Church is to be built at Lavey, diocese of Kilmore. The churches of Knocknamuckly, county Down, and Monahendry, county Tyrone, are to be enlarged. The churches of St. Anne, Dublin; Leixlip, same county; and Ballymoney, county Antrim, are to be refitted. Important alterations and additions are to be made at Derry Cathedral. All under the Ecclesiastical Commissioners.

A new Presbyterian Church has been erected at Ballyclare. Mr. W. T. Martin, C.E. furnished the designs.

New Roman Catholic Churches are being built at Maghera; also at Raheen, Queen's county, Mr. J. S. Butler, architect to the latter.

A new National Bank has been erected at Clonmel, from designs by Mr. Caldwell, architect. It is of Italian character externally, having a rusticated basement, decorated windows, a bold projecting cornice, and surmounted by a parapet. Mr. W. Brash contractor, Mr. Higgins clerk of works. The iron-work was supplied by Mr. Jacob, of Clonmel; the marble chimney-pieces by Mr. Hibson, Dublin; and the gasfittings by Mr. Daniel.

The Minor Model School at Omagh, undertaken for the purposes of national education, has been completed, and contracts have been entered into for the erection of practising schools at Dublin (already described in the *Builder*); for new district model school at Derry (do.), and minor model schools at Parsonstown, Carrickfergus, and Newtownstewart. The Newtownards proposed school—an important and handsome building—seems to

be in a state of abeyance. It would, if built according to the original intention, prove an acquisition in that good but slow town. We hear that a contract is being, or has been already, entered into for the erection of two wings to the female training-school at Talbot-street, Dublin, preserving the style of the existing building, which is Italian.

The Board of Public Works commissioners sanctioned, during 1859, 189 loans, amounting in the total to a sum of 67,910*l*. for the erection of farm buildings, and the annual rate of improvements in drainage operations effected by that body has reached the average maximum of 6,780 acres. In 1858 a sum of 7,110*l*. was issued for such works in the northern district, 13,300*l*. in the midland and eastern, 6,560*l*. in the western, and 7,440*l*. in the southern.

The new coast guard station at Kingstown is far advanced towards completion, and we understand that buildings for a like purpose are to be erected at Clontarf. Several improvements are being effected at district lunatic asylums.

The new steam-packet pier at Kingstown is progressing towards completion, and will, it is said, be ready in the course of the ensuing summer.

At Howth harbour breakwater some works are about to be executed. The buildings for the accommodation of the judges of the Landed Estates Court, at the rear of the Four Courts, are progressing; Mr. Meade, builder.

The drinking fountain movement in Dublin has assumed quite the character of a furor. A society has been formed and subscriptions are received, the Lord Lieutenant giving 100*l*. for several ornamental fountains in various sites; the Lord Mayor presenting a fountain with a dog-trough, value 5*l*.; Messrs. C. Malone and Alexander Parker similar ones, value, respectively, 6*l*. and 5*l*.; Mr. Jonathan Pim a registering-fountain, value 7*l*.; Mr. Richard Allen one for cattle, value 8*l*. 10*s*.; and Mr. Alderman Atkinson and Mr. Thomas Pim two fountains with dog-troughs, value 5*l*. each. Of the above-named gentlemen, four are "friends"—friends in need as well as deed, say we.

A FEW WORDS TO WORKMEN FROM A WORKING MAN.

THERE are two things that the Building Trades Unions are endeavouring to abolish, viz. task-work and overtime. There is also a third point they are now attempting to establish, viz. nine hours per day instead of ten. If the promoters of the above could transport this little island of ours between the tropics, somewhere near the Equator, where day and night are about equal, and the seasons of the year much the same, the uniform nine-hours movement throughout the year might be carried out with greater facility than under present circumstances. As we cannot regulate the length of the days, nor change the seasons, nor render them conformable to our whims and wishes, would it not be an act of wisdom on our part, if the seasons will not conform to us, for us to conform to them?

For instance, here is a farmer, with many broad acres, teeming with abundance of corn: he hires a large number of men to cut it down, and lodge it in a place of safety. The farmer does not expect the men to limit their time to nine hours per day, but to extend their services as long as the day permits. The labourer works with diligence: the corn is cut and saved: the farmer is benefited: the labourer has extra pay for his services: the public have a fresh acquisition to their wealth. But supposing a third party interferes, and endeavours to poison the minds of the employed against the employers, by dictating such terms the acceptance of which would be ruinous to the master. The corn remains uncut, unsaved; the season passes, and all is lost, if such mischief-makers, who assume the guise of public benefactors, successfully carry out their plans. Let us apply this simile to the building trades. There are eight or nine months in the year highly favourable to building operations,—three months in the year are equally adverse: much of the material used in winter, by frost and inclement weather, is spoiled: it is no matter of surprise, therefore, that many operatives are unemployed during winter. This deprivation is severely felt by many in the building trades. To remedy this evil, the unionists propose to abolish task-work, overtime, and also to restrict the working hours from ten to nine hours per day. However plausible these propositions may appear to a superficial observer, I assert, if these objects are carried out established, that they will aggravate the present evil instead of making things better. This may be proved by a very simple process of sound

reasoning, as follows:—The man who in seed-time sows two acres instead of one, has a better chance, in time of harvest, of employment, than that individual who restricts himself to sowing one acre only. The man who diligently improves the summer in the building trades, working not only nine, but twelve or thirteen hours per day, if he lease, puts himself in the possession of means, if he be a frugal man, of purchasing those necessities of life the production of which must naturally give employment to others. But the prevailing idea among working men is that by working overtime in summer they deprive others of employment. Those who entertain such an idea quite overlook one important point: it is this: there is no limit to labour.

Much might be done that is now left undone. If there were a certain limited amount of labour to be performed, and no more, then the man who performed more than his proportionate share would of necessity deprive his neighbour. But the earth is rich in raw material. At the same time, it is comparatively useless before it undergoes a process under the workman's hand. The capitalist and his agent, the builder, with a well-filled purse, stand by, ready to pull down, to build up, to improve; but, strange to say, the very men who might benefit themselves by such an outlay of capital, raise insurmountable barriers and obstructions to all progress. It must be evident to any close observer, that as money when well laid out begets money, so does labour beget labour. The more labour men perform in summer, the more they will have to do as a body in the winter. To reduce the hours of labour and impose restriction and obstacles on trade, is to dry up and annihilate the resources from whence labour obtains its supplies. To simplify the matter in plainer terms: suppose a dozen men go into a public house to obtain refreshments; if, instead of civility from the landlord, they meet with abuse, exorbitant price, and galling restrictions, these men are not bound to spend a certain amount of money in such a house: they are at liberty to refuse to lay out one farthing if they think proper.

JOHN GRIFFIN, Stone Mason.

THE PROTECTION OF LONDON.

If we look over the whole of the civilized world, we find that all the arts of warlike fortification have been called into use, for the purpose of protecting the capitals and principal towns from foreign aggression. During the last forty years Paris has been a place of vast strength; St. Petersburg has been so fortified, that good authorities have stated that, with the weapons in use at the time of the last war, it was impregnable from either direction. The great cities of other nations have been put into the condition of being able to resist enemies; and, without regard to expense, the greatest skill has been brought into use, and the most suitable materials provided for the protection of the wealth and persons of the unarmed inhabitants.

As regards London, the greatest, the most wealthy, and the most flourishing capital in the whole world, it is left without any artificial means of defence; and this, notwithstanding that the introduction of steam has made the passage of the Channel by a fleet, containing an invading army, a matter of comparative ease, so that the British Islands are in consequence not in the same situation as formerly.

The experience of the last few months has shown that, by the active application of the railways, and other means, which have been brought into active use during the last half century, vast armies, with their artillery, cavalry, and munitions, can be moved at a speed which was not contemplated in either ancient or comparatively modern warfare. The changes which have taken place have been the means, in a great measure, of rendering either the Channel or the distance of the coast from London, circumstances on which the safety of the metropolis should be allowed to depend.

A very eminent military authority has stated, that 50,000 men, moderately trained in warlike tactics, could, behind proper defences, protect a large city for a length of time against a drilled force of 300,000 men, but that the said force of 50,000 could not stand their ground an hour against 5,000 practised soldiers in the open.

The frail barriers of the ancient Britons—the more massive defences of the Romans—the wall and towers, which, in the Norman and other days, before the invention of firearms, were considered all-powerful against an enemy, are not what are wanted at the present day; but assuredly

such strength should be given to certain points of the Thames as would resist the passage of armed ships up our chief river. It is not so long since that Dutch vessels of war burnt part of Gravesend, and did considerable other damage. We should be prepared at this and other points to resist the vastly increased powers of vessels of war. Besides strongly fortifying the Thames at some point near London, we should also have forty surrounding the metropolis arranged according to the best art of war, so that, in case of an enemy suddenly reaching these shores, the unarmed population might be defended until measures could be taken by the Government.

AN ENGINEER.

THE SUSSEX ARCHEOLOGICAL SOCIETY.

The annual general meeting of the members and other supporters of this society was held at Bosham and Chichester on Thursday in last week. Bosham, so named from the Saxon Bosenham, is a village situated on the shore of an estuary, known as Chichester harbour, and about five miles from its mouth. The manor belonged to Earl Godwin, and was inherited by Harold, his son, the regent nominated by Edward the Confessor, and afterwards king, and slain at Hastings in 1066. Harold embarked at Bosham on his fatal visit to William, the conquering Duke of Normandy. His arrival at Bosham and subsequent embarkation, with a representation of the church, form the commencement of the famous Bayeux tapestry. The church itself is very interesting. The tower and chancel arch are Saxon. In this church the pious Canute worshipped, and here the effigy of his daughter is still to be seen.

The Rev. H. Mitchell entertained a numerous audience with a paper on the "Chief Relics of the Church, Roman Villa," &c. Among the audience were the Bishop of Oxford, the Dean of Chichester, and Archdeacon Garbett, and in short nearly all those (ladies as well as gentlemen) who afterwards dined in the grounds of the Bishop of Chichester's palace.

In his paper the Rev. Vicar of Bosham remarked that the tower, which bears evident marks of the Saxon style of architecture, is said to be the highest in England of Saxon origin. It was probably built about 1020. In 1630 the spire was injured, but not materially, by lightning. There are in the tower six bells. The date inscribed on the oldest is 1172. In the year 1787 the tenor bell fell, and sustained so much injury that it was obliged to be re-cast. The chancel arch is said by competent authorities to be also Saxon. If so, the nave of the Saxon must have been of equal length with that of the present church: if Norman, its date will be 1080. The arches of the nave are Early English. The crypt is of early date. There was formerly a communication between it and the college, which stood on the south side of the churchyard. For what the crypt was intended various opinions have been given.

The rev. gentleman also read an interesting paper on "Bosham and its Monastery," in course of which, alluding to the Bayeux tapestry, he said:—"In the Bayeux tapestry (which is descriptive of the conquest of England by William Duke of Normandy), the opening scene represents Harold on his journey—probably from Winchester—to his castle of Bosham, then entering the church situate where the present church stands, eventually embarking on his pinnacle, which was afterwards driven by contrary winds on the Norman coast. The date of the circumstances here represented must be about the latter part of the year 1065, a short time previous to the death of Edward the Confessor. It is not to be supposed that the church portrayed in the tapestry, any more than many other parts of it, is a correct representation. Moreover, Harold and one of his followers appear to be entering by a western door, of which there is no trace whatever in the present tower, which must have been standing in Harold's time. On the death of Harold, the Conqueror, being crowned, took possession of Harold's patrimony at Bosham."

On returning to Chichester, the archaeologists visited the cathedral, inspecting the close, cloisters, vicar's hall, and bishop's chapel, his lordship's palace, the market cross, museum, St. Andrew's Church, North-street; St. Mary's Hospital, Prior-park; the Broyle, West-street, &c.

As soon as the inspection had been closed, the company repaired to the grounds of the bishop's palace. Here and upon the lawn was placed a marquee, 100 feet by 40 feet, in which dinner was served up. The Dean of Chichester presided, and the meeting was addressed by the Bishop of Oxford, Mr. Blencowe, Archdeacon Garbett, Mr.

Hankey, and other gentlemen; after which the party proceeded again to view the many objects of interest, not only in the palace and cathedral, but also throughout the city generally.

CONGRESS OF THE BRITISH ARCHEOLOGICAL ASSOCIATION.

The sixteenth annual meeting of this association will be held at Newbury, commencing September 12th.

The general arrangements are as follow:—

Monday, September 12.—General Meeting, 3 p.m. precisely. The Earl of Carnarvon's Address—Paper on the Antiquities of Berkshire, by Mr. T. J. Pettigrew—Visit to Newbury Church—Jack of Newbury—Museum—Alms Houses, &c.—Table d'Hôte—Evening Meeting at the Mansion House—Papers and Discussion.

Tuesday.—Excursion to the First Battle-field—To the Mounds in the Countess of Craven's Park—Roman Encampment at Speen—Rev. J. Adams's Paper on—Speen Church and Monuments—Shaw House—Donnington Castle, Priory, Alms Houses, &c.—Wickham Church—Avington Church—Table d'Hôte—Evening Meeting—Papers, Discussion, &c.

Wednesday.—Excursion to Silchester—Rev. B. Poste's Paper on—Upton Court—Aldermaston Church—House—Brimpton Church—Thatcham Church—Table d'Hôte—Evening Meeting—Papers, &c.

Thursday.—Visit to Grimsbury Camp—Examination of a Barrow—Wellhouse—Hamstead Norris—Compton Down—Perborough Castle—Beeche Farm—Aldworth Church and Monuments—Mr. Planché on—Loughborough Hill—Blewberton Hill—Grimsdyke—Blewbury Downs—Barrows—Cuichelmsey—Ilsey—Beadon Church—Table d'Hôte—Evening Meeting—Papers, &c.

Friday.—Visit to the President at Highclere Castle—Excursion to Reading—Reception in the Council Chamber—Paper on the History and Antiquities of Reading, by Mr. Pettigrew—Visit to Remains of Abbey—The Friary—Churches of St. Lawrence, St. Mary, St. Giles, &c.—Return to Newbury—Soirée at the Mansion House.

Saturday.—Excursion to the Vale of the White Horse—Welford Church—Little and Great Sheffield Churches—Paper on the Monument in Little Sheffield, by Mr. J. R. Planché—Lambourn Church—Wantage Church—Ardington House and Church—Return to Newbury—Table d'Hôte—Closing Meeting at the Mansion House.

PROTECTION FOR SAWYERS.

LOOKING into a sawpit, I observed the dust to be very inconvenient to the pit-man, and, understanding crape dazzles the eyes, I got him a four-inch square of crown glass, with two holes bored on either side, through which an Indian rubber band passes. The glass rests on his forehead and nose, and the band, going round the back of his head, keeps it tight to the face. As it is a great relief to him, perhaps, if it were known, others might adopt it. It strikes me it would be very useful to plasterers.

COMMON SENSE.

DECAY OF STONE.

SIR,—The cause of the destruction of the stone of the new palaces at Westminster is undoubtedly the sulphuric acid that is always present in the atmosphere of London, arising from the combustion of coal, which always contains a considerable per centage of sulphur. I noticed this destruction of the stone going on in 1854, when up in London giving evidence before a committee of the House. I then minutely examined the building, and found abundant evidence of decay. My attention was first called to this destructive action of the sulphuric acid in the atmosphere of large towns ten years ago. Having observed a white efflorescence on the bricks and stones of this town (Leeds) wherever there was damp, I analysed and found it to be sulphate of magnesia and sulphate of lime. I also found sulphuric acid in the air. Combustion of coal is the only source whence so considerable a quantity of acid could be evolved into the air, as all coal contains about one per cent. of sulphur, whose combustion must keep the air of large towns always acid. This acid state of the air is causing serious damage here, as the only lime used is magnesian lime. The sulphate of magnesia formed is dissolved during rain, absorbed into the bricks or stones, and, when dry weather comes, it crystallizes and splits off the face of the bricks or stones like frost.

No magnesian stone or lime should be permitted in large towns, as the acid will act alike on the

stone and mortar. The stone of the new palaces is magnesian limestone, and, unless a protection be found, all the mouldings and other parts liable to damp will rapidly decay.

As to the remedy proposed, an alkaline silicate, or, as it is called, soluble glass,—will, in my opinion, be worse than the disease, as the acid atmosphere will decompose it as easily as the stone. The proper remedy will be to oil the stone with boiled linseed oil, which will prevent it being moist and attracting the sulphuric acid. The oil will not alter the colour, and will effectually protect the stone.

C. L. DRESSER, F.C.S.
. Oiling, in the case of Caen stone, if not of others, is known to have failed.—Ed.

METROPOLITAN DRINKING-FOUNTAINS ASSOCIATION.

SIR,—The engravings you published a fortnight since, and the letter from "Jones" in your last week's publication (in which he asks, "Where are our architects?"), lead me to make an observation as to the above association. When the advertisement appeared in the *Builder*, inviting architects to compete for the fountains, I took the trouble to prepare a couple of sketches for Gothic mural fountains, in which I showed the water issuing from natural springs in the rocks, in low relief as a background, to groupings of water-plants, &c. in the foreground. There were also small jets of water falling into granite troughs at the bottom, for dogs, and an inscription over the jet of each fountain. The Association did me the honour of awarding me the third premium of 5*l*. and spoke in approving terms of the designs; but it seems the taste of the Association now has entirely changed in favour of Messrs. Willis's ornaments to defunct poulterers and butchers, in cast-iron. It is the more unjust to me, because you say in the description that you engrave the designs for fountains which the Association awarded premiums for.*

P.S. Which designs received the 20*l*. and 10*l*. premiums. However unjust the competition might have been, I had no interest in the Association.

THE DRINKING-FOUNTAIN MOVEMENT.

Inscription for a Fountain.—In one of your recent numbers, you gave some designs for drinking-fountains: may I draw your attention to the subjoined lines as appropriate for inscription on such public erections, at the same time teaching a noble moral?

TYLDESLEY.

LINES ON A SPRING.

Gentle reader, mark in me
An emblem of true charity,
Who, while my bounty I bestow,
Am neither heard nor seen to flow;
Rejoice by fresh supplies from Heaven,
For every cup of water given.—T. WARTON.

Drinking-Fountains for St. Pancras.—A committee of the representative assembly of St. Pancras have been in communication with the Free Drinking-Fountains Association, and at the meeting of the council the report of the committee was presented. It stated that the Free Drinking-Fountain Association had consented to erect five standard and four wall fountains in the parish, at a cost of about 350*l*. and to keep the same in repair, on the vestry paying them the sum of 100*l*. and supplying the fountains with water, which offer the committee earnestly recommended the vestry to accept. The surveyor had pointed out the following as the most eligible sites; namely, King's-cross, the Broadway at Camden-town, Brighton-street and Cromer-street, the Red Cap at Camden-town; Southampton Arms, Hampstead-road; Easton-road, near the London and North-Western Railway Terminus; Tottenham-court-road, by Whitfield's Chapel; at the Brill, Somers-town; near the York and Albany, Regent's-park; the Camden-road; Goldington-crescent; the Free Hospital, Gray's-inn-road; the Hampstead-road, near Genge-street; the Commissioners' Rooms, Kentish-town, and in Cumberland Market. Nine fountains for these sites are to be provided by the Free Drinking-Fountains Association, two by the Illuminated Indicator Company, and five by private individuals. The committee had applied to the New River Company and the West Middlesex Water Company for a gratuitous supply of water, which was refused. The former company stated that its charge would be sixpence per thousand gallons delivered through a metre into a cistern. A calculation had been made that a stream from

each fountain supplying three pints of water per minute would be sufficient, if kept up night and day, and that the annual charge per fountain would be about 5*l*. The report was adopted after some discussion. The vestry, it is said, have full power to carry out these fountains under the 92nd section of the Metropolis Local Management Act.

The Kensington vestry have taken up the subject of free drinking fountains. The Earl of Harrington had offered to erect one in the parish at his own expense, and the vestry had also resolved to erect six fountains at the expense of the parish; two in each of the wards of Nottinghill, Kensington, and Brompton. The sites have been selected, and the matter referred to the paving committee to be carried out. At the last meeting the board resolved they should be all mural fountains, inlaid with polished granite, similar to the one placed at Kensington-gore, at the expense of a friend of one of the vestry. The Grand Junction Water Works Company have offered to give a gratuitous supply of water to drinking fountains in the parish within their district, subject to regulations. Miss Evans, of No. 12, Sheffield-terrace, Kensington, is to erect a fountain at her own expense, and a lady, named Frances Patrick, of Ladbroke-place, Notting-hill, has offered to erect a cattle trough. A motion in the vestry, to the effect that a cattle trough be erected in each ward, however, was lost, we regret to say, by a large majority.

At Gravesend it has been resolved to erect two fountains, and it is hoped that ere long five in all will be put up. The two about to be erected are to be supplied from a tank on Messrs. Nettleingham's premises in West-street, and one is to be given for domestic purposes as well as drinking. The cost of the two will be 70*l*. and the local commissioners have only been asked to take charge of them.

At Brighton there are now two drinking fountains to be erected,—one at the top of the New-steine, the other at the top of Grafton-street; the former at the expense of Matthew C. Walker, Esq. of Home Park Lodge, Lower Sydenham. It is in a pyramidal form, upwards of 8 ft. in height, the principal part in Portland stone, and the ornamental part in Sicilian marble. On the summit is a place for a lamp, whilst the base will contain water for dogs, &c. The other fountain, which is the gift of a lady, is a mural fountain, and the water will issue from a water-lily. Both are the work of Mr. Pepper.

At Oxford, Mr. Cardwell, M.P. the Irish secretary, proposes to erect a fountain in one of the recesses of Magdalen-bridge. The design is by Mr. E. G. Bruton, of Oxford, architect. Mr. Langston, M.P. has also presented a drinking-fountain to his constituents, which will be erected in a part of the city where it will be a great accommodation to the poorer citizens.

At Newport, according to the *Hereford Times*, two fountains have been erected, one near St. Paul's Church.

The Sheffield Council have confirmed a report by a committee of their number on fountains, stating that various designs had been procured, and offers of fountains received, and recommending the erection of thirteen fountains on sites specified. It was expected, however, that the water company would supply the water gratuitously, especially as it would not be used in continuous streams. Whether dog-troughs should be added was not decided, but the Council ought not to grudge that small extra cost to complete the fountains. Eight fountains had been promised by various gentlemen.

The Edinburgh Council are proceeding with the supply of fountains to the city. The sub-committee, recently appointed, visited the Show-yard of the Highland and Agricultural Society to inspect the fountains placed there for exhibition, and the Lord Provost selected a pillar-fountain to be erected, at his own expense, on the Centre Meadow, near Melville Drive. The committee are making arrangements for the erection of fountains in various thoroughfares throughout the city. One, of a pillar shape, is about to be put up at the north end of Waverley-bridge. The one erected at the south west-end of Waverley-bridge, says the local *Post*, has proved a great success.

The Berlin correspondent of the *Times* says of the movement there,—The Berliners have refined it. On all the open places elegant little structures of wood, painted white, and more or less gilded, have been put up. They are about 12 feet by 8. Behind a narrow counter, adorned with water plants, two maidens serve out, to the thirsty, goblets of soda-water at the small charge of a half penny. They have many customers, and the ingenious speculator is doing a lucrative business,

while his strictures are considerably more ornamental, and perhaps not less profitable, than the Manners monument near Apsley House.

CHURCH BUILDING NEWS.

Faringdon.—The corner stone of the new church at Bourton, in the parish of Shrivenham, has been laid by the Viscountess Barrington. The church, which is dedicated to St. James, is to contain 16 sittings, and is from the plans by Messrs. Huggins and Johnson, architects, London. The contract for the building has been undertaken by Mr. Birchall, of Shrivenham. The stone-work is to be executed by Messrs. Honeybone, of the same place. The site was purchased for 250*l*. and presented, with a donation to the church, by Mr. Thomas Tucker, of Bourton.

Southampton.—The repairs and decorations of All Saints Church are proceeding, according to the *Hampshire Independent*. The ceiling and walls of the body of the church are nearly completed, and the chancel is in an advanced state. The ceiling is relieved by azure blue panels and partially gilded flowers. The chancel ceiling is treated in a somewhat similar manner, but with increased depth of tone, with gilded caps and marbled pillars below. The rector has, at his own expense, made considerable alterations to some of the gallery sittings, by which the accommodation will be increased. The ventilation has also been partially improved. Mr. F. Perkins has presented two stained glass windows for the chancel, and Mr. Mayes has offered to defray the expense of gilding the pilaster caps of the nave. Mr. Pantis, of Northam, is executing the work, under the superintendence of Messrs. Guillaume, Parmentier, and Guillaume, the architects.

Bristol.—The cathedral has been for some years very much crowded at the Sunday services, and a wish has been generally expressed that the Dean and Chapter would take some steps to arrange the cathedral so as to accommodate a large congregation. The Dean and Chapter have, therefore, employed Mr. Scott, in conjunction with Mr. Thomas Shackleton Pope, of this city, and have now before them from these gentlemen a plan by which almost the whole of the cathedral may be made available for public worship, and at the same time the architectural effect of the building, it is said, improved, and its adaptation for choral services not impaired. The Dean and Chapter will give 1,000*l*. towards the accomplishment of it, but they appeal for assistance to the public generally, and specially to the diocese and city of Bristol. On the liberality with which this appeal is responded to must depend, not only the extent to which the plans can be carried out, but whether they can be carried out at all; so that no contract will be entered into till the subscriptions paid in are of sufficient amount to warrant such a proceeding. The fund at present amounts to about 1600*l*.

Chalfonts (St. Andrew's).—Advantage has been taken of the rebuilding of Chalfonts Church to decorate it with stained glass windows, which have been sent by Mr. Philip Palmer, of London. The east window, of three lights, contains the figure of Our Saviour in the centre as the Good Shepherd, with St. Peter and St. Paul on either side. Above is a sexafool light, containing the Crucifixion. The side-chancel lights,—four single ones,—are composed of dispersed quarries, with ornamental borders. The west window, of three lights, consists of quarries painted with cherubs and several monogram, alternating with vine-leaf border. The tracery contains the dove, and in the cusps are flowers in colours.

Birmingham.—The foundation-stone of a new Congregational Chapel, at Acock's-green, has been laid. The building is from the designs of Mr. Twissell Thomson, of this town, and in style is Decorated Gothic. The material employed in the construction is white brick, with string-courses of blue and red, and Bath stone in the ornamental portions. A four-light window will be placed in the west elevation, and a tower and spire at the south angle. The spire will be of timber, and covered with particoloured slates, blue and green, and, with the tower, 90 feet in height. Internally, the building will be lighted on each side by four two-light windows, have an open roof, be without galleries, and provide accommodation for 450 persons. The height from floor to ridge is 41 feet. The cost of erection will amount to about 1,750*l*. The foundation-stone of the new church of St. Barnabas, to be erected in Hyland-street, Birmingham, has been laid by Miss Ryland. The church, which is being erected from the design of Mr. William Bourne, of Dudley, will accommodate about 800 persons. It will be built of Hampstead red stone, with Hollington stone

* Not so. We said, "We have engraved representations of a number of the designs for fountains which the Association awarded premiums to and are about to erect."

drawings, and is estimated to cost upwards of 3,000. Mr. William Nelson, of Dudley, is the contractor. The decorated style of English architecture has been adopted for the design. The front next Ryland-street will consist of an octagonal crocketed turret, arched entrances, and large traceried windows.

Everton (Liverpool).—The church of Everton has been re-opened after cleaning, painting, and decorating by Messrs. R. L. and J. Clay, of Liverpool. The interior walls have been painted St. Helen's stone colour, the ceiling and columns, and the gallery fronts and the pulpit, oak, and the pews have been reined with green cloth; Messrs. Clay have also executed the decorations round the windows. The stained glass in the galleries has been nearly all put up since the church was closed. The whole of the new stained glass has been designed and painted by Mr. Gibbs, of London. The windows are decorated in framings after the manner of the Alhambra, and this again is encircled in a bordering of marine blue, encircled with fleur-de-lis in gold.

Manchester.—The foundation-stone of a Wesleyan Chapel has been laid at Longlight. The site selected, says the *Manchester Advertiser*, is on a vacant spot of ground adjoining the road, opposite the entrance to Richmond-grove. The chapel will be in the Early Pointed Gothic style, as being most suitable to the materials, which are red, blue, and white bricks, with stone for the tracery of the windows, and other parts. Provision will be made for 450 persons in the area, and 150 children in the west gallery, and future enlargement can be made without injury to the appearance of the building. Behind the chapel will be minister's vestries and class-rooms, and over these a school-room of 180 children. A keeper's house will adjoin the chapel.

MASTERS AND MEN.

Sir,—I have known men amongst the most clamorous for high wages and the least deserving of them, who have, when opportunity offered, taken contracts at rates which, after a hard day's work, did not leave them the wages they got as journeymen. Many men of this description have managed to get into a large business, doing the trade serious injury by their cutting contracts, and failed for thousands of pounds. Such is the ruinous state of trade, in a large district well known to me, that out of a hundred firms now in business, it would be impossible to find more than two or three that had been in existence ten years, and those are men with incomes derived from other sources. This proves that "when a house is divided against itself it cannot stand." We want an amalgamation of interests. Let the employers and the employed combine to conduct business with honour and integrity, discountenance those who by fraud and untradesman-like conduct cause incalculable ruin to thousands. Let the average rate of wages be fixed by a committee of masters and men; then, above all, let the amount be apportioned according to the skill of the recipients, every man to be classified according to his abilities in the books of the Association, as 1st, 2nd, 3rd, or 4th rate; and if the standard rate of wages be fixed at 5s. then a 1st rate man will be worth 6s. 3d., a 2nd rate, 6s. 3d.; a 3rd rate, 4s. 9d.; and a 4th rate, 3s. 9d. By these means a man would have an inducement to pursue a steady and industrious line of conduct, and to earn the rank for which he strives, much of necessity both advance his own and his employer's welfare. Then may we adopt as our motto, "Unity is strength." The public would be infinite gainers by this movement; it would tend to form a little class of the best men known through hard workmanship, inferior materials, and fraudulent contractors. I trust that the present movement may lead to some permanently beneficial result. AN OLD BUILDER.

COUNTY COURT DECISIONS.

Sir,—Much dissatisfaction has of late been expressed regarding some of the decisions of the county courts in the country; but many of those in the metropolis are not unobjectionable. With reference to the case of *Bingham and another v. Jones*, reported by you (p. 611): on the 5th of August, the plaintiffs applied, by counsel, to the same Judge, for a new trial on the following grounds: 1st, that the disterns were of the proper size, and each was capable of containing the same quantity of water; 2nd, that the houses were the property of the defendant up to the very day of trial; 3rd, that all the charges in the plaintiffs' account were fair, proper, and reasonable; and even less than they were entitled to make; 4th, that the chimney-pieces were of the proper size ordered; 5th, that the plaintiffs had offered to take back all the goods on the 11th of March, but the defendant said they would do very well. All which facts, it was stated, the plaintiffs were prepared to prove if a new trial were granted. It was also stated, that since the trial the plaintiffs had got the disterns and chimney-pieces measured by Mr. Henry McCullough, a respectable surveyor, who had found them of the correct size; and his evidence, and that of Mr. James Tarrant, a blacksmith, who had done work at the same houses, and to whom the defendant admitted, on the very day of the trial, that the houses still belonged to him, could be supplied. On the part of defendant it was objected that the plaintiffs had not made the application for a new trial in time. Upon which the plaintiffs accounted for the delay by proving that they had been occupied during the interval between the former trial and the application for a new trial in finding Tarrant, the blacksmith, whose evidence was material; but the judge refused to grant a new trial, or to permit the plaintiff to be nonsuited, which it was stated they would prefer to having their claim reduced from 251. 18s. to 161. I submit that some alteration should be made in the law with regard to county courts, if it is intended

that they are to be conducted so as to afford an appeal to a judge of a superior court at chambers, in matters of fact as well as of law, in cases where the judge of the county court pronounces the verdict, and performs the office of a jury, or else that one of the judges of the superior court should sit in county courts, where the causes of action are 20s. and upwards. This remedy would be more satisfactory than the present system, whereby tradesmen are liable to have their claims reduced without any calculation, principle, or reason. If some remedy of this kind be not soon provided, the sooner county courts are done away with the better. A TRADESMAN.

STAINED GLASS.

Peterborough.—A stained window has been placed in the north aisle of the choir of Peterborough cathedral by Mrs. Mills, in memory of her late husband, the Rev. T. Mills, honorary canon of the Cathedral. The work was executed by Mr. Wailes, of Newcastle. The tracery is filled in with the four Evangelists, and in the lights below are represented the following subjects:—Christ blessing little children; Christ exhorting the fishermen to leave their ships; Christ exhorting St. Peter to feed His sheep; and the Last Supper. This is the third memorial window which has been recently placed in this cathedral.

Diss.—A memorial window to the Fincham family has been erected in the south aisle of Diss church, Norfolk. The subject delineated is Abraham offering his son Isaac, in sacrifice. This is the fifth window which has been decorated with painted glass during the last three years.

Saffron Walden.—Another window of stained glass (subject the Four Evangelists) has been placed in the south side of Saffron Walden church, by Miss Rickard, as a memorial of her brother, Mr. John Rickard, and sister, Miss Phillis Rickard, late of this parish. The artists are Messrs. Lavers & Barraud, of London.

Eastbourne.—At the request of several of the inhabitants, says the *Surrey Standard*, the vicar, the Rev. Thomas Pitman, has procured a design for a stained window for the parish church of St. Mary. It embraces five scenes from the life of our Saviour. The cost of this window, including the protecting wire and every necessary expense, will probably be about 250l. It is proposed to erect the window in parts as the subscription will allow of the progress of the work. At present subscriptions have been announced sufficient to enable the tracery to be put up.

Dalham.—Sir Robert and Lady Affleck have placed a painted window, by Willement, in the church of Dalham, Sussex, in memory of two of their children. The subject selected is Christ Blessing little Children.

Books Received.

London Health and London Traffic; being a Letter addressed to W. S. Lindsay, esq. M.P. on the Embankment of the North Side of the Thames, between Blackfriars and Westminster Bridges. By T. L. Wood, Esq. Barrister-at-law. London: Stanford, Charing-cross. 1859.

THE purpose of this letter,—to a member of the Royal Commission on Harbours, &c.,—is to urge the formation of an embankment from Westminster-bridge to a little below Blackfriars-bridge, on the north side only, with a roadway on the top, some feet above the level of high-water; leaving sufficient space inside the embankment, to form large docks or slips, or for the accommodation of a railway. That which was advisable and strongly approved of in 1844, remarks the author, becomes a stern necessity in 1859; and it is a question closely and directly connected with the existing scheme for the main drainage of London, inasmuch as within it would be laid the lowest level of sewers in the exact line required to meet the Victoria-street Sewer at Scotland-yard, while the requisitions of health and traffic would be in this particular also strictly identical. As it is, the river is not only a vast sewer, but one of the worst possible form, in this portion of it especially, being an open drain with two narrow ends and a bulbous middle. "Were it possible," the author remarks, "or rather practicable, to cut away the banks of the river with a clean sweep, it might be advisable to widen the river both at Vauxhall and Southwark; but if we cannot do this, the only practicable plan is to take the narrowest portion as an uncontrollable and unalterable condition, and train the bank on each side to the same width or thereabouts. Wide reaches cause slack: slack diminishes scour and creates deposit: contract the banks and the velocity above Southwark-bridge is no longer checked at flood; or at ebb below Vauxhall,—and

hence we get a better scour of the coarser deposit of shingle and silt in the low-water channel of the river and a clean foreshore, in which, as at Millbank or Southwark, no mud accumulates."

There is nothing really new in the scheme proposed; but neither is any novelty claimed; the main purpose being to re-urge what has before been urged, and to defend the formation of a portion, and that a most essential portion, of a system of embankment, which would, doubtless, better be wholly done at once; but, since that is plainly out of the question, even on the ground of ways and means, the next best would be to proceed with so much of the work; and the portion between Westminster and Blackfriars, on the north side, is that which Mr. Wood re-urges the proceeding with; and he points out the advantages of doing so, under the different heads of navigation, health, and traffic.

As regards the traffic, it is proposed that a line of roadway or street should run along the edge of the embankment from Hungerford-bridge, where it would communicate with Whitehall-place to Blackfriars-bridge, where it would also quit the river, and open up lines of communication with St. Paul's and Cannon-street.

The proposed embankment does not rise abruptly from the proposed new low-water mark of the dredged and deepened channel of the river, but a foreshore is left of a moderate and regular inclination, a matter indispensable, as remarked, to the safety of existing bridges and the accommodation of a due volume of tidal water, reference being had to the present width of the river at Southwark and London bridges.

The question of cost and ways and means is not particularly entered into, but Mr. Wood does not consider that to be an objection of much force, as applied to the limited scheme of which he urges the immediate realization.

The Official Illustrated Guide to the North-Western Railway (including the Chester and Holyhead Line) and all their Branches. By GEORGE MEASOM. Smith and Son, 186, Strand, &c.

The Official Illustrated Guide to the Lancaster and Carlisle, Edinburgh and Glasgow, and Caledonian Railways. By GEORGE MEASOM. Smith and Son.

THESE are two of the most extraordinary shilling's worths, as respects quantity, and even quality of matter, generally speaking, that have ever perhaps been presented to the public. The first comprises 573 octavo pages of letter-press and illustrations, and includes descriptions of the most important manufactories in the large towns on the north-western lines: it is embellished with no less than 360 engravings; and although some of the latter invite a suspicion of advertising purposes, still a great proportion of them do not, and are on the contrary good engravings of places and objects of general interest. The second of these Shilling Guides consists of 364 pages, of similar matter, and includes 150 engravings. Over and above, there are, between the two, about 100 pages more of an official advertiser, also useful in its way; so that for a couple of shillings, we have, in all, no less than 1,057 pages of useful and amusing printed and illustrated matter, including upwards of 500 engravings! Perhaps one of the chief objections to such guides is, that there is too much for the pocket; but although both are comprised in one somewhat ponderous volume in the copy before us, they appear to be usually issued separately, and are quite large enough indeed even in that shape.

Miscellaneous.

OPENING OF THE WORCESTER PLEASURE GROUNDS.—These grounds, twenty-five acres in extent, having been laid out as a garden and arboretum, were recently opened to the public. They include a bowling-green, archery, and cricket grounds, with promenades, and a central fountain. By an arrangement made by the directors on commencing the undertaking, the public were to have free use of the grounds on one day of the week, provided a sum of 1,000l. were subscribed towards laying them out, and that sum has been raised, so that on Mondays the grounds are open free to the public. The grounds form part of a seventy-acre meadow at Pitchcroft, close to the city, and easily available to all its inhabitants. They are surrounded by a dwarf brick wall and ornamental palisade. The gates are of ornamented iron, and the piers which support them are, like the wall, of parti-coloured brick.

MR. SPURGEON'S TABERNACLE.—We learn, from the daily papers, that the first stone of this building, already illustrated in our pages, was laid by Sir Morton Peto, on Tuesday last.

REMOVAL FUND, IN FUTURE OF ARCHITECTS.—Earl de Grey has sent 10*l.* to the Removal Fund. The following names have been added to the list of subscribers since our notice: Messrs. J. Clarke, P. C. Hardwick, Rev. L. Petit, H. Curry, J. Edmeston, C. Barry, J. H. Brown, R. R. Rowe, and D. Mocatta.

FRENCH MODEL LODGING HOUSES.—The Minister of the Interior, accompanied by the secretary-general of his department and other functionaries, has visited the model houses for workmen and the poorer portion of the middle class, which the Emperor has caused to be constructed on ground belonging to his civil list, and which his Majesty has presented to the Asile Imperial of Vincennes, as part of its revenue. These houses are 16 in number, and comprise 311 distinct lodgings, and 36 shops and backshops: each has besides a lodge for a concierge. As many as 363 families, forming from 1,200 to 1,300 persons, can be accommodated in them. The "apartments," though of different sizes, consist generally of ante-room, a kitchen, a dining-room, and one or two bedrooms. The fifth floor is set apart in rooms for single men. Each house is lighted with gas, and supplied with water and air.

IRON AND MACHINERY CONTRACTS FOR THE MERSEY DOCK BOARD.—At the meeting of the Mersey Dock Board, on Friday last, it was decided to accept the tender of Messrs. Mather, Ledward, & Co. to supply the best Staffordshire plate iron, at 9*l.* 15*s.* per ton, all round; angle iron, 8*l.* 10*s.*; T iron, 10*l.*; and Lowmoor iron, 19*l.*; and also the tender of Messrs. James Taylor & Co. for the supply of three railway travelling cranes, at 168*l.* each, and six portable cranes at 185*l.* each.

THE VICTORIA BELL, LEEDS.—We mentioned the casting of the hour bell for the clock tower of the Town Hall, Leeds, by Messrs. Warner & Sons, and now add a few particulars. The diameter at mouth, 6 ft. 2 in.; the height, 5 ft.; thickness of sound-bow, 6 in. Note B.—The bell is named after her Majesty, "Victoria;" above the name is a profile of the Queen: round the skirt, above the sound-bow, is the following inscription: "This bell, weighing 4 tons 1 cwt. 1 lb. was cast by John Warner and Sons, of London, for the Town Hall, Leeds, in the year of our Lord, 1859. Cutburt Drick, Architect."

STRIKE IN THE CHAIN TRADE.—Disputes as to wages have again taken place in Staffordshire, in consequence of which upwards of 1500 men are now idling about the country. The notice given by the men, however, is believed not to be a legal and proper one, and one of the superior law courts in London, it is said, will have to determine this question. A number of men were summoned before the Stourbridge magistrates for leaving their employ without giving due notice. These men were in the employ of Messrs. Noah Flingley & Sons, chain-makers, Cradley. After a long hearing, the magistrates said they should convict the men, but their attorney stated his intention to ask for a case, and carry it to the Court of Queen's Bench. The magistrates then adjourned the case.

BURSTING OF THE CANAL AT WALSALL.—Great alarm has been excited by the giving way of the embankment of that portion of the arm of the canal at Walsall which lies between the gas-works and Marsh-lane. The precise spot at which the bank gave way is close to a worked-out shaft, which very speedily swallowed up a vast quantity of the water let loose. The earth, too, gave way all round the shaft, so that it soon presented the appearance of a yawning gulf. In the streets adjacent a flood prevailed for several hours, and a serious amount of damage was done. It is supposed that the cause of the accident was extensive undermining near the spot.

THE NEW FOREIGN-OFFICE.—The cost of model, plans, and working drawings, and of obtaining builders' tenders, for the New Foreign Office, is set down officially at the sum of 3,800*l.* This sum does not include any charge likely to be made by the architect for the modified design prepared by him according to the instructions of the First Commissioner of Works and Public Buildings. If this design should be carried out, the above sum of 3,800*l.* (except 300*l.* for the model), as well as the amount of the architect's claim for the design itself, will merge in his commission and the builder's tender. Another return gives the number of square feet of floors in Mr. Scott's plan for the New Foreign Office, showing how much space is occupied by offices and how much by dwelling-houses and reception-rooms.

KENT COUNTY PRISONS.—Various works have been recently executed at the Kent County Prisons in Maidstone: amongst them may be enumerated the erection of a bakehouse with large oven, 12 feet by 10 feet, adjoining the cooking house, and a bath establishment, containing six baths and the necessary offices for the use of the prisoners. The prison built in 1856 for females has also been extended by the addition of dark cells for the punishment of refractory women. The water supply from the well to the prisons having been found insufficient, pipes have been laid from the reservoir at the Lunatic Asylum, Barming Heath, a distance of about two miles, to the gaol tanks, by which an abundant quantity of water is obtained. The works have been carried out under the direction of Messrs. Whichcord and Blandford, architects.

IMPROVEMENT OF COTTAGES IN SCOTLAND.—From the fifth annual report of the directors of the Association for Promoting Improvement in the Dwellings and Domestic Condition of Agricultural Labourers in Scotland, and supplementary report by Mr. Walker, the architect and secretary of the association, recently issued in a printed form, it appears that a considerable number of cottages have been built, during the last season, upon plans sent direct from the office of the association at Edinburgh, and that a better tone of feeling is generally manifested on the subject. The directors anticipate the best results from the many improved cottages which proprietors in different parts of the country have erected, and from the useful information, they might have added, which has for some years been diffused by the association and its agents themselves. To the reports are appended a selection of communications from members, and a report of the first annual general meeting. The architect's report, also, contains various plans and sketches, of use in the construction of labourers' cottages.

FALL OF WALTON BRIDGE.—Last week the bridge leading from Walton to Halliford, Middlesex, was observed to be cracking across the highway of the bridge over the centre arch, and the crack kept increasing so much as to allow parts to fall into the river, and ultimately the arch fell with a violent crash into the bed of the river. In a short time after the other arch fell in also with the same violence, without any injury to person or property. The *Times* says this bridge was built by Mr. Samuel Dicker in 1750, and consequently is 109 years old. There is now only communication by boards across the river. The bridge consists of four stone piers, between which are three truss arches of beams and joists of wood strongly bound together by mortises, iron pins, and cramps, besides which there are five arches of brickwork on each side to render the ascent and descent the more easy. The centre arch was exceedingly large. A correspondent who saw the fall of the arches says—"I had crossed the river just below the bridge in a punt with a friend, to take a sketch of it from the Walton side, when the falling of a few stones from the broken arch warned us to quicken our speed; and before we had well reached the shore the pier suddenly gave way, and the two large arches on either side, with the roadway for some 150 to 200 yards, fell into the river below with a tremendous crash. The water splashed up like a fountain, and the sudden displacement caused the river to rise in a wave four or five feet high, which, rolling down the stream with irresistible force, carried boats, punts, logs of timber, and everything within reach, before it. Fortunately, nobody was in a boat near the spot at the time, or he certainly must have been capsized, and perhaps drowned. The bridge was built of bricks with stone piers and buttresses."

"PROPER GARMENTS."—Your excellent remarks upon poor postmen's heavy black hats and sweltering hot red tunics lead me to say that wool becomes destroyed by summer heat, and that cotton outer garments are infinitely more comfortable and suited for the season. The very sheep are glad of getting rid of their fleecy coats in summer. I may remark that all hygienic practitioners urge the use of fine linen next the skin, as being sweeter for the purpose than cotton or wool. Few know the luxury of a linen sock till they try it. Such is the experience of one who lived ten years in the tropics. The *Builder* has a mission of building up the temples of the Holy Spirit as well as dwellings for those temples. I hear the character of impartiality attributed to the columns of the paper, and with such nothing can prevent success—and ultimate success is what all Christians desire.

A SEASON FOR ALL THINGS.

PROPOSED AMENDMENT OF LOCAL MANAGEMENT ACT.—On Saturday last Mr. Tite moved for and obtained leave to bring in a bill further to amend the 18th and 19th Victoria, cap. 120, for the better local management of the metropolis. His object in introducing the bill at that period of the session was merely to have it printed and circulated during the recess. The bill was brought in and read a first time accordingly.

DISPUTES BETWEEN MASTERS AND WORKMEN.—A bill "To establish Equitable Councils of Conciliation to adjust Differences between Masters and Operatives" has been prepared and brought in by Mr. Mackinnon, M.P. Mr. Slaney, M.P. and Mr. Ingham, M.P. but of course only for the consideration of hon. members during the ensuing parliamentary recess. The councils of conciliation will consist of an equal number of masters and operatives, and the awards of these councils (with certain formal exceptions) will be final and conclusive, and not subject to review or challenge by any court or authority whatsoever. These councils will be licensed by the Secretary of State when duly formed (on petition to that effect). They must include at least two masters and two workmen, and not more than six masters and six workmen, with a chairman. The councils will be elected for one year only, on the first Monday in December. The petitioners for a licence will elect the first council, but householders and part occupiers of houses in cities and boroughs (where a council has been formed) may be registered as voters for the council and be elected thereto. The masters will nominate their own portion of the council and the workmen elect theirs. The sessions of the council are to be held in the justice court-house.

THE SOCIETY OF ORNAMENTAL SCULPTORS.—This society have issued an address to stone-carvers, wherein they say:—"We repudiate strikes as unworthy our profession. We desire not to dictate to man or master, but to leave each his full liberty. We desire to place the employers on an equality, by giving our individual services to each on the same terms; and further, we do not wish to make the works of one employer very expensive, and, by scamping, make the works of another so much cheaper, thereby giving the cheap one an undue advantage, to the detriment of our profession: we prefer doing our work according to the position it is to occupy, so that it may be an ornament to the building, and not a ridicule to ourselves. We believe these principles, properly and honestly carried out, will cement our union more closely, in removing much grievous jealousy, replace it with confidence in individual integrity, and our rivalry will then take its legitimate form, viz. a fair and friendly emulation. By these means, we hope to gain for the profession and its members that position and respect to which they are entitled, but from which they are delarded by the present careless and scamping manner in which many of our works are executed." The secretary is Mr. Stewart, 22, Vauxhall-bridge-road.

MIDLAND COUNTIES' ARCHEOLOGICAL SOCIETY.—The members of this Society have recently made an excursion to Wroxeter and Shrewsbury. The proceedings were divided into two sections, the excursion being preceded by an exhibition and *conversazione* in the rooms of the Midland Institute, which the Council had lent to the Society. The exhibition, though more restricted than that held two years ago in the Free Grammar School, was of an interesting character. It was arranged in the Institute News-room. On the *conversazione* evening, a large party assembled in the Theatre of the Institute, to hear some explanations from Mr. Thomas Wright, F.S.A. on the recent discoveries at Wroxeter, or Uriconium. The chair was taken by Mr. C. H. Bracebridge. After Mr. Wright's lecture, the company adjourned to the Patent Specification Library, where refreshments were set out, and then dispersed throughout the building, but re-assembled in the News-room at a later period of the evening, to hear a paper by Professor Chamberlain on "Half-timbered Houses." The party went to Wroxeter on the following day. About 150 left the Snow-hill station by special train for Upton Magna, for Wroxeter. At Upton Magna they halted for a few minutes, to await the arrival of the omnibuses, coaches, and cars, destined to convey them to Wroxeter. After having sufficiently explored Uriconium, the visitors went on to the ancient church at Wroxeter, the gateway of which is guarded by two massive columns taken from the ruins. They afterwards went on to Shrewsbury, and inspected its antiquities, including the Museum and the various objects found at Uriconium, and there exhibited.

ROTHERHITHE.—The foundation-stone of a Baptist Chapel was laid on the 5th inst. by the Right Hon. the Lord Mayor. The style will be Pointed, with open timbered roof, porches, and vestries. The material employed is white brick, with red and yellow brick buttresses and arches. The chapel will seat about 325 persons, and the total outlay will not exceed 900*l*. including boundary-walls. Messrs. Morris and Son, of Poplar, are the architects, and Mr. Robt. Lawrence the builder.

COOL ROOMS.—The following may be useful this very hot weather. It is a letter from J. E. B. Neil, esq. in the *Lancet* of last week. He says:—"It may be interesting to your numerous readers to learn, since in fevers a cool room frequently does as much good as medicine, that blinds, coated with the following composition, and placed outside the window, are both sun and rain proof. The greatest heat will not affect them. Boil well together two pounds of turpentine, one pound of litharge in powder, and two or three pounds of linseed oil: the blinds are to be brushed over with this varnish, and dried in the sun. Umbrellas, light linen coats, and covers of hats, may be so treated."

COTTAGES FOR LABOURERS ON ENTAILED ESTATES.—A bill has been prepared and brought into Parliament by Mr. W. Ewart, Mr. Dunlop, and Mr. Black, "to Facilitate the Erection of Cottages for Labourers by the Proprietors of Entailed Estates in Scotland." The preamble of the bill recites the Acts 10th George III. cap. 51; 11th and 12th Victoria, cap. 36; and 16th and 17th Victoria, cap. 94, which provide for the application and recovery of sums expended on the permanent improvement of entailed estates; and the enacting clauses of the bill are as follow:—"From and after the passing of this Act all the provisions of the recited Acts which relate or apply to improvements of entailed estates of the nature contemplated by the first recited Act, shall be held and construed as including and applying to the erection of cottages for labourers, upon such estates, in the same manner in all respects as if the erection of such cottages had been specified in the ninth section of the first recited Act among the other improvements therein mentioned. 2. From and after the passing of this Act the erection of cottages for labourers upon entailed estates, or upon lands directed to be or invested with a view to being entailed shall be held to be one of the permanent improvements of such estates or lands contemplated by the second and third recited Acts; and all the provisions of those acts which relate to the permanent improvements of such estates or land shall be held and construed as including and applying to the erection of such cottages."

ACCIDENTS TO PERSON AND PROPERTY.—The bridge on the highway, across the river Tawe, near the Ynyscedwyn Arms, at Ystrad, near Swansea, has for some time past been giving way, and has at length fallen, but fortunately through the night, when no one was near it. The whole neighbourhood was disturbed by the noise.—As a carpenter, aged 60, was repairing a roof at Sandhill Farm, near Withycombe, West Somerset, his foot slipped and he fell, pitching on his head, and was killed instantaneously. A singular fatality has attended this family. There were three brothers, all carpenters: the eldest committed suicide in London, by cutting his throat; the second hanged himself in his workshop, and the third met his death as above stated.—An alarming scene has taken place at the laying of the foundation stone of the new Primitive Methodist Chapel at South Shields. The chapel is in course of erection near the Jarrow Docks; and it is proposed to use the ground floor for a school. The erection is built above the second story, and the beams and planks were laid for that floor. At the time the ceremony was about to take place, about 150 persons, mostly pitmen, had got upon this floor, using it as a platform, when the central beam of the floor snapped, and the whole living mass, with the material, came down with a horrible crash. A fearful scene ensued. The shouts of the injured people, and the screams of females, who were fainting on all sides, were appalling. It was a few minutes before the people could recover their senses to pull out those injured from amongst the fallen material. Those who were hurt were attended by medical gentlemen present, but fortunately no one seems to have been killed.—At Dundee a mason was stepping backwards upon two planks, which formed a scaffolding, when he overbalanced himself. In falling, he caught hold of a man working beside him, and both came to the ground from a height of about 40 feet. One was killed on the spot; the other died shortly afterwards.

CARLISLE.—The foundation-stone of a new "Evangelical Union" Chapel has been laid at the foot of Cecil-street. The building funds have been raised by subscription. The edifice is to be in the Gothic style, and capable of accommodating about 450 persons. Provision has been made for a gallery, and below the chapel a school-room is to be made. Mr. Raper is the architect.

BREACH OF CONTRACT WITH WORKMEN.—In a special jury case at the Court of Passage, Liverpool, the plaintiff, Robert Davidson, a journeyman sawyer, who had been in the employ of Messrs. Royden, shipbuilders, sought to recover damages for an alleged breach of contract on their part, as defendants. In consequence of a strike amongst the sawyers in Liverpool, last year, the defendants advertised for new hands, guaranteeing, in the advertisement, twelve months' employment, "if suitable." The plaintiff was engaged on these terms; but soon after the old hands were gradually taken on, one by one, and he was ultimately discharged by the defendants on the 26th of October. He obtained another situation in February last; and therefore sought to recover compensation for being out of work from October till the end of the twelve months. The defence was, that there was plenty of work for the plaintiff; that if he did not make a higher wage it was because of his own incapacity; and that he had not been discharged by the defendants. The jury, after about half an hour, gave a verdict for plaintiff, damages, 35*l*.

RENEWING A LIGHTNING-CONDUCTOR ON A TALL CHIMNEY.—A Sheffield builder, Mr. Brown, having undertaken to climb to the top of the great chimney at the Stoke Alkali Works, 312 feet high, for the purpose of repairing the lightning-conductor, we have now to report the accomplishment of his task. Instead of throwing over the chimney a cord, followed by a rope and tackle, by help of a kite and string, Mr. Brown had prepared for the purpose twenty-four ladders, each 21 feet long. These were raised one after the other with the assistance of three workmen, until the top was gained. Each ladder was spliced to the next by a rope, and fastened by two pairs of hooks driven into the chimney, to prevent oscillation. The twenty-third ladder having been fixed immediately beneath the cornice, which projects 3 feet 6 inches, the last ladder was tied to it, the top projecting outwards, and in this position Brown ascended it on the under surface. The men afterwards followed with the points of the lightning-conductor, to fix in the place of the old one, which had been eaten away by acid from the chimney, to a length of 3 feet. Three points were fixed in the place of the old single one. The removal of the ladders was a comparatively easy task. The men engaged had occasionally to suspend themselves by hooks, fastened into belts worn round their waists, from the ladders. Workmen are repairing the spire of the Stoke parish church, the same persons being employed as in the repair of the lightning-conductor.

THE METROPOLITAN RAILWAY.—The report of the directors of the Metropolitan Railway Company states that everything is now in a fair way for the realization of the line to Farringdon-street. Six-sevenths of the required capital have been secured, and a deviation bill has recently been passed instead of the abandonment bill, which was withdrawn. The report of the engineer, Mr. Fowler, states that the sections of the archway and other works of the railway, including the chief stations near Paddington, are ready to be submitted to the inspection of contractors. He proposes the selection of a certain number of contractors of high position, and with peculiar fitness for works of this character, and the drawing up of a proper tender and draft contract, including a reference to plans and other documents, to obtain proposals for the completion of the works of the railway on a guarantee contract, inclusive of all contingencies. It will be a matter of serious consideration for the board, however, adds the report, whether it would not be better to wait the termination of the present strike amongst masons before issuing tenders for the letting of the work. On this subject the chairman observed, at the recent meeting, that he would recommend that portion of the report to the consideration of the working men themselves, as they were by their own conduct preventing the expenditure of capital amongst them, and thereby losing the advantages which their labour and industry ought to produce. The report has been adopted by the proprietors. The line will start from an open station at Paddington, and the whole of the line from King's-cross to Farringdon-street will be open, whilst the carriages will be so constructed and lighted as to remove any objection to the tunnel under the New-road.

GAS.—The Sale of Gas Bill has passed through the Houses of Parliament.—At Woodbridge, in Suffolk, a new gas company has been formed, under the Limited Liability Act, capital 5,500*l*, in 550 shares of 10*l*. each. It is the intention of the new company to provide the town with a sufficiency of gas, by laying down new mains of a larger diameter than the old ones. This is now being done.—The Wivelscombe Gas Light and Coke Company pay a dividend of 6 per cent. and announce a reduction in the price of gas from 8s. 4d. to 7s. 6d. per 1,000 cubic feet.

TENDERS.

For building five houses on the Craven Estate, south side of the Strand, east and west of Craven-street; Mr. Fred. W. Bushill, architect. Quantities taken out by Messrs. Newman and Wilson.

Lucas, Brothers.....	£13,713 0 0
J. & C. P. Anson.....	12,990 0 0
Holland and Hannen.....	12,188 0 0

For Wycliffe Chapel, Bristol-road, Edgbaston. Mr. Cranston, architect, Birmingham:

Branson and Gwyther.....	£7,616 0 0
Webb.....	6,576 0 0
Wilson.....	6,493 19 0
Briggs.....	6,385 0 0
Hardwick (accepted).....	6,965 0 0

For schools and residences, Bloxwick, Walsall; Mr. Cranston, architect, Birmingham:—

Evans.....	£3,651 19 8
Hardwick.....	2,972 0 0
Briggs.....	2,645 0 0
Rowley.....	2,785 0 0
Jones.....	2,628 0 0
Stokes.....	2,607 10 0
Highway (accepted).....	2,830 0 0
Baker.....	1,998 0 0

For Villa, at Thorpe-next-Norwich, for Mr. Isaac Bugg; Messrs. Goodwin & Butcher, London, architects. Quantities supplied by Messrs. Benest & Newson, Norwich:

Davis.....	£2,457 0 0
Rump.....	2,504 0 0
J. G. Lacey.....	2,250 0 0
Bocking.....	2,200 0 0
Plummer & Bloom.....	1,990 0 0
Ling & Ball.....	1,940 0 0
T. Brooks.....	1,938 0 0
J. W. Lacey.....	1,935 10 0
Brown & Bailey (accepted).....	1,929 15 0

For rebuilding 13 and 15, King-street, City; Mr. T. E. Knightley, architect:—

Woods.....	£2,231 0 0
Coleman.....	2,658 0 0
Batterbury.....	2,524 0 0
Forster.....	2,520 0 0

For the erection of five cottages for Mr. Hearne, at Buckhurst-hill, Essex; Mr. J. H. Rowley, architect:—

Ennor.....	£1,682 0 0
Humphreys.....	1,595 0 0
Rivett.....	1,463 0 0
Cushing.....	1,399 0 0
Carter.....	1,160 18 0

For a rectory-house, in the parish of St. Thomas the Apostle; Messrs. Tress & Chambers, architects:—

Lucas.....	£1,822 0 0
Jay.....	1,816 0 0
Conder.....	1,727 0 0
Wilson.....	1,765 0 0
Deardis.....	1,757 0 0
Coleman.....	1,747 0 0
Brown.....	1,728 0 0
Macey (accepted).....	1,613 0 0

For building house, No. 15, Minorities, for Mr. R. Carter; Messrs. Smith and Williams, architect. Quantities by Mr. R. Carter:—

King.....	£1,652 0 0
Brown and Robinson.....	1,593 0 0
Patman & Fotheringham.....	1,630 0 0
Little & Son.....	1,669 0 0
Wilson.....	1,466 0 0

For a semi-detached villa, at Great Crosby, near Liverpool, for Mr. E. Halswood; Mr. T. Mercer, architect. Quantities supplied. Accepted tenders:—

<i>Brickwork and Masonry.</i>	
Sawyer, Waterloo.....	£419 0 0
<i>Carpenter and Joiner's Work.</i>	
Griffin, Waterloo.....	315 0 0
<i>Slating and Plastering.</i>	
Charnock, Seaforth.....	138 0 0
<i>Painting, Plumber, Glazing, and Iron-work.</i>	
Maudslayi, Great Crosby.....	174 10 0
Total.....	£1,045 10 0

For works to be done in alterations and additions to premises, Noble-street, City, for Mr. Goddard; Messrs. Tiltott and Chamberlain, architects:

Pritchard & Son.....	£736 0 0
Hooken.....	695 0 0
Conder.....	659 0 0
Brass.....	648 0 0
Prince.....	645 0 0
Duplock.....	644 0 0
Wills (accepted).....	581 0 0

For the erection of a detached villa, for Mr. A. Read, Buckhurst-hill, Essex; Mr. J. H. Rowley, architect:—

Humphreys.....	£445 0 0
Ennor.....	439 0 0
Rivett.....	423 0 0
Cushing.....	416 0 0
Davey.....	390 0 0
Carter.....	365 0 0

A TO DECORATORS, GRAINERS, AND PAINTERS
RESPECTABLE YOUNG MAN, from
 a large MANUFACTURING FIRM, in the west of England, and
 desirous of obtaining a SITUATION as a PAPERHANGER, GRAINER,
 and GENERAL HOUSE-PAINTER. References given, if required.
 Terms preferred.—Address: H. B. 29, Pall-mall street, England road.

The Builder.

VOL. XVII.—No. 864.

The Economic Museum at Kew.

TO institutions are more characteristic of the educational movement of the present day than Economic Museums, such as those of Kew, Jermyn-street, and Brompton, and some of the collections in the British Museum. Being entirely of modern creation, they have had the good fortune to escape the trammels of red-tape and routine, and are remarkable instances of what science and common sense can do when working together with honesty of purpose. The establishment of Kew is in all its departments managed on these enlightened principles. Too much credit cannot be given to Sir William Hooker, who was amongst the first to introduce an intelligent system of management into the national institutions of the metropolis. In his hands an establishment, which, a few years ago was no better than a second-rate private garden, has advanced to the rank of a model institution. The secret of his management consists in the personal interest he has, from his first appointment, taken in the progress of the establishment, aided by a profound knowledge of his science and good common sense.

A more interesting or better arranged collection of vegetable products it would be difficult to find than that of the Museum of Economic Botany. As a scientific assortment, it is, perhaps, unequalled. In its galleries are exhibited all the families of plants in their proper place and order, with the principal uses and applications which their productions have received. This arrangement is evidently the only one that could be employed to carry out, without confusion, the requirements of the general collection. It was adopted in order to overcome the inconvenience which had been found to attend the more commercial classification that was followed when the Museum was in its infancy. Without venturing to suggest any deviation in this respect, we may, perhaps, however, be allowed to hint that sub-arrangements might with great advantage be formed of some of the more extensive classes of products; such, for instance, as timber, with the view of bringing together those of them which have received similar applications. This would, no doubt, necessitate the procuring of duplicate specimens of many substances; but as these would, for the most part, be articles of commerce, the formation of such sub-arrangements would neither be difficult nor costly.

It would very greatly aid to the instruction which the industrial classes derive from the Museum to afford them an opportunity of studying the substances used in their own or kindred trades, placed in juxtaposition, as well as to enable them to examine these materials classed among other substances analogous in a botanical point of view, but probably very different in most of their sensible qualities.

The re-establishment to a limited extent of concurrent commercial groups would also serve the purpose of a sort of index to the general collection. A perfumer—not a hair-dresser—but a real perfumer—for instance, would have no difficulty in discovering, among the commercial sub-arrangements, the group of aromatics in which, among many articles familiar to him, he would probably notice several to which he

was a stranger. These coming before him in this way in company with old acquaintances would be certain to attract his attention; whereas, buried as it were in the general collection, they would most probably entirely escape his notice. By means of the information to be obtained from the cases through cards exhibiting the botanical names and other particulars, he could then consult such articles as interested him most in their places in the general collection, and study them in their scientific bearings and botanical affinities with other individuals of the families of plants to which they belonged. For want of these collateral assortments, our perfumer would, for instance, be very likely to leave the Museum without having had his attention drawn to one of the most remarkable of odoriferous substances, namely, the “*agaila* or eagle-wood,” generally considered to be the *lignum aloes* of Scripture, which is so highly esteemed all over the East, from China to Constantinople; lost as it would be to him under the head of *Aquilariaceae* and in companionship with the numerous members of *Aristolochiaceae* and *Euphorbiaceae*.

It may be worthy of remark, in passing, that one variety of this precious substance, which generally attracts the curiosity of travellers in the drug bazaar of Stamboul by its extraordinary price, is actually the produce of British territory; and yet it may be said to be unknown to British commerce, very much as the strong-smelling *Vetivert* (*Andropogon muricatus*), so generally employed on the Continent for the preservation of furs and clothes from the moth, but hardly ever brought to this country, is the produce of a common Bengal weed. “Eagle-wood” which at Silhet, the place of its growth, sells for about 2s. per pound, in other Eastern countries is worth 5s. and at Constantinople 30s. per pound! Yet it is left entirely in the hands of native traders. In the *Arabiaceae* family there likewise occurs a curious article to which British trade is not sufficiently alive, namely, the “American Ginseng” which at Canton is worth 70 dollars per picul, or 2s. per pound. It is entirely in the hands of the Yankees, although the plant grows wild in abundance in Prince Edward’s Island as well as in the States. Practical information of this sort might be more appropriately introduced in a commercial classification than in the general scientific collection.

Timber, which is far the most extensive of all vegetable products, would admit of several commercial subdivisions, such as ornamental woods, those used in naval architecture, those employed in buildings, dye-woods, medicinal woods, &c. The group of ornamental woods comprising the numerous fine specimens from Australia and New Zealand would be particularly interesting. At present these are scattered through a great many different families, and are necessarily located in separate and often distant parts of the building. A very curious and instructive group might be formed of the ornamental woods of the ancients, from which we should learn that long before the introduction of rosewood and mahogany, all the requirements of luxury were answered by woods of European or Mediterranean growth. This is more likely to be admitted now than would have been the case previously to the modern fashion for walnut-wood, which was the old-fashioned standard furniture wood of the Romans, as we learn from Juvenal, sat. xi. 117:—

“Tables made here at home those times beheld
Of our own wood: old walnut that was told
By some kind tempter, when the wind lay east.
Now our rich gourmands value not a feast
Unless the meats be served on citrus board
Whose ample width rests on some ramant pard.”

In ancient times much more attention seems to have been paid to the qualities possessed by certain parts of a tree than to the species of tree used. From Pliny we learn that the burs produced by certain trees, on account of the variety of figure which they displayed, were chiefly sought after for ornamental purposes. It is only recently that this quality of wood has been turned to any account in modern cabinet-work. The walnut furniture of the present day is an instance of the revival in favour of burr wood. Notwithstanding the

important part which burr walnut-wood play in modern upholstery, it is somewhat surprising that no samples of it whatever, except a very insignificant piece of veneer, are to be found in the Kew Museum. This is a want which could be readily supplied from the Faubourg St. Antoine in Paris, where very curious and beautiful specimens are to be seen in the warehouses of the dealers.

Many of our native trees produce extremely handsome burr woods, such as the elm, poplar, yew, oak, willow, ash, and alder, which, when duly chosen and properly opened, furnish wood very much superior for effect to the ordinary run of foreign wood. Our country gentlemen, if possessed of the requisite information, could often produce, from their own estates, ornamental materials for furniture, that would far surpass in beauty the wood usually furnished by their upholsterers. A collection formed to illustrate the ornamental woods of Pliny, would exhibit some of our English trees, in certain circumstances, to possess many fine qualities. The alder, for instance, ordinarily considered fit only for stakes in wet ground, when old and burry would appear to great advantage, bearing out the ancients in placing it among the veneer woods. In reference to this wood, Sir T. D. Lauder, in his edition of “Gilpin’s Forest Scenery,” observes,—“The old alder-trees which are full of knots, cut up into planks, have all the beautiful figure of curled maple, with the advantage of presenting a deep, rich, reddish tint, and in this state they make very handsome tables.” This is almost an amplification of Pliny’s words:—“Dat et alnus tuber scitile, sicut citrum, acerque.”

Some of the other Plinian ornamental woods, of more southern growth, which are now rarely or never met with in this country, would, no doubt, likewise prove worthy of their ancient reputation. Among these are the ilex, palm, and terebinth *Pistacia terebinthus*. Only the latter figures at Kew, in the shape of a small sample of plane-wood, among the anacards in case 21. It would be very interesting to have a specimen of burr terebinth, which was a wood much esteemed by the Romans for small work. Petronius mentions it:—“Sequebatur puer cum tabula terebinthina et crystallinis tessellis,”—a boy followed him with a draught-board of terebinth-wood, and crystal dice.

Beautiful specimens might be procured from Orihuela, in Spain, in the form of snuff-boxes, which are still made there, and very highly esteemed. The ilex oak is extremely abundant on the north coast of Spain, but we do not remember having seen it used for ornamental purposes. The palm is, however, sometimes so employed at the present day; and a very curious cabinet made of palm-tree veneers is to be seen in the South Kensington Museum.

Perhaps the most interesting of all the ornamental woods in the Museum are those furnished by some of the species of *Callitris*, especially *C. quadrivalvis*, which is the tree that produced the renowned citrus-wood of the ancients, an account of which was given in the *Builder* of 11th April last, by a correspondent. The samples of this wood, which are in the Kew collection, give but a faint idea of its surpassing beauty, which, in some specimens we have seen, is such as fairly to justify the Romans in the extraordinary admiration they entertained for it. The specimens we saw at Kew were all small pieces, obtained from French Africa, which never was the true habitat of the tree. We looked in vain for the citrus table mentioned, in the *Gardener’s Chronicle* of 21st May, in a review of a reprint of our correspondent’s communication above alluded to, as to be seen in the Museum of Economic Botany at Kew, but found only one composed of the wood of the Australian *Callitris robusta*, which, though very beautiful, is not really a citrus table at all. We will take this opportunity for disputing the criticism of the *Chronicle* on the orthography of the word *θίον* alluded to in our correspondent’s contribution. The Homeric word is *θίον* and not *θίων*, as the reviewer’s incorrect correction would have it. Both he and the learned Endlicher, whom he quotes as an authority, are utterly wrong on

this point, as any copy of the "Odysse" will prove—

Ἦτο μὲν ἐπὶ τῷ ἄλκιμονος Ἰσάκου, τῷ ἰσθμῷ δὲ δὲ
Κέρων τ' ἐκείνους, θύον τ', ἀνὰ νῆσον δὲ δὲ,
Διομήδην. Ὀδ. ι.

"A mighty fire upon the hearth did flame,
The native prince, and his domestic frame,
Of cedar cleft, and thura was the pile
Which breathed its odour round about the isle."

The wood of the genus *Callitris* ought to have a special interest for us, on account of the great number of species which occur in some of our colonies; as, for instance, Australia, where no fewer than twenty are found. In the Museum are specimens of the wood of *Callitris robusta*, which exhibit, so far as plain wood can, many of the fine qualities of the North African callitris. It is reported that none of the Australian species produce burrs; but we are inclined to think that an experienced "burrer" or burr-finder would be able to discover them where an ordinary woodman would fail. The discovery of burr-wood in the Australian callitris would be of very great importance, because it is evident, from the qualities found in the plain wood of *Callitris robusta*, that it would probably closely resemble that of *Callitris quadrivalvis*, which, in the present condition of the Barbary States, it is almost impossible to procure.

We cannot close this brief notice of Kew without calling attention to the want which exists of a place of refreshment somewhat in keeping with the character of the Gardens. It would surely prove a remunerative undertaking to establish a large and elegant refreshment-room or *café*, supplying good articles at a moderate rate and in a civilized manner, in the place of the miserable tea-dens and common public-houses which alone are found at present round this delightful resort of the Londoner.

VISIT OF ARCHITECTS TO THE PREMIER, ON STYLE OF FOREIGN OFFICE.

In consequence of the appeal made, about a fortnight previously, by several amateurs to Lord Palmerston, in the hope that his decision as to the rejection of any Gothic style for the new Foreign Office might be reversed, a number of architects, as we mentioned in our last, holding a contrary opinion, obtained on Wednesday, the 17th, an audience from his lordship. The deputation (if we may so call it) consisted of Messrs. Banks, Barry, Bell, Brodick (Leeds), Clifton, Cockerell, Professor Donaldson, Falkener, C. Fowler, jun. H. B. Garling, P'Anson, Kerr, Lamb, Low, Mee, J. W. Papworth, Scoles, Smirke, A.R.A., Thomson, and Watson; with communications of assent to the proposed step from Messrs. Asphitel, Bellamy, Coles, Davies, Hesketh, Owen Jones, Penrose, Walters (Manchester), and others.

Mr. Tite, M.P. introduced the deputation, and said at starting he wished it to be known that the present movement and deputation had not in any way originated with himself or Mr. Coningham. He then begged his lordship's attention to the gentlemen above named, who represented the views of 200 out of the 230 architects of this and other countries who had responded to the appeal of the former Government for competition designs. Before leaving them to speak for themselves, he felt at liberty to remark that if the architects who had been summoned by Sir B. Hall as Chief Commissioner of Works and Public Buildings before the conditions of competition were drawn out had been consulted as to the choice of a style, then indubitably a Gothic style would not have been adopted; that the ground of nationality put forward for the Gothic adopted by Mr. Scott was fallacious, inasmuch as its principal features were to be found in the Lombard-Gothic of the early part of the thirteenth century, combined with the character of the town-halls of Belgium of a much later period; and that if the present case were given as an opportunity for an experiment on a new Gothic style, he should consider it as a most injudicious step. He succinctly repeated the chief topics of objection to the Gothic style for the present purpose, such as expense, congruity, light, &c. which he had already made public. Having laid before his lordship official plans of the site, and having explained the actual condition of the locality with reference to the expense of the demolition of some of the present buildings (of which, as he observed, no sufficient explanation could be given in the House of Commons with an constant and inappreciable reference to such plans), Mr. Tite pointed out that as

the whole mass of Mr. Scott's building would fill up, or nearly so, the site from the Park to Parliament-street, as bounded by the yellow lines in Sir Benjamin Hall's plan, the result would be, that his great tower and the most of his Park front would be hidden behind the State Paper Office, and that the flank abutting in Downing-street could not be built at all without destroying the buildings of the present Colonial Office. He further urged the necessity for character and expression in a public building; that the destination of an edifice should appear as much as possible upon its face—that a prison should look like a prison, and a palace like a palace. Mr. Tite gave considerable praise to Somerset House as originally designed by Sir W. Chambers, and as lately partially completed by Mr. Pennethorne. He concluded with the expression of his confidence in Mr. Scott's ability, if that gentleman thought it compatible with his position in the profession, to relinquish the style in which he had obtained so high a reputation, and of the desire of himself and deputation as not intending to make any remark that should be personal to that gentleman, who was known to almost every one of them.

Mr. Sydney Smirke said that he was anxious to disavow all personal feelings on this occasion; he had not taken part in the recent competition, and, therefore, could be actuated by no feeling of disappointed rivalry. He had, moreover, a great regard for Mr. Scott, and highly appreciated his talents as a Gothic architect; but he felt that the true interests of his profession demanded that every exertion should be made to resist the attempts of a certain set of medieval *dilettanti*, to force on us their thirteenth-century style, which, however picturesque, and however well suited to ecclesiastical purposes, was as clearly unfit for the architecture of public offices, as would the costume of that century be for the dress of the clerks and porters in those offices. It might be well to look to the example set us on the Continent. He was not about to set up France as *arbitratrix elegantiarum*, nor would he deny that French architecture was open to much criticism; but it would be as idle to deny great aesthetic excellence to French architects, as to deny the bravery of the French army. What then did they do? During the last eight or nine years they had been enriching Paris with a mass of architectural magnificence, and yet not one public building has been there erected in the Gothic style. Nor was this owing to their not being conversant with that style, and enthusiastic in its study, for there were in France some of the best architectural antiquaries in Europe; but by their totally abstaining from Gothic in their public works, they practically admitted its unfitness for them. The same entire absence of Gothic existed in the recent architecture of Berlin, Munich, and, he believed, also at Vienna. He therefore trusted that they would resist, *forte viribus*, the adoption of the Gothic style for the Foreign Office; for if thus the thin end of the wedge were inserted, it would necessarily follow that the whole of the contemplated pile of public buildings occupying great part of Westminster, would be in the same streaky, gable-ended style; and if such should unfortunately be the case, he would predict that hereafter the architecture of England would become the laughing-stock of Europe.

Professor Donaldson said he thought that the deputation might also express some of the indignation felt by the majority of the competitors and of non-competing architects at the result of the competition. Not that they were dissatisfied with the decision of the judges, who, it would be remembered by his lordship, had agreed with their professional advisers in placing designs that were not Gothic at the head of the lists of premiums. He condemned the exertions that were made to reverse the effect of those decisions by some of the *dilettanti* to whom Mr. Smirke had alluded, and which were rendered nugatory by the committee (of the House of Commons) consequently appointed, as the committee came to no conclusion. He also laid considerable blame on the late Chief Commissioner of Works, as having attacked the integrity of the system of competition, which ought to be founded on the principle that the award of the execution should, wherever possible, fall to that of the prize. The professor eulogized the architects who had decorated, not only the Western portions of the metropolis, but also the City, and who, by their works, had those been even restricted to the designs exhibited at Westminster during the competition, evidenced the fitness of their minds to form an authoritative opinion upon the subject under consideration. He considered that, where a

Gothic style had been employed in London for buildings intended for business, the style had been made to serve as a sort of advertisement; but those were very few, and he urged that, if retrogression was to be the *mot d'ordre* from the public to the architects, then there was no reason shown why that backward step should only reach to the Gothic period. He felt that the choice of a Gothic style for the Palace at Westminster might be defended upon tradition, and begged his lordship to remember that the new Foreign Office, if in contiguity with anything, was in close proximity to a number of buildings that were not Gothic, and to one of the gems of European architecture, the Banqueting House.

Mr. Coningham, M.P. concurred in the remarks that had been made, which he thought were confirmed by the private edifices of the present time. He regarded the Gothic fashion as a retrogression like pre-Raphaelism, and hoped that its abettors, finding that taste was a question for each individual mind, would be enabled to follow the path already trodden by Goethe and Beckford, who commenced their career of amateurs with a lavish adulation of Gothic, and ended it as admirers of a totally different style. Referring to the intention of erecting a new Indian office, the speaker concluded by expressing his anxiety that, while adopting the general feature of Italian architects, monotony and uniformity should be avoided at Whitehall and Westminster, instead of a variety of eccentricities that were fashion, not taste.

Mr. E. B. Lamb would suggest that it was generally held as a matter of fact that our art ought to keep itself in advance of the materials of which it avails itself. It was equally a matter of fact that the Gothic style had had a point of excellence, for its time, beyond which it had done nothing. On the contrary, since the time of Henry VIII. the Italian or neo-classic style had been changing itself so as to accommodate the diversity of climates and the invention of new materials or the improvement of old ones. All these, as they had been hitherto treated, were so many difficulties in the way of the restoration of a really Gothic school of advanced art. He also insisted that every public building, at the least, should exhibit in the style employed, one which should not be deprived of any of its leading characteristics. Agreeing with Mr. Tite on the subject of lighting in the opposed styles, he sketched the outcry that would be made if the Palace at Westminster were to be enlivened by the removal of the divisions to its windows, and by similar steps that might be necessary to render that building as useful as it were in another style.

Mr. Kerr, apologizing for coming forward (at the suggestion of Mr. Donaldson), thought the deputation ought scarcely to leave his lordship without presenting to his mind what constituted the palpable reason why, in a case of the kind, one style of design ought to be adopted, and another style rejected. Styles of art were not arbitrary or accidental forms of design, done up in red tape, and stowed away for selection, but every style of art was part and parcel of a period of intellectual development, a thing produced by that period, identifying itself with all its peculiarities to the minutest detail, and belonging to that period, and that alone. In other words, every particular phase of human history, inevitably produced its own particular manner of artistic design. This was notably the case, for instance, as regarded the periods of the Egyptians, the Greeks, the Romans, the Byzantine empire, the Middle Ages, and so on; each had its own peculiar style of art generally, and of architecture individually, belonging to itself, and identified with all its peculiarities. Now, in the fifteenth century, as every school-boy knew, the world passed from an old form of society and intellect, into a new. There took its rise that which may best be called the modern European phase of civilization, which had endured and progressed down to the present day. If the theory he had expressed were correct, we should expect to find such a change inaugurating with it a corresponding change in artistic style, and in architecture. And so it did. We should expect to find the new style, remaining in use, attached to that form of intellect to which it belonged, till the present time. And so it did. We should expect to find it varying at different times with the variations of modern civilization. And such was the fact. We should expect to find its practice even now to be various in various countries, according to peculiarities of national character. And so we should find it to be, infallibly. It was called Italian, but if it took its rise in Italy, it was because modern civilization took its rise in Italy. It was called Classical; but if it adopted classical details, it was only in such

manner and to such degree precisely as modern society and modern education began upon the basis of the remains of classical times. However, at the present day, with us there was a certain class of the educated section of society, the enthusiastic, or romantic class, or whatever they might be called, so as to indicate a slight departure from common sense without being offensive,—who had been very busy in reviving Mediæval matters. It was true that they proclaimed their sole motive to be the preference of pre-Raphaelite painting and Gothic architecture, and other mere superficialities of the Middle Ages; but this apology we could not accept. *Facilis descensus avariæ*—the surface would bring with it the substance. Indeed, he need scarcely remark that a characteristic policy, in Church and State, had already notoriously been arrived at. It would seem as if the party were prepared to enunciate the position that the modern European system of society was effete and in decay, and that a new and glorious Mediæval system was about to succeed it. If his lordship's sagacity led him to believe this anticipation to be correct, then it might be wise to build, not only the edifice in question, but all public edifices whatever, in the style pertaining to the coming time; but if on the other hand it seemed more likely that modern European civilization was not on its last legs, but would endure yet a good century or two; then certainly it must be best to build our public offices in the style of the period in which we live.

Lord Palmerston said he was glad to receive the assurance that trained men of science and judgment approved the course which he had felt it his duty to pursue. He could excuse the mania in some quarters for building Gothic habitations in the country, by recollecting that those might be prompted by the vicinity of the Elizabethan manor-house, which itself was the successor of the Gothic castle. But in regard to those building Gothic habitations in towns, he felt that there were people who had notions which were totally out of date. A public office was, in fact, the habitation of the chief and his staff during the day, and he (Lord Palmerston) knew of no style so suitable to an English habitation as the Horizontal, or Classic, or Italian, or whatever name its branches might have gained. A public building ought to be handsome externally, while convenient in the interior; and the style which he preferred undeniably gave buildings which combined those qualities. He believed that, in the erection of a handsome building, the style that he preferred allowed a reasonable economy to be observed internally: the contrary, with regard to Gothic, had been practically taught him at Westminster and elsewhere. He felt that he had only to repeat the statement made on a previous occasion, viz. that he had so strong an objection to the Gothic style for the present purpose, that he should think it his duty, in office or otherwise, to protest against the erection of a building such as had been submitted: he could say, in short, that his mind was determined not to have Gothic, but Italian. He might feel satisfied with his conviction that Mr. Tite's sentiments were correct as to the comparative cost of the opposed styles.

Mr. Watson mentioned the heavy expenditure by Mr. Russell in Park-lane, the only Gothic dwelling-house in that part of London.

Lord Palmerston then referred to the cost of the present State Paper-office, which, he said, must be pulled down to show Mr. Scott's park front, and which, it was stated, cost 40,000*l*.

Mr. Tite and Professor Donaldson suggested the possibility and propriety of a new competition, as was confined only to the pre-empted architects, as was resorted to at Cambridge in the case of the Library there.

Mr. H. B. Garling and Messrs. Banks and Barry, as leading prize-men in the late competition, were made known to Lord Palmerston, and the interview was brought to a close.

CORRESPONDENCE AS TO INTERVIEW WITH LORD PALMERSTON: AND THE FOREIGN OFFICE.

SIR,—I suspect, from the wording in last week's *Builder*, of the notice of the deputation of architects to Lord Palmerston, that you would not be found a very warm advocate of the step. I confess that the deputation appeared to me, in some of its elements, to savour of personality,—at least, as regards party feeling, not individual ill-will; but as a demonstration in support of the honest opinions of a class of architects too long silent, and much denounced, and now threatened with entire repudiation,—the

practitioners, I mean, of common-sense modern architecture, it was (as regarded the very great majority of those present) a creditable and honourable act beyond any controversy. All must be satisfied with the general character of the visit as a demonstration of manly opinion.

AN ARCHITECT.

SIR,—I think the deputation to Lord Palmerston was not only justifiable, but called for, as Classic architecture has been unjustly treated in the *shuffle of the cards* which has placed the Gothic design first which was only third. We went against the Mediævalism, not against the individual; but what I write for is to say that many seem, nevertheless, to think that there should be a fresh competition. The Government know now what they want, and the Premier is determined to have Italian architecture. Those data being fixed, the matter had perhaps better be thrown open to the world, or to the old competitors, or to the old prize-men. The first would be the safest.

ONE WHO WAS PRESENT.

SIR,—The illustrations which have been published are particularly welcome at the present juncture, since they enable those who have not had the opportunity of seeing the drawings and model, to form some idea of Mr. Scott's design for the Foreign Office. We can judge of the style proposed for it, and of the taste displayed in it, which are chiefest matters for consideration as far as the public are interested in the architectural success of an important structure, and one so conspicuously placed that if less than an embellishment to its site, it will be pronounced a disfigurement to it.

My opinion as to Mr. Scott's design does not follow, but coincides with that of Lord Palmerston. Perhaps I might qualify the noble Premier's epithet of "frightful" by substituting for it those of "decidedly un-English," and "un-artistic." If we are to have Gothic, let it at any rate be that of our own growth. The score of its nationality put aside, it can confidently challenge comparison with that of the Continent. What in the whole range of continental Gothic is to be opposed to, or confronted with, what a certain architectural critic has thought fit to vilify as our "detestable English Perpendicular," in that sort of condensed, comprehensive, and energetic criticism, which in the mouths of unsophisticated coalheavers would take a different shape?

After such fashion it is that some of Mr. Scott's admirers and friends (?) have sought to cry him up by crying down the palace of Westminster, not scrupling to pronounce it "a failure," which if it be, should also be a warning. I have no personal predilection in favour of Sir Charles Barry; and I think that he would have done better had he adhered to his first design for the "Houses of Parliament," at least as regards the river-front, upon which a vast amount of "elaboration" has been thrown away, because it produces no corresponding degree of effect. Were the public allowed to have free access to the Terrace, we should then be able to inspect and contemplate at leisure all the "bravery" of ornamental detail bestowed upon that front. Wherefore, though permitted to enter the House of Peers, the public should be excluded from the Terrace, I am quite puzzled to conjecture.

All this, however, has little to do with the question of style for the Foreign Office. I am such a *poco curante* in politics, that I can scarcely tell whether it is John Bright or Viscount Palmerston that is our present Premier: whichever of them it be, he is doomed to do more than nine hours' work, far likelier nothing less than nineteen, with exhaustion, not indeed of muscle but of brain. Like royalty itself, a prime minister reposes upon a bed of roses, to scent their fragrance, but to feel their thorns.

That I am decidedly Palmerstonian as regards the style fitting for the Foreign Office is too palpable to be disguised.

ANGLO-GOTHICIST.

THE IRISH NATIONAL GALLERY.—SIR,—With reference to the second paragraph in the article headed "Works in Ireland," in your last number, wherein it is said, "the iron girders, &c. (for the new Irish National Gallery) are being supplied from Oxmantown Foundry," will you permit me to say that the whole of the wrought-iron girders and joists for the construction of the fireproof floors are made in England, and supplied by myself? There are, I believe, some cast-iron girders and stanchions in the building, and your notice may possibly refer to these.

HENRY BARRETT.

THE STRIKE QUESTION FURTHER ARGUED.

Is another portion of our number will be found some particulars of the progress during the past week, of the lamentable contest between masters and workmen in the building trade, and several communications on the subject. But our pages are of course looked to for something more than the chronicle, in which we are anticipated in great measure by the daily press. We need not conceal, however, from either side, that we do not find the immediate subject an easy one,—albeit, in some of its bearings, it may have been thus spoken of: whilst our responsibility in any expression of advice is that which should be felt in the treatment of a question which concerns the welfare of every one who has labour or capital to sell or invest, and concerns ultimately the prosperity and progress which are dependent upon the industry and wealth of the country at large. It would indeed be easy, saying that the relation of capital to labour is not understood by the artisan class, to endeavour in this present article to contribute to the cessation of strife, so far as the existence may be due to want of intelligence, or of application of principles admitted, on which side soever the omission or falling may lie. That defective information on the part of the artisan class, as to conditions on which their wages depend, is greatly prevalent, we do not deny: the fact is proved by many of the incidents of the present dispute, and arguments that have been put forth. In like manner, there may be masters who, whilst not grasping or hard-hearted, yet cannot conceive the reasonableness of an effort for increase of wages and for diminution of hours of labour, or that the gain of money by the workman might be the means of increasing the consumption of articles, and that the lessened labour might even tend not to lessen the quantity of the work done. So much progress, however, has been made by the artisan class in general education, and they are so well aware from experience of the sad consequences of previous strikes, that we cannot believe in their carrying on war against that which has been called their natural friend, capital, were there not an object to be attained, or a disadvantage felt to be removed, for the sake of which they encounter the alarming odds which the more intelligent amongst them know to be in the present instance arrayed against them. We say this, although feeling that they have made mistakes, and that their proceedings have not been marked throughout by fairness. The conduct of the masters in some cases has been misrepresented, and the intention of the "document" been, we may say, perverted. The sole object of the "document" we believe to be, the preservation to the masters of that freedom which the artisan claims for himself; and the masters are quite excusable in declining to make any arrangements with men who belong to societies which have exercised control so far as to interfere with the accuracy of estimates, and the completion of contracts, by a *tyranny* over masters and men which has been as great as the imputed "tyranny of capital." That the object of the masters is not that so industriously ascribed to them, is shown by the concluding paragraph of their notice of August 1st, in which they say,—“Your committee would recommend that, to continue to meritorious workmen the advantages of the legitimate objects from which existing Trades' Unions or Societies have been diverted, the proposed association should give authority to the Executive Committee to submit for its sanction a plan for the establishment of a new, sound, and legitimate benefit society.”

The relation between master and workman, as over and over again shown by those who have the interests of the latter at heart, and who consider every argument that is uttered, is simply that of two individuals having commodities to exchange. One has labour and the other has money: and it is fair for one of the parties to stipulate on conditions without which he will not make an exchange, just as it is for the workman who buys an ounce of tea that it shall be wrapped in paper, or a pint of beer that it shall be handed him in the pewter. This doctrine, say some, is political economy, which takes no notice of the Christian duties. That is admitted,—as also that there are such duties from a master to his workman; but it will only blind the perception of the workman, and will even prevent possibility of exercise of such duties, to import matter into the debate which has no more concern with the real question than with the science of building. If rate of wages were dependent mainly upon individuals, generous or avaricious, it might be reasonable to speak of such obligations as

Christianity teaches; but the rate is determined for the employer rather than by him; and any master who would be induced to give more than the customary rate, without the certainty of more than the customary return in labour, would inevitably get into the *Gazette*. Such customary rate is fixed by the price which the consumer can afford to pay for the article, or in the present case by the amount which the individual has to spare for a house, which condition depends on what the individual may himself have been able to get in exchange for his particular commodity from the general prosperity of the country, or rather of countries; for, by peace and freedom of trade, the depression of one country is alleviated by the prosperity of another, and the ultimate happiness to which, however slowly or interruptedly, the world tends, is brought nearer to realization. Inequalities, the while, rather than the reverse, are what are natural to man: this is shown by the difference of advantages under which men are born into the world, differences of country, of physical constitution, of social station, and of wealth, and by every interpretation of the parable of the ten talents; and such teach the fallacy of an attempt to settle uniform rates of wages, which aim to reduce all, in opposition to the teaching of nature, to one level, and to discourage all individual efforts.

We do not omit to consider that the rate may depend, also, on the quantity of profit which the master requires, or that which stands him in the place of wages, for what he has done. Of course he is entitled to that, just as the labourer is to his compensation. And it may even be the correct method of explanation, to say that in all respects the master so-called, resembles the labourer; since both get their returns only from a fund which is the property of some one else. For, it is well known to workmen themselves, that building operations are in great part carried on with money borrowed; that when the market-rate of interest is high, returns will not justify the borrowing, and building ceases for a time; that the great capitalists and the bankers might in some sense be called the master-builders; and that, whatever may be wrong in legislation as to money—if wrong there be—or whatever rights are due to all educated men politically, or towards amendment of financial conditions, or towards the acquirement of what has been deemed their inalienable title to the land, (both which questions have been raised in discussion of late, but which we do not pursue), they, the men, can have no grievance against those who are in such case merely the manipulators of capital, or agents. The question put in either case, that is to say, whether the master be considered the capitalist, or the agent, is simply—Is he, or is he not, acquiring from the combined undertaking, an unnecessarily large amount of return, or wages?

Thus, the present strike turns, in great measure, upon the point, whether the master can do one of two things,—diminish his profit to himself—or otherwise, get a higher price from the public. For, it is perfectly clear from the present strike, that it will not answer for the master to rely, in case of success in the nine-hours movement, upon getting a greater amount of work than is at present done in nine hours; because one object of the strike is to procure the employment of men who have been unemployed,—an object which would of course be frustrated were the present ten hours' amount of work to be got through in nine hours. Besides, it may be reasonably supposed that the work would be done by the new workman in an inferior manner; there having been some tendency towards selection of good workmen, however the rules of the trades' unions have aimed at procuring employment for each man in his turn.

Now, we doubt whether we ourselves, or the workmen and their leaders, are in the position to judge whether or not the masters are obtaining an excessive amount of profit, or whether or not the public would pay more for the article. Neither are the Legislature or the Government in such a position. It was the consciousness that, whether they or not, none but the masters could approach to a judgment on either question, that made us almost shrink from the attempt to say anything on the subject in hand. But it may be inferred by any one who examines our lists of tenders, that the ideas of profit required from capital or investment vary; and that the builder making the lowest tender may have the smallest quantity of profit. Again, the number of builders who are unfortunate is so large as to occasion common remark. As regards the cost of buildings, considering that house-room is one of the real difficulties of the artisan class in London, we do

not know how a further increase of cost could be viewed with complacency.

Without speaking with the slightest disrespect of the judgment of the workmen, when formed with knowledge of facts, we think it must be seen by them that they are endeavouring to express a judgment without knowledge of facts. Assume that the masters concede the question of the hours, and engage the additional number of men, or assume that the workmen return to labour on the original terms,—equally they may have injured themselves. In the latter case they will have lost the time and wages during which they have been on strike, incurring debts which many of them in the rest of their lives will not recover from: in the former case, the demand for buildings will probably be less great, so that not more, but less than the old number of workmen will be employed; or uncertainty of employment will be increased, and the men may be only too glad to return to their old rates. Instances of this will come to the recollection of all who know anything of strikes, or those who have lately read the newspapers. So true is it, as taught by the much-abused political economists, that though strikes may be what the workmen would call successful, they cannot suffice to raise permanently the rate of wages, which is dependent simply upon the number of the labourers amongst whom the available fund or capital has to be apportioned; and thus there is perfect reason in the advice which working-men have ridiculed, namely, to beware of frightening away capital, which is not tied to any sort of investment, or any country,—and reason in the assertion that there is no means of increasing wages except by fostering the increase of capital as compared with population, or by the opposite process—diminishing population, as, for instance, by emigration. If a large amount of the capital of the country could be invested in building, the whole of the workmen might be employed, whilst they would have better homes; but this will not occur so long as there are strikes. Besides, should the workmen "succeed" in their present object, every master hereafter will have to reserve always in hand an amount to provide against the contingency of a strike—an amount which would otherwise be fructifying to the benefit of the body of artisans. The calamities of Ireland have arisen from causes which are well understood by the political economist, some of them which have required to be checked by emigration; and so far as this has brought a poorer class than that of our own people to these shores, it has doubtless tended to depress wages with us below what might otherwise have been the level. But amongst the causes in Ireland have been the strikes, which, together with general insecurity for property, have literally "frightened away" capital from that country.

The workmen are right in endeavouring to secure, by lawful combination, the utmost that they can get as wages, and in endeavouring to shorten the hours of labour. Political economy directly teaches that attainment of these objects, provided that the common capital of the country, or fund for the payment of labour, is not drawn upon unduly, is advantageous to all; but the men are wrong in practically assuming that they have not disadvantages for an opinion on this point which are inseparable from the position of others, and which question a strike alone can solve,—but to the degradation of their position, if the strike be unsuccessful,—whilst chances of such ill success are increased by the very circumstances brought up by the occurrence of the strike itself. Surely the master may honestly differ in opinion as to his capability of paying increased wages. If so, the chances are that the workman, on his desire to return to work at the old rates, finds that he is not wanted, the capital having been taken to other investments, or the labour having been supplanted by machinery. A contest between capital and labour has been likened to the combat of the Kilkenny cats: the personal disadvantages, however, preponderate on the side of the artisan or labourer.

Are there however, it will be asked,—and here we revert to previous remarks,—no means in the hands of the labourer, by which he can protect himself from oppression, and from the natural tendency on the part of the master to look after his own interests? We may consider that thinking men have cast off the delusion that they are entitled to any of the returns of capital—capital which was never theirs, but was simply the accumulated industry of an individual. The workmen have no more right to returns from that capital, than they have to the other description of gain, the profit which the employer keeps as the wages of his labour. When their talkers allude to one

individual employer as having made his fortune out of the "blood, bone, and sinew of the producing classes," it is strange how they forget that contemporaneously with that fortune, has been made, besides the gain to the country at large, what is fortune by every parity of reasoning to thousands of the same classes, and if we do not mistake (alluding of course to railroad construction), through the medium of "piece-work." But admit that there is difficulty in solving the question as to what is at a particular time the equitable rate of wages:—how is to be acquired by the artisan the gain which he is justified in expecting from the introduction of machinery? It is only plain, that the ground taken by the Conference of the United Trades is wrong, and that the workmen have no claim to the profits of machinery beyond the claim which they have in common with other members of the community, from whose inventions they themselves derive benefit. We should insult the men themselves, did we suppose they could not see that they are every day deriving fresh advantages from the cheapening of commodities, and the means of increased enjoyment and health which are within their reach. Are they slow to avail themselves of these? Go to the railways or the river-boats on Sundays; and see how comfortable a man with his whole family may be on the 33s. (or take it at less) of the industrious artisan per week. We incline to think their real enjoyments are not much less than those of the capitalist. It is not many days since a large contractor, with a positive tear in his eye, contrasted his enjoyments as a workman with the misery he had endured through the proceedings of his men during the last twelve months. Of course sickness may fall upon them; but even supposing that the results of this do not come from the want of provident habits, and come from absence of opportunities for small investment, such results do not show that the relations of capital and labour are wrong, however they may show the need of legislative interference, or of the sympathy and aid of what are called the upper classes. There can be no doubt of the claim of the artisan to be heard on the question, of in what manner the period may be bridged over, of his suffering, which occurs between the supersession of his labour, and his replacement in the field: he can help the introduction of the machinery by his opposition to it; but he cannot stop the progress of that or of any other general good; and it may be said that his attempt to claim any priority in advantage from machinery not invented by him, or purchased by his labour or his capital, is simply a relic of that opposition to machinery altogether, which artisans as a class have laid aside, having, in the growth of their intelligence, seen the benefits that have accrued to them from it. Further consideration—whether or not further experience of strikes—will teach them the necessity of abandoning all relics of those middle ages of which some of their orators speak so much, the period when there were indeed no rights of manhood, or of property, and when civil strife with fire and pestilence were the constant shadows on this home of England. They will give up all tyranny over labour, which seeks to place intellect and skill at the level of mediocrity, and checks advancement; or which prescribing a term of apprenticeship, would even go to prevent a man from elevating his condition, and which were it perfect in its organization, would forbid the development of a George Stephenson amongst us. Not even, the fact that wages have diminished—supposing that to be so, which we are not prepared to say,—would show that the condition of the artisan had retrograded; for, the rates require to be viewed relatively to the prices of food and commodities; and we certainly do not think that all who make assertions as to a decline have in full, studied what is so difficult a subject.

That altogether the financial condition of the building artisan class in our country has need of further improvement, we cannot doubt. There are only these modes (besides improvement in their own habits) in which the object can be effected:—1. By the larger investment of capital in building speculations. 2. By diminution of the number of artisans, as by emigration. 3. By the redundant members of the class taking to other employments, and by a decline in the price of food; or, 4. By the formation of co-operative labour associations. Of these expedients, or correctives, the first and last are those only which are pertinent to the question, and of the two, notwithstanding the success which has attended co-operation in some cases, and what the law now allows to be done, we are inclined to think that the first will carry the election, till education is advanced, and men can join together without reason for suspicion of

one another, as too much evinced in the progress of public companies. Still it is remarkable that building workmen have not tested further than they have the principle of association, especially with a view to the lessening of that house-rent which is their greatest difficulty, and which difficulty is the very one which they are now bent on increasing. Holding, however, that the immediate question is not an easy one; what we have expressed are conclusions, for which we calculate upon the adhesion of the educated men amongst the artisans with whom we are fellow-labourers: as to the expediency of the strike they must decide for themselves; and "God defend the right." They will ever have our aid towards the improvement of their condition, whether as to the places of their abode, their means of education, their social and even their political advancement, and their opportunities for relaxation; but we can but ask them to bring the matter now at issue to amicable arbitration, and to abandon every attitude which must lead to the belief that they are opposing themselves to means which, rightly applied, are for their advancement, and for the welfare of all.

PROCEEDINGS IN CONNECTION WITH THE STRIKE.

The position of affairs, we regret to say, has not mended; indeed the methodical proceedings and extended organization of the "conference" (which has almost the air of saying "see how well we can do it"), and the asserted determination of the masters to insist on the "declaration," are ominous as to its continuance.

The masters also adhere to their determination not to open their shops, even to those who will agree not to join a society interfering between master and man, until the Messrs. Trollope are at work. At the present moment (Thursday) we are enabled to assert that Messrs. Trollope have 137 men engaged; but as the masters are not to meet again before next Tuesday, and could not even then open their shops without calling a general meeting of their association, it must, under any circumstances, be some time before any change can take place.

The Conference wish it understood that "Messrs. Cremer & Facy, and Messrs. Brown & Osborn, have been appointed delegates for visiting the whole of the principal towns in the United Kingdom, for the purpose of agitating the Nine-Hours Movement, and collecting material support for the men locked out."

Meetings have been held in consequence at Reading and elsewhere, and resolutions passed to give aid to the men.

They further wish us to make known the opinion of Mr. Edwin James on the declaration, already, however, extensively circulated. Mr. James says:—

"Upon the differences so detrimental to the capital of the employers, and so injurious to the best interests of the employed, which so manifestly exist, I at present express no opinion; but I am not at all surprised that any English artisan, who has the right to carry his labour to market unshackled by any restriction, should resist the imposition of such a law, his master which are most arbitrary and most unjust."

Some of the masters say on this that no reasonable man have given this opinion if he had known the condition in which they, the masters, have been held for some months past.

Last week a meeting of operatives engaged in the metal trades met, whereat the chairman, Mr. Toney, said "Any one who refuses to help his fellow-workman on Saturday night is no man, and is not worthy of the name of a metal worker. We have had nothing to do with the nine hours' movement, and have given the master builders no trouble for twenty years. At the same time I think that nine hours' labour is enough for any one, and if he can't tire himself in that time he's a lazy fellow." Mr. P. Barnes moved, and Mr. J. Seyles seconded, the following resolution, which was agreed to:—"That this meeting, taking into consideration the present condition of the locked-out operatives in the metal trades, do pledge themselves to use every lawful endeavour to render them every assistance until the obnoxious 'document' is withdrawn."

Monday the first payment of a dividend was made to those who have been locked out a fortnight. The total payment to each, both from the Conference and the funds of the society to which he belonged, is said to have ranged from 8s. to 8s. The strike men have received—1st week, 12s. skilled; 2nd week, 11s. skilled, and 12s. unskilled; 3rd week, 15s. skilled, and 12s. unskilled; 4th week, 12s. skilled, and 8s. unskilled. The Conference disbursed about 1,000l. among the following men:—

Labourers	3,245
Carpenters and joiners	2,816
Bricklayers	1,077
Plasterers	662
Masons	547
Painters	362
Smiths, plumbers, &c.	80
Stone sawyers	54
Men at Woolwich (all branches) ..	151
Messrs. Trollope's men	214
Total	9,618

On Tuesday some misunderstanding on the part of the labourers, led to the assembling of a considerable throng at the Paviors' Arms, but the secretary showed that 17s. had been handed to the labourers' delegates. The uproar, however, was renewed, and Mr. H. Noble, a bricklayer, addressed them. He said, "I will tell you exactly what we have done with the money we have received. The amount of money which we sent to the bricklayers in order to pay them is, 1d. a head, which was all we could give, was 58s.; to the masons we sent 2s. 6d.; to the painters, 19s.; to the plasterers, 33s.; to the carpenters and joiners, 15s.; and to the labourers' committee, through your delegates, 17s. In addition to this we paid the Woolwich men—551 in number—the stone-sawyers, smiths, and plumbers. To Trollope's men alone we paid 190l. (A Voice—'Yes, they got it, and we got none.') Steady, my friends. Why, were the men that you called out for the nine hours, and they must be maintained.—'Ay, that's right enough.' We paid to these men 13s. each for the mechanics, and 8s. 6d. for the labourer. That amounted to between 500l. and 700l. which was the whole of the money that was collected. The money we received was equally divided amongst the whole lot, labourers and mechanics alike, and the amount paid was 1s. 10d. a head. The point is this. If the masters had not shut up their shops and locked the men out, we should have had ample funds to carry out the nine-hours' rule; but the masters having locked out the men, who amount to thousands in number, how do you think that we can guarantee you anything like a tangible support? Do you know how much we should want to give you such a tangible support? Why, 20,000l. or 30,000l. a week."

After some further observations he called upon them to hold up their hands against the "declaration," which they did, and then they dispersed.

In the evening an adjourned meeting of delegates from the various metropolitan trades was held at Shaftesbury Hall, Aldersgate-street. The chair was taken by Mr. Grey, mason.

Delegates were present, representing the French polishers of the east end of London, the Mutual Improvement Association of Saddlers and Harness-makers, the silk weavers, the umbrella and parasol silk weavers, the boot and shoe makers (2nd division of R. Reformers), the plumbers (Meeting at the Star, Borough), the umbrella-makers (Union-street), the plumbers (Central-lodge, Green Man, St. Martin's Lane), the tinplate workers (Black Jack), the boot and shoe makers (West-end), the 2nd division of boot and shoe makers, the Amalgamated Society of Engineers, the bookbinders (Raquet-court, Fleet-street), the gliders, the coach and wheelwrights (Rose-street, Long-acre), the plumbers (Hole in the Wall), the tobacconists (Bacon-street, Bethnal-green), the silver spoon makers, the operative tinplate workers (Bell Inn, Old Bailey), the zinc workers (Clerkenwell), the second division of R. Reformers, the ropemakers, the coopers (east end), the boot coopers (west end), the London cabinetmakers (west end), the coopers (Hand-in-Hand Society), the cigar makers (Commercial-road), the brick-makers, the unskilled cutlers, and the cane workers.

Mr. Potter (the secretary), in explaining the proceedings of the past week, said,—"Yesterday a dividend was declared by the conference to nearly 10,000 individuals. To pay the nearest trade to such a number would require a large fund, a much larger fund than we had at our disposal. The conference, however, struck a dividend of 1s. 10d. per man to 10,000 men, making no difference whatever between the classes, but paying skilled and unskilled workmen alike. Many of the societies paid, in addition to that, 6s. a man. The men who struck at Trollope's were also paid to the number of 212—12s. skilled and 8s. unskilled labourers. This being the fourth week of the strike, the conference thought that they were justified in giving the men locked out as large a dividend as they could, and in placing the strike men on as low a footing as possible. We expect that the dividend next Monday will be larger for many reasons. After some further observations, wherein he urged that the masters were wrong,

Various delegates spoke, mostly saying that, when meetings could be held, funds would doubtless be voted in aid. The Delegate from the Amalgamated Engineers said that their body would decide what support they should give to the movement at a meeting to be held on Wednesday fortnight. They would contribute the property of granting 1,000l., and, as his society had every confidence in the executive of the present movement, he had no doubt whatever that the 1,000l. would be granted. He suggested that the building trades should unite themselves into one amalgamated society, and that a standing committee of all the trades of London should be maintained in order to meet crises like the present.

The Delegate from the plumbers (Hole in the Wall) said that his body would support the building trades, but he was not at present prepared to say to what extent. If the present movement for the nine hours should be successful, he supposed that the plumbers must have eight hours, as they had nine hours at present.

CORRESPONDENCE AS TO THE STRIKE.

SIR,—Looking at this mad "strike" or "lock-out," or whatever other term may be given to it, in an artistic light, it appears to me that it is closely connected with the question of machinery versus talent. No man who is really capable of doing something of value, let it be in any department whatsoever, would for a moment attempt to join a combination which would prevent him from obtaining for himself the proper recompense for his talents. Think of Charles Dickens joining a society of penny-a-liners, to be remunerated for his writings at that price! By energy he has made his way, and while doing so has raised his standard of payment from say a few shillings a page to more pounds. It is in this way that many masons and carvers, starting at some few shillings per day, have by education and practice become proficient, at last ending by taking rank as sculptors (some even as architects), receiving their thirty to fifty guineas for a bust, and their hundreds and thousands of pounds for statues and other works of art. Wood-carvers are in the like category; and with something of the same energy, smiths might again resuscitate some of that lost

mystery of ornamental ironwork, now so seldom practised from the want of the universality of the feeling for it. Workmen who will only remain at the bench, making perhaps doors and sash-frames, and even bungling at that; nailing down floor-boards, and such like work; laying bricks or cutting stones, all which, however it may require a certain amount of skill, must in a very great measure be comprised under the denomination of machinery rather than of real skill or of art. The present race of workmen appear to me to show by their movement that they wish to be considered as machines: formerly all workmen were artists, and not paid more for being so. I could understand any desire on their part to be paid according to merit, but when the request comes, "all at one price" and "all so many hours," the reasonableness of their demand is doubtful, to say the least of it. By accepting a proportionate rate of wages, they would prove their desire to cultivate their intellects, and render themselves worthy of their hire, and a greater degree of pride in their own work would be felt by each man.

Such work as is done by the men now out, can be learnt by other men in a comparatively short space of time. A clever foreman or two, in a capenter's shop, would soon put a dozen willing men into training. A few weeks would be sufficient to make bricklayers sufficiently skilled to do such work as is done nowadays; no art, and not much education is necessary, either for carrying loads of mortar or of bricks; and a slight amount of tuition would turn men at present running wild in our streets, into decent plasterers. The trades are not so difficult to be learnt that men should refrain from learning them to gain an honest livelihood. As a workman said to me once, "There's many a trade to be learnt by looking on." Some years since, when a strike took place amongst the compositors and other people in the printing establishments, what did Messrs. Handard do? Sit down and wait? Nothing of the kind. Being themselves up in the business, they sent out into the neighbourhood, obtained a large number of persons who were willing to learn, taught them the work, and in a fortnight had their establishment in full play as if nothing had happened; laughing at their old hands when they saw their folly, and wished to be taken on again.

Such may probably be the case in the present strike, should the men continue to be so regardless of their own interests as to believe that their present demands will be a panacea for their complaints. The address of the Society of Ornamental Sculptors, given, in your last number, should be read by all; it is another proof of the little wisdom displayed in the present movement of the workmen. I would also refer them to the seventh volume of the *Builder*, p. 116, where Mr. S. Smirke showed that the workman, in the time of the Commonwealth and subsequently, may have paid about as much for his bread as he now pays, whilst he received *rather less than a quarter* of his present wages!

May I relate an anecdote to be found in Vasari? * * * the builders, animated by success, worked vigorously; but being pressed more than usual by Filippo, and having received certain remonstrances concerning the masonry, and in relation to other matters of daily occurrence, discontents began to prevail. Moved by this circumstance, and by their envy, the chiefs among them drew together and got up a faction, declaring that the work was a laborious and perilous undertaking, and that they would not proceed with the vaulting of the cupola but on condition of receiving large payments, although their wages had already been increased, and were much higher than was usual. By these means they hoped to injure Filippo, and increase their own gains. This circumstance displeased the wardens greatly, as it did Filippo, also; but the latter having reflected on the matter, took his resolution, and one Saturday evening he dismissed them all. The men, seeing themselves thus sent about their business, and not knowing how their affair would turn, were very sullen; and on the following Monday Filippo set ten Lombards to work at the building, and by remaining constantly present with them, and saying 'do this here,' and 'do that there,' he taught them so much in one day that they were able to continue the works during many weeks. The masons, seeing themselves thus disgraced as well as deprived of their employment, and knowing that they would find no work equally profitable, sent messengers to Filippo, declaring that they would willingly return, and recommending themselves to his consideration. Filippo kept them for several days in suspense, and seemed not inclined to admit them again. They were afterwards reinstated, but with lower wages than they

had received at first. Thus, where they had thought to make gain, they suffered loss, and by seeking to revenge themselves on Filippo, they brought injury and shame on their own heads." This was in 1423. Matters do not appear to have changed for the better in 440 years!

AMT ET AMATEUR.

SIR.—In a recent article you touch on the political economy of the strike, but you omit to mention that in our artificial state of society, certain laws prevent working men from bringing their labour to the best market. Unconsciously, the best friends of the working-classes shrink from carrying the stern laws of political economy to their inevitable conclusion; and yet, how can a case be argued with any hope of beneficial result, when only one-half the facts are stated?

Passing by the well-ventilated question of the paper duty, I will go on to the circumstance which is not so generally recognized, viz.,—that our entire export trade has now reached that point at which its further extension depends chiefly on an increase of the more important imports, say, tea and sugar, on both of which the Pharisæes of the present day, regardless of the precept,—"Muzzle not the ox," have placed an enormous duty.

I hardly expect you will think this letter worth printing, but as political economy is so often quoted against the strikes, it ought also, if possible, to give them a lift.

G. W. FIELD.

SIR.—I perceive that a circular, signed by G. Potter and others, which you inserted last week, is full of error and misrepresentation. In accordance with a principle which has almost become a law of nature, you will find that when a man has a bad cause, or the worst part of the argument, he generally seeks to make good his deficiency by falsehood and abuse.

Let me try one or two of Mr. Potter's assertions by this rule.

1. The statement, "that in agreeing to the 'document,' it would rob the men of their freedom." How it would do this, the circular adroitly leaves others to show.

A man agreeing to a statement, which simply says, "that so long as himself and employer are mutually agreed, he will not acknowledge the right of Mr. Potter or his Conference to usurp an unjustifiable domination over him," cannot be robbing him of his freedom. No, sir, it is the Conference's interference with every Englishman's right to think and act for himself that robs him of his freedom, and not the "document" which seeks to make him free.

2. How this misrepresented "document" can also "rob the men of those benefits which their thrift has provided for sickness and old age." I am at a loss to imagine. Nor can I, for the life of me, see the connection between them. The Conference seem satisfied in making foolish assertion, trusting that the workmen whom they are leading to destruction will never ask for the proof. So far from the masters wishing to destroy the men's benefit societies, it has been their aim for many years to improve the working man's condition, both physical and intellectual; and I will give a donation to any new, *real benefit society* they may form, which truly seeks to benefit them, and not sow dissension between employer and employed.

I would entreat the workmen not to lend themselves to the shallow sophistry of the Conference as to the terms on which a man ought to labour. It is the duty of every man to make the most he can of his labour: it is his capital, and ought to be under no restriction. To suppose that a man with six or seven children shall work no more hours (or earn no more, for it is just the same,) than a single man, or that every man must earn and share alike, is simply ridiculous; that the skilful and the dull, the industrious and the idle, are all to share the same, and rest satisfied with attaining a wretched mediocrity. Where was this nonsense learnt? Not in nature, for the strongest, most active and vigorous always take the lead; not in our great schools, universities, or learned professions, for there every man looks to himself and endeavours to reach the prize of his "high calling;" no man wishing for mediocrity (which, after all, means inferiority), but each seeking to obtain the degree of M.A. or D.D., the gown of the professor, or the baton of the field-marshal. It is a noble emulation. He may look back on his journey at his less gifted brother; he may pity and assist him; he can do no more; it is plain they can never be equal; one will be a bishop or chief-justice, the other a poor curate or magistrate. This is the law

of nature. We must progress. One man will rise above another; it cannot be avoided. In proportion to a man's abilities so will be his progress, provided he strives. Oh, that I could impress this on my fellow-workman, for this holds good for him. Let him strive all he can, and endeavour from a workman to become a foreman, and ultimately a master; let him mark out this course for himself, and these pernicious unions and strikes will totter to their destruction.

A LONDON BUILDER.

SIR.—Is it not lamentable to note the delusion which is attempted to be kept up by the "Conference" as to the sympathy from various sources professed to be excited towards the "nine-hours movement." Surely the eyes of the workmen must be opened by such facts as these.

The agitation has been going on, according to the statements of its leaders, for twenty months or more; yet, when the time of trial comes, they are prepared to dole out to the poor victims of their manoeuvres 1s. 1d. per man for a fortnight's pay, when these very men, but for their interference, would have received 20s. to 33s. each per week, or 40s. and 60s. respectively for the fortnight. It is said, that the labourers have been told that they must, by degrees, repay the money advanced to them by their society.

Rumours were diligently circulated that from 10s. upwards were to be expected per week per man. What confidence can be placed in men who would willingly allow such rumours to be abroad while they knew the fearful reality of the case.

And now they promise larger payments. Upon what basis? The trades, generally, were to support. They had one meeting, and adjourned, so that they would be prepared that evening, said the spokesman at the Paviors' Arms, to come forward with their efficient aid. What was the result? Thirty delegates met: one from a life assurance! twenty-one trades were represented. The actual moneys produced 64l. the total promised, 15l. more, and 10l. on loan; six societies were too poor, or wanted their funds elsewhere; one would meet in a week; three next week; five in a fortnight! The rest *sympathised*; but could do nothing without a general meeting would consider it; one actually protested against the nine-hours movement altogether; and one plumber suggested that they, the plumbers, must now have eight hours.

Surely the sensible men must see on what broken reeds they are leaning.

A CONTRACTOR.

SOME CONSEQUENCES WHICH MAY ARISE FROM THE "STRIKE."

AMID the fierce controversy now waging between the employers and operatives engaged in the building trades, there appears to be little heed given to the probable effects of this unhappy strike, especially as regards wages and machinery. Experience tells us that strikes in general lead to results most opposed to those actually desired by their promoters, and that instead of raising the rate of wages, they tend to lower them; instead of repelling the use of machinery, they aid its more rapid development; and instead of benefiting the condition of the artisan, they tend to degrade and humiliate it. Hence the objections made with respect to the strike at Messrs. Trollope's. They are made, not so much in a spirit of contradiction, as in the consciousness of the evils which the artisans are inflicting on themselves and the community! and if an instance is required, let the recent strike of the shoemakers of Northampton furnish the illustration.

The sewing-machine was introduced into their trade, and as they disapproved of it, they consequently "struck" against its use. Then came the usual accompaniments of a strike: speeches—the very parallel of those made by the speakers of the nine-hours movement—were delivered; meetings held; shops placed on strike; "scab" lists issued; threats, violence, and intimidation practised; and an extensive agitation carried on to procure funds. Yet, after several months' fierce and bitter warfare, the men on strike found that their conduct only caused the masters to rely more on the machine labour than on the manual; consequently a few weeks back the strike was broken up, and the men refrained from further opposition.

But during this struggle, hundreds of pounds were fruitlessly wasted, extensive and wide-spread ruin created, and the staple trade of the locality lost to a certain extent. And all for nothing! May not this afford a lesson to those who are "striking" for the "nine hours;" and may it not

cause them to reflect on the policy of the present movement, and to consider whether it would be prudent to sacrifice a substantial reality for a shadowy dream? Even now the inventive talents of man are at work, and it may be that the present strike will lead to the more extensive use of machinery in the building trades, especially in the masons' department; and if machinery be an evil, which I question, will not this evil be increased by the very means employed to avert it?

Again, as the funds of the strike begin to fail, the pressure of want will cause many to become "blacks," and their numbers will be increased by those coming from the country in search of employment, and possibly by foreign artisans attracted by the comparatively high rate of wages paid in London. This will consequently cause the labour market to be overstocked, and a reduced rate of wages will be the natural consequence. If so, can the present strike, in any way be conducive to the interests of the operative? I know my words will not be pleasant to those who like to propound plausible theories; but experience is a stern teacher, and the more I see of strikes, the more I become convinced that they are the worst possible remedy which working men can apply for the removal of a real or supposed evil; and I would earnestly appeal to the good sense of my fellow operatives to refrain from a course which will certainly result in no benefit to themselves, but may be productive of much evil.

JOHN PLUMMER.

Kettering.

THE ART-UNION OF LONDON AND ARTISTS.

SIR.—No one who feels an interest in the progress of the fine arts in this country, can fail to have observed the greatly increased attention which people in general pay to matters of art, and their improved power of discrimination in all that depends on æsthetic principles; and there can be no doubt that this advance is to be attributed in a great degree to the action of the various Art-Unions which have been in operation during the last twenty years. Strongly impressed with this feeling, and having watched the progress of these societies with great interest, I was struck by the report of certain statements made at a meeting of artists, held on the 5th of this month, to express their disapproval of the proceedings of the council of the Art-Union of London; and I have been expecting to see some public reply from that body. None such, however, appears to have been put forth, the council probably considering it unnecessary. Such may, perhaps, be the more dignified position to assume, and I can understand your own disinclination to discuss the question; but many persons are prone to imagine that anything stated in print, unless answered, is unanswerable. I was myself, I confess, much startled by some of the statements made on the above occasion; and I have, therefore, taken pains, by a reference to the published reports of this society, and by inquiries in the proper quarter, to ascertain the real state of the case, and I shall be very glad if the result is allowed to reach the public through your columns.

The first point which struck me, in the report of the meeting of artists given in the *Morning Advertiser*, was the statement of the gentleman who occupied the chair—Mr. Hurlstone—that the proportion of prizes at the last distribution was 1 in 145. I immediately turned to the report, and I found that the number of subscribers was 14,702, and the number of prizes, 950, being in the proportion of 1 in every 15! So flagrant a misstatement as this was not calculated to give a favourable impression of the amount of credit to be attached to the general tenour of the speeches delivered. In reference to the chairman himself, I may observe, *en passant*, that having seen his name rather frequently in the catalogues of the exhibitions of prizes, I turned to the reports of past years, and, roughly jotted down the amounts found that he had received no less than 1,267l. 10s. from the society for his pictures, purchased with its funds; and that he, at the last general meeting of the Art-Union of London, moved a vote of thanks to the committee for "their unceasing endeavours." The great grievance of the artists who have moved in the matter is that, out of the large sum subscribed this year, only 2,700l. should have been appropriated to the purchase of pictures, and at the first blush this certainly does appear to be a small proportion. In dealing with the question, however, the painters at once placed themselves in a false position, by assuming that the encouragement of art meant simply buying pictures, thus altogether ignoring the claims of engravers, sculp-

tors, medallists, and others; and, if I could venture to intrude so far on your space, I think I could adduce, from the criticisms in the public prints, such a series of comments on the exhibited productions of many of those present, as should make these gentlemen think they had far better have refrained from drawing any notice to their claims for the exclusive supply of works of art.

It was strongly urged, by the speakers at the meeting, that the support of artists has been the main plea always put forth by the Art-Union for public support. This is not the fact. It is true that when, in 1845, the proceedings of this society were suddenly stopped by Government interference, the loss to artists whose pictures were actually in the exhibitions was one reason given for allowing the then pending distribution to take place; but this is not at all the primary object of these associations; as stated in the reports of the council, or in the published prospectuses; that is pre-eminently the promotion of the knowledge and love of art by a wide diffusion of the works of native artists; and surely it is at least as efficacious a means to accomplish this object, by educating the eye, and teaching the people to know in what the fundamental principles of art consist,—to send out to all parts of the world 15,000 copies of such a work, say, as the outlines illustrating "The Pilgrim's Progress,"—as to disperse two or three hundred oil-paintings of more or less excellence.

There is one point which was entirely lost sight of by all the speakers, but which must be ever present to the minds of those who have the management of these associations, viz. the necessity of raising the funds before proceeding to distribute them. Now, a reference to the reports proves incontestably that on the character of the print or other work which each subscriber is certain of having, mainly depends the amount of the subscriptions, rather than on the prizes, of which each considers his chance very doubtful. The issue of such prints as "The Smile," "The Frown," and the "Merry-making," by the London society; and the "Coming of Age," by the Glasgow, were followed by a large increase in the subscriptions. These prints and others are still eagerly sought; and "The Blind Girl" of the now extinct Irish Art-Union can hardly be procured. Such being the case, the council were fully justified in securing, though at a very large amount, the magnificent plate of "Life at the Seaside;" and it must be remembered that though the publisher who first obtained the right to engrave it may have made a considerable profit on the transaction, yet when a plate—as to the fitness of which for engraving, and the result when completed, there have been great doubts—has been brought to a successful termination, and promises to the proprietor a rich harvest of subscribers, it is not to be expected that he should relinquish such profit, or part with the plate without being well paid for the anxiety and risk as to the result, and for the interest of money laid out on engraving, copyright, &c.

That the purchase in this case was a judicious one is proved by the fact that the amount of subscriptions exceeded by 3,500*l.* that of the preceding year. The cost of this plate, with paper and printing, for the large number of subscribers it helped to obtain, amounted to nearly 7,000*l.* of the subscription. Of the remainder, 3,140*l.* were required for the working expenses of the year, besides 2½ per cent. as required by the charter to be set aside for a reserve; and seeing that there are nearly 800 agents all over the world to whom the prints for every subscriber have to be sent free of cost, the Report and Almanack to be provided, and agents' commission to be paid, the above sum is by no means excessive. The amount available for prizes beyond the print, which is of itself a prize, was thus brought to 4,700*l.*; and in its allotment there had to be considered both the claims of the several branches of art and the wishes of the subscribers. The council have, at various times, not, I think, unjustly, assumed for the Society much credit for the encouragement it has given to the art of bronze-casting in this country, which could be scarcely said to exist twenty years ago. Medallist engraving, also, is an art here still greatly in arrears for want of support. The equestrian statuettes of her Majesty, the bust of Ajax, and the silver medals represented these claims. The copies of Gibson's charming group of "Venus and Cupid" form surely a choice example of the sculptor's art, and whoever is fortunate enough to obtain one cannot fail to draw from it continual lessons in beauty and grace. To complete the scheme, and to obtain that proportion of prizes to blanks which the expectation of the subscribers requires, were given the volumes of photographs,—all interesting and instructive; not landscapes or views, but each one the reproduction of some work of acknowledged

excellence by some great master, and thus neither competing with the landscape-painter nor, as it is to be feared too many of these productions do, serving him in lieu of his own study and due labour in nature's service. These several considerations duly weighed, many will doubt if it were an improper apportionment of the funds to give about three-sevenths to the several branches of art above enumerated, and four-sevenths to the producers of pictures; and, moreover, it must be remembered that the extra value of the print makes this an exceptional year. With regard to the pictures so purchased, I find the general opinion to be that the selection this year is an improvement on that of several years past; nevertheless, it would, I think, be unkind to the artists too curiously to investigate the relative degrees of merit with which painting is represented in the large room, and sculpture in the little one.

I inclose my card. I wish some one would tell us how many thousands of pounds have been paid to the Society of British Artists, of which Mr Hurlstone is president, through the unselfish and disinterested labours of those who conduct the Art-Union of London.

ADRI ALTERAM PARTEM.

BRIDGE FOR THE VICTORIA STATION AND PIMLICO RAILWAY.

THE Bridge which is being erected over the Thames for the Victoria Station and Pimlico Railway (a railway to commence at a junction with the West-end of London and Crystal Palace line in Battersea, and terminate near Shaftesbury-terrace, Pimlico), is being proceeded with rapidly. Our engraving represents the appearance it will present when completed. We further give some illustrations of detail, namely, a half section of arch, and section through the crown of arch.

"The stone used in the construction of the bridge is of three kinds, viz. for the footing of the piers, Yorkshire rag landings; for the piers up to the level of Trinity high-water, Portland roach-stone; and for the whole of the masonry above high-water line, Bramley Fall stone."

The bricks in the piers are to be "Paviors," and for the other parts Cowley Stocks.

The bridge will consist of four principal openings across the river, having each a clear span of 175 feet, and of one side opening at each end over the road leading to the suspension-bridge, with a clear span of seventy feet. The principal openings are each spanned by six wrought-iron arched girders, resting on cast-iron bed-plates fixed to the piers and abutments, and will be composed of I shaped ribs, with top and bottom tables, and central web of flat plate-iron, connected together by means of angle-iron and T iron covers, and the whole riveted together.

Horizontal wrought-iron girders stretch from arch to arch, bearing on the piers in the centre of their length, upon cast-iron bed-plates fixed on the masonry of the piers. These horizontal girders are also I shaped, and are constructed of flat wrought-iron plates for the top, bottom, and central web, with T and angle-iron stiffening-bars, riveted together in the same manner as the arched ribs.

The spandrels between the arches and horizontal girders are intended to be filled in with a wrought-iron framework, radiating from the arch. These for the four inner, or bearing girders, will be composed of four angle-irons, placed back to back, and riveted through flat wrought-iron plates of varying thickness; the angle-irons will be riveted to and form part of the upper table of the rib and the bottom table of the horizontal girder, being joined to the radiating bars at the points and in the manner shown on the drawings. The radiating bars will be intersected longitudinally by a flat wrought-iron plate passing through the centre of each bar.

The two outer spandrels will also be filled in with a radiating framework composed of T iron bars, placed back to back, and riveted through flat wrought-iron plates of varying thickness; the T irons are riveted to and form part of the upper table of the arch rib and the lower table of the horizontal girder, and will be connected at the points.

The four inner or bearing ribs, with the spandrels and horizontal girders, are all exactly similar, both as to sectional area and mode of construction; the two external or face girders will be diminished in section, and constructed so as to form a plain fascia, the central web forming the face.

The arched ribs and horizontal girders will all be constructed in pairs, connected by means of the transverse covering-plates, which will be riveted

to the upper and lower flanges of each, at about every six feet apart, and each arched rib will be divided into five segments, which will be connected by bolts passing through transverse wrought-iron flat plates, extending through the entire width of each pair of girders.

The roadway will be carried by means of wrought-iron transverse bearers placed three feet apart and bolted through the horizontal girders and arched ribs, each alternate bearer being continued through the centre and external spaces. They will consist of I shaped bars, and these resting on the horizontal girders, having the bottom flanges riveted to flat wrought-iron plates extending over the entire width of the bridge, and connected with the bottom tables of each horizontal girder.

The arched ribs will spring from cast-iron bed-plates, resting on and bolted through the masonry of the piers and abutments; a segmental cast-iron shoe will be bolted to each end of the arch, and will rest in a corresponding concave bearer, which will work loose in the bed-plate, and will be provided with proper keys for adjusting it in position.

The seventy-foot opening over the road will be spanned by six horizontal wrought-iron girders. The roadway over this opening will be carried by means of wrought-iron cross-bearers, placed three feet apart, bolted through the horizontal girders, and each alternate bearer being continued through the centre external spaces.

On the top of the external horizontal girders a cornice will run along the entire length of the viaduct on each face, and will be composed of wrought-iron plates, rolled or bent to the required forms.

The whole of the wrought iron used in the work is to be obtained from the Monkbridge Iron Company.

Power is given to the engineer to test to the following extent:—

18 tons' strain must be borne without a greater extension of length than ... ¼ of an inch.	
21 tons' strain ... ½ " extension.	
23 tons' strain ... ¾ " "	
25 tons' strain ... 1 " "	

and all bars must bear a tensile strain of 26 tons before fracture.

At the second half-yearly meeting of the company, held a few days ago, the report read said,—
"The directors are still confident that the line and station will be ready for public traffic by the time appointed—viz., the 1st of June, 1860."

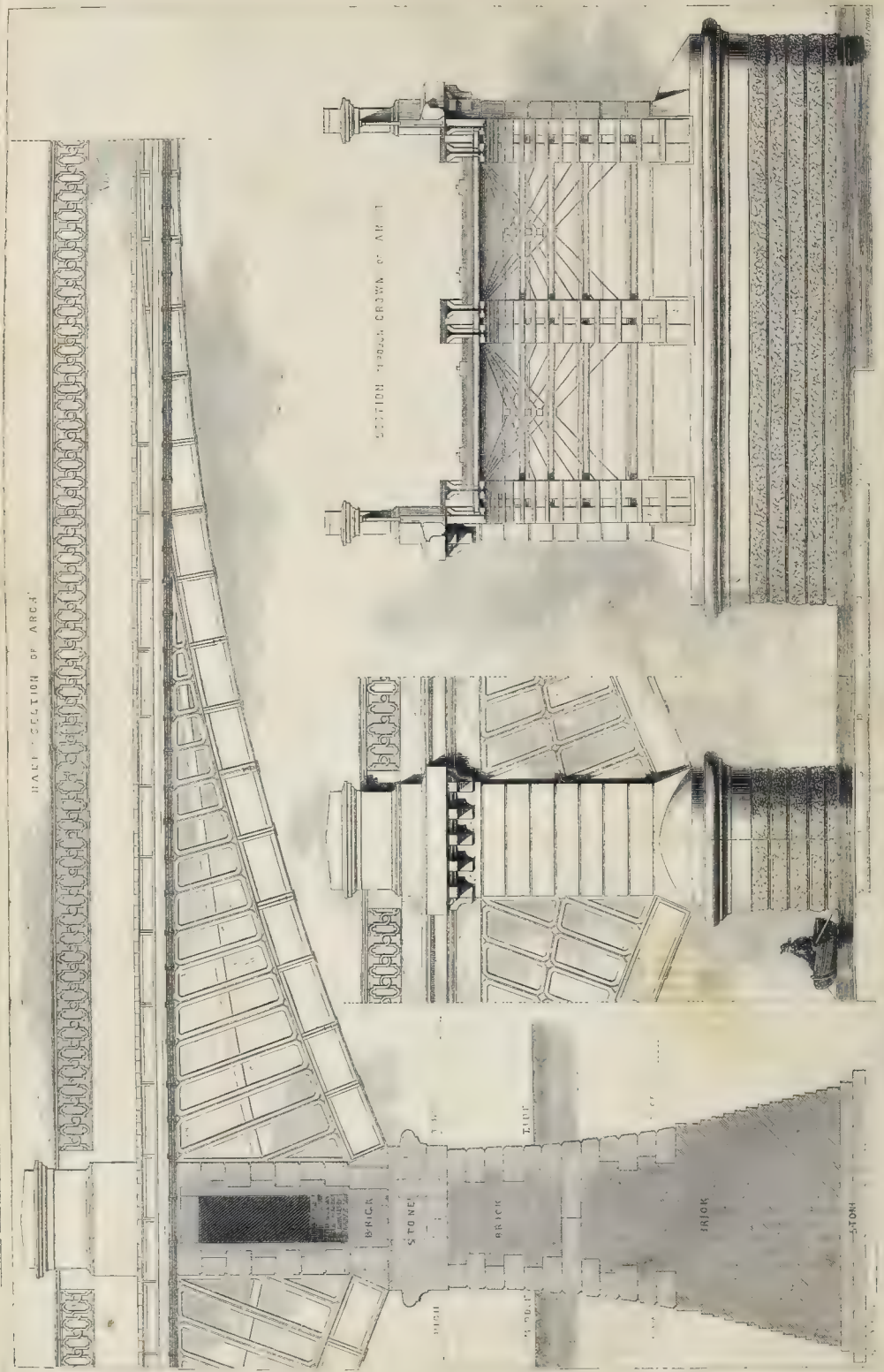
"Of the several schemes which were brought forward in Parliament this year, for connecting the Great Western and London and North-Western systems with the Victoria Station, that for the extension of the existing West London line across the Thames, having received the support of the Great Western, London and North-Western, Brighton, and South-Western companies, who have jointly undertaken to find the capital for its construction, has passed both houses of the Legislature, and is intended to be carried out as rapidly as possible."

Mr. Kelk is the contractor for the Victoria Station and Pimlico line, and considerable progress has been made in the works. In two of the three piers in the river, of the bridge we have illustrated, the foundations have been put in, and the masonry is considerably advanced towards the springing of the arch. In the third pier the piling of the coffer-dam is completed, and preparations are made for the commencement of the masonry. In the two abutments the coffer-dams have been finished several weeks, and the excavations are well advanced; moreover, with a trifling exception, all the masonry required for the construction of the bridge is on the ground and ready dressed.

The contract for the iron work has been sublet by Mr. Kelk to Messrs. Bray and Waddington, of Leeds, who have made considerable progress with their work.

Mr. John Fowler is the engineer-in-chief; Mr. William Wilson the assistant-engineer.

BORING ROCKS.—Mr. Sommeiller, of Turin, is said to have invented a rock-boring machine, which consists of two parts—one fixed, the other moveable. The moveable portion comprises a cylinder, within which is a piston, to which is attached the boring tool. The rod also extends behind the cylinder, and carries a mechanism which gives the borer a rotary motion. The percussive piston has an indefinite or undetermined course, and is independent of the actuating fluid, which is properly distributed into the cylinder by a slide-valve, working independently of the piston.



Details of Construction.



VICTORIA STATION AND PIMLICO RAILWAY BRIDGE OVER THE THAMES.

MR. JOHN FOWLER, ENGINEER-IN-CHIEF; MR. WILLIAM WILSON, ASSISTANT ENGINEER.

ON THE GENERAL THEORY OF PROPORTION IN ARCHITECTURAL DESIGN AND ITS EXEMPLIFICATION IN DETAIL IN THE PARTHENON.*

I HAVE undertaken to render an account of the results of some studies of the principles of proportion in architecture, as exemplified in the Parthenon.

The subject is not proposed as one of mere archaeological interest, or simply as a curious chapter from the history of the art: if justice can be done to it, it ought to be something more—it ought to be a contribution to the scientific aids and resources of the art, as proving not merely that the Greeks worked upon such and such arbitrary maxims, but that they had discovered certain principles. To trace a theory of proportion as employed by the Greeks in design may be of interest in any case, but how much the more should it approve itself as having a rational and scientific basis.

Few, it is probable, will doubt that the solution of one of these problems involves that of the other; and whoever can prove that he holds the explanation of the proportions of the Parthenon, will be easily absolved from further argument that the system employed was right and truly scientific; as on the other hand a claim to possess a true theory would have to stand the test of application to the Parthenon. The general theme of admiration of all who write and all who speak of the impression of this temple on the spectator, I have found to be the sense of harmony that it excites—the pleasurable satisfaction of the feelings associated with proportion. Grace of proportion, dignity of proportion, justness and harmony of proportion, are phrases that recur in the course of their observations again and again. In response to what is implied in these expressions, the speculative have not been remiss in asserting for architectural harmony as close a dependence on mathematics as has been so long established for musical. Admitting the justness of the presumption so far, I may say at once that my own conclusions are quite at variance with what is often the next presumption, that the ratios of the diatonic scale have any special value as realized in architectural forms. I do not find this to be the case: I venture to say I find it distinctly not to be the case; but inasmuch as, wherever numerous proportions are applied, on whatever principle those which are found in the musical scale are sure to occur along with others, I can quite understand how the coincidences encourage a prepossessed or precipitate theorist and flatter to betray.

It will be convenient to state succinctly in the first instance the most important conclusions, which will then be easily borne in mind through the process of proof and application.

First: it has appeared that the Greek architect attached the highest importance to the determination of his dimensions by proportion, and to the execution of those dimensions with minute exactness. Accidents and faults apart, for which a margin must be always allowed, nothing was left to chance, random, or remainder.

Secondly: dimensions are proportional, in the customary sense of the word, when they have a common measure; but it becomes of importance to decide in what directions they are most appropriately taken, which lines are architecturally characteristic. I find that the Greek architects brought into comparison dimensions measured along the same straight lines, or lines parallel, and such a comparison for convenience I call Rectilinear proportion: thus the height of an entablature may be commensurable with the height of a column, the breadth of a metope with the breadth of a triglyph, the height of a naos door with the height of a pronaos column. Another important form of comparison is between dimensions taken at right angles to each other, and such instances will be referred to as Rectangular proportions. Thus it seems obvious and reasonable to estimate the proportion of an oblong plan by comparative statement of the length and breadth: no doubt its form might be recorded and communicated numerically by the statement of the angle of its diagonal with a side; but the eye does not judge such a proportion by reference to the diagonal.

The comparison of length and breadth of the temple measured upon the top step, of the height and length of an apartment, of the height and breadth of the façade, or a triglyph, &c., are examples of rectangular proportion.

The direct comparison of areas I only meet with

in one, but that a very important class of instances: I refer to the determination of the relative proportion of columns by proportion of their sectional area, a subject which space forbids me to enter upon.

Assuming it to be determined that no dimension shall be admitted into a design that shall not be proportionate to some other dimension, either rectilinearly, rectangularly, or both ways, it still remains to be considered what proportions or what ratios (using an equivalent expression), shall be adopted. Ratios, even of low numbers exclusively, offer themselves in crowds, and are to be subjected to arrangement and selection. If we commence with two equal lines, and, leaving one unaltered, alter the other by continuous diminutions, we shall find every conceivable or possible ratio occurring between absolute equality, 1:1 on the one hand, and absolute disparity 1:0 on the other. If we pause at certain stages of the progress, as determined by some principle, these resting-places will form a scale of proportion, a series of steps by which we may regulate degree of approach to and departure from equality between any compared dimensions or series of dimensions. On what principles are the resting-places to be determined, the scales constructed? I can only give results briefly and partially too.

First: the design itself will necessitate the adoption of certain ratios from the requirements of purpose and plan.

Secondly: the variety of exigencies demand that the other selected ratios should range pretty widely over the interval to be divided, and give a choice of proportions verging towards inequality as well as towards equality, yet with sufficient interval to preclude confusing proximity.

Without pursuing the analysis further now, I must content myself with stating that the scale by which the Parthenon is regulated, commencing with the ratio 1:6, advances towards equality by ratios preserving the common difference between their terms of 5. Thus, 1:6, 2:7, 3:8, 4:9, 5:10, &c. As the scheme advances the differences become trifling, and the numbers undesirably high, and the scale is made out by the ratios 4:5, 5:6, 6:7, &c. the common members of a primary series. Such a scale is formed by the rejection of the innumerable other ratios, some self-condemned by their high numbers, but others as not required or as interfering with the effect of the most characteristic ratios. Thus, the ratios 1:3 and 2:5, are most extensively and importantly employed in the temple at Bassæ, but are absolutely unknown in the Parthenon. Even of the members of the scale admissible and admitted some are comparatively neglected, while emphasis is given to a few by repetition in many instances, and both rectilinearly and rectangularly, and in applications expressive and important. Such preponderance we shall find to be given in the Parthenon to the ratios 4:9, 7:12, and 9:14,—to the first especially. It is to be assumed that the system of making dimensions proportionate to each other, sometimes rectilinearly and sometimes rectangularly, was adopted on the principle that the mind and eye naturally take cognizance of both forms of comparison, and feel satisfaction in both harmonies. What then, it may be said, are their comparative values when they clash? It was the aim and study of the Greek architect of the Parthenon that they should not clash, and we shall have to admire the dexterity and success with which he harmonized the two forms of comparison, so that rectilinear proportions that fall out as happily as if they had been exclusively considered are found to be compatible with, indeed to be the means of bringing about, rectangular comparisons that are still more effective; but I leave it for the examples to bring home the value of this principle, and the skill evinced in employing it.

To the examples again I must trust for conveying due appreciation of the strict and logical consistency with which the Greek architect selected the terms of his comparisons: that the length of an apartment should be brought into proportion to its breadth, may be obvious enough; but in the ramification of design divisions are called for which must not be proportioned at random, but can only be correctly referred by a shrewd eye for correlative function and expression. Proportions to be expressive must correspond with and so represent natural relations of analogy or antithesis, and it was in the discernment or contrivance of these that Genius founded and perfected Greek architecture.

The terms to which a prerogative importance is allowed in regulating other dimensions are especially,—

1. The breadth of the front, from which is derived,

2. The breadth of the abacus, and

3. The lower diameter of the column.

But no subdivision of these into any moderate number of fixed minutes or modules will explain their regulating power, which is dependent upon variable proportion, upon the adoption of ratios that may be taken from any part of the scale.

The designer of a Greek temple held it of importance to secure a definite proportion of low numbers between the length and breadth of the structure, as taken upon the grand stylobate, whether upon the topmost or on a lower step; a horizontal rectangular proportion. Thus the Parthenon has breadth and length on top step as 4:9, Theseum the same, but on the lower step, and the temple at Bassæ also on lower step, has the proportion of 2:5, and the temple at Ægina that of a double square.

Equally important, or even more so, was it that the full vertical height of the front, from the pavement of the peribolus to the apex of the pediment, should compare in a ratio of low numbers. In several hexastyle temples, those of Theseus and Bassæ are examples, and I may add, the western front of the Propylæa, the height of the front is commensurate with the breadth, as 3:4. In the Parthenon we shall find that, besides this grand ratio of height and breadth, which there is 9:14, very accurate rectangular proportions were obtained between other main divisions of the elevation: the cheek upon multiplying these in every instance was the stringent importance of certain rectilinear proportions which were liable to interfere with them. Of these it appears from comparison of examples, that the greatest importance was attached to making the height of the column exceed the joint height of the other members, that is, stylobate, entablature, and pediment, by a single aliquot. For example, the height of the column may compare with the complementary height of the front as 7:6, or as 6:5, &c. &c. In other words, the height of the column as compared with complement of height is the larger term in what is technically called a super-particular ratio. The ratio applied in the Parthenon is 10:9; in the Theseum 5:4, equivalent to 10:8. The Sicilian builders never discovered or appreciated this principle, and their effects suffer accordingly.

Thus much for the elevation of the front, but a further arrangement was thought necessary or desirable in the Parthenon, in order to harmonize the column as vertical member with the joint horizontals, entablature, and stylobate, as seen on flanks, where from such frequented points of view the height of the roof was not visible or brought into comparison. Accordingly the joint height of the stylobate and entablature on the flank is just equal to half the height of the column; or say, height of column: complement on flank :: 2:1. With what exactness this is the case will appear from the comparison of figures to be given presently. The same ratio holds good in the same comparison in the Theseum, where the entablature received an addition of height from the cymatium, which, as discovered by Mr. Penrose, was returned along its entire length.

It was a further established principle that the height of the column should compare symmetrically with the horizontal spacing of the columns; should, in fact, be just equal to the dimensions from the centre or edge of one column to the centre or edge of a third, measured upon the plan. In the Parthenon this symmetry is applied to three ordinary columns, and the two intercolumns included, and the same appears to be the case at Sunium. In the east front of the Propylæa and in the temple at Bassæ, an angle column and columniation are included in the comparison, which, in the latter case at least, introduces a difference from the relative contraction of the angle columniation. In the temple at Rhamnus the dimension is taken from the outer edge of the angle column to the centre of the third from the angle: in the Theseum we have a like division, but involving only ordinary columns.

I apprehend that the introduction of these equalities of heights with breadths was found to give repose to the effect of a long range of columns, as a repetition of similar spaces and dimensions, and the principle may be susceptible of wide application, as in fenestrated compositions. If, in the progress of a design, we conceive the diameter and spacing of the columns to be settled in the first instance, it is clear that the principle just stated would limit the architect to choice of height among three or four fixed dimensions, and, on the other hand, if the height of the column is assumed, the systems of spacing that are available would be reduced within narrow limits. In point of fact, in all such cases, no one

* Read by Mr. W. Watkiss Lloyd, at the Royal Institute of British Architects, June 15th.

point was settled absolutely until all others were settled. When the result is obtained it appears as if the adoption of one harmony brings about another as a necessary consequence; but this is not an accident, for the decision to adopt the first was made on the very ground that it was compatible with or involved a second: in all such adjustments the search is for those symmetries and proportions which recommend themselves by bringing the richest dower of subsidiary harmonies conducive to the effect required, and no solution is satisfactory until such are found.

One more principle, much taken to heart by the architects of the Doric temples of Greece proper, was to adopt a breadth for the abacus of the capital equal to $\frac{1}{2}$ of the height of the column, or else an aliquot part of the breadth of the temple on the top step, or lastly accommodating both conditions. A dimension for this part, however, cannot be adopted lightly, for it decides the diameter of the echinus at its greatest swell, and this must be relative to the general proportions required for the column. At Bassæ the abacus of the front is $\frac{1}{2}$ of the height of the column; but not commensurable with the top step; in the Theseum it is $\frac{1}{2}$ of the height of the column, and also $\frac{1}{2}$ of the top step; in the Parthenon the ordinary abacus of the east front is $\frac{1}{2}$ of the top step, but not commensurable with the height of the column: the abacus of an angle column, however, which is broader than the ordinary, is equal in breadth to $\frac{1}{2}$ of the height of the column, while, on the other hand, it is, of course, no aliquot of the top step.

Such were the leading conditions to which, by custom of the style, by experience of good effect, or by manifest fitness, the architect's design was bound to conform, which gave a certain guidance at the same time that they gave a certain control; not so much guidance that responsibility for ultimate effect did not rest with his genius, not so much control that genius had not ample range for variety and invention.

We have now, therefore, in the case of the Parthenon, a clear breadth of front of 100 attic feet, say 101.341, on which to erect an octastyle Doric portico, with diameters of columns proportioned to intercolumns in about the ratio 4:5, and in the distribution of the eight columns we have to take into account that, in accordance with the style, the angle columns are to have a somewhat larger diameter, and the angle intercolumns are to be somewhat more contracted than the rest. The process by which, it appears to me, the architect made the distribution in the present instance, is as follows:—The top step had to be divided into seven main segments, five of them being equal, and giving the lines of centres for six columns equidistant from each other, while the two end segments were to be somewhat larger, in order to receive the full diameters of the angle columns, a difference that more than makes up for the contraction of the angle intercolumniation. The problem, therefore, in the first instance, is to assign the degree of excess to the two angle segments, as the breadth of the front divided by seven, after deduction of this joint excess, would give columniation. The seven segments of the step correspond to seven segments of the architrave, each equal, in a general way, to the breadth of two triglyphs and two metopes, except the external segments, which have to accommodate an additional half triglyph. Now, if we deduct the breadth of a semi-triglyph from each end of the step, and divide the intermediate space by seven, we shall find the divisions give us the ordinary columniations with the greatest accuracy. This process, of course, assumes that we know the breadth of triglyph, and this may easily have been obtained before the average columniation was absolutely settled, as it is deducible proportionably from the breadth of the architrave.

Triglyph.	Columniation.
101.341—2.786 =	98.555 ÷ 7 = 14.079 + 1.393 =
228.141—	" = 225.355 ÷ 16 = 14.084 + " =
Ang. Seg.	Measured.
15.472	{ 15.478, 15.367,
15.477	{ 15.468, 15.449, 15.531, 15.443.

We have now, therefore, obtained the centres of the columns, giving columniation 14.084, which is exactly coincident with a great many as measured, and also with the average of the variations, the principle of which is accurately determinable, but cannot be now discussed. If we divide this calculated columniation into nine parts, and assign four to the diameter and five to the intercolumn, we obtain, $14.084 \div 9 = 1.565 \times 4 = 6.260$, intercolumn; $14.084 \div 9 = 1.565 \times 5 = 7.825$, intercolumn; $14.084 \div 9 = 1.565 \times 4 = 6.260$, diameter. The measured diameters give 6.250 and even 6.245, and this may be held a sufficient

approximation; still I believe that another principle decided the exact dimension adopted, though the difference may be but little more than the $\frac{1}{16}$ th of an inch. Again we are entitled, by the usage of the order, to look out for an agreement between the height of the column and a division of the columnnade on plan. The nearest approximation is given by the dimension on plan that includes three diameters and two ordinary intercolumns, viz. 34.428, but the height of the column is only 34.250, giving a difference of full 2 inches. Here again, while we are bound to admit that this approximate symmetry was regarded and valued, it is clear that we cannot accept it as governing the dimensions adopted in execution for the height of columns.*

A VISIT TO LOUGHTON. A NEW SUBURBAN DISTRICT.

We can scarcely, even at present, form an idea of the changes which will be effected in the metropolis when the London and suburban railways are more completely carried out, although already the effect is considerable. During the summer months large numbers of the middle classes run off by rail in search of healthy villages, or farm-houses, at a moderate distance from the metropolis, where their families can be lodged, and which can be reached after business in the evening, and allow of the return by sufficient time in the morning.

Dwellings, at rents so moderate that the difference between them and the sum paid in town is sufficient to pay for the monthly railway ticket, are springing up in all directions: most of the railway companies that have termini in the metropolis are assisting this movement by the cheapness of fares; and it is probable that they would be still further consulting their interest by giving greater facilities for the occupation of the suburbs.

As regards the recreation of the pent-up Londoner, of both the middle and poorer classes, the railways give the means of change. A few years ago a journey to the sea-side was, to the great bulk of the working classes resident in town, almost an impossibility, owing to expenses and length of time needed to travel, notwithstanding the speed of the famous Dover and Brighton coaches of other days: now the fare to Brighton and back is as low as 3s. 6d. and for children, below twelve years of age, half that price; so that thousands who would never have hoped for such a thing are whirled away, and enjoy the sea-breezes of the southern coast.

Without just now travelling so far, we would glance at the district around London, where there are indications that the metropolis will, in a very brief space of time, extend in an extraordinary manner: from villages which are near railways, rows of dwellings are spreading towards town, and London is branching towards the villages; and it is to be hoped that precautions will be taken to prevent as much as possible the formation of thick clusters of dwellings, and that a system will be adopted of spreading the houses over a sufficient space.

Taking train at Fenchurch-street, and proceeding by Stepney, Stratford, Leytonstone, and Woodford, to Loughton, a district is found, which, until the opening of the new branch of the Eastern Counties Railway, was but little visited by Londoners.

A reference to a map of London, of date about fifty years back, shows how rapid has been the increase of the population of this north-eastern district, — Hackney, Homerton, Stepney, Poplar, Stratford, Plaistow, &c., each expanding so much, that they will ere long be a connected mass of bricks and mortar. Along the banks of Bow-creek, blazing furnaces light up the neighbourhood at night, and various works, some not of the most wholesome description, give employment to large numbers of persons. The great locomotive works at Stratford, and other extensive establishments, cause a large demand for houses suitable for the industrious classes. Most of the new houses lately erected at and near Stratford are of small size, and without improvement on the usual plan. The general appearance of the place, cut up in all directions by branches of railways, is not very inviting: the numerous coal-waggons, the bustle, and unornamental nature of the stations, and other works, will remind many of the early railways in the coal districts of Northumberland and Durham. We, however, pass these, and get amongst meadows and cornfields on one side and into Hainault Forest on the other; and now and

then there are peeps of the river, and little hamlets and churches, buried in trees. Large hostels have been reared at points along the line, and are fitted in that manner which is the delight of the pleasure-seeking Cockney, but is sadly out of harmony with rural beauty. At these places donkeys, gaily caparisoned, and goat and pony chaises, are waiting, and now and then costermongers from Houndsditch, Whitechapel, and elsewhere, heavily laden with fruit purchased at Covent-garden, Farringdon, and other markets, clad in rustic costume, are set down at the different stations. Most persons would think that taking fruit to the country was something like "carrying coals to Newcastle;" the costermongers, however, know their business, and salute the town visitors with "Buy fine fresh country apples or pears, ladies," and many return home with their baskets full of the Covent-garden fruit, which they eat with greater relish in consequence of their belief that it has been freshly gathered on the boundaries of Epping Forest.

The neighbourhood of Loughton will surprise those who have formed an idea that the county of Essex is flat and unvaried, for here the land rises up in bold and picturesque elevations, from most of which Epping Forest may be seen, in masses of foliage, for miles in the distance.

Until the advance of the railway to this village, the district was seldom visited by strangers, and the people and the place had as rural an appearance as if they had been situated 100 miles instead of twelve miles from the metropolis. The land, which is generally rich and capable of high cultivation, seems to have been managed on the old-fashioned principle of two years crop and one year fallow, and the improved ideas of farming were considered as new-fangled and unnecessary. It may be that some of the young farmers think differently, but they are bound to a particular system by their leases. There are, however, some truly English scenes of comfort to be noticed; well-filled stack-yards; meadows, even in the summer-time, green as emerald. The wood has been spared; and although this may not be considered high farming, it is pleasant to see the shady lanes and other groups of greenery. Our artistic reader who may wander in this direction will find some good subjects for his pencil; for, although he may have to use ingenuity in the arrangement of his foreground, he will discover good materials—in rolling clouds beyond, and the varied light and shadow of the forest, &c. Some of the views are very extensive, and reach to St. Paul's, Shooter's-hill, the high lands of Sussex, and to Kent. The village is long and straggling, and rises from the railway station up a considerable eminence. Formerly fifteen or sixteen coaches passed through it on their road eastward, and then the place was lively with the rattle of wheels and sound of horns, and a certain amount of business was carried on in the quiet old-fashioned way. The stoppage of this traffic has caused the decline of the quaint-looking hostels, and occasioned, as we are told, much poverty among a considerable number of the inhabitants.

A few years since the residence of the lord of the manor, a mansion of considerable antiquity, situated near the old church, was, with its fine library, totally destroyed by fire. The well-wrought iron gates of about Charles II.'s time still remain; part of the stables with turret clock-tower; and also a small portion of the church, which is now only used for funerals; for a large new church of the Norman style of architecture has been recently built nearer to the village. This graveyard is a quiet resting-place.

In looking at this and many other neighbourhoods, surprise must be felt at the want of taste and knowledge which is shown in the selection of the sites for dwellings of much cost and pretension. There is a remarkable instance of this at Loughton; for, although there are here such commanding positions,—good for the purposes of drainage, with fine views, and where the architect and landscape-gardener might make a famous display,—the residence of a worthy London alderman is placed uncomfortably in a hollow.

From Loughton, along the line towards town, the announcement that the land is to be let on long building leases indicates the coming population.

The lord of the manor holds peculiar privileges in connection with the royal forest of Epping. Various transactions are managed at the Court, which, together with the proceedings of similar courts, might be usefully recorded in a popular form by some of our antiquarian lawyers.

This forest, although extending about nine miles in length, and from two to three in breadth, is composed chiefly of oak, beech, and other hard wood

* To be continued.

trees, which, however, are dwarfed and stunted by constant pollarding; for the inhabitants are allowed, from the 9th of November till the month of May or June, to lop and gather wood for their household use. Directly the midnight hour has struck on the 9th of November, bands of villagers may be heard chopping in various parts of the forest, thus asserting their ancient privilege. Formerly the deer were plentiful in those woods, and, although they seem now to have disappeared, certain tender trees are still sacred from the axe, in consequence of their being considered necessary for the food of those animals.

In various parts of the forest patches of land have been inclosed, and by the process of taking a little bit at a time these pieces of land grow continually. Considering the alteration of the means of conveyance, and that now on certain days persons can get to Loughton and back for one shilling, and even less; and seeing how rapidly the population is extending towards this valuable national property; its limits should be carefully defined, and all further encroachments put a stop to.

A long day seems short when looking at the varied sunshine on the forest, and the glowing sunset; and then the grey twilight warns us unwillingly to move towards. Great is the contrast between those solemn, still woods and the glare, bustle, and vice of Whitechapel, Houndsditch, and other parts of this crowded London.

This stillness is not always in the forest, for by excursion trains thousands run to Loughton (and as the place becomes better known these numbers will increase), and then the woods ring with laughter and merriment.

There are good schools at Loughton, and we must not leave the place without noticing a provision made here which is worthy of imitation elsewhere. A large plot of ground has been diverted into spaces for family gardens, for which a rent of 5s. per annum is charged. This sum is collected and placed in the hands of responsible persons in the parish, who at a certain season examine the gardens, and distribute the accumulated amount in prizes of from 2s. to 10s. to those whose ground is in the best condition.

PARIS.

THE construction of the new Octroi Offices, in the fortifications, which in a few months are to form the new limits of Paris, is continuing very actively. The demolition of the *Barrière de l'Étoile* would naturally have for effect to throw the greater part of the octroi traffic into the Avenue de l'Impératrice; and this, from the number of carriages continually going to and returning from the Bois de Boulogne, would present great inconvenience if octroi offices were placed there. The municipality has accordingly determined, in order to avoid this inconvenience, that no office shall be constructed in the Avenue, and that, at the entrance to the wood, octroi officers shall be stationed, to send to the other barriers persons and vehicles conveying articles subject to the payment of duties.

At the corner of the new bridge between the Pont Royal and the Place de la Concorde a marble tablet has been placed, bearing the inscription, "Bridge of Solferino, built in the reign of Napoleon III. 1858-59."

The new Boulevard du Champ de Mars, which goes from the Pont de l'Alma to the Champ de Mars, is now completely terminated. The formation of it was carried on with such activity, that in the space of a fortnight 22,000 cubic metres of earth were removed, 21,000 square metres of foot pavement were laid down, and a sewer, 2,000 metres long, constructed of freestone and Roman cement.

The works of the square of the Place Louvois are nearly terminated: the rock-work and the grass-plots are finished; and trees and shrubs are being planted. At the same time great activity prevails in the erection of an elegant iron railing which is to surround it, and already one can form an idea of the happy effect resulting from the transformation of the arid and desolate Place du Louvois into a delicious pleasure-ground, where pedestrians will henceforth find a cool, shady retreat. The canvas surrounding the fountain will be taken off on the day of inauguration of the square. The fountain is of cast iron, coated by the electric process with a thick shell of copper,—a process which we have often described.

The French Emperor issued, on the 14th ult., a decree for erecting a funeral chapel to the memory of the French troops who fell in Africa, the Crimea, and Italy, in the new cathedral of Marseilles, the unfinished state of which permits a chapel to be founded worthy of the occasion.

On the 12th inst. the new church of St. John the Baptist, at Belleville, in Paris, was consecrated by Cardinal Morlet, Archbishop of Paris.

COSTUME IN FRANCE AND ENGLAND: CALAIS.

A CORRESPONDENT, writing from Calais, says:—The utter absence of all pretension in this old-fashioned bathing-place is quite refreshing, and makes it a perfect harbour of refuge for the overworked and world-beaten. There was some little stir in the town on the emperor's fête and previous Sunday, and music in the "Grande Place," where is that quaint old *Hôtel de Ville*, with the bust of Eustache de St. Pierre, with the rope round his throat (as he presented himself to the English king), over the entrance. But no place was illuminated save the Custom-house outside the gates, and which is also the railway station; so that dejected passengers might receive the impression that Calais was very loyal, whereas in the town the moon was the only light that shone brightly. The Calaisiens are a quiet people—*un peuple solide*—and not given to enthusiasm of any sort. The crowd of listeners on the ramparts to the music on Sunday afternoon was one most pleasant to the eye; not an ill-dressed person to be seen. All the lower orders in France dress so thoroughly well, according to their station, that the *tout ensemble* is most picturesque. There are here three distinct classes among the people:—the fisherwomen, with their bright scarlet, and green, or blue petticoats, large white caps, and solid gold ear-rings, all good and clean; the countrywomen, with caps white as snow and beautifully plaited or ironed, and handsome large black cloth cloaks; and the townsfolk, with the daintiest and freshest of caps, with bright flowers, and ribbons, and clean dress of muslin or other kind, with pretty shawls or mantles, all of inexpensive materials, perhaps, but good of their sort. I think nothing must strike foreigners more than the ragged and disreputable appearance of the lower orders of our English people. I fear improvidence and recklessness are strong points among the English poor (originating, perhaps, in that terrible passion for drinking); whereas I am more and more convinced that the French people are saving and most economical, putting by money constantly, and yet always preserving a decent exterior, without any desire for the copying of the higher classes, and would disdain to attire themselves in the dirty finery of their masters. I wish some one would preach a crusade against the disreputable and unpleasant appearance of the lower orders of the English metropolis. C. C.

DRAINAGE OF NEWPORT, MONMOUTHSHIRE.

THE drainage of this town has been completed, and as we learn from the engineer's report, very satisfactorily. The total length of sewers put down in the streets is 37,500 feet = 7.10 miles; costing, including three outlets, 11,862*l.* The depths vary from 20 feet to 5 feet; and the sizes from 4 feet 6 inches by 3 feet 6 inches, egg-shaped, to 14 inches circular. They are all constructed of radiated hollow bricks, made specially for each size of sewer, of excellent quality. The sizes of the bricks are 1 foot long, 4½ inches and 6 inches wide, and 3½ inches average thickness. The mortar was made from the lias beds at Liswarry, in the neighbourhood, and passed through a pug-mill before using. Its hard-setting property was found to be so good that it was used in the inverts instead of cement, whereby great saving of expense was effected. The greater part of the town having been built upon the ship's ballast, brought in the vessels trading to the port, and spread over the natural surface, the contractor in excavating for the sewers in this ballast had great difficulty in keeping up the sides of the trenches and in putting in the sewers, owing to the extreme looseness of the ballast, and the enormous quantity of water it contained, as also from the tides. The trenches were obliged to be well strutted and lined with vertical planks, which were driven downwards as the workmen shovelled out the ground, while other men were unceasingly engaged in baling and pumping out the water. During a heavy thunderstorm, about Christmas last, a number of the larger sized sewers became filled with water, the outlet not being formed at the time. In order to get rid of this water so as to proceed with the work, the contractor, to save pumping, ingeniously contrived a syphon with which all the water was easily and quickly drawn out of the sewers from a depth of 20 feet, and discharged into the river some 300 feet distant, at a trifling expense. We

subjoin a table showing the particulars and cost of the sewers as executed:—

Total lengths.	Average depths.	Sizes of sewers.	Thick-ness.	Cost per foot lined.
		ft. in. ft. in.	s. d.	
1,322 ft.	15 ft. 6 in.	4 6 by 3 6	9 in.	11 8
2,217 ft.	13 ft. 0 in.	4 6 by 3 6	9 in.	10 11
6,110 ft.	12 ft. 0 in.	3 0 by 2 2	9 in.	7 7½
12,354 ft.	11 ft. 8 in.	3 0 by 2 2	6 in.	5 3½
1,923 ft.	9 ft. 3 in.	2 6 by 1 10	6 in.	4 7
9,663 ft.	10 ft. 0 in.	2 6 by 1 10	4 in.	3 8½
690 ft.	10 ft. 2 in.	2 8 by 1 9	4 in.	3 6½
3,264 ft.	8 ft. 6 in.	1 2 diameter	4 in.	2 4½

At a meeting of the Town Council, held on the 16th instant, the engineer, Mr. Alfred Williams, certified the completion and perfect condition of the work; and said it was so well done, that he would recommend the Board to give up the usual terms for keeping it in order. This the Board readily agreed to. The contractor was then complimented by the Board, who also unanimously voted the following resolution:—"That the Mayor and Corporation of the borough of Newport, in the county of Monmouth, have the satisfaction of stating that the contract for the drainage of the entire town, undertaken by Mr. John Phillips, contractor, of Holloway, London, has been completed to the perfect satisfaction of their engineer, who inspected the works throughout their progress, as well as to themselves, and have pleasure in giving a certificate to that effect."

COMPETITIONS.

Schools, Parliament-street, Nottingham.—The design submitted by Messrs. R. C. Sutton, of Nottingham, and H. J. Paull, of Cardiff, has been selected by the committee. The cost will be 2,000*l.*

Winchester Diocesan Training School for Masters.—A special meeting of the Winchester Diocesan Board of Education has been held for the purpose of receiving a report of a committee appointed to advise the Board in the selection of a plan for the new Diocesan Training School for Masters. Eleven plans had been offered for competition. The committee came to a unanimous opinion in recommending the plans which had for their motto "Spes." On the Board adopting the recommendation of the committee, subject to some minor alterations, the envelope inclosing the name of the author was opened, and the name proved to be that of Mr. John Colson, of Winchester.

Invergorston.—The subscribers for the erection of a new church in Invergorston, on a lengthened inspection of competing designs, sent in by Messrs. A. & W. Reid, and Mackenzie, Elgin; Mr. Mathews, of Inverness and Aberdeen; and Messrs. Ross & Joass, Inverness and Dingwall, decided for that by Messrs. Ross & Joass, but remitted to the committee to get such alterations made respecting size, &c. as they might see necessary. The expense of the new building is estimated at about 2,000*l.*

CHURCH-BUILDING NEWS.

Shrewsbury.—The church at Sarn has been consecrated. The edifice stands on the north side of the road leading from Newtown to Bishop's Castle. It is in the Early English style, and consists of a nave and chancel, with a tower on the south side over the porch. The exterior walls are constructed of stone found in the neighbourhood, the dressings having been worked from the Whiterock, which has also been used for the tower, though the spire which formed the covering for the latter is carried up in oak shingles of a somewhat peculiar character. The roof is high pitched, and covered with Bangor slates, finished with creating of the *fleur-de-lis*. The interior is approached through a porch beneath the tower. The chancel and windows form cusped arches, while that of the west end is triangular, the mullions being curved and moulded throughout. The roof is open timbered, of Memel pine, darkly stained. The pews are of the same material, with low backs, and open. The design was supplied by Mr. T. M. Penson, of Chester. The cost will be between 1,000*l.* and 1,100*l.* and the work has been executed by Mr. J. Thomas, of Churchstoke.

Wallasey.—The new parish church of Wallasey has just been completed and consecrated. The old church was destroyed by fire on the 1st of February, 1857, and at the suggestion of Messrs. Hay, architects, a larger edifice was resolved to be erected on a piece of glebe land to the north of the old churchyard. The tower of the old building still remains, so that the district will not be deprived of its ancient landmark. The new edifice

is a cross church, consisting of chancel, with north and south aisles, nave, with aisles, and south porch, transepts, and tower over the intersection. The extreme length is 130 feet, by 85 feet the extreme width. The nave, separated from the aisles with an arcade of four bays, is 65 feet long by 23 feet wide; the aisles the same length, and 13 feet 9 inches wide; transept, 80 feet 6 inches from north to south, and 21 feet wide; the tower, 25 feet 6 inches square; chancel, of three bays, 38 feet long by 21 feet wide; the aisles, of two bays, 25 feet long by 15 feet wide. The ground falling rapidly towards the west end, a large flight of steps leads up to the west door, as well as to the south porch, which occupies the western bay, leaving room for a small window next the end wall. A four-light window fills up the west gable over the west door: a five-light window, filled in with stained glass by Mr. Wailes, of Newcastle, fills up the chancel or east end. The north and south transepts are each in the lower part occupied by two two-light windows, with large marginol window above. While the nave aisles are leawies, those to the chancel are gabled with large three-light windows. A clerestory of segment-headed two-light windows extends from west to east; the nave aisles having three-light segment windows, and those of the chancel two-light pointed ones. The tower rises one story over the intersection of the nave and transepts, supported at the angles with buttresses pierced on each side with two two-light pointed windows, and surmounted with cornice and battlements, and a flag-staff in the centre: at the north-east angle is an octagon stair turret rising 10 feet above the tower. Minton's encaustic tiles are used for the floor of the chancel, and the 4-inch red and black Staffordshire for the aisles and rest of the church. All the benches are made from Baltic timber, varnished on the natural colour of the wood, without any stain. The four outside doors are made entirely of home-grown oak, with large floriated iron hinges, and are all studded with diamond-headed nails. The whole of the works have been executed at a cost of 5,700l. Mr. Fisher was the contractor, and Messrs. Hay, the architects.

Manningham (Yorkshire).—A Wesleyan new chapel has been erected and opened at Manningham. The edifice is built from the designs of Mr. Jackson, architect. The style of architecture is Italian. The ground, which cost 400l. was presented by Mr. James Ambler, and the estimates for the building amounted to 2,600l. which has been exceeded by about 150l. The length of the building, including the schools in the rear, is 95 feet, by 54 feet in breadth. The chapel will accommodate 700 persons, and the schools 300 scholars. An organ has been erected by Mr. Fearnley. The ground in front and on two sides of the chapel is enclosed within a palisading corresponding with the style of architecture. The chapel is situated in Back-lane, Manningham, a populous and rapidly-improving locality.

South Shields.—The Wesleyan Methodist Chapel, Chapter-row, South Shields, has been repaired, painted, &c. under the direction of Mr. F. R. N. Haswell, architect. The various decorations were executed by Mr. R. Hewitson, of North Shields.

PROVINCIAL NEWS.

Spalding (Lincolnshire).—Several important improvements have lately been made in the thriving village of Spalding, according to the *Lincolnshire Chronicle*. The leaning spire, a noticeable object for travellers, is now undergoing repair. Mr. Dawson, of Spalding, is the contractor for this work. The Municipal Inn has lately been renovated, externally and internally. The old Frooke Almshouses, which have for many years been a disgrace to the village, have been removed, and new buildings are rising in place thereof. Messrs. Aitken are enlarging their premises.

Norwich.—The new workhouse is completed. It consists of several separate buildings, the main one in the centre. In front of it is a line of offices, and behind a large dining-hall, with a chapel above. Further back there is the asylum and workshop. The infirmary is built a short distance apart. There are about 500 rooms in the main building. It is divided by great corridors running from each side and from bottom to top of the building. Iron galleries run along the corridors, and these galleries are reached by stone staircases giving access to the upper rooms. An engine is used to pump water up to large iron cisterns at the top of the building, and from these cisterns all the rooms and lavatories are supplied with water. Gas fittings have been fixed in all the rooms and corridors. A large kitchen has

been built between the main building and the dining-hall, and is fitted up with all the latest improvements. A covered way leads to the dining-hall, and above it is the chapel. The contractors were Messrs. Curtiss and Balls.

Arnold, near Nottingham.—The foundations have just been laid for national schools for this place, with master's residence attached. The style of architecture is Pointed, with a bell-turret. The buildings are to be of red brick, with Mansfield white sandstone dressings for window and doorway quoins, and for window tracery. The two rooms for girls and boys are arranged to open into one for lectures and public meetings, and are divided internally by a moulded arch, filled in with a wooden screen, easily removable. The roof is open work, with stained and varnished woodwork. These schools, expected to accommodate about 200 children, stand upon half an acre of land, having separate play-grounds for girls and boys. The infant schools attached to the church in this parish have just been remodelled, and separate class-rooms provided. They are made to accommodate upwards of 100 children. The architect for the work is Mr. Frederick Jackson, of Nottingham; and the builder for the national schools, Mr. William Scattergood, of the same place.

Faversham.—Under Wright's Charity, it is contemplated that the present almshouses, situate in Preston-street, Tanner-street, and Abbey-street, should be discontinued, and new erections built upon one site, viz. Town's Orchard, itself charity property, together with a chapel. Plans and estimates had been laid before the trustees of public charities, and other arrangements made for carrying into effect this part of the scheme. The attorney-general, however, thinks separate houses unnecessary, suggesting the Scottish system of flats. The trustees for the present defer any further proceeding.

Barnstable.—A building has been recently erected in this town. It stands on a site 40 feet by 30 feet, and is built of coloured brick with Bath stone dressings. On the ground floor is a large room the full size of the building: on the first floor is another of the same size; and in the roof are seven class-rooms. The floors and joists are supported on trussed girders, which are visible in the ground and first floors, and are stained and varnished, as is the wood-work throughout. The whole was erected from the design and under the supervision of Mr. Gould, a local architect.

Winborne.—The new justice-room here has been opened for the sessions. The apartment is 30 feet long by 21 feet wide, with a panelled roof, and is lighted by means of a skylight. The building was designed by Mr. Evans, the county surveyor. Messrs. Eaton and Cottman were the contractors.

Gloucester.—The plans for the new residence of the Bishop of Gloucester and Bristol, in this city, are so far completed that the works will be shortly commenced. Mr. Hutton is the architect. The chapel and hall in the present palace are to be preserved, but the whole of the rest of the structure will be rebuilt. Several houses adjoining are also to be removed, and a carriage-way made to connect Pitt-street with College Green.

Prescot (Lancashire).—A new market has been erected here from a design by Mr. Culshaw, architect. Mr. Twist was the contractor. The new building is of brick, and has been finished at a cost of about 500l. or 900l.

THE WESTMINSTER CLOCK AND BELL.

We have had a letter from Mr. E. T. Loseby, in which serious charges of mismanagement are attributed to Mr. Denison. The present letter only alludes to the clock itself, but Mr. Loseby threatens another on the subject of the bell also. As to the clock, Mr. Loseby, after stating various specific instances in which he alleges Mr. Denison failed to fulfil the conditions undertaken by him, goes on to say—

"Mr. Denison, having fairly established himself in the double position of designer and referee, acting professedly for the Government, begins the process by causing the material to be altered from expensive gun-metal to cast-iron, and the contract price, instead of being lowered, to be raised from 1,600l. to 1,900l. partly under the plea of iron being more expensive to work; and then the next step is to dispense with the said workmanship altogether, but retain the full price in the contract; thus evading not only the original workmanship which gun-metal wheels would have necessitated, but the additional labour of cast-iron, for which the extra sum was added. And then, as each failure occurs in the plans of Mr.

Denison, the designer; and the Astronomer Royal's conditions of construction are sacrificed after each other; Mr. Denison, the referee, is ever ready to put a bold face on the matter and pronounce the sacrifice of the conditions as really the best thing that could have happened."

As for the bell, we must ourselves say, its sound is by no means agreeable, nor will even the designer must have anticipated. In fact, the tone is not that of a bell at all, but much more of the nature of that issuing from American clocks of the San Slick order, and provided with twisted brass rods which are struck by the hammers instead of bells. Moreover, the sounds from the Westminster bell are irregular in strength, disagreeably loose, and harsh in tone, which the Slick clock sounds are not. It is said, however, that this arises from the present imperfect arrangements, and that the bell will ultimately yield a much more satisfactory sound.

WESTMINSTER CLOCK.

Sir,—My attention has been called to a letter in the last number of the *Journal of the Society of Arts*, from Mr. Loseby, respecting the Westminster clock, in which he alludes to a statement recently made in the House of Commons, by Mr. Fitzroy, respecting the minute-hands,—made by my authority,—the weight of each of which he reported to be above 3 cwt.

That statement was made, I find, upon the authority of Mr. Denison alone, and as it has already misled Mr. Loseby, and possibly the public also, I think it right to put you in possession of the facts of the case.

These hands, which are now condemned by Mr. Denison, were prepared under his own control: one of them was submitted to him as a specimen before the remaining three were made, and met with his cordial approval: the others were made with his orders, in strict accordance with the specimen which he had approved, and he fixed the whole of them, when finished, and made himself responsible for the cost of so doing. The weight of each hand, exclusive of the external counterpoise, is 1 cwt. and 25 lbs.

It is obvious, therefore, that Mr. Denison, and he alone, is as fully responsible for those hands as he is for all the other going parts of the clock.

(CHARLES BARRY.)

BAPTIST CHAPEL IN MELBOURNE.

A BAPTIST chapel of some pretensions has been erected in Albert-street, Melbourne. It has a recessed portico with Corinthian columns, and a tower on each side of it of Wren-ish character. The church was erected under the superintendence of Mr. Thomas Watts, of Melbourne, architect (a pupil of Mr. C. Eales). The area of the building is 75 feet long by 52 feet 6 inches: it is capable of seating about 800, but 1,100, we are informed, have been accommodated. The building was erected, with all its fittings, for about 4,000l. by Mr. Hickson.

THE DUSTHOLE NUISANCE.

ALLOW me to call upon you to wage war against that intolerable nuisance, the dust-hole. I do not want you to propose to put it further away from the house, or to have it of any particular construction, but to get rid of it altogether. How to do away with it in London I leave for you to propose; but how to dispense with it in the suburbs is very easy of accomplishment. Where I live (at Holloway), the dust-cart is never to be found: we watch, and ask people to send the dustman, when they see him, but if he comes once in two months we are very lucky. I have now, however, given him up altogether. My dustbin is to be converted to another use. I dig holes in the garden where ashes, the refuse of vegetables, &c. are put, and covered over with mould every two or three days. We, therefore, have no smells now; the growing qualities of the ground are improved; and I have the satisfaction of knowing that I am quite independent of the "regular dustman." The broken crockery (which is very considerable in my case), comes in very usefully when broken small, towards raising paths or making new ones.

ANTI-DUSTMAN.

NEW READING-ROOM AND MUSEUM AT SOUTHAMPTON.—A proposal, made by the Town Council of Southampton, to expend 10,000l. of the Hartley bequest in erecting a public reading-room and museum, has met the approval of the Vice-Chancellor.

RAFFAELLE'S DRAWINGS IN THE BROMPTON MUSEUM.

THE suggestion of your correspondent, "J. H." that some brief explanation of these drawings should be provided, is a very good one; and I hope that he will address it to the proper authorities at Oxford, to whom the Kensington Museum is indebted for the very generous loan of them. A small catalogue has been already published, but it might be amplified with advantage.

"J. H.'s" suggestion about exchanges will not be difficult when these drawings are photographed, as they are now being done by Mr. Thurston Thompson for the Department, which has announced its intention to photograph for the use of the Schools of Art, all the original drawings of Raffaele which England possesses.

I enclose a brief statement which the Department has issued.

F. S.

*. The statement says,—"It is intended to procure, if possible, photographs from all the original drawings and cartoons of Raffaele and Michelangelo known to be in this country, and to issue them as a complete national work."

The most important, and indeed the most extensive, collection of these precious works in existence is that of the University of Oxford. The drawings comprised in it (250 in number), formed part of the celebrated collection of Sir Thomas Lawrence, which having been offered entire to the Government at a price which would be but a fraction of the present value, was, to the irreparable loss of the country, declined. The Lawrence Collection was ultimately dispersed, with the exception of the greater portion of the drawings of Raffaele and Michelangelo, which, after the most strenuous efforts of various lovers of art, were purchased by private subscription for the sum of 7,000*l.* of which Lord Edou. Albert subscribed the munificent sum of 4,000*l.* and were presented to the University of Oxford. Another but smaller portion of the works of these two great masters passed at the same epoch into the collection of his Majesty the King of Holland.

It is now hoped that private possessors of original drawings, by Raffaele and Michelangelo, in this country will allow them to be exhibited on loan, and to be copied by photography for the use of the public."

STRIKE OF CARPENTERS AT DUBLIN.

THE carpenters in the Irish metropolis served a peremptory notice on their employers last week, demanding a rise of 2*s.* per week, and left off work on Monday, the 22nd instant. To the employers this strike will be most detrimental generally, probably ruinous to some, for never has the building business been so brisk in Dublin and throughout Ireland as within the last twelve months, and heavy contracts were being proceeded with hurriedly under large penalties, which render the strike the more severe. Not very long since the employers made a concession to the men: probably they would be disposed to do so now, had they received timely notice to make their arrangements; but the peremptory course adopted has roused a corresponding spirit, and some say that should they be compelled temporarily to yield, they will arm themselves against a recurrence by lessening their necessity for manual labour, and availing themselves of the aid of machinery.

We trust, good sense will induce a rational and speedy settlement; that, if there be just reason for an advance of wages, it may be calmly and amicably adjusted, without detriment to any class.

Miscellaneous.

CAMBRIAN ARCHEOLOGICAL ASSOCIATION.—The thirteenth annual meeting of the members of this association was held at Cardigan on Monday in last week and four following days, under the presidency of the Bishop of St. David's. A local committee of fifty-five gentlemen had been formed, with Captain Pryse, M.P. Lord Lieutenant of Cardiganshire, as chairman. During the sitting various excursions were made to places of interest, and several papers read.

THE JOUENYMEN BAKERS OF THE METROPOLIS.—Amongst the hard and unwholesome labours of the metropolis there are few so harassing and destructive of health as those of the journeymen bakers. A large number of them work throughout the whole night during winter and summer: they labour from twelve to eighteen of each twenty-four hours in an oppressive atmosphere. This unnatural work consumes their strength, and makes the bakers physically old before they should have reached the prime of life. Meetings of those engaged in this trade have recently been held for the purpose of discussing their grievances, and inquiring if it is not possible to reduce the number of the work-hours and make other necessary changes. The men very truly say that their labour is as bad, if not worse, than that of negroes. The case of the bakers is a strong one, and calls for amelioration.

PROPOSED OFFICES FOR PROVINCIAL WELSH INSURANCE COMPANY.—It is satisfactory, says the *Bankers' Magazine*, to find many additional influential names upon the list of office-bearers of the Provincial Welsh Insurance Company, among them Lord Boston, Viscount Avonmore, Lord Massey, the Hon. F. Yelverton, Mr. T. Barnes, of Farnworth (late M.P. for Bolton), &c. Sir Charles Morgan, one of the trustees, has lately been raised to the peerage as Lord Tredegar. Mr. Barnes, it is stated, is to be the chairman of the company. The directors have recently purchased a site in High-street, Wrexham, for the erection of substantial offices, in pursuance of the last report to the shareholders. The site is in the most prominent part of the principal street, and directly opposite the Market Hall.

SHIPS BY RAIL.—The success of the ship-lifting apparatus at the Victoria Docks has induced Messrs. Brunles and Webb to propose that the problem regarding the Suez passage should be solved by the abandonment of the canal scheme and the construction of a ship railway between the two seas. According to their views, piers of piling should be erected at each port, vessels lifted and lowered by hydraulic power, the transit effected in cradles resting on five lines of railway, any one of which would be available for ordinary traffic, and a speed of twenty miles an hour could be anticipated. The estimated cost would be 4,800,000*l.* against the 6,400,000*l.* demanded by M. de Lesseps, which many engineers assert would be swollen to 30,000,000*l.* It is also pointed out that the vessels while on their cradles could be examined or even repaired as if in graving docks, that their sale would be of better use on the railway than on the canal, and that the constant cost of dredging and clearance would be wholly avoided.

GAS.—At the annual meeting of the Liverpool United Gas-light Company, it was stated that for many years past they had been working upon very advantageous contracts, taken many years ago at a reduced price. Those contracts had now expired, and they were obliged to consume canal at an advanced price. On the other hand, the consumption of gas was steadily increasing, perhaps 4 or 5 per cent. per annum, and a great portion of it was net profit, inasmuch as the same mains and the same establishment sufficed for the extended demand. Still they could not hold out any prospect of a reduction of the price of gas to the public. —The Walsall Improvement Commissioners have reduced the price of gas to 3*s.* 4*d.* per 1,000 feet, but the Birmingham and Staffordshire Gas Company is extending its mains into Walsall. —A meeting has been held in the Hall, Stewart-street, Cowdaddens, Glasgow, for the purpose of taking means to obtain a reduction in the price of gas. Councillor Macdowall presided, and after a few introductory observations from the chairman, Mr. Minto again delivered his lecture on the subject. Thereafter, Mr. Wm. Melrose moved a resolution, praying the meeting to support the cheap gas movement, which was seconded and, after a discussion, agreed to.

ARCHITECTURAL SOCIETY OF THE ARCHDEACONRY OF NORTHAMPTON.—The ordinary bi-monthly committee meeting was held at the society's rooms, Gold-street, Northampton, on August 8th, Mr. H. O. Nethercote in the chair. The Earl of Westmoreland was elected a life member, and Earl Spencer, the Countess Spencer, and Captain Stockdale, of Near's Ashby, were elected members. Various presentations were made. Several designs for temporary iron churches, by Mr. Slater, were examined and discussed. These are now coming so much into use for new districts, and for the colonies, that the style and arrangement become important questions. Two designs for a memorial window at Upton were shown by the Rev. H. De Saumarez. An architectural meeting of the Leicestershire Society had been held at Loughborough, to which members of this society were invited. A paper on the parish church was read by Mr. James, and its restoration has since been zealously taken up: 3,000*l.* have been subscribed. Mr. Scott is the architect. A large architectural congress is announced at Rugby, probably in August, 1860. It was resolved that the autumn meeting be held this year at Stamford, on the 6th and 7th of September, instead of the October meeting at Northampton. A letter having been read from the secretary of the Glasgow Architectural Society, with reference to the adoption of the Gothic style in the new Foreign Offices, it was resolved that this society agree to co-operate with the Glasgow and other societies in memorializing Government in favour of Gothic. Some other matters also came under consideration.

NUISANCE ARISING FROM A QUARRY.—At the Liverpool Police Court, Mr. John Fairclough, builder, was summoned for allowing an old delf belonging to him, in Margaret-street, Everton, to give off an offensive smell, injurious to the health of the inhabitants of the neighbourhood. The defendant had previously, on the 8th of June, been fined for the same offence, and had been ordered to fill up the delf; but he had neglected to do so, and the present prosecution was instituted by the Health Committee. Mr. Fairclough was mulcted in a penalty of 40*s.* and costs, and the magistrates expressed their intention of visiting the place to satisfy themselves as to the real state of the quarry.

SANITARY PROGRESS IN NEW YORK.—In an article on the public health, the *American Gas-light Journal*, of 1st instant, urges attention to the importance of the movement lately inaugurated in New York by the formation of the New York Sanitary Association, and the advisability of instituting such associations in every city and village in the States. The example of "the old world," and especially of Britain and France, is cited to show the benefits derivable from such a movement; and in respect to New York it is pointed out that the present mortality is such, by comparison with that of London, that were New York as populous, there would be 45,998 more deaths than now occur annually in London.

GAS EXPLOSION AT EARL'S COURT.—A serious explosion has occurred at Rich Lodge, Earl's-court, Brompton, in a cottage on the premises, and formerly inhabited by a gardener, but unoccupied, except occasionally, about the time of the explosion. The cottage had been supplied with gas apparatus and meter, and a smell of escaped gas having been felt, a lamp lighter went below the ground-floor of the cottage with a light, when an explosion took place, shattering the poor fellow's legs, and blowing up the whole cottage, floors and roofs, consisting of two adjoining rooms, besides two other outhouses connected with it, one of them a stable. The lamp lighter was taken to St. George's Hospital, but the report that he was dead was (on Tuesday) untrue, although he has lost one leg entirely, and the other was also broken. The newspaper report that it was the Lodge itself that was blown up is also a mistake.

ST. PETER'S DISTRICT SCHOOLS, NEWTON-IN-MAKERFIELD.—The foundation-stone of these buildings was laid on Tuesday, the 16th inst. by Messrs. W. J. Legh, of Lyme-hall, Cheshire. The ceremony took place amidst a very large assembly, the occasion being united with the annual treat given to the school children. These buildings comprise an infants' school-room 40 feet by 20 feet; boys' and girls' school-room, each 65 feet by 18 feet; with class-rooms 18 feet by 15 feet. There is a front and back entrance, and also a lavatory to each school-room, and the whole are calculated to accommodate 320 children. Attached to the girls' school is a house for the mistress, and to the boys' a master's house, each having a parlour, kitchen, and scullery on the ground-floor, and three bed-rooms on the chamber-floor. There is an extensive walled play-ground to each school, and gardens to the houses. The style of the building is that known as Early Decorated. The infants' school, gabled to the front, with bell-turret adjoining, forms a centre. Right and left run the boys' and girls' school-rooms, the class-rooms to which and the houses form wings. The contract for the whole, including entire fitting up, is rather more than 2,000*l.* Mr. William Poulson is the architect, and Mr. Thomas Stone the builder, both of Newton.

THE PROPOSED EXHIBITION OF 1861.—Sir: I beg leave to suggest, through the medium of your valuable columns, that which I think will supply the lack of novelty which seems to be felt concerning the proposed Exhibition of 1861. I would propose that it be an exhibition of the Art Industry of All Nations. Upon consideration this will, I think, be found to embrace a large space of the world's industry. Of course it could not be expected to gather all the art industry of all time together, but must be of some fixed period; and I think that the art industry of the last ten or twenty years, or even of a longer period if thought necessary, would embrace some of the greatest works ever produced, both in the fine and mechanical arts, and would constitute an exhibition at once new in purpose, attractive in plan, and that would be as novel and successful as its predecessor of 1851.—ONE OF YOUR READERS.

*. This would be too confined. It was intended to be an Exhibition of Art and Industry. Why is it not proceeded with? The French will, perhaps, forestall us after all.

LARGE STEEL CASTINGS.—An improved mode of producing cast-steel, whereby sufficient quantities may be produced for extreme size castings, is said to have been invented by a M. Sudre. The essential features of the invention are the application of a reverberatory furnace, in which the compound necessary to produce steel is introduced; the use of a reverberatory furnace having the hearth heated by a suitable flue beneath, which admits of inferior fuel being used; the use of gas for the above purposes; the use of a highly-heated vessel as an intermediate receptacle for the steel from the crucibles; and the use of scoria as a protective layer for the surface of the steel.

INN SIGNS BY EMINENT ARTISTS.—A correspondent of *Notes and Queries* writes:—"Among the curious inn signs painted by eminent artists may be mentioned that of the Queen's Head, near the corner of New Inn-lane, Epsom, which was painted by the celebrated Harlow, while on a visit to the family of the Rev. Mr. Thomas, of Epsom. It represented the head, I believe, of Queen Caroline; and one side of the sign showed the face, while the other side depicted the back of the head. On a late visit to Epsom, I found that this whimsical sign had disappeared, and I should be glad to know what had been its fate." Another says:—"At a small tavern, situate at Cottage Green, Camberwell, known by the sign of the 'Flying Dutchman,' is a spirited and large sign, depicting the before-mentioned celebrated racer winning the Derby, ascribed to Herring. The proprietor of the hostelry being alive to its value, removes it in bad weather."

THE CHAINMAKERS' STRIKE.—The strike, which has taken place amongst the chainmakers in the East Worcestershire district still continues, and it is estimated that about 1,500 are at play. It appears from the statement of the men, that the strike originated in the fact that since 1847, when the chain trade was at its best, the wages have fallen 20 per cent. The men do not work on time, but are paid by the cwt.: for half-inch chain they receive 4s. per cwt.; and as they reckon to make five cwt. of chain per week, the average weekly earnings at present are about 29s. per man. Out of this a boy has to be paid for blowing, and firing has to be found. They, therefore, complain, and as it would seem with some show of justice, that their earnings are insufficient to support and educate their families, and they, therefore, ask for 5s. per cwt. for half-inch chain, and for thicker chain in proportion. Many cases of wilful damage to bellows have been reported, but the union men deny that it originates with them. Several meetings have been held at Cradley, and the men have unanimously resolved to continue the strike, unless the advance be conceded. One firm has already given in to the demand of the workmen.

MONUMENTAL.—The model statuette of Wedgwood for the Potteries memorial statue has been prepared by Mr. Edward Davis, of London, whose bronze statues of General Nott, at Carmarthen, and of the Duke of Rutland, at Leicester, are known. The design represents the potter discoursing upon the Portland Vase, which he holds in his left hand, while with his right he seems to be commending it as a model for study. The North Staffordshire Railway directors have granted a site in the Station-square, at Stoke. The executive committee appointed by the subscribers have adopted it. The contract with Mr. Davis will be carried out, and the work begun without delay. —A mural monument, of somewhat unusual style, has just been completed by Mr. Joseph Stephens, of Worcester, in memory of Elizabeth Hannah Fenton, daughter of Mr. Fenton, chairman of the O. W. W. Company. It is 2 feet 3 inches high, and 1 foot 7 inches wide, being constructed of Caen stone, in the semblance of a square-headed Gothic window of two lights, with tracery in the head. At the back, as though seen through a window, is a marble slab, the whole size of the monument, on which is the inscription to the deceased. The local *Herald*, in describing it, remarks that there is a somewhat similar monument in Stratford Church. —A monument has just been erected at Severn Stoke Church to the memory of the late Mr. Joseph Jones, of Springbank. It consists of a coped tomb, having upon its upper surface a foliated cross enriched with ball-flowers. In the centre of the cross is carved a passion-flower, and at each angle of the tomb the figure of an adoring angel. On the four sides are carved suitable emblems. The monument has been executed by Mr. Wm. Forsyth, from a design by Mr. W. J. Hopkins, of Worcester, architect. The stone was brought from Doulton, in Somersetshire.

PAPERING OF ROOMS.—I have often thought that the ornamental papering of rooms might be greatly improved, and rendered useful and instructive, by substituting maps for the usual patterns—not on a too minute scale, but showing the principal places. How many thousands who daily read about seas, rivers, and places, know nothing of their position on the map of the world! By constantly having tasteful ornamental maps before us on our walls, we should become familiar with the whole world. I wish some manufacturer of room papers would try the experiment, which I think would succeed, particularly as to library papers.—*Theta in the Field.*

THE DRINKING-FOUNTAIN MOVEMENT.—There was a sad outcry from want of water in the grounds of the Crystal Palace on Tuesday (the Foresters' day), when such multitudes flocked thither, including thousands of Teetotallers with their wives and children. Here, as well as at Kew and other such places, drinking-fountains really must be put up, however cheap or humble they may be: even simple taps would do. It is not seemly that, in a resort so general as that of the Crystal Palace especially, there should be any want of an obviously desirable and useful arrangement such as this,—a want which induces the multitude to feel that an indirect object in view must be to produce a thirst-pressure impelling them to taps of another order, which are plentifully enough supplied at the Crystal Palace. The Zoological Gardens, Regent's-park, we hear, are being supplied with drinking-fountains; and we do not see how Kew, Cremorne, the Crystal Palace, and even the Parks, for which we have for many years urged this desideratum, can much longer resist either the good example thus set them, or the urgent requirement itself, by which thousands would be daily refreshed and benefited. —At Newbury, a fountain is to be erected by subscription. The site selected is at the west end of the Mansion House. —At Yarmouth the mayor has offered to erect at his own expense a fountain in one of the public places. The site to be determined by the Local Board of Health will probably be either on the south quay or at the back of the Town-hall. —To the Newcastle fountains erected at the Grey Monument and in Neville-street, Messrs. Dunn & Co. of Market and Grey-streets, says the *Gateshead Observer*, have now added a third, opposite St. Thomas's Church. A fourth, we believe, is to be erected by this firm. —At Dublin, preparations are being made for the insertion of a drinking-fountain into the western side of the pedestal of the statue of King William at College-green.

STRIKES.—Since the repeal in 1824 of the Combination Act, which made the combination on the part of the workmen to raise wages a punishable offence, numerous strikes have taken place throughout the three kingdoms in almost every department of labour, nearly all of which have been unsuccessful, and have exercised a most disastrous influence on the welfare of the operatives engaged in them. Economical science, as we have seen, affirms peremptorily that it is impossible for combinations and strikes to raise or keep up permanently the price of labour, and experience has abundantly verified the declaration. There are three ways in which strikes have terminated unsuccessfully, and have frequently lowered the rate of wages rather than raised it. They have wasted the capital of the masters as well as the savings of the workmen, and have thus diminished the fund out of which labour is paid; they have compelled masters to substitute machinery for manual labour,—a gain to the community at large, but a serious injury to the operatives in the particular branches of manufacture in which this occurred; and they have completely destroyed the trade in certain districts, and caused the masters to remove their factories to other situations where they would be free from the improper control of their men. It would be easy to furnish abundant examples of all these results. To take the last first:—The lace trade was, to a great extent, driven out of Nottinghamshire by the combinations of the Luddites. The silk trade migrated from Macclesfield in consequence of the restrictions placed on labour by the trades' unions there. The business of calico-printing, which was long carried on in Belfast, was taken from it in consequence of the combination of the operatives. Bandon lost its cotton trade, and Dublin both its shipbuilding and its foundry trade, from the same cause; and, on a moderate estimate, wages to the amount of 500,000*l.* a year have been withdrawn from the Irish metropolis in the manufacture of almost every article of consumption, entirely in consequence of the repeated strikes of the operatives.—*Scottish Press.*

TRINITY CHURCH, BARNSTAPLE.—Sir: About ten years ago a magnificent church was erected in this town, dedicated to the Holy Trinity. Would you believe it, sir,—the present incumbent has, with a ruthlessness worthy of the Goths and Vandals, suffered the beautiful arches separating the nave from the chancel and transepts, together with the carved angels which support the hammer-beams of the roof, to be yellow-washed! —*BYLDAN.*

DIRECT OR IMMEDIATE (?) ISSUE OF HEAT INTO MECHANICAL MOTION.—A curious apparatus has been described in the *Philosophical Magazine* illustrating a new mode of producing motion by means of heat. It consists of a massive circular horizontal railway composed of copper. The rails are made red-hot, and a thin ball of German silver is then placed upon them. Immediately the ball is placed upon the rails it begins to travel, and continues to be propelled in a uniform direction as long as the rails remain sufficiently hot. The development of this new fact in science, says the *Birmingham Daily Post*, is a result of experiments recently made by our scientific fellow-townsmen, Mr. G. Gore.

WROXETER.—The quadrangular building adjoining one of the principal streets of ancient Uriconium has been more extensively uncovered, and presents in some respects features different from what was expected. The back part, or eastern side, which was supposed to be a long inclosure like a cloister or crypto-porculus, is divided into compartments by four transverse walls, which advance only a little more than half way across, leaving a clear passage running not only along the whole length of this building, but apparently extending beyond it. These divisions give us very much the notion of their having been shops or stalls, and in one of them was found on the floor a small round iron box, standing on three legs, with its lid on, and so much corroded by the rust that it is hermetically sealed, but a bit of the upper edge having been broken off by the pick of the excavator enables us to perceive that the inside is partly filled with decayed wood, apparently of some rare kind, with some implement of metal in the middle, which cannot be examined without further breaking the box. The progress of the excavations in the more important part of the area in possession of the excavations committee is very much impeded at present by the accumulation of earth taken out of them, and by the uncertainty in which the question of keeping a portion permanently open remains. There is a general and very strong feeling that the ruins of so deeply interesting a character should not be buried again.

FINCH-LANE, CITY.—In nothing is the Englishman's love of independence and freedom of action more conspicuously displayed than in the utter absence of anything like uniformity that generally characterizes our street architecture. There is but a single street in the City in which a complete unity of idea is carried out in the construction of the buildings; and that street is Moorgate-street. Its next approximation to so desirable a consummation is Cannon-street. In nearly every other street, chaos and confusion are the disorder of the day, and in no important thoroughfare with which we are acquainted is there a greater disregard for law and regularity than in Finch-lane, Cornhill. If the spectator stand at the south-east corner of this narrow and crooked street, which now contains but a dozen houses, he will find that a mountain of bricks and mortar closes the view before the eye reaches Thread-needle-street; but should he cross to the opposite corner, he will then be enabled to take a *coup d'ail* that will embrace the full proportions of Finch-lane, with all its charming luxuriance of incongruity. Some person may exclaim, in the plenitude of his ignorance, what possible interest can attach to such a place as that? and why dwell upon a theme so trifling? To such questions as these, we have a reply that will, we trust, be quite satisfactory, even though no other were at hand. Be it known, then, to all and every of our readers, and to the whole world besides, that the great and immortal inventor of the steam-engine, James Watt, did, in the year of grace 1765, work at the art and mystery of instrument making in this very lane, and for one John Morgan, who, but for his fortuitous connection with the illustrious Scotchman, would have been as little known to us as the man in the moon. There are but twelve houses in Finch-lane: some sixteen years ago, it contained twenty-three. What is lost in number, however, is made up in altitude. The Finch-lane of the past had, and the Finch-lane of the present has, two remarkable characteristics. Its preponderating elements were and are food for the body and food for the mind. —*City Press.*

The Builder.

VOL. XVII.—No. 865.

The Town and Country Builder in 1667.



It is good sometimes to look back: we may gain whether the review serve to encourage by showing the advance we have made, or to stimulate by reminding us that but little progress has been effected. Some time ago Mr. Elmslie goodnaturedly left with us a little book on the practical part of the profession, published, as were two or three somewhat similar works, just after the fire of 1666, and which probably is unknown to the majority of our readers. It is called "The City and Country Purchaser and Builder. Composed by S[tephen] P[rimatt], Gent.:" and the writer shows the feeling with which he published it by adding, from Plato, "*Non nobis soli nati sumus*." It is dedicated to the Justices and Barons "appointed

by Act of Parliament for determination of differences touching houses burnt down or demolished by reason of the late Fire in London," and the author says "being conscious to myself of no worse aim in the publishing of this work, than the good of my country, I have this presumption that I shall not incur your Honors' displeasure." He gives tables for computing the value of lands and leases at different rates of interest; and in the second book, *Liber secundus*, as he prefers to call it, looks into "the respective mysteries employed in building," shows what houses should cost, and concludes with the germ of a treatise on surveying and measuring superficies and solids, as a necessary thing to be known to the builder.

Let us see what he says as to the valuation of ground for making of brick:—

"Ground near London, that hath a good Clay 3 or 4 foot deep, is very valuable for the making Brick. It may be accounted that a yard of Earth square will make seven or eight hundred of Bricks. If the owner of the Ground will not make Bricks himself, and so take all the trouble and profit, he may let the same for a certain Rent to be paid out of every thousand: he may account that he may have a thousand of Bricks made, and ready for use, all charges for Workmanship in fitting the Earth, Sand, Straw, making, turning, and burning, at seven shillings sixpence, or eight shillings a thousand; he may add three shillings for the carriage of every thousand to the place where the same are to be used; which carriage is either more or less, according to the distance of the place: the seven shillings sixpence for making, being added to the three shillings for carriage, amounts unto ten shillings and sixpence; so that if the bricks yield thirteen or fourteen shillings a thousand, there is two shillings and sixpence, or three shillings and sixpence profit in every thousand for the Ground, and so if more or less.

"The Proprietor may afford the Undertaker a moiety of the profit at least, and so may set a certain Rent, which may be one or two shillings in a thousand, or more or less, according to the goodness and fitness of the Clay, and the Ground lying convenient."

He points out very properly, that in principal streets the ground-rent is an important point to be considered in valuing a house. "Suppose" he says, "a House that was standing before the late Fire in Cheapside, and worth an hundred pounds per ann. and would yield fifteen hun-

dred pounds, if the same was to be sold, and now to be rebuilt will cost five hundred pounds, to make it of the same value. You may reckon the Ground Rent of this House to be worth a thousand pounds, which is twenty years' purchase for fifty pounds per ann. and the Building upon the same, allowing ten pounds in every hundred, worth fifty pounds per ann. more; so that the Ground Rent and the Building together, amount unto one hundred pounds per ann. and are worth fifteen hundred pounds to be sold; which makes it plain, that such improvements is not altogether occasioned by virtue of the Building, but principally by the situation of the ground; so that fifty pounds per ann. is but a reasonable Ground-rent for a House that will cost five hundred pounds the re-building, and yield one hundred pounds per ann. when built."

His advice as to the selection of a master builder, with which he commences the second book, had reference to a different state of things than that which now prevails. He says,—"And let him make choice of such a master workman as will set his helping hand to set the work forward; such a workman will afford to do his work cheaper, than others who walk with their rules by their sides, and it doth very much discourage those from idleness who work under him."

He further urges him who would build to be assured, before making progress, that "his house, when built, will render him eight pound in the hundred at least for every hundred pound expended, or else it will not be worth his building."

We learn that the price then demanded for every rod of brickwork by some was 7*l.*; but he says:—"You may reckon that every Rod of Brick-work being reduced to one Brick and a half, will take up Four thousand and five hundred of Bricks, for which if you reckon Sixteen Shillings for every thousand, it comes unto three pounds twelve shillings: every Rod of work doth usually take up an hundred and a quarter of lyme, for which if you reckon after the rate of ten shillings a hundred, it amounts to twelve shillings and sixpence: every hundred of lyme requires two load and a half of Sand, which if you estimate at three shillings per load, and for two load and a half, it comes unto seven shillings and six pence. As for workmanship, it is commonly accounted amongst ordinary workmen, that three indifferent Brick-layers and three Labourers to make and serve them with Bricks and Mortar, are able to erect a Rod and more every day of low Party walls, and ordinary work; you may reckon that they are not able to do so much of Front work and arching-work for windows, and that it doth require some small time for to fit their scaffolds, which is some loss in their work: so that if you give the Brick-layers after the rate of three shillings a day, and the Labourers one shilling and eight pence, the workmanship for Brick-layers and Labourers, reckoning that a Brick-layer is able to lay (taking the Front and Arch work, with the Foundations and party walls) a thousand Bricks every day, one sort of work with another: a Rod of Brick-work after that rate for workmanship, will amount unto about 21 shillings; and for the master workman for the supervising them, and for his Scaffolds, six or seven shillings a Rod. You may compute the same to amount unto six pounds a Rod, which may be reasonable for an agreement by the Great, materials and workmen being at the Rates before mentioned; or if it be only for workmanship, you may allow, taking the better sort of work with the worse, one pound eight shillings for every Rod, there being a Master Workman."

"Sammel-bricks" are to be especially avoided, not to be allowed even in "the choar of the foundation," and the builder is advised to lay all "the ends of the joists and summers in loam," to prevent them from rotting through the heat of the lime. Before the Great Fire the price of brickwork was 5*l.* or 5*l.* 10*s.* per rod, something extra being given for chimneys. Under the head of "Plasterers" he says:—"You may reckon that an hundred of lyme which is worth 10 shillings, and half a load of sand that is worth one shilling and six pence to mix with the same, and 5 bushels of hair

worth 7 shillings 6 pence, will cover one thousand of laths that are 5 foot long, and worth one shilling eight pence a bundle or hundred, which for a thousand is sixteen shillings and 8*d.* which for all materials, amounts to 1*l.* 15*s.* 8*d.* to which you may add 1*l.* 4*s.* 4*d.* for workmanship in lathing and plastering, it amounts unto 2*l.* 10*s.* which is after the rate of 10*d.* for every square yard of work, for ceiling or partition-walls, a thousand of laths covering 60 yards of plastering."

Estimates are given of various-sized buildings. The cost of a house in a street, 20 feet in front, 40 feet in depth, and four stories high, besides cellars and garrets, is brought to 426*l.* 6*s.* 11*d.* after deducting the value of the two half party-walls to be paid for by the adjoining owners.

Timber, "both fir and oak," is put down at 1*l.* 15*s.* a load; iron balconies, 5*d.* or 5*d.* a pound; "glassery" at 6*d.* a foot; and lead wrought, at 18*s.* a hundred." A number of rude plans or platforms, as they are called, are given. But how much he knows of art may be judged of from his teaching that,—"The art of architecture to be used in any sort of building in High streets or lanes consists only in the placing of chimneys and staircases for convenience of trade or otherwise; for which purpose I have set you down chimneys and staircases of most sorts." At the close of his "advice" he gives some observations on the desirability of having a garden, "it being the purest of humane pleasures and a great refreshment to the spirits of man;" coolly taken from Bacon's Essay, "Of Gardens," without any acknowledgment; and he concludes with the very sensible remark, that "where the Country Builder cannot make election of a place where he may have all these Conveniences, it is good for him to get as many of them as he can."

There were very few English works on the art in 1667, when this book appeared. Amongst those published abroad at this time and soon after, we may point out to our younger readers Alberti's "*De re Edificatoria*," Florence, 1485; P. de Lorme's "*Architecture*," 1568; Serlio's "*Opera d'Architettura*," 1584; Scamozzi's "*L'Idée dell' Architettura Universale*," 1615; "*L'Architettura di Palladio*," Venice, 1642; Freart's "*Parallèle*," Paris, 1650; Androuet du Cerceau's "*Livre d'Architecture*," 1662; and Pierre Bullet's "*Architecture Pratique*," Paris, 1691.

In England, Wotton had published his "Elements of Architecture" in 1624. Perhaps the earliest work on practical architecture issued here was one by John Shute, called "The First and chiefe groundes of Architecture." Shute, who is described as painter-stainer and architect, was sent to study in Italy by John, Duke of Northumberland, in 1550, and published his work, a folio volume, soon after. He died on the 25th of September, 1563, and was buried in the old church of St. Edmund, Lombard-street.* The commencement of his epitaph shall serve as the ending of our article:—

"This monument declares, that here the corps doe lye Of him that sought in science sight to publish prudently, (Among the rest of things, the which he put in ure), That ancient practice and profound, that light of architecture, A knowledge meet for those that buildings doe erect, As by his workes, at large set forth, is shewne the full effect."

CHESTER, REVISITED.

THE DECORATIONS IN THE CATHEDRAL.

SKETCHES, made some years ago, of buildings in Chester, and impressions which we have derived lately, show that considerable changes have been made in the architecture, which had once, and indeed still presents, features of interest and beauty, and some which are peculiar to the city. Most of these features, or those which may be called historic or antiquarian, have been noticed in our pages, either on the occasion of the meeting of the Archaeological Association in 1849, or at other times; and therefore, we are not again about to describe the remnants of the Roman city, the old walls, the Cathedral and St. John's Church, or particularly the "Rows," and the half-timbered houses, or the modern Grosvenor-bridge, —though these things deserve the attention of persons who visit Chester for the first time. Our

* Godwin's "Churches of London," vol. ii.

object rather, just now, is to recount what has been done most recently.

We observe, then, that many of the old buildings that gave the peculiar character to the streets at the earlier date alluded to, have been removed; whilst in their stead, and in place of others, there have been erected a considerable number of houses of Gothic character, but of the peculiar modern versions of the Gothic, whilst of materials more durable than those of the half-timbered houses. "The Rows" are preserved, as well as the general plan of the centre of the town, which may be described as that simply of two lines of street intersecting one another in the form of a cross, a considerable space of the ground in each internal angle formed being reached only by narrow courts from the "rows." Entered from such courts are many residences, even of people of a higher class than would be found in courts of a similar kind in London. Without a more detailed plan than appears to be procurable in Chester, it is not easy to understand what are the divisions of property: but the arrangements spoken of cannot be quite accordant with sanitary principles. Both the depth of the plots of ground and the "rows," however, are favourable to the architecture and the purposes of shops. As regards the latter, the two stories of shops,—the lower story being at the street-level, and the front of the shop above being set back so far as to leave room both for a passageway under cover, and generally, in addition, on the opposite side, for a stall or counter,—economize space in the manner needed in towns, and allow of purchases being made by ladies with comfort in any kind of weather. Opportunity for the exposure of wares and for business announcements, more than the ground story affords, is certainly wanted in London, and we have advocated adoption, to a considerable extent, of the external gallery system, for that reason as well as for the reasons which are familiar to those who have considered the question of residences for the middle and humbler classes. But as to architectural effect, it will be understood by professional readers, that there must be in the circumstances pertaining to the sites of all the buildings in the Chester "rows" considerable opportunities. The front next the street, with the upper stories carried on arches or a bressummer, is free from the defect of one which seems to be borne only on glass; whilst, as the shop, from being so much set back, necessarily extends considerably beyond the back wall of the body of the house, a top-light can be contrived in the shop with considerable advantage, decoratively. Consequently, although the "rows," retaining the old form, have, in several instances, very low ceilings, and the building-sites each are without light from the sides, many of the shops are very well lighted, and some of them have a tasteful appearance, not usual in small provincial towns.

We have said, or left it to be implied, that much of the alteration in the architectural character of Chester had accrued from the modern system of building, and use of materials more durable than timber and plaster. We confess that we are not wholly satisfied with the result of the change. Part of the old city of Chester seems to be wanting; and new houses have sprung up in a dress which is strange, though intended to harmonize with the old. Removal of buildings from time to time is unavoidable; but the question arises whether it is desirable at all, to regard old associations, where circumstances would render it inevitable for them to be destroyed. Certainly the Medieval architects acted on no principle of preserving associations. Leaving this question, we would merely record the fact of the appearance presented by the streets of Chester now as compared with twenty years ago. A larger proportion of the houses are brick-fronted; and one group of buildings in the Eastgate, with elaborate workmanship, has just been completed in stone.

Till quite lately, however, in rebuilding at Chester, the effort was to reproduce, as nearly as possible, the half-timbered houses; and in our volume for 1856 we gave an illustration of two adjoining buildings in Eastgate-street, the shops of Mr. Roberts, bookseller, and Mr. Bolland, confectioner, which were erected about the time, from the designs of Mr. T. M. Penson, the architect of the stone-fronted building we have spoken of (and which is in the same street), as well as the two cases mentioned, belong in character of detail to the Late Gothic period, and resemble the old buildings at Coventry, in the enrichment of the gable-boards, or "barge-boards," and in the wooden tracery to the window-lights. Representations in the two local guide-books differ from one another; the architect's design, as shown in

our volume, however, displays much cleverness, as in the corbelling-out of the gable-crowned central portion of one of the fronts in advance of the bressummer, and the supporting of the ends of the bressummers by bold corbels, reducing the span, so that there is no effect of weakness. The lower story and its shop front, and the iron-work above it, which forms the balustrading to the "row," as in other recent works, are well managed. In certain fronts of the same class of construction, as in the premises of Messrs. Platt & Son, chemists, also in Eastgate street and Row, the character of the seventeenth century half-timbered houses, the prevailing character of the old buildings of the town, has been imitated. There are other new buildings in Watergate-street and elsewhere, of the timber-and-plaster method of construction, but having less decoration than the works we have mentioned. The plaster, or cement filling-in, of course, is a covering to brick-work, in place of plaster on lathing.

In other buildings which appear more recent, including several in Bridge-street, red brick and stone were employed, with darker coloured bricks occasionally in patterns. In these cases the gable may be coped with mouldings and terminated by a stone finial: an oriel window in stone may be noticed in the principal upper story: the whole details may be of the Early "Decorated" character; and whilst a bressummer is retained, and its ends are carried on corbels, both these parts of the design are treated as stone actually or by imitation.

We now come to Mr. Penson's most considerable addition to the street architecture of Chester,—the work already spoken of as completed very recently. It comprises the sites adjoining one another, of two of the houses of Eastgate-street. The whole is harmoniously treated as one stone-fronted design, with a staircase-tower rising in the front, directly from the street level (the "row" of the upper story being continued at the back of this tower), and set to one side, so as to give the effect of two originally unequal frontages. The bressummer method of support is here dispensed with; arches (pointed segmental) and circular piers, or arches and responds, being substituted in the story first above the street, or that of the "rows." There are three such arches on the one side of the tower, and a single wide arch on the other. There are two stories above the arches, besides the gables; that is to say, there are four ordinary stories above the street, besides an additional story to the tower, which rises again to a considerable height with a truncated roof. The details of the whole, of "Decorated" Gothic character, are particularly elaborate in the tracery and cusping of windows, and the foliated ornament to capitals, corbels, arch-mouldings, and strings: coloured tiles are introduced in the roof, and effective ornamental iron-work is placed as railing between the arches of the "row," and to the roof of the tower. The windows of the upper stories are closely set, and wall-shafts which occur between them are carried below their strings or sills down to corbels. There is a slight difference as to these windows between the portions of the building separated by the tower, but only in minor details. In general outline, looking at that which may be called the principal portion of the buildings, the windows of the upper stories are grouped as six bays in the front, over the three open arches. Above those windows which are coupled in the middle of the front, there is a face-arch (carried on wall-shafts and enclosing a spherical-triangular opening) and a gable; and there is a similar feature with the required variation in the corresponding front. There is a doorway at the base of the tower, or from the street, with elaborate enrichment to the arch-mouldings; and some effective details are introduced elsewhere in the tower. The upper stories in these premises are let in chambers, for which heavy rents are asked.

Mr. Penson did not appear to us to be succeeding so well in the large hotel opposite the railway station, which is very nearly ready for occupation. Cement is used for dressings, and these are of the Italian character. Lofty truncated roofs are added in portions of the plan. The pure Italian below, and the French-Italian of the roofs, as in several recent designs noticed in these pages, is, from whatever reason, not harmonious. The railway station built in 1847 and 1848, we may observe, is the best for convenience of plan and appropriateness of decorative character that we are acquainted with in that part of England. The design is attributed to the late Mr. C. H. Wild, and Mr. Thompson, the architect of the Derby station, acting under Mr. Robert Stephenson. It is ex-

ceedingly difficult to plan well an important station where traffic passes through, or where several lines meet and intersect, as may be discovered even at the largest station at Crewe; and consequences of any defect in planning, nor of any original deficiency of the site, are multiplied day by day, as traffic increases, and as land adjacent to a station rises in value. What would be present inconveniences to passengers, and serious danger, are reduced at Chester, certainly to a minimum, by the arrangement of the lines and platforms, and the projection of the cab and omnibus sheds from the main frontage, by the position of the station-master's office elevated in the centre of the principal platform, by the careful provision of directions as to hours and exact spots of the starting of trains, and by the generally admirable management. The result is a great contrast to some stations in the North, the bad arrangements of which may hereafter call for notice.

The principal new houses are to be found in Curzon-park and Queen's-park, across the Dee; the former, near to the Grosvenor-bridge, and opposite the race-course, and the latter, higher up the river. To the Queen's-park there is a foot-bridge, on Dredge's suspension principle, east of St. John's Church. This bridge is 417 feet in length, with a centre span of 262 feet, and it cost 850*l*. It is exceedingly slight, and sways and undulates by the tread of the crowds passing over it on Sundays, in what appears to be a dangerous manner. There is an iron bridge on a different principle across a ravine, at Curzon-park, and also very slight in appearance. This bridge is in two spans, with a centre pier, and there is no apparent support between pier and abutment, unless the very slender lattice-work of the railing. It is, however, difficult to examine the construction from below. The roadway certainly is much depressed, and appears to have become so since the date of original construction. Most of the new houses in these localities have some decorative character: the best of the number have bands and arches of red bricks, contrasting with lighter coloured bricks less harshly than is usual in this manner of design. A group of buildings, similarly treated, on the right bank of the river, close to the suspension bridge, indeed, shows that considerable effect in combination with landscape may be produced by mere brickwork, provided there be proper management of the general masses and the minor recesses and projections. The railway bridge over the Dee,—that where the accident happened,—an event which was very important in its influences on subsequent works,—is now greatly modified in form and construction. The girders are supported on a cradling in the middle of each span, by struts from the piers; but compound girders in which are what were considered to be defects of the principle, we believe remain as they were originally placed in certain other bridges.

On a site near the castle, barracks for the militia are in the course of completion. They are very similar to the majority of the barracks in other parts of the country lately erected for the like purpose,—being Gothic and castellated externally, and, we must add, not quite what we should like to see, either in point of taste or sanitary requisites. The windows are most of them very small, and there is a rather confined internal court; so that either healthfulness of the building, and what we supposed to be the conclusions of the several commissions on barracks, have been made to yield to the idea of some imitation of the Medieval castle, or opinions at head-quarters regarding the need of preparation for defence against riot, are different from what they have been. If the former of these is the case, the result shows how prejudicial every way it is to begin with views of imitation. By these the produce is an inferior thing in art, and a thing which does not answer one of the first conditions of building,—the requirement for use. Our art seems to be never prepared for a new class of buildings, or a new invention or material. That cannot be for good result in art which either represses the utilitarian development, or which seeks to combine with a different use the decorative characteristic of something else. Why cannot we seek to embody both the art and the use, subordinating neither one to the other?

Amongst works of recent date at Chester, may be named the Savings Bank, erected in 1853, and designed by Mr. James Harrison, a building of late Gothic character, of white stone, with gables, mullioned windows, a prominent bay-window, and a clock turret. The last-named feature is at the angle, but not carried up in appearance from the ground. The Diocesan Training College, by Messrs. Buckler, belongs to the same style. It was completed in 1842, at a cost of about 10,000*l*.

The most important work in Chester which we are called upon to notice, however, is that of the decoration of the Lady Chapel at the Cathedral, which has been some time in hand, and is now almost completed. Mr. Octavius Hudson is the designer and artist. The chapel is three bays in length, and belongs to the thirteenth century. North and south aisles, each of two bays in length, were added to it in the fifteenth century, the present western openings or arches into the aisles on each side being formed and parloises inserted; whilst in the next or middle bay each side, the original window, a triplet with clustered shafts, under an arch of bold mouldings, was left, the glass removed. The present east window is of "Perpendicular" character, with stained glass by Wailes; but the north and south windows (which have also glass by Wailes) are earlier in date. The east window, at least as to the glazing, may be altered in some manner when the present decorations are completed. In the aisles of the chapel and choir, we may mention, there are several windows with good glass, chiefly by Wailes; but one of them at the east end of the north aisle is by O'Connor. The decorative work we are about to notice, is comprised in the chapel only, or exclusive of the aisles.

In arranging the scheme of decoration, it was desirable as well to represent, if possible, the original character of the interior, as to secure present harmony of colour. Fortunately for the early Gothic styles these objects are not inconsistent with one another. Inharmonious combinations such as there are in many of the Gothic ceilings and rood-screens, were characteristic of the "perpendicular" period. Each style of masonic architecture had its correspondent style of decorative colour; and the early style making use of tints and hues, rather than everywhere positive colour, was in accordance with the best principles. Mr. Hudson very properly thinks that decorative colour should be subordinate to the form, and that the colour should grow upon the observer, rather than startle with its effect, to the destruction of everything else. There is no doubt that some costly blunders have been made through non-observance of such principles. Mr. Hudson uses gold as well as positive colour where requisite; but neither is in excess; whilst the gold is always either as a field or background, or on the whole surface of an object, as a leaf, and not so as to distort the form according to the practice which we long since animadverted upon. As regards the authority in this particular case, there were remains of colour and gold in several places, and even of defined ornament; but the main part of the decoration is the result of study of similar buildings.

We have often spoken of the difficulty of describing work of architecture in words; but the difficulty is very great where colour is to be described, because each individual has a different idea of what is blue or red, or whatever else, through forming his idea from such object in nature which has one of the hues of such colour; and from other reasons; yet, we must make the attempt to give some further particulars of the decorative work at Chester, which is in question.

The plain walling is painted a light stone colour; and on this, lines are marked in red, resembling the jointing of masonry. This is the least satisfactory part of the work. Under the moulded string-course, a scroll is painted in the red colour, and above the string a peculiar ornament is added to the alternate upright lines of the jointing. The wall-shafts carrying the groining are painted light Venetian red, the hollows separating the cluster of shafts being a neutral tint, whilst the upright fillet in the centre of the principal shaft, and the mouldings of the bases are gilt. The cyma mouldings, and others of the same character, are in graduated colour, red or blue, with lighter tint. In the capitals, leaves are gilt; birds appear to be light green, and backgrounds and soffits red. The bosses of the ceilings are on the same principle. The mouldings of the groining are, the reduced Venetian red, and various shades of olive and green. The severies of the groining, are decorated with scroll-work in thin lines of light green, with leaves, and with some rosettes in red, as well as blue ornaments and gilt stars. On the severies also are medallions, large and small, the latter of heads, chiefly; and the former, various compositions of figures. The figures have been studied from models and the lay figure. There are many other details, both of form and colour; and, for the most, they are marked by considerable nicety of perception and taste.

Before leaving Chester we visited the Museum of the Mechanics' Institution, at the Water Tower.

In it is a crayon drawing, said to be a portrait of Harrison, the architect, "of Chester," by himself, when a young man; and here is also a model of a design for the north gate,—with a colonnade over the arch,—a suitable arrangement which ought to have been carried into effect. The Museum, however, should contain a greater number of the objects of interest that have been discovered in Chester,—a matter which might be looked to by the Chester Architectural, Archaeological, and Historic Society. The society cannot have been into the neighbourhood of the Museum lately, or we should have not found one of their gifts, a fragment of cusped work, labelled,—“This mullion,” &c. Every town should possess its Museum; and there is no town which would have more interesting objects for one, than the town of Chester.

PROCEEDINGS IN CONNECTION WITH THE STRIKE.

No progress whatever towards a settlement has been made: money is being wasted, bad feelings are excited, and a national injury is commenced. The numbers of men at work at Messrs. Trollope's have not increased, and the Executive of the Central Association of Master Builders, when they met on Tuesday last, adjourned for a week. We proceed to show what has been the course of events since our last.

Meeting at Cambridge Heath-gate.—On the 25th August a public meeting of the operatives of the East-end of London was held at Mr. Silley's Royal Victoria Gardens, Cambridge Heath-gate, for the purpose of taking into consideration the late lock-out movement, the strike, the lock-out, and the “document” or declaration issued by the masters. Mr. Hardy having been voted to the chair, a resolution,—to the effect that, seeing the masters still persisted in the declaration they had issued, which was of such a character as no Englishman could ever recognize, that a meeting was of opinion that no settlement of the question could be effected without the withdrawal of that “document,”—was carried, various speeches being made to the precise effect of those already reported.

Leicester.—On the 25th a meeting of the operatives in the building and other trades of this town was held in the Temperance Hall, to hear statements from the delegates from the Conference of the United Building Trades, and to organize a subscription for the operatives locked out in the metropolis. Mr. Powers (joiner) was voted to the chair, and resolutions were passed denouncing the “document” as a “most un-English and illiberal proceeding,” pledging the meeting to use every lawful endeavour to support and assist, pecuniarily and otherwise, during the struggle, until it is brought to a satisfactory issue.

Oxford.—Here too, last week an open-air meeting of the operatives in the building and other trades was held near the Martyrs' Monument when the following resolutions were passed:—“That believing the request of the London building operatives to their employers, to reduce the present working day to nine hours, to be just and necessary to their future welfare; and admiring the calm, moral, and legal means by which the London workmen have prosecuted their claims; we consider the attitude assumed by the master builders of London to be a disgrace to them, and a shame to the cause in which we live. We, the men of Oxford, therefore pledge ourselves to give our London brethren our most strenuous support in resisting the slavery sought to be imposed on them by their employers, and endeavor to bring the strike to a movement to a successful termination.” And,—“That we pledge ourselves to use our best endeavours to prevent any of our fellow-workmen from this neighbourhood going to London, at the employers' solicitation during the present unjustifiable struggle.”

Meeting of Messrs. W. Cubitt's Men.—On the 26th ult. the workmen who were lately in the employment of Messrs. W. Cubitt & Co. builders, met in Winchester-hall, Pentonville, “to express an opinion respecting their present position.” Mr. Bennet, who was called to the chair, stated that he, and those with whom he was associated, regretted the position in which they had been unwillingly placed in consequence of the strike, which they traced to an unfortunate misunderstanding between the employers and employed, and earnestly desired to bring the dispute to an early and satisfactory issue. It was necessary, first of all, that the proposed “declaration” should be withdrawn; and, on the part of those who had been for many years in the employment of Messrs. Cubitt, and who had given general satisfaction to their employers, it was not too much to ask that their past conduct should be taken as a sufficient guarantee for the future, without any formal agreement. Should Messrs. Cubitt think proper to reopen their establishment, and withdraw the “declaration,” he and his friends were prepared to pledge themselves to concur in referring the remaining question in dispute to arbitration, and to abide by the decision. The following resolution was proposed:—“That this meeting desires to express its regret at the unfortunate misunderstanding existing between the employers and workmen in the building trade, and pledges itself to use all honourable means for arriving at some conciliatory arrangement whereby it may be speedily terminated. On this it was moved as an amendment, and carried,—“That this meeting regrets the position assumed by the employers in closing their establishments and introducing an objectionable declaration, and pledges itself, should the employers think fit to reopen their shops next week with the said declaration, not to accept any such agreement, and not to resume work until such declaration is unconditionally withdrawn, and the trade publicly opened.”

Meeting of Operatives at the Surrey Gardens.—On Monday, 29th ult. a large meeting of operatives was held at the Surrey Gardens, for the purpose of receiving a report and considering their present condition. Mr. Grey (mason) having been voted to the chair, Mr. Potter (secretary) said that the object of the meeting was twofold—first to give them another opportunity of showing their disapprobation of the objectionable “document” which

the building operatives were called upon to give their assent to, casting away their liberty of action, their freedom of thought, and their rights as Englishmen. He asked them to oppose a step which their Christian and liberal employers requested them to take. He contended that the “document” would place shackles upon working men, and that the employers should be called upon unconditionally to withdraw it. He had no hesitation in saying that if the “document” were not withdrawn, it would entail a vast amount of misery, not only upon men, their wives, and families, but upon the masters themselves. The whole responsibility now rested with the masters, and he considered it an abominable thing that the public should be gulled by them as they had hitherto been. Everything they did was in secret, whereas all that the men did was above-board and open, as was plain from the fact that gentlemen representing the public press were that day amongst them. With regard to the report he had to make, it would be merely a verbal one. The funds up to the present time had not been very considerable, but he was happy to say that special general meetings of trades had been called throughout the country for the purpose of raising subscriptions, which would now flow in rapidly. He was aware that in some quarters the dividend declared last week caused some dissatisfaction, but they might easily imagine that some difficulty would arise when 14,000 or 15,000 men wanted payment. The total income up to last Monday evening had been 1,401, 5s. 2d.; so that he had not yet, as had been suggested, been able to run away with 50,000. The expenditure had been 1,357, 12s. 7d., leaving a balance of about 60l.—not a great deal to run away with even if he were so disposed. He would not take a single farthing from them until they resumed work, and they might deal with him as they liked. After some remarks from Mr. Noble, who repudiated the document, the report was unanimously adopted. Mr. Perham moved the following resolution, which was carried:—“That it is the opinion of this meeting that the document subscribed to the operatives of the building trades for their acquiescence is degrading and insulting in the extreme, and that the master builders, by introducing it, have shown a spirit of tyranny and oppression which cannot be tolerated either by society or the working classes of this free country; and this meeting pledges itself not to resume work until the objectionable document is unconditionally withdrawn.” He said he had, in many instances, seen skilled men engaged in the same branch of trade as himself were going to America, or taking out their country tickets, enabling them to travel about rather than sign the degrading declaration.

Meeting of Delegates.—The adjourned meeting of delegates from different trades was held on Tuesday, the 30th, at the Shaftesbury-hall, Aldersgate-street. The following trades were represented:—East-end ropemakers, amalgamated engineers, cane-workers (East-end), plumbers, tinplate-workers, Mutual Improvement Society of Sadlers, West-end boot-closers, West-end ladies' shoemakers, umbrella and parasol silk weavers, City boot-closers, leather makers, shoemakers (East-end), French-pole-shivers, united cork-cutters, district glass-blowers, second division of shoemakers, Reform Shoemakers (East-end), zinc-workers, City bootmakers, Brickmakers' Society, City ladies' shoemakers, and several others. Mr. Gray, mason, was called to the chair. Mr. Potter said he had little to add beyond what appeared in that day's papers, of their proceedings at the Surrey Gardens. However, they had that day received several repitances of men from Liverpool, Northampton, Brighton, and other places; and many towns had given them promises of future support. It seemed that there had been an anti-strike committee formed, and a notice of meeting to be held had been circulated, but no time or place had been stated. The men had offered four persons to the masters as mediators, but the whole of them had been rejected by the masters, and the public would see on which side the real sympathy of the strike lay. Various delegates then announced certain votes of money; and it was resolved:—“That an address be drawn up, to be signed by the delegates present, and issued throughout the country.”

Poplar.—On the same evening a public meeting of operatives resident in the Poplar district was held at the Saberton Arms Tavern, New Town, Poplar. Mr. Bacon was called to the chair, and a resolution was passed, to the effect that the conduct of the master builders in the metropolis had assumed in respect of the struggle between the workmen and themselves, especially as to the issuing of the document or declaration for the workmen, was deserving of all condemnation, and that the meeting would support those operatives who resist it by every means in their power.

At this meeting, as at others, it was asserted and re-asserted, that the masters had brought about the strike for the purpose of humbling the operative, in apparent forgetfulness that the strike was *the act of the men*, and *of the men alone*, and that the masters, if not prepared to assent, had no alternative but acting as they have done in respect of closing all their shops, as they would of course have been beaten in detail.

Nottingham.—On the 29th ult. a meeting of the building operatives of this town was held in the large room at the Durham Or. Mr. Marriott, as chairman, introduced a deputation from London, who made an address. The following resolution was carried:—“That this meeting heartily sympathizes with the builders of London in their present position, and feel proud of the noble stand made against the obnoxious document presented for their acceptance.” Mr. Brown, stonemason, in seconding the resolution, stated that the Stonemasons' Society contributed to seven different hospitals in the country, the sum amounting to 150l. per annum. Last year more than 1,000l. was paid as sick-money. The society had paid to unemployed men whom the parishes refused to maintain, 4,000l. They had also paid for accidents 800l., and for these the masters had as much right to pay as the men. All that had been expended for strikes was 1,114l.

At Plymouth a meeting took place on the same evening, Mr. Spence, carpenter, in the chair, when a resolution was moved by Mr. Jacob Winsor, stonemason, was unanimously adopted to support the present movement in London. There were about 600 persons present, and the sum of 4s. 6d. was collected. Mr. Lamb complained of the want of support by the local workmen. The society's members were like the figs in a Cornish pudding,—one here, the other at the Land's End. In June the Plymouth men asked for 3s. 6d. a day and nine hours; they obtained only 1s. a week additional. He thought it was, each to Trollope's men was a small pitance. Mr. Shovel stated that, after the operatives had succeeded in London, the same system must be adopted in Plymouth. In the Devonport dock-yard the day's labour averaged 6 hours only.

The Anti-Strike League.—The unemployed non society-men have formed themselves into a league for the purpose of appealing to the masters to re-open their shops, declaring themselves willing to abide by the condition of the so-called document, that they do not and will not belong to any society that has for its object the establishment of rules for the guidance of workmen as far as regards interference in the management of establishments in which they are employed. They hold it as a doctrine that every man ought to be unfettered, and free to sell his labour to what master and at what price he may think proper and, intending to act according to those principles, an appeal, setting forth their opinions, has been embodied, praying that the masters who were, in self-defence, compelled to close their shops, may re-open them to the thousands of non-society men who are unemployed. A committee, of which Mr. Joseph Dryden Pomeroy is chairman, and Mr. Christopher Mills secretary, sit daily at No. 4, Little Warner-street, Clerkenwell, to enrol names and to receive signatures to the appeal.

The shipwrights' strike on the Tyne appears to be at an end, the principal employers having given the men the required advance (5s. per day); and the shipwrights at Mr. James Young's and the Middle Dock at South Shields have resumed their employment.

The strike amongst the joiners at Southport has terminated, the men having gone to work.

At the Westminster Police Court, on Saturday last, a workman connected with the building trades, named Thomas Carmody, was fined 20s. or fourteen days' imprisonment, and ordered to enter into his recognizance to keep the peace for the next three months, for using abusive language and threatening a carpenter in the employ of Messrs. Trollope.

A FEW HINTS TO MASTERS AND MEN ON THE DOCUMENT.

SIR,—If a man, without any provocation on my part, knocks me down, if I can regain my footing and my physical powers are adequate, I return the compliment; but, according to law, I have no right to retaliate. It is very just that this should be the case; for, if every man were allowed to avenge his own quarrel, irritable and malicious persons would inflict greater punishment than the case deserved. If I am too powerful for my adversary, who has given the first provocation, it is very unseemly in him to call me a coward, and sue me at law for damages; but this is often the case: the first and only aggressor is the first to appeal at law. Now I might have escaped comparatively scatheless from the encounter with him who has unjustly assailed me; he, on the other hand, might have wounds and bruises to exhibit before him who administers the law. If a witness can be found to give partial evidence, suppressing that part which ought justly to appear most prominent, viz. the conduct of the first aggressor, under these circumstances I who am innocent might be punished with fine or imprisonment, and the only guilty party escape free.

The document has been pronounced by a distinguished individual as "arbitrary and unjust." On the other side of the question opinion is withheld. This may be termed partial evidence, from which it is not possible to draw just conclusions. If the document had been introduced previously to the present strike, it would doubtless have been "arbitrary and unjust." The promoters of the strike gave the first blow: the document is a blow in self-defence. The law allows working men to combine: the document is an infringement on the rights of working men: provided working men do not go beyond the limits the law allows them: if working men have not gone beyond those limits, then the document may be justly pronounced "arbitrary and unjust."

A brief review of the circumstances, now so publicly known, will convince any impartial observer whether the men have or have not exceeded the limits the law allows them. About 400 men strike against one employer, because he will not agree for them to work nine hours per day instead of ten. Had this employer agreed to the conditions of the men, he could not have presumed that every other employer would follow his example; consequently, he would have been under the necessity of estimating for work 10 per cent. higher than his competitors. Now, if it were a just thing to strike for nine hours, why select one victim? Why not strike against all employers at once, and put them on an equal footing?

But the answer is,—the master in question discharged a delegate. Is this a sufficient reason for you to plunge thousands of poor families into dire distress? Is this the condition to which you would reduce employers, that they are not to discharge a man without your sanction and consent? If this be the condition to which you would reduce employers, may I never be an employer. I hate injustice. I hate oppression, whether it be prac-

tised by king or beggar. I live in a country where a larger amount of liberty is enjoyed than most countries are willing to allow. I feel very tenacious of that liberty, when those who are my equals attempt to deprive me of it. Now, let us just see the amount of liberty that those who are the chief promoters of combinations and strikes are willing to allow their fellow-men. According to my judgment, when 400 men left their employ because their employer would not pay them ten hours' pay for nine hours' work; and when those very men were willing to engage, and some did engage themselves to other employers to work the old-established time—ten hours per day,—such an act as this was an act of gross injustice. To avert such an act of injustice as this, if I were in want of employment, I would engage myself with this employer in preference to another: set that to my account, and take the will for the deed.

But the consequence would be, as working men are well aware, my name would be branded and sent into every provincial town in England, and wherever the influence of society men prevailed I should be deprived of employment. I ask, in the name of justice, what right any body of working men have to make law that virtually contradicts the laws of the land in which I live. I do not subscribe to your funds, I do not consent to your rules: if the law allows you to combine, limit your influence to those who are members of your society.

But if the laws of the land allow me to work for whom I think proper, and on what conditions I think proper, is it "legal, moral, and just" for you to deprive me of those privileges that the law allows every one without distinction?

To employers.—The present crisis must to you be a perplexing one. To punish the guilty you must be aware that thousands of innocent ones are suffering. From the knowledge I have of working men, being one of them and constantly mixed up with them, I can assert that, taking the working classes as a body, they are skilful, industrious, and peaceable; but it must be confessed that there are among them a few whose only element seems to be agitation. Give them the means to scour the country to lecture at open-air meetings, sowing discord and strife between employers and employed, levying contributions on the hard earnings of other men, then let them sit in committee dictating terms to both masters and men,—in such spheres of action as these they lose all relish for the bench and the banker, and it is also evident that they lose every spark of manly feeling. To send by their influence a few employers to the Court of Bankruptcy is to them a matter of rejoicing: to plunge thousands of poor families into distress excites in them no sympathy. To neutralize the effects that such men have produced, employers have introduced the document. If a man strikes me, as I said before, it ill becomes him, if I retaliate, to say my conduct is unlawful. Now the introduction of the document is rather a questionable policy. But what could be adopted that would prove more lawful and effectual.

Take two truths.—First, masters hate the tyrannical system of trade unions: secondly, workmen in general hate it likewise, because it deprives them of their liberty. You ask, Why do men join them? Because they are often compelled to do so to obtain and retain their employment. Let employers come to a firm decision on this simple point, viz. that all men, whether society or non-society men, shall have free access to their employment, not to suffer or permit a third party to interfere with concerns that belong only between the master and his men. No man with propriety could say that this step would be unjust, unmanly, or unlawful. If men were thus left free, trade unions would have to purge away many repulsive customs that now prevail. I know this step may appear difficult to some employers. If an employer be in haste to complete a job, and he receives a deputation from his men demanding the discharge of some one obnoxious to the other men; to resist such demand would endanger delay and loss. It is not every firm that can sacrifice 15,000*l.* to maintain a just principle; but if working men are once fully assured that employers are inexorable on this point, the cowardly and degrading custom of one working man demanding the discharge of another would cease to exist.

JOHN GRIFFIN, Stonemason.

MALVERN.—A vestry meeting of the inhabitants has resolved unanimously to expend the sum of 4,000*l.* in repairing the roofs and windows of the parish church.

THE POSITION OF THE WORKMEN.

SIR,—If there is one thing more marvellous than another about these strikes, it is the credulity and trust reposed in the leaders, notwithstanding the evident want of foresight and administrative skill manifested by them. So the statement of accounts is "received and approved." receipts, 1,401*l.* 5s. 2d. the result of more than twenty months' agitation!—levies from time to time and continued contributions. If this statement be true, the ordering out of Trollope's men, with all the consequent risks, was the most wanton and reckless piece of management that could be imagined,—generalship it does not deserve to be called. If it be not true, there is no need to characterize it. Then for expenditure. The moneys charged in this week's statement to carpenters, plasterers, masons, painters, and sawyers agree with the numbers stated to have been relieved in the previous week's account, but the bricklayers and Woolwich men do not agree, and the labourers are charged with more than 30*l.* more than the previously announced numbers warrant; while eighty smiths, &c. returned the first week, and their only representatives in 6s. 6d. to plumbers, &c.: then the general expenses are at the rate of 70*l.* per week for the three weeks that the strike has lasted. I confess, sir, I doubt the whole.

It was currently reported the first week in August, that the Conference were prepared with at least 10s. per man for skilled hands. They must have known that pence, and not shillings at all, only were at their disposal; and so at the end of the first week the men were quietly told, "We make no dividend this week, as you all had full wages to begin with." A second week ends, and then, with all possible parade, a dividend is announced, and the miserable pittance of 13d. is handed over for a fortnight's allowance. The third week comes to a close, and even the few pence are not forthcoming; and so instead of honestly telling what is the real state of the case, a general meeting, forsooth, is summoned to denounce the "Document," and the leaders ride off upon this issue; and the workmen are coolly told that there is nothing for them now, but only "hold on, and you shall roll in wealth." Could credulity go further than confide in these promises?

Now what has this cost? The skilled man, four weeks at 33s. or 6*l.* 12s.; the labourer, four weeks, at 21s. 4*l.* 4s.; or, at a moderate calculation of the aggregate, from 40,000*l.* to 50,000*l.* amongst them: enough already wasted to render necessary a year of toil to re-instate the loss, if all that was proposed were to be gained to-morrow; but how long time must elapse before the evil will be remedied if this be not gained, as it most certainly will not be?

To whom also are the workmen indebted for the existence of the "Document," so much abused, but to the "nine-hours movement?" If it be so distasteful, the Conference, and the Conference only, is to blame for rendering it necessary.

The masters received a deputation of workmen on the 26th August, 1858, and heard all that each had to say, and talked the matter over in all its bearings, only closing the discussion when the men themselves acknowledged that they had nothing more to urge; and to the subsequent applications for a renewal of the discussion the masters have uniformly replied that they were ready to renew it if any new ground could be discovered or fresh arguments adduced. So that to declare that all conversation has been refused is untrue; and if a firm refusal to concede that which it is believed the party claiming has no right to, is to justify an attempt to obtain it by violence, the most absolute robbery would be allowable on condition only that the goods had first been courteously asked for. Surely the thoughtful workman must see that the parties to whom he has committed his interests are totally incompetent to the fulfilment of the trust, and have betrayed him, to his loss and injury. Nor let it be forgotten that so far as the "nine-hours movement" is concerned, no change whatever has been made in the attitude of parties or the avowed policy of the Conference. So far as they are concerned, they have done all they can to stop Messrs. Trollope's works. They avow that they will bring the nine hours from them, though in their appeal to the country, the "Document" is the cry. I had hoped, when I saw in one of the papers issued, something like a declaration of readiness to "modify the claim set up" that there were dawns of hope, but Monday's meeting, and its reckless resolutions, seem to clothe all in darkness again.

One of the Paviers' Arms speakers avowed that they should want 10,000*l.* per week, and this is far below the real figures. They have no chance or probability of obtaining 1,000*l.* or anything like it; and every pound represents days of bitter deprivations now, and weeks of severe toil hereafter. And yet the leaders of this movement can urge the workmen to submit to this; and, most marvellous of all, the workman will submit.

Can you, sir, or can any one, suggest any means more simple, or that can be made more satisfactory to the workman, by which he may be freed from the chance of the renewal of such scenes as are now occurring.

The present position of matters is painful, but the prospect of its renewal is still more awful, and the plain duty of every one is to do all that in him lies to make its recurrence difficult, if not impossible.

A CONTRACTOR.

KNIGHTSBRIDGE.*

It is thought a doubtful point whether "Knightsbridge," or "Kingsbridge," were the more ancient name of this hamlet. In a charter of Edward the Confessor, the wood at Kyngesbyrig is referred to; but if it had both names, even then, it was to be expected that in a royal charter the royal name should appear, even although the rival one were the more popular, and even the more ancient, of the two. In a charter not royal, namely, one of Abbot Herbert, of Westminster, less than a century thereafter, the name is *Knygtsbrigg*; and although the place is not explicitly named in "Doomsday Book" (and neither is Hyde, nor Westbourne, nor Paddington), the returns, it may be, having been given with the manors of Eia, Chelchith or Cealc-hyth, Lilestone, &c.; yet the manor of Eia, which in *Doomsday Book* answers for 10 hides, included part of what is now the hamlet of Knightsbridge, and was afterwards divided into the three manors of Eybury, *Neyte*, and Hyde. This *Neyte* is mentioned as early as 1342 in a commission of sewers. Hyde, with lands taken from Knightsbridge, afterwards formed Hyde Park.

There is thus a probability, which seems to have escaped Mr. Davis, that the name of the hamlet was derived from that of the manor of *Neyte*. There is a tradition, however, as to "Knightsbridge," namely, that two knights, on the way to Fulham, to be blessed by the bishop, quarrelled and fought at the Westbourne Bridge, and killed each other on the spot. A commentator of Norden, the topographer, too, gives the following anecdote, which, it has also been thought, might account for the name. "Kingsbridge, commonly called Stonebridge, near Hyde Park-corner, where I wish no true man to walk too late without good guard, as did Sir H. Knyvett, knight, who valiantly defended himself, there being assaulted, and slew the master-thief with his own hands." Against both of these supposed derivations, however, we have the fact that the place was called "*Knygtsbrigg*" in a formal charter (that of Abbot Herbert), long before the time to which either of these traditions could apply; and on the whole we are inclined to prefer our own suggestion, that the name Knightsbridge was derived from the very ancient name of "*Neyte*," which belonged to the locality, either as the name of a manor, or of part of a manor, probably from even before the time of the *Doomsday* survey.

Previously to the Reformation, Knightsbridge was in the hands of the authorities of Westminster Abbey, and although certain manors connected with it reverted to the King at the Reformation, that portion of the district ultimately called Knightsbridge was still reserved to the Abbey, and has ever since remained in the hands of its deans and chapters, except during the alienation of church-lands in the seventeenth century, when it became the property of Sir George Stoneyhouse.

Notwithstanding priestly possession for so many centuries, a part at least of the lands in this vicinity was regarded as in some measure common land down almost to the eighteenth century; for, in 1592, the inhabitants appealed to Lord Bureleigh, high steward of Westminster, against the inclosure of certain fields in this vicinity, with hedges and gates, claiming to have them annually laid open for use in common at Lammas tide (August 1st); and although Stytre, who speaks of these proceedings, and of the breaking open of the fields, does not state how the contest terminated,

it is certain that for many years the owners of some of these fields paid money to the parish officers of St. Martin's in lieu of this claim.

The bridge between the place partly derived its name was one thrown across the Westbourne, a broad and rapid stream which flowed to the Thames from Hampstead, by Bayswater. Crossing the Uxbridge-road, the Westbourne entered Kensington-gardens, passed through these and Hyde-park, running along the centre of the modern Serpentine. Leaving the Park, the bourn crossed the Great-Western-road at Albert-gate, where it was crossed by the King's, or Knight's, or *Neyte*'s bridge, a portion of which was removed for the gate improvements. This bridge, remembered by many, stood between the French embassy and the last house of Knightsbridge-terrace. A part of it still exists under the present main road. From Albert-gate the bourn ran by William-street and Lowndes-square, and under Grosvenor-bridge, where it divided and passed into the Thames by two mouths. The eastern was stopped up when the Grosvenor-canal was formed, but the mouth may still be traced at the back of Westmoreland-street. The western is now the entrance to the Ranelagh sewer, to which, in fact, the stream itself has for many years degenerated. By an under-current, formed in 1834, its course was diverted at Bayswater, to prevent drainage passing into the Serpentine; and when the "Five Fields" were intended to be built on, a new sewer, for which Smeaton had previously made surveys, was constructed. The whole of its course is now covered in, although part of it was still open so late as 1854.

So abundant, at times, was the flow of the Westbourne, that it occasionally became a source of annoyance to the inhabitants of Knightsbridge from overflowing, after heavy rains, and converting the neighbouring fields into a lake, not unlike the Serpentine itself, so that the Thames boatmen had to row people across it from Chelsea to Westminster. From what is recorded of the usual roads, however, it is questionable whether this might not have been an advantage rather than a disadvantage, as regards facility of transit. In 1554 Wyatt's men entered London by the Knightsbridge-road, the state of which was such that it materially retarded them, and aided in the discomfiture of the "draggletails," as their muddy baptism by the way occasioned them to be called. In 1736, although the Court had then resided at Kensington for nearly fifty years, we find Lord Hervey writing to his mother that "the road between this place (Kensington) and London is grown so infamously bad that we live here in the same solitude as we should do if east on a rock in the middle of the ocean, and all the Londoners tell us there is between them and us a great impassable gulf of mud. There are two roads through the park, but the new one is so convex and the old one so concave that, by this extreme of faults, they agree in the common one of being, like the high road, impassable."

Mud and dust, however, were not the worst features of the Knightsbridge road, which was infested by footpads, so that even so late as 1799 a party of light horse patrolled nightly from Hyde-park corner to Kensington; and it is within the memory of many still alive that pedestrians walked to and from Kensington in lands sufficient to ensure mutual protection, starting at known intervals, when a bell was rung to announce the proper time. It was not even safe to sojourn at the change-houses or inns which stood by the way, for these were the haunts of the highwaymen, who were always welcomed by mine host as his best of customers.

An Act, passed in 1829, placed the Great Western-road from Knightsbridge to Brentford bridge under the charge of the commissioners of metropolitan roads, and one of the best approaches now to the metropolis is by the Knightsbridge-road.

The water supply of the hamlet was anciently by means of springs and wells, which were very numerous, pure, and valuable. Doubtless, the Westbourne was also of great use to the inhabitants. In the beginning of the eighteenth century, a conduit was formed within Hyde-park, by permission of the crown, for the supply of Park-side; and in the fields on each side of Rotten-row there was a row of conduits, the waters of which were received by one at the end of Park-side, known as St. James's or the Receiving Conduit: these supplied the royal residences and the Abbey. A spring in Hyde-park, in the time of James I. was allowed to supply the Lazar-house (now Trinity Chapel) by "a pipe of lead bringinge the sayde springe of water to the sayde house."

The progress of building at Knightsbridge appears to have taken place not so much progressively as in two distinct movements. The first was from 1770 to 1780, and the other from 1825 to our own time.

"On examination," says Mr. Davis, in the book before us, "it will be found that few of our streets were built at other periods. A letter before me of a skilled carpenter, written in 1783, tells his friends in the country he gets 2*s.* 8*d.* per day for his labour, and that he is allowed to make seven days per week, 'and if the peace continueth' he shall be able to realize 20*s.* or a guinea per week; for his lodging he paid 2*s.* per week. If this was a fair sample of the rate of wages then, the mechanics' financial condition must have improved to an extent little credited perhaps by themselves."

The air of Knightsbridge has always been considered pure and salubrious; but in a sanitary point of view all is not fair, even in Belgravia. "Behind its imposing mansions," as the same writer remarks, "many a foul spot is hypocritically hidden; and although much has been done by the medical officer, there yet remains plenty of work on hand for him; too many spots yet requiring thorough transformation, and a vigilant watch to be kept, that selfishness be not permitted to triumph over public good."

Within the last ten years, Knightsbridge has lost all traces of the rural aspect it once had, and has become a thoroughly commercial place. Improvement in the neighbourhood of the "Green" is much needed.

We give warm commendation to Mr. Davis's little book. It contains a large amount of information concerning the place of which it speaks, and is pleasantly and discreetly written.

CONDITION OF LONDON SUBURBS.

KENTISH TOWN.

Every year's experience shows that a very large amount of disease and death is produced in the suburbs of the metropolis, owing to sanitary neglects. In noticing recently the large number of deaths (between four and five hundred) from diarrhoea, the registrar-general remarks that it has been more fatal in Shoreditch, Bethnal-green, and Mile-end, than in the other metropolitan divisions. Of the 415 deaths, 153 occurred in the east districts, although they comprise only a fifth part of the population of London. The disease was also fatal in Kentish-town, where sixteen deaths occurred from this complaint.

In a recent report on the condition of the water in the metropolis, it is shown that the water supplied to the eastern portion of London is much loaded with organic impurities. Notwithstanding, when we consider that the greater number of the deaths are of young infants, many of whom would not be likely to be affected by the condition of the water supply, it seems that, although the land water may have been partly the cause, a large proportion of the mischief is done by the polluted condition of the atmosphere. The heat has been excessive, and been the means of spreading abroad poisonous gases. Upwards of 600 persons more than the average died in the metropolitan districts in one week; the death-rate, however, has since lessened.

As regards Kentish-town, an inspection of part of the district will show some cause for sickness and death in this locality. The changes which have taken place here during the last twenty years have been great: rows of substantial houses have been built, or are in progress, so that the green fields are nearly covered to the bottom of Highgate-hill.

The chief portion of Kentish-town lies very flat, and stretches from the bottom of Highgate-hill towards Camden-town and Islington. It was through these fields that the river Fleet flowed from Hampstead, until it became so foul that it was necessary to hide it from the view. In other parts there are open ditches which have not been in the same way treated; besides these there are several deep and some shallow pools of stagnant water of the most dangerous description. These hollows have, in most instances, been dug out by the brickmakers; and before the Act of Parliament which made the drainage to a sewer compulsory, houses were erected near one of these pits, and drained into it; and along the margin of the line of the new railway there is a quantity of land lying waste; the ground is rough and broken; even near the St. Pancras Almshouses green and putrid water is allowed to collect: this might by

* The Memorials of the Hamlet of Knightsbridge; with Notices of its immediate Neighbourhood. By the late Henry George Davis. Edited by Charles Davis. London: Russell Smith, Soho-square; and Mr. Davis, St. Paul's Schools, Knightsbridge. 1859.

* See Dr. Aldis's "Report on Sanitary Works in Belgravia;" "Letter to the Vestry of St. George," &c.

a little care be remedied. In front of the house of a medical gentleman not far off there is water which taints the air to some distance, but is allowed to remain. It appears that there is some dispute about this little piece of land, and while this is pending the lives of people are exposed to danger: there ought to be some means of enabling the officers of health to improve such places. The policemen who have for some time done duty in this neighbourhood say that at night-time the smell which comes from the stagnant water is sickening. This is what is certainly to be expected: in warm weather the water collected in these holes gets heated by the sun: at night the atmosphere becomes colder than the water, and vapours arise, which float about and vitiate the air.

In rainy weather the waste land is covered in many parts with water, which in due time putrefies and evaporates: here are dead dogs and other unsightly refuse.

Passing up the Grafton-road, towards the Gospel Oak-fields, we come to the residence of another medical practitioner: his house and those close by are handsome, the gardens are beautiful, the street is well paved, and evidently every care taken to provide water, ventilation, and light; and yet it is in some of these houses that much sickness has existed. Nor is this to be wondered at; for although everything seems so trim and proper in front, at the back there is one of the deep and dangerous pools to which we have referred. Standing near this, we look around and note other similar putrid collections, which seem, to those who think of the matter, to have been left for the purpose of destroying life. All round the skirt of this piece of waste large houses have been built: an important feature amongst them is the almshouse for orphans. It is certain that poisonous miasmatic fumes must pass into all these houses, and subject the tenants to risk.

We have performed the unpleasant duty of examining some of these stagnant ditches: nothing can be more filthy. Surrounding these distilleries of fever and diarrhoea some thousands of persons in various positions live, and whose health is affected, and even life is threatened, by such conditions as have been referred to; and yet it seems that those who are aware of the danger are helpless: they complain to the parish authorities, but without receiving any useful help: the officers of health have not the power of interfering with property situated in this way: the police may be poisoned in their rounds, but this force is unable to interfere for good. If a dangerous individual threaten the lives of the wayfarer, he would be removed and disposed of; but as regards matters which most seriously affect the lives of large numbers of the public, the police are helpless.

The matter is very difficult to deal with; for it may not be convenient for the person to whom such property is leased to build upon it at a particular time, and then, according to present arrangements, he would not be obliged to drain the places complained of. When, however, we find that in the neighbourhood of such neglected ditches and pools numerous deaths from diarrhoea, fever, and diphtheria, have happened, it becomes an evident duty to provide means for the purification of such plague-spots.

The passing of cesspool matter into any of those pools can be and should be prevented. Some of the ditches should be at once either cleansed or filled up, for they have become useless for draining purposes. The surface might generally be cleared of offensive matters at a small cost, and great good might be done by using deodorizing materials in both the pools and ditches. The chief of the persons who live around the place complained of are in good circumstances. The poison which is generated affects all who go to the houses, and pervades the streets and gardens. A few pounds wisely laid out would do much good, and be, perhaps, the means of saving life in the autumn.

THE SOCIAL MOVEMENT.

MANY circumstances, unquestionably in themselves adventitious, have, together, been the means of imparting a somewhat fictitious importance to the present strike. In the very heart of the metropolis it could not but force itself into notoriety: coming, as it did, to a head, simultaneously with the collapse of an all-absorbing and a terrific continental struggle, it would naturally rush in to fill the vacuum which had been operated in the public brain. Yet still, every possible allowance of this character made, closely envisaged, there will not be found to be wanting in this movement elements which, if not judiciously and speedily neutralized, eventually may assume proportions the most prodigious, an aspect the most

alarming. In every country—that is, in every free country—the day and the hour must come (it may be sooner, it may be later) when, respectfully, yet authoritatively, the rich man will be asked of the poor for an account of his stewardship. Sir, I am no Plutarch, I am no prophet; hence will not I needlessly trouble you either with my parallels or with my misgivings. Before there was a Gracchus there was a Cornelia; and when the daughters of our land shall have numbered their Cornelias in their ranks, then, and not till then, were it reasonable to attend the accession of our British Gracchi to the scene. If the time has not yet come, most certainly it is at hand, when, as a body, the labouring classes will be prepared to dispute, inch by inch and foot by foot, the neutral ground which yet is separating the estranged hosts of labour and of capital; and sure a fairer or a likelier spot than this our little isle, the most practised, the most prophetic eye, could scarcely have pitched on, to become the battlefield of such a strife. The circumscribed character of our territory; the fecundity of its occupants; the activity, restlessness, and independence of the national temperament; the reasonableness of our postal service; facilities of communication,—all have been pointing, steadily and for years, to the arrival of an hour in which *capitalized labour* would as surely be in a position to count its *right arms by millions*, as the Bank of England its accumulated hoards. No possible end is to be served either by disguising or ignoring the altered features of the times. The evil is not to be dispelled by merely averting our eyes: it must, boldly and unflinchingly, be grappled with, and face to face. The sooner this great fact is recognized the better—that capitalized labour is stealthily, yet perceptibly, usurping to itself the honours, the privileges, the rights, and the immunities of capital. Entitled or not entitled, with reason or without reason, certain it is, that capitalized labour is openly and avowedly bent upon subduing to itself an attitude which will as effectively enable it to dictate to capital the conditions upon which it is disposed to lend its resource, as ever capital has been wont to dictate its terms to labour.

I repeat, that this strike is entirely of an exceptional and of an unprecedented character. At first sight, it may appear to be all one, to strike for an increase of pay, or for a diminution of the hours of labour. That this latter mode of putting their requirements is perfectly capable of being resolved into the former, the *Builder* has very ably shown, and I am willing to allow. But, let us look a little closer into the shape in which they have thought proper to place these claims: ponder, and weigh well, the *animus* which must have prompted them to the adoption of so unconventional a method of expressing themselves; and, that such was very far from being the inference which they had been solicitous to convey, will, very quickly, appear. Sir, these men are fighting with *double-edged tools*: they strike for wages, and they strike for time. Now, if to strike for wages is to strike for an increased means of subsistence, to strike for time is to strike for an enhanced means of enjoying that subsistence: in other words, for a *lift in the social scale*. Clearly, then, this is the bait, the decoy, which has drawn to their ranks, not merely the designing, the young, the idle, the loafing, but the really upright and respectable men—men who would have scorned, had they not been outwitted, to be parties to any such remonstrance. Clearly, there is a compromise, an understanding, between the truly worthy and the dangerous, unscrupulous, and “talking” men. The former are, as yet, comparatively untainted with the pernicious, the socialist doctrines, upon which some of the latter are, evidently, but too well made up. Now, let not these plain, simple, honest fellows, even for an hour, be unnecessarily exposed to the contaminating associations with which they are surrounded. As a body the operative classes are united, they are exasperated, they are disaffected. One false move, either on the part of the masters, or of the men, may eventually prove to have been the seed plot of a wretched, a helpless, a wasting, and a chronic dissolution of all that mighty fabric which has been at once the glory and the growth of ages. Supposing, at this time, the men to be repulsed: it will but be to return, some ten years hence, with redoubled ranks and tenfold resolution to the charge. Admitting, on the other hand, the masters to be forced to succumb: a precedent will have been established which never could, or should, be wrung from any such community, save in the very direst and the last extremity. It was little short of political suicide.

Were one disposed to be virulent, the very

many ugly features connected with this movement might fairly be enlarged upon. Let us discard and away with all such suggestions. There will be sheep, and there will be goats, in every flock. One measure must not be dealt to all. Presuming, then, the great body of the men to be really respectable parties, however entangled with, or at the mercy of, their more accomplished and absolute accomplices; supposing, further, their case to be this:—“Gentlemen, all we ask is, that we, our wives, and our children may be placed, henceforth and for evermore, in such a position as will secure to us a handsome and an adequate measure of this our common humanity. We ask no more. We have never pretended to become a family of gentlemen, nor yet of masters. What we require is this, that some rational *minimum* of position, of education, and of social ease may be guaranteed to us; and below which it shall not be in the power of capital or masters to crush us.” Now, if this be their case; if no uselessly or mental reservations be lurking behind in the great labouring bosom of the community; if they are disposed to withdraw, and to intrench themselves within the limits of a legitimate combination; then, I say, that it is one which is entitled to command from us, in reason, in conscience, in honour, in religion, and in policy, the very profoundest respect and consideration. In no other form are the demands of these men, so much as for one moment, to be tolerated. It is harsh, it is very harsh, to urge, simply because the laws of political economy on the one hand, and of religion and of philanthropy upon the other, must be allowed to exercise a several jurisdiction, that, therefore, the cry of these people is to be stifled; or that, inasmuch as their case would be quashed, if ever it were opened, in the Court of *Queen’s Bench*, it should, consequently, be denied a hearing in that of *Equity*. What is more; it is idle. The matter must equally be met, and it must be met by deeds, and not by words. Now, is it any more to the purpose to assure them that, relatively to the maid-of-all-work, the shop, the factory-boy, the seamstress, their position is even an enviable one? That alters not their case. You are only giving to us, they will retort, a reason why they should, long ago, have done what we are doing to-day; and which they very certainly would have done, had it but been within their competence.

Sir, it is not, then, to be presumed but that this “little speck” upon our political horizon, and like unto a “man’s hand,” is the precursor, as in the days of Elias, of storm, and cloud, and ruin,—of one grand and simultaneous agitation on the part of the operative classes,—as it were, a very upheaving of the whole basis of our social system. How can it be otherwise? The capital once carried by assault, with what heart will Bristol, or York, or Birmingham, betake themselves to their strongholds? The “builders” emancipated, are not they, in honour and in conscience, bound to work out the salvation of those fellow “slaves” who so nobly had stood by them in the hour of their extremity? Sooner or later these men will find their *Brightes*, their *Cobbins*, in their ranks. Organization and leaders alone are wanting to the amalgamation of a league on the part of the working classes, offensive and defensive, and the pressure of which will make itself to be experienced in the very remotest corner, nook, and cranny, of this our land. Now, if all this be so, may it not be worth while to arouse ourselves for one little moment, to shake off some of that apathy and prostration which seem so gradually to be creeping over our whole system, and letthink us of what it is that we are being called upon to commit ourselves to? Is it not, in point of fact, proposed by the labouring classes to raise, by direct taxation upon the proprietary, a sum equivalent to the one-tenth part of the gross amount which is annually expended upon labour within this realm of Britain, and which sum is to be made over to them *in time*? To instance—any article that, upon the present scale of remuneration, might be worth say 5s. or one day’s labour, would, upon the revised, be enhanced to a value of rather better than 5s. 6d.; in lieu of which extra six-pennyworth of labour, and which is to be worked off next morning, the operative is to be entitled to one hour’s repose. In other words, our pay-sheets are to be intercalated to the extent of one month in twelve,—our almanack with some fifteen sabbaths. True they would tender to us, as a consideration, the assurance that the “hour” shall never once be missed. The worth of such a boon time alone could test. In the interim, more especially in face of the very obvious precedent which at least a portion of the petitioners are seeking to establish, to attach any sort of importance to it were,

to my mind, but purely Quixotic. Were *piece-work* to be the order of the day, and, at the same time, the hours of labour to be limited, then it is not to be questioned but that, one man with another, as much work would be put out of hand in nine hours as in ten. One man will accomplish as great an amount of work in eight hours, and with as little fatigue to himself, as another will in ten. It is entirely an affair of interest, of temperament, plect, and spirit. But, to suppose that the men, out of a pure sense of honour, or of gratitude, would ever continue, however they might start, to turn out a greater amount of work per hour than they have been in the habit of doing, is perfectly preposterous; not that I am by any means prepared to say that, practically, the result might not prove to be pretty much as it is predicted, or promised by the men. Everything would necessarily depend upon the spirit with which they were actuated, and upon the terms on which they might stand with their employers. It is really surprising to see to what an extent and in how short a time the general *physique* of a man will be improved, indulged with ever so brief an interval of unworked repose, and with what redoubled energy he will tackle to the work in hand. Whatever variety of opinion may be entertained upon this head, and where it is simply question of generous and of outdoor occupation; with regard to the moment, so far as factory labour may be concerned, we cannot possibly be exposed to any sort of misapprehension. There, the loss of the hour, and of the hour's worth, must be irretrievable.

We have next to consider what would, probably, be the practical working, allowing it once to have been effected, of this great social revolution. In the first place, it would constitute a permanent *come-down* in the national circumstances, style, and tone of life. Our case, as a nation, would be precisely that of a man who, earning uninterruptedly his 1,000*l.* a year, and living up to it, were suddenly to say to himself, "Well, now, what a precious fool have I been here all my days, labouring away in this preposterous manner. I will be off this very afternoon at five, instead of six o'clock. True, it will be a hundred a year out of my pocket; *n'importe*, I will take it out in country air." It is the old story over again, of the "belly and the members." If we, as a people, are over-well to do, over-fed, or over-clad, then, in the name of common sense, let us commence this very day to take things easy. But if we, as a people, are but adequately supported, but decently clad, then must we, if this measure be carried, be prepared to cut our coat according to our cloth, and to become right creditable Romanists, fasting one day in ten. A very high authority has somewhere hinted, "That if a man will not work, neither shall he eat." In the next place, it will be so much money thrown into the fire. If I give a shilling to a beggar, even though he spend it in a pot-house, that shilling is very far from being lost to the nation. But here we have a sum amounting to no less than two shillings in the pound for every farthing which is expended in this kingdom upon labour, positively menaced to be scattered to the winds of heaven. Again, it will most certainly cause a very sensible diminution in the call for skilled and for unskilled labour, and precisely to the extent to which society will have become impoverished by the unaccustomed drain upon its resources. The prices of everything will be advanced ten per cent. that is, to those who may not be disposed to put up with an inferior quality of article. So that, upon the whole, nothing can be more evident than that the labouring classes will be very far from being benefited by these, their financial projects, at least in a pecuniary point of view, whilst the consumers (and even a labourer is a consumer) will find themselves saddled with an income-tax of no very ordinary character. Were we alone in the world, could we foresee so much as the remotest probability of any similar act of grace being extended by the foreign masters to their people, then, indeed, the concession would be shorn of many, if not all, of its more perilous and disquieting features. But, how far, or, how long, the manufacturers of this country would be enabled to cope, groaning under the weight of so very intolerable a burden, with their more privileged competitors, it would behove the men themselves right well to revolve, ere they proceeded irrevocably to press this matter home.

What may be the eventual views and aims of the men, Heaven and their own breasts alone can tell. This, however, is to be observed, that scarcely a day passes over our heads which does not bring to light some new feature in the fray. They would seem to be gradually throwing off the mask,

A certain tone of defiance; a haughty confidence to carry the point, coercively, in the teeth of reason and of justice, is now becoming the prevailing characteristic of their official proclamations and communications. It is not even obscurely hinted, that the oft-deferred labours of the coming session may be anticipated; "reform" be achieved independently of the grace or act of Parliament. Now, much of this is "talk;" yet "talk" though it be, it scarcely appears to be the kind of talk which any thoughtful man can wish to hear, in the heart of a metropolis, proceeding from the utterance of some five-and-twenty thousand labouring men, to be re-echoed and responded to throughout the length and the breadth of this great working land. Now, to all this some remedy must be found. As yet the public has but simply stood at gaze. Unhappily it is ignorant, confounded, bewildered, and altogether unable to decide betwixt statements the most irreconcilable, yet upon the verity of which each party alike is willing to stake its reputation. Faults there have, doubtless, been, and are, upon the one side, and upon the other. Assuredly this is a case, if ever there was one, to call, if not for legislative interference, at least inquiry. Capital is notoriously timid: masters may become impatient: they may cast themselves upon the public: the public may be apathetic, or in the country; so the end of it may be that the shops will be re-opened, and the public be compelled to "pay the piper." If the public is really sympathizing at heart with the men,—then, I say, let them come forward at once and state so, and thus relieve the masters from the intolerable scandal which it is being sought to cast upon them. The matter, they will allow me to assure them, is much more serious than it ever appears to have entered into their philosophy to imagine. We are all masters, one way or another, and all are menaced alike. Messrs. Trollope's case to-day may be Mr. Linde-say's to-morrow, and Messrs. Sharp & Roberts's the next; so that, virtually, "master" and "public" are one. It is pre-eminently a public, a vital, and a national question. Let, as speedily as may be, some three or four commissions be nominated; one, say for public works; another for agriculture and mines; a third for manufactures; and a fourth for what might be called the home department. Under this head would be comprised the state of our prisons and our unions; the social and the moral position of our domestic servants,—the sewing-girl, the shop-boy, &c. Each of these commissions should be armed with the very amplest prerogative; be empowered to examine upon oath, if necessary, whosoever it might be pleased to call before it. It should be their duty to inspect the streets, houses, lanes, courts, and vicinities more exclusively assigned to the location of the poor; to enter all factories, homesteads, mines; in a word, to establish, beyond the reach of equivocation or of misconception the actual condition of the labouring classes at this hour, whether in town or in country, in-doors or out of doors, above ground or below the ground. From the very nature of the case, it is impossible to conceive but that great, and crying, and insufferable wrongs must have crept into, and be pervading, the whole fabric of our social system. Let us make a clean breast of it. Is it to be presumed that a commercial world, if probed to the core, would prove to be more immaculate than a monastic? Yet what an *exposé* did the "blue books" of the days of the Reformation reveal to the light of day!

One word upon the laws of "strike." A state of strike is a state of warfare. Adequate provocation administered, and no one is disposed to deny to either masters or men the right to call the offending party out. But if men, though countrymen, will go to war, then are they in honour bound to abide, as are nations, by the laws of war. Now, are the men doing this? Most certainly they are not. Let the master builders of London and their men fight it out between them; a fair field, and no favour. But, instead of this, what do we find? The capital and resources, the moral and material countenance of every trade and every county in the empire repairing or being hastened to the scene of strife. Now, this is *not* fair play. I should just like to know what the workmen would say should the merchants, the bankers of London, come to the aid of their masters, which assuredly they have quite as good a right to do as has a "silverspoon" man to fly to the rescue of his brother mason? Nor will it do to tell us that the capitalists have neither the right nor the occasion to rally by one another's side; that, singlehanded, the men are no match for the masters, and that allies they must have. We know otherwise. If

masters can point to many a broken phalanx, to many a scattered field; you men, too, can count your slain. How many a "tall" master ye have laid low; *ay*, how low poor Havelock on the Ganges, or Raglan in the Crimea, right well ye know. The pages of the *Gazette* are strewn with your slain. The stagnant village, decayed or departed capital, transplanted trades, the seedy shipyard, the smokeless furnace, and the riven chimney,—these, all, tell their tale; these line the *via sacra* through which have marched your triumphant and your devastating hosts. If the jealousy of this country is aroused, and rightly aroused, at so much as the symptom of a leaning towards unnecessary centralization on the part of the executive, how doubly jealous should we be at the pretensions of a power, so secret, irresistible, so demoralizing, so intolerant, inquisitorial, as is that with which we are menaced? Are we not clearly following in the footprints of the philosopher, who, absorbed in the apprehension of the stellar system, stepped clean into the dyke? Who is there among us who has not at his finger's end the *pros* and the *cons* of every thing which can be said upon the European balance of power? Whilst we are all busy wondering and surmising into which scale is to be cast some wretched little *Parmesan* pennyweight, a very *imperium in imperio* is being founded, and in the heart of the metropolis. Now, this cannot be. Combination, under any circumstances whatsoever, betwixt the various trades, must at once be suppressed, and by authority of Parliament. The evil is a growing one, and may quickly have arrived at proportions which it will require no ordinary hand or skill to prune. Legitimately exercised, benefit societies might almost be the salvation of this country; the "hundreds" of a commercial world. But, legitimately exercised they most certainly have not been, nor is there, apparently, the remotest prospect of their being so.

Too much importance, it will be said, has been attached by the writer to this affair: it will all blow over, it will be compromised. I know all that. But I also know, that, whilst the public are necessarily scattered,—careless, pre-occupied, indulgent, and apathetic,—the workmen are resolute, watchful, encroaching, and united. In fine, the conclusion arrived at is this, that this strike is not entitled to call forth any immediate expression of the public sympathy,—and this is said without the slightest wish either to forejudge or to foreclose the points at issue; that it has originated at the instigation of parties altogether incompetent to be the leaders of any such movement, and whose avowed principles are dangerous, objectionable, and altogether calculated to sap the very foundations of our social system; that there are many trades from which, had, even in its present ungracious form, this character of petition been presented, it had still been received by the public with very great forbearance and compassion; and that, upon the whole, the actual social, sanitary, physical, and moral condition of the labouring classes is such as to call, as well in religion as in policy, for an early and a searching investigation on the part of the State.

A CIVIL ENGINEER.

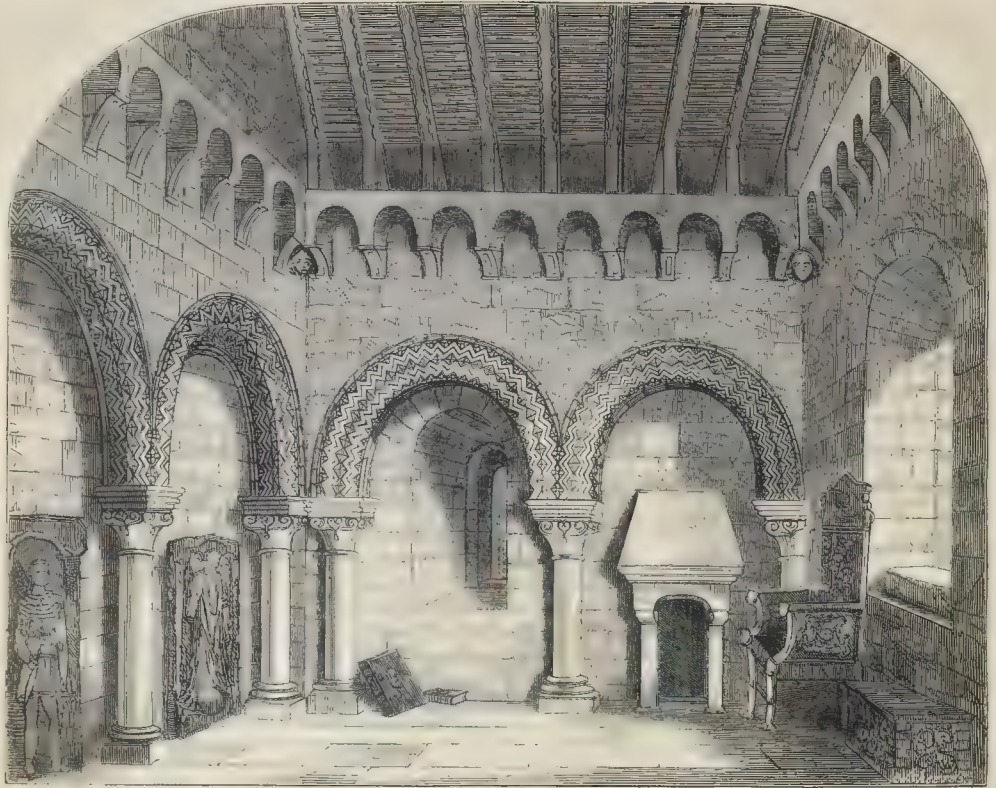
STAINED GLASS.

Doncaster.—It is the intention of Mr. E. C. Bower, of Tickhill Castle, according to the *Doncaster Gazette*, to place a stained glass window to the memory of his father in the parish church. The spot selected for this purpose is the centre window in the north aisle; and it will, therefore, be near the place where the former memorial stood in the old edifice.

ANCIENT ARCHITECTURE IN NEW-CASTLE-ON-TYNE.

The keeps of old Norman castles, interesting works of a former age, have, in most instances, been much mutilated or spoiled by injudicious restorations. The White Tower of London, decked with turrets and other comparatively modern facings, looks, so far as the exterior is concerned, a modern antiquity, and unfortunately the interior has not quite escaped. The keep of Rochester is in a ruinous state: that at Norwich still retains most of its original features: and so does the "new castle" at Newcastle-on-Tyne, now seven or eight hundred years old, a portion of which forms the subject of one of the annexed engravings.

This castle has passed through various vicissitudes. It has been converted into a brewery: a windmill has been erected on the top: it has served the purpose of a prison both for debtors

ANCIENT ARCHITECTURE IN NEWCASTLE-ON-TYNE. — *Roma in the Castle.*

and criminals: it has also been made into a cholera hospital, and used as a sort of barracks for soldiers. Fortunately the massive and yet in some parts richly decorated Norman masonry have resisted, not only the war of the elements, but also the various dangers from the hands of man; and now this venerable and picturesque building has been carefully restored, and looks, both in the interior and exterior, as if it would stand (with fair play) for a thousand years to come.

We have before mentioned the particulars of this restoration, and that the chapel, doorways, &c. under the superintendence of Mr. Dobson, were made as like as possible to their former appearance; and, now that this useful work has been done, the edifice has been placed in the care of the Newcastle Society of Antiquaries, who, in this most appropriate place, hold their meetings, give *soirées* to the town-folks, and gather together one of the most valuable collections of Roman antiquities in this country.

The little Norman apartment now engraved is situated at the top of the steep flight of steps which leads to the richly decorated entrance to the keep. This curious little example of old architecture was not long since in a ruinous and neglected condition; but now, thanks to Mr. Dobson, it has been carefully restored.

DESIGNS FOR DRINKING-FOUNTAINS.

THE Metropolitan Free-Drinking Fountain Association doubtless have, as you observe, an excellent purpose in view, that of providing cool, clear water for the thirsty million; but this "excellent purpose," I think, will be much interfered with if more judgment is not shown in their selection of designs. Independently of the question of art, I cannot help thinking the material chosen is an error. Iron may have its advantages, but its heat-conducting property must surely be an objection. Imagine one of those erections lately published by you, placed in the centre of a roadway, exposed to such a broiling sun as we have been experiencing. What would be the temperature of these iron

boxes at the time when they are most needed? They would simply be so many heated ovens. Iron may be used, certainly, to any extent as an ornament, but marble or stone seems to me the proper material for the main portion of the structure. "That which is worth doing, is worth doing well." This often-quoted saw should be recollected by the association, and instead of disfiguring the metropolis and its suburbs with these cooking apparatuses, let us have erections that will be some credit to us. The beautiful well at Antwerp is an object sought by every visitor to that city.

Without pretending to any great superiority, I venture to submit a few designs, and hope, though far from perfect, that they may be thought a step in the right direction, however small. It will be seen that in consequence of the different heights one scale could not be adhered to, but their proportions may be inferred from the height of the basins. The design on the right of the cut, and the third from it, I propose to be of freestone, with white marble basins, supported by columns of coloured granite, with caps of flowers peculiar to fresh water—waterlilies, valisneria, and others. The cups would be attached by a slight chain (not shown in these or any of the suggestions, to prevent confusion), on small ornamental iron brackets. There would be four openings for water in the shape of iron sprigs of some water-plant, or a tap, if preferred, into the basins. A hooded recess might be added at the bottom for dogs, or at the corners of the steps. By means of small stop-cocks, the two jets allowed to flow would be always those in the shade. The freestone should be indulated.

Water flowing from flowers, many will say, is defective in principle; but I am inclined to think the idea is not so absurd, considering the purpose, as leading it out of shells stuck about in all manner of impossible positions,—suggestive, moreover, of sea-water,—or as bringing the refreshing stream from the mouths of men, beasts, and fishes!

In the second design from the right, the basin is supported between two piers, from each of which the water flows as before. Four cups hang on

either side of these piers, and there are hooded troughs below for dogs, and seats at each end. The top of these, with the basins and hoods over dog-troughs would be of marble, the rest of freestone and iron-work. A side view of this design is given at the back.

The third would also be of freestone, with columns of coloured granite, red below and serpentine above, with carved caps. The water falls in one stream from the top of the hood into a marble basin to dog-troughs below on each side.

The fifth is an ornamental shaft against a wall terminating with a lamp. There are seats on either side with hooded recesses for cups, and dog-troughs below.

The fountain suggested on the left would be of white marble, and metal rest for loads. The water would pass up the central support of the basin (which would shade it from the sun), and return into a circular dog-trough round it. There are standards with hollowed receptacles for the cups. An iron hood might be placed over the whole to make it more complete. A side view of the design is shown behind.

It appears strange to me that so much stress should be laid upon the fact that each jet of water costs the large sum of 5*l.* per annum. Looking at it in a philanthropic point of view, how much drunkenness would not these drinking-fountains be the means of preventing? What would 40*l.* or 50*l.* a-year in each parish be as compared with the ultimate reduction of the poor and police-rates? It seems to me that every parish should have its drinking-fountains kept up out of its funds, and instead of increasing, they would, I am convinced, be the means of reducing the rates.

Brompton.

HENRY GODWIN.

LITHOGRAPHIC PORTRAITS.—We have received two very good specimens of the skill of Mr. Schenck, of Edinburgh, as a lithographer. One is a portrait of Lord Loughborough, and the other of Col. Sykes. Both are very effective, and, in the case of Col. Sykes, at least, the likeness is remarkable.



DESIGNS FOR DRINKING-FOUNTAINS.—MR. HENRY GODWIN, ARCHITECT.

FROM PARIS.

The gigantic timber framework, which covered the Place Vendôme on the day of the entry of the army of Italy into Paris, has already been taken down. This amphitheatre, which contained about 5,000 persons, had been erected in eight days, by 150 workmen, from the workshops of M. Balutet, one of the contractors of the new Louvre, and employed 1,800 steres or cubic metres of wood. The demolition was commenced on the 18th ult. and was completely terminated on the 20th.

The gardens of the Palais des Thermes are perfectly finished, and nothing remains to be done except a very small portion of the iron railing enclosing it on the side of the Boulevard St. Germain, near the Rue St. Jacques. Pieces of sculpture of the earliest antiquity have just been placed in the gardens, and disposed so as to harmonize completely with the severe style of the Roman ruins.

The exterior of the apse of the St. Leu Church, on the Boulevard Sébastopol, has just received two statues of St. Leu and St. Gilles. They are of ordinary size, and placed against the buttresses, at half their height from the ground.

One can count at present, on the Central Boulevards, the Place du Château, and the Place de la Bourse, about fifty chestnut-trees in full flower, though they were transplanted last spring. Botanists say, in order to explain this phenomenon, that the spring vegetation having received a check by the transplanting of the tree, the second sap, that of the month of August, forces the flower-buds of the month of May, which were arrested in their first development, to open their blossoms.

A curious lawsuit is said to be about to take place in Paris, likely to create some sensation in the antiquarian world. It is well known that Cardinal Richelieu was buried in the chapel of the Sorbonne. His tomb can be seen there still, but in one of the most terrible days of the Revolution the insurgents rifled this tomb, as they did many others, and after having taken the body of the cardinal, separated the head from the trunk, and placed it at the end of a pike. This head was afterwards picked up by an ancient deputy, who has left it to his son, who refuses to part with it except for an exorbitant sum. At present the State is inclined to institute an action against the possessor of the skull, to force him to restore the remains of the illustrious man, which are its property.

THE DEFENCES OF THE COUNTRY.

A COMMISSION has issued to inquire into the present condition and sufficiency of the fortifications existing and the works in progress, and to consider the most effectual means of rendering them complete. Mr. James Fergusson is named one of the commissioners. Our readers will remember that Mr. Fergusson published a pamphlet a few years ago, called, "The Perils of Portsmouth," wherein he condemned strongly the Government works. His appointment, therefore, would seem to show that a radical change is to be effected, and that important works may be expected.

HOW THE RAFFAELLE DRAWINGS WERE BOUGHT FOR OXFORD.

THE son of the Lord Chancellor Eldon was a prudent but a very liberal man. When the university of Oxford was desirous of obtaining possession of the remaining Raffaele and Michelangelo drawings from the late Sir Thomas Lawrence's collection, now exhibited at Brompton, a subscription to effect that object was set afoot by the university, and a sum—but a very inadequate one to purchase the drawings—was speedily obtained. Lord Eldon, hearing the state of the subscription, took occasion, at one of the university addresses to her Majesty, to say to the then Vice-Chancellor, "I have been told that the university is anxious to possess some of Lawrence's drawings, and I should be very glad to contribute 2,000*l.* if they would be of any service in securing the collection." The Vice-Chancellor thanked his lordship for his munificent offer, and informed Lord Eldon next day that, having seen Mr. Woodburn that morning, he was happy to say that gentleman was now so anxious that the drawings should be deposited at Oxford, that he was willing to reduce the price to a sum which exceeded only by 1,000*l.* the amount already subscribed, including Lord Eldon's donation. "I will go to Oxford immediately," said the gentleman alluded to, "and have no doubt I shall raise the 1,000*l.* required in a short period, for

many who have already given will subscribe a second time rather than lose these noble specimens of art." Lord Eldon paused for a few moments, and then said,—"No, you shall not go to Oxford. The clergy and fellows of colleges have already responded to the calls made upon them, and I doubt not to the utmost extent of their ability,—perhaps in some instances beyond the strict line of prudence,—for I know the generous spirit of an Oxford man. I have the money at my banker's: I will pay the 3,000*l.* and the drawings are your own."

WANTED: A LETTER-BOX FOR SWINDON.

GREAT inconvenience is constantly experienced by passengers on the Great Western Railway for want of the means of posting a letter at Swindon station. We have felt it ourselves more than once, and the station-master himself, if we mistake not, would fully confirm our assertion as to the requirement. Even if the mail train be at the station, the guard is not permitted to take a letter to town, and thus, for a letter going inland, a whole day's delay is sometimes the result. A pillar-post might be fixed on the platform without being in the way, and could be worked with trifling trouble. We speak in the name of many when we express a hope that the Post-office authorities will listen to this representation, and supply the want.

THE PROPOSED GARRISON HOSPITAL AT WOOLWICH.

It having been, at length, determined to build a garrison hospital at Woolwich, for 650 beds, an opportunity is now afforded to military architects for a practical embodiment of the principles which, after so much controversy, we are fairly entitled to call the fixed principles which should influence hospital construction. Existing structures having been tested by their practical results, and their arrangements having been tried by absolute physiological laws, we are now, after discussions which have, within recent years, come so much closer to the actual facts, in a position to say that we know all the rules which ought to guide us in respect of the great primary points of site, plan, and interior arrangements; and the only question now, as affecting any particular projected hospital, is, how these well-ascertained laws can be best applied in the special case, with regard to any special requirements that may be presented. In each new case particular circumstances must always be expected to impose particular limitations, but in the case of which we are going to speak these are very few, and can be very briefly stated.

The proposed structure is required, for the most part, for illnesses arising among men of average health and at the most healthy and robust decennial period, and, to a trifling extent only, for invalids from tropical and other colonial stations. In point of fact, it is to be for the service of a particular barrack, and it must be in close relation with that barrack. It is fortunate that there is a much greater means of choice than would be at first sight expected in a locality which is so near the metropolis, and on which building operations have, of late, so much encroached. A little inquiry may even show that, within a very small radius, there will be found such a difference of local climate as to make that an important element of consideration. Local climate depends on temperature, moisture, prevailing winds, and the impalpable entities resulting from animal and vegetable decay which these winds carry with them. This is a mere trite truism, but well worthy of being remembered on this occasion.

The present hospital, which must strike every one who enters the garrison from the railway by the bold way in which its only salient front is presented to the north-east, is, otherwise notable from the circumstance that it exhibits every conceivable defect that the most perverse ingenuity could devise. Had the able, scientific, and most excellent gentlemen who, last year, took so much pains to convince us that a thousand sick can be efficiently and economically provided for in a wilderness of little bed-chambers, but paid a visit to this, our largest military hospital, they might have saved themselves much trouble and the country much unnecessary expense.

For the proposed hospital there are four practicable sites, all more or less eligible, against all of which objections of more or less weight can be stated. Counting these objections, one by one, we may be able to approach a sound conclusion by the process of exhaustion. The sites are:—

A. The space between the Engineer Office and Nightingale-terrace.

B. The irregularly triangular space, the angles of which are formed by the Mortar Battery, the middle gate of the barrack-field, and the blue gate.

C. The Repository grounds.

D. The field on the (proper) right of the road to Charlton, between Maryon-road and the first bend in the road itself.

Site A has certain advantages. It is near the barracks. The ground is the property of the public, and is so far uncovered. The soil is gravel, but, indeed, that is the case with all. Further, there is so abrupt a dip of the ground just in rear, that the long axis of the building must of necessity run north and south, but whether or not that is an advantage must depend on the plan of construction adopted, and the manner in which it is given effect to. On the other hand, we must consider how this site stands to the river and marches. Now, the Kent marshes, as far down as to Gravesend, at least, have been so drained, cultivated, and even built upon, that, if they are ever, now-a-days, spoken of as *agru-producing*, it must be rather out of respect to a tradition than because there is much fever found within range of their influence. All question of the production of positive periodic disease may be almost dismissed. But it is a fact that in the valleys which rise in succession between the river and the ground—we are speaking of these only at certain seasons—there are dense persistent river-fogs, to which the latter is directly exposed; and it must also be remembered that when many acres about Barking-reach are converted into a vast deodorizing field for the sewage of all north London, a new and most injurious influence may be added, so that the "black North-easter" will not only, as the poet sings,—

"Come, and strong within us,
Stir the Vikings' blood,
Bracing bone and sinews,"

but it may bring with it also something neither pleasant nor health-producing.

The three other sites that we have mentioned may, as far as sanitary considerations go, be very safely bracketed together. The only marsh-ground to which they show themselves is the richly cultivated market-gardens below Greenwich. They give room for the most ample development of plan. They are so situated that a building can be made to face in any direction or in all directions. Objections other than sanitary may be stated. It is not likely that the Repository grounds will be allowed to be turned to any other purpose but the present one. The site that we have called D is not now the property of the public, but that is a difficulty that is easily overcome. It may, at first sight, seem too far away, but is not so in fact. It may be objected to site B that it takes away too much of the barrack-field, but a glance at the ground itself will show that, even after taking a greater space than is likely to be required, the front of the barracks would remain more than clear. It may be added that a handsome building on this site would not injure, but should rather add to as pretty a bit of landscape as there is near London.

Our object has been to show that with regard to this important and expensive public work, the choice of a suitable site is by no means restricted. We trust that when the plan and arrangements come to be thought of, full justice will be done to the increased knowledge which has been acquired of late years on these subjects, and which has been so ably set forth.

C.W.M.

SCULPTURE IN BATH ABBEY CHURCH.

THE recent death of John Bacon, jun., as he was called to the last, has brought out a note from Mr. C. Empson, of Bath, in which city Bacon lived several years. He died at his residence, on Batwick Hill. Mr. Empson says,—
"In the Bath Abbey, on the right of the great western entrance, there is a glorious monumental group to the memory of Herman Katcamp, who died in 1807, and was British Consul in Spain. This monument is entirely the workmanship, and is inscribed with the name, of 'John Bacon, jun.' The monument represents a beautiful female figure in pensive attitude, adorning an urn with flowers—a wreath of delicate blossoms, chiselled so exquisitely and in such bold relief that it would be difficult, perhaps impossible, to find in the whole range of sculpture anything more lovely. It has been said that the figure was modeled by the elder Bacon, and certainly it is worthy of any artist, or any period of art. The drapery is graceful, and the pose of the figure in the finest

taste. Whatever share the elder Bacon may have had in the model, we have authority for stating that this matchless garland was arranged from nature, and was entirely designed and executed by the skilful hand of our late fellow-citizen. The love of flowers throughout his artistic career was cherished by Mr. Bacon, and remained an abiding solace. Flowers proved the most acceptable of gifts to him, and his rooms always displayed the appreciation of such offerings by a tasteful arrangement.

In the Abbey church there are several monuments by each of nearly all the British sculptors who are of acknowledged fame, — Nollekens, Flaxman, Chantrey, Westmacott, and others of less note, yet far above mediocrity, besides a most interesting collection of ancient monuments, erected when artists never marked the marble with their name. There are also numbers of historical importance, although merely mural tablets. The monument representing the 'Good Samaritan,' to the memory of Jacob Rosanquet, who died in 1767, is most elaborate, and tells clearly, as all works of art should do, the impressive event, so applicable in the present case to the individual to whose memory it is dedicated, and never fails to obtain notice from strangers. Even children are pleased with this picture in stone. There is another version of the 'Good Samaritan,' in the monument of Fletcher Partis, to whose bounty we are indebted for the college which bears his name. Another *baso-relievo* also claims attention. It is to the memory of Elizabeth Grieve, by Harris, of Bath. The composition is remarkably elegant and significant, and the execution is admirable.

In closing his remarks Mr. Empson expresses regret that, without application to the custodian and payment of a fee, this series of monuments are not to be seen except at a time when it would be highly indecorous to be contemplating them, for at those times there is divine service.

It is to be hoped that the authorities will listen to this observation, and alter the arrangement. We know few churches where the shutting-out and penny-show system is pursued more offensively than in Bath Abbey Church. The half-opened decoy doors, protected by locked iron gates, the tone in which intruders are answered, and the scant civility accorded (we speak of an actual occurrence), even when the terms are fully understood, dwell strongly on our memory.

There are many other things in Bath which may be usefully studied, besides the sculpture in the Abbey Church and the Abbey Church itself. Bath, thanks to Wood and its situation, is in some respects without its parallel. It is quite right that it is represented in Parliament by an architect.

ST. JAMES'S CHURCH, GERRARD'S CROSS, BUCKS.

THE new church upon the Common at Gerrard's Cross possesses some architectural characteristics which have induced criticism. For the last twenty years almost every ecclesiastical structure has exhibited some variety of Gothic taste. For the most part imitation has been the order of the day, and the severest criticism has gone little further than to ask, — Is everything in such a work warranted by precedent? Is the ensemble chronologically correct? In the accuracy of the antiquary or the reproduced discoveries of the modern traveller, public taste has been satisfied, instead of looking to the vital principles of architectural progress, which are developed from a consideration of the wants we have to meet, the appliances and materials most accessible for meeting them, the dictates of constructive fitness, and the appreciation of the beautiful considered independently of association, education, and antiquarianism.

Impressed with the conviction that in those ages when architecture enjoyed its most vigorous life, and wielded its mightiest energies, it worked upon these principles, and never fettered itself by a thought of the past, we have viewed with satisfaction several recent examples of departure from the schoolboy track of precedent in favour of the considerations just enumerated. A bolder and more intelligent use of brick, for example, has been adopted lately for church purposes by several architects. Instead of mouldings in stone of costly carriage, an equivalent has likewise been found in brick, varied in colour, form, or mode of laying. It is beginning to be understood that light and shade, in many positions, are of more value than detailed ornamentation, and that even Pointed architecture may surrender the protection of precedent and the prestige of richness when the result shows fitness to circumstances and unity of effect.

Gerrard's Cross Church has been erected as a memorial church. The plan of the church is that of a Latin cross, lying duly east and west, with a dome rising above the intersection, and a tall tower or campanile, abutting upon the north-west extremity. The dome is flanked by four salient compartments, forming turret-like abutments to it, as it rises above the roofs. Internally, the inner angles of these turrets are occupied by four cylindrical columns, from which spring as many principal arches, carrying the dome, and eight small arches sustaining the upper parts of the turrets. In point of internal dimension, the church is 100 feet from east to west, and in the transept nearly 60 feet from north to south, the ruling width both of nave and transepts being 21 feet 6 inches, by a height of 35 feet, to the summit of the roof. Taken from the outside, the dome rises to a height of 67 feet, independently of its terminating cross and accompaniments: the tower, in the same manner, rises to a height of 80 feet, being 12 feet 9 inches square for the principal part of its height. The semi-circular arch reigns throughout. Stone is employed only where it is almost a structural necessity, brick being largely used for plinths, cornices, weatherings, and other details.

Variety of colour is obtained round the exterior by executing in white brick the most prominent surfaces of the walls, and in yellow brick the recessed portions, which are further relieved by patterns in red. Patterns in red and yellow brick are introduced upon the white surfaces in the spandrels or intervals between the window arches; and elsewhere the same system of variation is applied in brick friezes and cornices, as well as in other situations demanding an equalization of colour.

The dome, which is octagonal, clears out as it rises from the intersection by means of steps at the angles, succeeded by a "tambour" of variegated brickwork, with stone mouldings. It is covered with lead, and surmounted by a gilt cross, and each face of the octagon has, rising from its springing, a dormer window in masonry.

The four turrets, which flank and give abutment to the dome, are, in their lower portions, treated like that part of the building with which they range. As they rise above the roof, they afford a dwarf story, on which each face exhibits a small triplet window, and this stage is succeeded in each case by a lead-capped roof, gathered up into a curved outline, and crowned with a moulded apex and gilt ball.

The tower presents on each face two tall arched recesses, rising as high as the general ridge line of roof, and comprehending four tiers of eyelets, which give light to the successive stages within.

The organ is placed in the south transept. The accommodation provided is for 400 persons, nearly half the sittings being free, and all upon the ground level. The chancel is ascended by four steps, and decorated round the walls with an arcade of seven bays on the east, and three on either side. In detail the work is entirely self-coloured, except the great columns under the dome, which are overlaid with red granite scagliola, and the shafts of the chancel screen, which imitate grey granite. The roof is of the open timber construction.

The distinct object of the church, and the leading particulars of its foundation, will be found in the following transcript from an inscription on a slab, placed in one of the compartments of the north transept. It is as follows:—

"To the Glory of God
And in memory of
GEORGE ALEXANDER REID, ESQ. M.A.
Member of Parliament for Wiltshire,
Noble General in the Army,
And Colonel of Her Majesty's 11. Life Guards,
This church is erected by
ANNA MARIA and LOUISA REID,
His attached and devoted daughters,
Under the direction of
WILLIAM TITE, ESQ. M.P. F.R.S.
The valued friend of
Their lamented brother.
Consecrated August 30, A.D. MDCCCLXII."

CORK CITY WATER-WORKS.

THE machinery for raising water from the river Lee to the upper and lower reservoirs for the supply of the city of Cork has been completed, as also have the large mains communicating with the lower or 180 feet level basin, and the two turbines lately completed by M'Adam, Brothers, of Belfast, are now in constant operation. In advertising for tenders for the erection of these turbines, says the *Cork Herald*, the pipe water committee adopted the water-wheel erected on the premises by Mr. Steel some few years previously as their standard, and required that, with the same consumption of

water as a working power, each of the turbines should raise an equal quantity of water with the water-wheel, or one million gallons of water 180 feet high in twenty-four hours. The contract being thrown open for public competition, the Messrs. McAdam, of Belfast, offered, with the same consumption of water, to raise one-fifth more than the wheel, or 1,250,000 gallons 180 feet high in twenty-four hours. Their offer was accepted, and the result attained has exceeded their most sanguine expectations. The contractors calculated that, with three quarters of the sluice open, the water consumed would be equal in volume with that used by the water-wheel, the turbine would make twenty-four revolutions per minute, and raise 1,421,767 gallons of water equal to 6,320 tons weight 180 feet high in twenty-four hours, or 171,767 gallons equal to 765 tons, in excess of what they were bound to by their contract; and that they have accomplished this, any one can satisfy himself by personal inspection. We have seen the turbines working and tested them most accurately, and the result was that, with 5 feet 11 inches "head and fall," (meaning the difference between the surface level in the cistern and that in the tail-race), the speed in the turbines was 25½ revolutions per minute, or 1½ revolution more than their calculated speed. The water is said to be soft and clear, and highly suitable for domestic and manufacturing purposes, and to contain a sufficiency of preservative salts to prevent risk from conveyance through leaden pipes.

THE EXAMINATION OF STONE.

THE qualities of stone are very various; and, where durability of construction is concerned, as, for instance, in our public buildings, the selection of stone most suitable in this respect is a matter of deep importance. There doubtless are divers opinions as to the grain or texture stone should have for building purposes. Might not, therefore, the microscope be employed with advantage to guide the selection of this material, and the publication of a classified list of stones, having engraved fac-similes of their microscopic outline and appearance, prove very useful to builders and others occupied in the erection of edifices where stone is intended to be used? It may be worth while for men of science to devote their attention to this subject.

ST. MAUR.

CORRESPONDENCE AS TO VISIT OF ARCHITECTS TO THE PREMIER ON FOREIGN OFFICE.

SIR,—Your last number contains two short documents, between which I fancy I can discern a certain connection. Possibly, they may be from the same pen,* and, if so, it may not be presumptuous to guess it to be the pen of a ready speaker who needs no "deputation" to instil his thoughts into the ear of the Premier.

The first of these documents is the exordium which heads the report of the "deputation" of architects to the Premier; and the words on which I would comment are these: "In consequence of an appeal made * * * by several amateurs to Lord Palmerston, in the hope that his decision as to the rejection of any Gothic style for the new Foreign Office might be reversed."

Now, the remarks I would venture to offer on the passage are:—First, That the gentlemen described as "amateurs" (a term generally, I believe, conveying the idea of a lay practitioner in an art to which he has not been trained), were, in fact, a considerable number of members of Parliament, who waited on his lordship to remind him of the pledge he had himself exacted from the late Government, to bring the question fairly under the judgment of the assembly to which they belonged, and not to prejudice the case without the concurrence of Parliament. They did not express a hope that his decision might be reversed, inasmuch as he had never given such decision, nor, that I am aware, once alluded to the subject in Parliament since his return to office; but they went to insist upon the claims of the House of Commons, and to assure him that he was much mistaken if he thought that the views of members of that House were very generally coincident with his own, as has since been pretty clearly shown in the discussion which took place in the House.

The second document I refer to, is a letter signed "One who was present."

The object of this letter is modestly to suggest a second competition! The writer politely designates Mr. Scott's appointment a "shuffe of the

* Although an inconvenient course, we may at once say that the supposition is not correct.

ards," and quasi-officially announces that the Government "know now what they want, and the Premier is determined to have Italian architecture." I wish to remind this self-appointed exponent of the views of the Government, in the first place, that after the competition the same Premier "determined" upon putting aside all the premiated designs; secondly, that what he is pleased to call a "shuffle of the cards" was in fact the revival of the rejected claims of the competitors by a new Government and before a new tribunal, in consequence of a memorial from the Institute of British Architects, who protested against the appointment of a non-competitor to the work; thirdly, that the report of that new tribunal having limited the choice of the architect to the recipients of the three first premiums, and given reasons for viewing them as on an equality, it is hardly fair to apply to that choice the term made use of, merely because it chanced to fall upon the third instead of (as the writer probably desired) in the second prizeman; and, finally, that it seems like libelling the Premier to assert that "he is determined to have Italian," when, not only did his own Government leave the competition open as to style, but they have now pledged themselves to Parliament that the question between the styles shall remain open until Parliament themselves decide it during the next session. This pledge, and the evident fact that the present Government have recognized Mr. Scott's appointment, are sufficient to set aside at once the idea of a new competition; indeed, it is pretty certain that the House of Commons would not permit that for a moment.

As so much is now said about the *congruity* of the new buildings with their immediate neighbourhood, it will be well not to forget that the two architects who were presented to Lord Palmerston, as the "chief prizemen"* (purposely ignoring Messrs. Coe and Hoffman, who were really so for the building in question),—in designing the War-office, which was to range with the Treasury buildings,—selected for it, one of them the style of the Hôtel de Ville, of Paris, of which Mr. Efe pronounced that "to have the building of Sir Charles Barry in juxtaposition with a building very much like the Hôtel de Ville would be an incongruity, which no man of taste would put up with for a moment;" while the other of them selected the Elizabethan style! So much for the very about *congruity*!

ONE WHO HAS PEEPED BEHIND
THE SCENES.

Sir,—Without the least interest in what is going on further than a love of architecture, and having watched the progress of events, I cannot resist writing you on the subject of the new Foreign Office, because it seems to me that if both parties would view the subject dispassionately it is not easy to deny that the Italian style (for want of a better name for it), embraces the finest specimens of modern palatial and business buildings in the world; and I think it is equally certain that the Gothic embraces most of those that are admired for ecclesiastical and educational purposes. Both are equally noble; and to write about Classical being worn out and effete is simple nonsense, and must be written in support of a miserable cause, as every year sees magnificent examples erected, which add glory to our age; but, unfortunately, I must add the unpleasant truth, that they are not in this country. It is impossible not to observe that the whole educated world of taste roam about in Paris, Munich, Berlin, Vienna (not to mention innumerable towns scattered over France), in delight with all that has been done during the last 25 years and is still being done. The melancholy truth, however, is, as I have said, that we are behind the day; and it is time that the profession, through you, should drop vague generalities, and begin to point out something tangible that should be done to take advantage of the present great opportunity of making London the most attractive city in the world, which could easily be done; and allow me to add that from your position with the profession it can only be done through your Journal. This, with regard to the object of my writing, and before explaining my proposal, I will only add,—that, so far as the Foreign Office is concerned, the architects of Great Britain can have no sympathy with any one save Messrs. Coe & Hoffman (whose names I have never heard before, and I know nothing of them whatever), and every one (I name nobody) since mentioned in connection with it has been

so at the expense of these gentlemen. With every sympathy, then, for these two gentlemen, but for no one else, I would suggest that the profession recommend something like the following to Lord Palmerston:—

1st. A competition for sketches on a small scale (nothing more is required) of a general block plan for laying out the whole district, as I feel sure the premiated design, even if carried fully out, would do nothing for London. To prevent too many designs, perhaps this competition might be confined to those who formerly sent in designs.

2nd. After the above decision has been arrived at, the successful design should be engraved, and then a competition for the Foreign Office, with the site fixed and the style fixed, would be attended with success; as every one vying with each other in the same style would be certain to produce what would give additional glory to our age.

Edinburgh.

A SOLUTION OF THE FOREIGN OFFICE DIFFICULTY.

Sir,—The present Government, having decided that the style of the architecture of the Foreign Office shall be Italian, has asked Mr. Gilbert Scott to make the design. Mr. Scott has hitherto distinguished himself for an exclusive faith in forms called Gothic, repudiating, indeed, all other styles. How, then, can he fulfil his task? I think I am only giving expression to what is passing in many minds at the present time, by saying that Mr. Scott might find an honourable solution of the difficulty, by adapting to the circumstances of the case, the noble designs which Inigo Jones made, two centuries ago, for palatial buildings, which were intended to occupy almost the very spot at Whitehall, now to be built upon.

Architects of the present day who design Italian buildings could hardly hope to excel Inigo Jones's designs, which are, indeed, based upon Italian thoughts; but have an Anglo-Italian feeling. And every one would be content to see Mr. Scott falling back upon our great architect in his present dilemma.

The grand design which Inigo Jones proposed may be seen with all its details, in Kent's folio of the designs of Inigo Jones, and in the "Vitruvius Britannicus," works which may be consulted in many libraries, but certainly at the British Museum and the Art Library at South Kensington.

South Kensington.

MR. LINDSAY AND SIR ARCHIBALD ALISON ON STRIKES, &c.

MR. W. S. LINDSAY, M.P. while being presented by the non-electors at North Shields with a rosewood cabinet of books, said,—He was going to speak a few words to them in plain, honest language; but it was for their good. In former times there were laws which made combinations for the advance of wages illegal; and many restrictions were put upon the masters in regard to the number of apprentices they took, &c. even to the dictation of the manner in which these apprentices should be fed. Happily all these laws had been swept away, as being unjust and injurious to the people themselves. They had now a right to combine amongst themselves, but it was very questionable to him whether it was for their interest to do so. They lost in the long run. Say, for instance, that they struck three months to get an advance from 5s. to 5s. 6d.: even if they carried their point, they had lost 5s. a day for three months, and entailed an immense amount of suffering upon themselves and families. They had also done an injury to the State, because they were unproductive labourers; they were consumers, but they were not lending anything towards the creation of the wealth of the nation. He would now come to the next point. While they had a perfect right to say they would not take a certain wage per day, they had no right to say to their neighbour that he should not do so if he thought proper, because that was a species of tyranny, by not allowing him to exercise his own free will. What was the effect of these combinations? There were rules laid down, which said that a certain man should only work a certain number of hours. Take, for instance, the masons' trade which was now on strike in London. They said a man should only use his trowel with one hand; and the effect of this was that the skilled, and industrious, and energetic man was put on the same footing as the indolent man, whose wages were the same as the other. This was an unnatural state of things; and the surprise

to him was, that the intelligent and energetic man should become a party to these combinations, which attempted to "regulate" the price of labour. While he said this, he begged them to bear in mind that he considered it equally impolitic and erroneous for the masters to combine. Mr. Lindsay then entered into some details as to stupid and self-injurious restrictions by coalmasters, in the sale, supply, and price of coals, and as to tyrannical and unjust restrictions imposed by workmen in London on others in Aberdeen; and strenuously advised his hearers to be bound by no law which attempted to fetter their energy, and to ask in the market for that price which their labour was worth, but also to ask to have free scope for their industry and energy, so that they might reap the reward. By doing so they were not only benefitting themselves, but the nation.

The currency is forming a subject of discourse and exhortation in connection with the questions of prices, wages, and strikes. In a discourse on the currency delivered by Sir Archibald Alison in the City Hall, Glasgow, to an audience including many of the working classes, Sir Archibald declared the currency to be emphatically the question of the people. The present laws on which the currency is based he characterized as most iniquitous and injurious to the nation, and tending to accumulate the capital of the country in the hands of the money-lenders. The law which compelled the Bank of England to draw in and diminish its paper circulation as gold went out of the country was the very reverse of what ought to be. When gold diminished, paper currency ought to be increased under proper restrictions and regulations. Sir Robert Peel, therefore, was utterly and grievously wrong in supposing and obtaining such a law as that under which the currency is regulated. Free trade with other countries must be followed by an alteration in the currency laws, otherwise there would be a continual recurrence of disorders like that of 1848. Sir R. Peel had fixed upon 14,000,000*l.* as the amount beyond which the bank should not issue notes exceeding the gold in her coffers; but considering the increase of population he would fix it at 21,000,000*l.* When gold sank below—say 15,000,000*l.* inconvertible notes bearing interest ought to be issued, and taken up when the gold came in again. Sir Archibald's discourse bore more directly on the questions of prices and wages and their rise and fall than on strikes; but in conclusion he made some remarks on these also, in course of which he said, "The great error generally committed is to think that wages can be prevented from falling in time of adversity. When the produce came down, an employer would very likely not be able to afford the same rate of wages, or he certainly would do so rather than part with old lands. As an instance of the disadvantage to the workmen themselves of a strike, he might mention that the strike of 1842 cost them in wages 500,000*l.*, while in 1857 the strike in Lanarkshire, Ayrshire, and Stirlingshire, had cost 700,000*l.*; and the total loss of the strikes of 1825, 1838, 1847, and 1857, had been 5,000,000*l.* He was not speaking to them in the interest of the masters. He cared nothing about the masters; but it was entirely for their own sake; and he would advise them, if they combined at all, to combine—not against their masters but—against the law which compelled their masters to reduce their wages."

A Birmingham tract writer and circulator on the currency, signing himself "Edmund Taunton," insists that the present monetary system not only regulates indirectly the wages of labour, but is, in fact, the cause of the present strike and lock-out in the building trade. It is, he maintains, "a foul conspiracy against labour;" and the error, both of masters and men, he says, "has been that they quarrelled before studying the cause, and this quarrel will increase the cause; and union between them is the surest mode of destroying the cause,—viz. the false balance of our money to our labour." If that be the case, the sooner the workmen in the first place retreat from their false position, and the masters in the next place rescind their proceedings,—instigated as they were by the prior movement of the men,—and both betake themselves, in union and in quiet, to a discussion of this great cause of evil to both, the better for all parties. But this is not the time to enter usefully into the merits of questions connected with the currency, and we do not think Mr. Taunton's mode of bringing them under notice is likely to afford much enlightenment to those so little versant with such subjects as are the building trades workmen, or even their masters.

* As "leading prizemen" is the expression in our report, though the words quoted by our correspondent did appear in reports elsewhere.

MONUMENTAL.

Two mural monuments are about being forwarded from Mr. Richardson's studio for erection in Bristol and Winchester Cathedrals; one for the former to the deceased officers and men of the 2nd battalion Military Train, which served so efficiently as light cavalry in the late Indian rebellion. It is of large size, in white marble: the regimental details are in bold relief above the inscription, which contains the names of the deceased; and the whole is mounted on a polished slab of black marble, relieved at the four angles with enamelled brasses of the actions, in red, blue, and white,—India, Lucknow, Alumbagh, Azinghur, and Jugdespore. That for Winchester is an adaptation after Pugin of a Decorated Gothic quatrefoil, with centre panel, surrounded by a net-work foliation of oak leaves and acorns, springing from a cross centre. The inscription, which is illuminated, records the names of Colonel Charles Chester, late Adjutant-General of the Bengal army, who was killed in action while marching to the relief of Delhi, and is erected by his brother officers and friends in India. It is carved out of a solid block of Carrara marble, and measures 3 feet 4 inches in diameter. It is to be placed in the companion recess, in the south transept, to that which received the same sculptor's Crimean memorial to the 7th Royal Fusiliers; an angel holding a mortuary scroll with the regimental colours displayed above, and beneath the inscription the following lines:—

"Not once or twice in this our Island story,
The path of duty was the way to glory."

A PROPOSAL AS TO BLACKFRIARS BRIDGE.

THE recent fall of the bridge at Walton-on-Thames (happily unattended with loss of life), leads us to think of what may happen one day to Blackfriars-bridge, and to notice a scheme by Mr. H. G. Coombs, of Union-street, Borough, for preventing such an occurrence there, which is now claiming the attention of the Bridge Committee.

There can be no question that the matter demands very serious attention, for the condition of the bridge is deplorable in the extreme; and, looking on the face of matters, it certainly seems strange that it should be allowed to remain in its present state.

Mr. Coombs's plan consists in removing the three central arches of the bridge, and substituting a cast-iron elliptical arch of 285 feet span, with a radius of curvature at the crown of 500 feet. The arch is composed of eight ribs, six of which are of cast-iron, and the two external ones are of wrought, to provide against risk of fracture by collision: the carriage-way is supported on cast-iron corrugated plates, and the footways are on a lighter construction.

The idea is a bold one, and deserves consideration. At any rate, it is quite time that some stir was made in the matter; and we shall thank Mr. Coombs or any other gentleman who may be instrumental in leading to a remedy of what is admitted to be a serious evil.

THE PAYMENT OF CONTRACTORS BY DEBENTURES.

NEW BRUNSWICK AND CANADA RAILWAY AND LAND COMPANY, LIMITED.

In reference to certain printed observations by the directors of this company to the shareholders, in which it is proposed to complete the line by employing contractors to be paid by debentures, one of the directors, Mr. J. C. Conybeare, of Coulsden Grange, Croydon, writes us to the following effect:—"I consider it imperative on me to prevent contractors and other capitalists being injured by the wrongful issue which the directors are attempting of debentures, to the amount of between 100,000*l.* and 200,000*l.* I say the 'wrongful issue.' In support of that expression, I distinctly state that Messrs. J. Bullar & Lloyd, two counsel of great eminence in such matters, have advised that the advertisements put forth by the directors, offering the said debentures to the public, contain 'misleading' statements, and that the issue of such debentures is inconsistent with the rights of parties who might successfully restrain the New Brunswick Company from making such issue, by an injunction bill in Chancery. It is a breach of the contract with the A shareholders, embodied in the articles of association of the company; and is, therefore, a fraud and grievous injury to every A shareholder. On a former occasion I called the attention of the public to the jesuitical ingenuity of one statement contained in the advertisements offering

debentures, namely, that 'the company is in possession of 70,000 acres of land, immediately adjoining the railway.' That statement is, no doubt, literally true, but is sadly deceptive, inasmuch as all the company's lands will (as Mr. J. Bullar, the parliamentary conveyancer, distinctly advised the directors fifteen months since) revert to the provincial government in August, 1860, if the line be not completed by that time, a condition which there seems no hope of performing, as the company has already expended all its available capital and more, and has not, therefore, a sixpence wherewith to make the remaining twenty-five miles of railway. The advertisement in question concludes with an express statement, that 'no debentures have yet been issued.' This statement is untrue: I have foretold on conclusive evidence that some debentures were issued early in 1858, though they have been kept out of all the half-yearly balance-sheets subsequently published by the company. If contractors or other capitalists choose to take the company's debentures after this warning, they are welcome to do so.—*Liberal animam meam.* I should have written this letter ten days earlier, but have been prevented by illness."

A GREAT WESTERN EXCURSION TRIP.

STR.—A train being advertised for the West of England a few days since, starting at the very reasonable hour of 2.30 p.m., I was induced to invest twice 7*s.* in the adventure, trusting to reach Yeovil about 7, or 7.50 at latest.

All went well on the main line; but after leaving Chippenham heavy delays occurred at the various stations—Trowbridge, Westbury, Bruton, &c. Frome was reached at 9.15, long after the last train for Shepton Mallet had started, to the grief and dismay of many fair travellers, and we reached Yeovil at 10.30!!! At what time the train arrived at Weymouth I cannot say, but some time on Sunday morning. Hastening into the not very agreeable town, through groups of drunken rustics, we reached, before the crowded omnibus, our place of rest, as we concluded, but here animated nature forbade repose. Pierce waraged till daylight, and then we presented very much the appearance of chicken-pox patients. Hotels ought to be subjected to supervision.

The noble church at Yeovil (the lantern of the west) is undergoing judicious repairs. The town-hall is an imposing pile. We visited with infinite pleasure the fine old farm-buildings at Preston, the picturesque group of mansions, chapel with stone bell-cot, and Priest's houses at Brimpton (Lady Fane's); the garden front later—supposed to be by Inigo Jones, being a counterpart of the Whitehall Chamber—and the house containing some admirable paintings and ancient tapestry and furniture, all in excellent condition. Thence we pushed on to Montacute, where village, hall, and abbey are all of stone, dating from 1500 to James I. & II.—not later, the gardens and hall being scarcely inferior to Lord Bath's, at Long-leat. Then, again, Stoke Church—Norman, Early English, and even Saxon, curiously interwoven—small, but most interesting. The view from Ham hill, on our return at sunset, was not the least interesting of a thorough archaeological trip thoroughly enjoyed. The following day Sherborne Minster was visited. The excellent vicar was busy in pointing out the leading points of interest to some friends, and an unusually gay and attractive marriage had just come off. A railway is being completed which will render visitors independent of the very wretched vehicles, yclept country omnibuses. The return to London was far more agreeable and rapid than the journey out.

SCULPTOR.

THE CANYNGE SOCIETY FOR THE RESTORATION OF ST. MARY'S REDCLIFFE.

THE anniversary meeting of this society was held at Bristol on the 23rd ult. The Bishop of Oxford preached an eloquent sermon in the beautiful old church, which was crowded in every part. Rather more than 100*l.* was collected after the sermon.

At the meeting held in the evening the committee reported that at the present time the Canynge Society consists of 122 members, contributing 17*l.* 4*s.* and that donations had been received amounting to 242*l.* 13*s.* 11*d.* being a total of 416*l.* 17*s.* 11*d.* It was further announced that about 100*l.* had been given to the treasurer during the week, making the whole result for the year, with the collection at the church, about 670*l.* A report from the Commercial Auxiliary Association in aid of the restoration said:—"As an association in

aid it was commenced with the intention of selecting for completion some very marked and distinct portion of the fabric. To carry out this object the south porch appeared more suitable than any other part of the building, and, with the approval of the Restoration Committee, it was commenced in the summer of 1857, and is now near completion.

As a work of ornamental taste and skill the south porch has been more costly than many other portions of the church would have been, and the committee regret to report that they have been obliged temporarily to suspend the work for want of funds. It is estimated that about 1300*l.* more will be required to complete it, and to pay off the balance of last quarterly account due to the chairman of the Restoration Committee.

The number of donors and annual subscribers is 1,052; the total sum received to the present time is 753*l.* 16*s.* 11*d.*; the expenses have been 19*l.* 12*s.*, and 672*l.* 4*s.* 7*d.* has been paid towards the restoration of the south porch: 44*l.* 4*s.* a portion of the receipts, have been given for special objects, viz. the restoration of some pillars in the church, and towards the stone work of a stained glass window in the Lady Chapel, to receive the 'William Hall' memorial."

Lord Stratford de Redcliffe directed his name to be put down as a subscriber of 5*l.* per annum for five years.

The mayor, the past mayor, the bishop, Canon Madan, Mr. Richard King, Mr. Powell, and other well-known citizens took part in the proceedings. Alderman Proctor, the originator of the society, was unfortunately kept away by ill health.

The Freemasons of the district are about to select a portion of the church for special restoration. Several stained glass windows are promised, and wait only for funds to prepare the stonework to receive them.

THE VICTORIA BRIDGE OVER THE ST. LAWRENCE.

As the completion of the great bridge across the river St. Lawrence is approaching, some particulars have been circulated.

The primary necessity of a new country is a road. The greatest boon, therefore, that could be conferred upon Canada, was the construction of a railroad; and those who devised and carried out the project of the Grand Trunk Railway, connecting the different dependencies of the British Crown in North America, and passing through the richest parts of both Upper and Lower Canada for a distance of 1,200 miles, must be regarded as great benefactors to the country.

Yet, grand as was the conception of the Canadian Railway, its original design was imperfect. It was not a road through the province alone which Canada required. It needed, imperatively, a facile communication between the north and south shores of the St. Lawrence; railway connection, free from the inconveniences of transshipment, with the United States; and, above all, direct communication with the seaboard of the Atlantic. The Victoria Bridge supplies this.

One of the difficulties to be overcome in designing the bridge was "the forces exerted by the breaking up of the ice." Mr. Stephenson decided on the adoption of stone piers, to carry the tubes at wide intervals, each pier having, on the side opposite to the course of the stream, large cutwaters of solid stonework, inclined against the current, up which, as it were, the ice would creep and break itself to pieces by its own weight and pressure.

The superstructure is an elongated repetition of the design for the Britannia Bridge. The Victoria Bridge is indeed remarkable for its extreme length, but its several tubes are not so long as those of the Britannia Bridge, and are only otherwise distinguishable inasmuch as they are the longest tubes yet constructed without the adaptation of the cellular principle. These tubes in all their details, were designed, plate by plate, and rivet by rivet, in the office of Mr. Stephenson, and were calculated for every strength and strain, and prepared and arranged in all their details, under the sole superintendence and supervision of his relative, Mr. George Robert Stephenson.

Great credit is given to Mr. Alex. M. Ross, who was appointed the resident engineer to superintend the bridge works in Canada, and who has especially devoted himself to the erection of the masonry; to Mr. Hodges, who, from the commencement, has most efficiently and honourably represented Messrs. Peto, Betts, and Brassey, the contractors, and on whom has devolved the principal responsibility in the execution of the works.

well as to Mr. Stockman, who, in the early part of the present year, went to Canada, accompanied by Mr. S. P. Bidder, to make a full inspection and detailed report upon the works.

It was the reliance of the company on Mr. Stephenson's experience and professional reputation that induced them to commence the bridge; and, having pledged that experience and reputation, Mr. Stephenson, who would have been responsible for failure, is entitled to the full meed of honour and of fame which must hereafter attach to the successful execution of so great a work.

PROVINCIAL NEWS.

Oxford.—Preparations for the reception of the Prince of Wales in October next are progressing; and, by the commencement of term, Frewen Hall, the intended residence of his Royal Highness, will have undergone thorough renovation at the hands of the Court Decorator. Mr. Wyatt, of St. Giles's, the builder engaged to carry out the design of an architect.

Bromyard.—A Working Man's Institute and Temperance Hall is about to be erected; but, in addition, the building is intended for holding the magistrates' meetings, county courts, &c. The principal building will be about 65 feet long by 14 feet wide, and will be of brick with stone dressings. Mr. Flewett, of Worcester, C.E. designed the building.

Leeds.—The top stone of the lantern of the tower of the Leeds Town-hall was recently placed in position by Mr. Cuthbert Brodric, the architect. Underneath the stone was deposited an engraved plate stating the date on which the foundation-stone of the Town-hall was laid, mentioning the names of the persons who had been laid, and recording some of the other facts in connection with the building. The tower is 225 feet high, and is nearly completed. A gilded iron ball and finial, about three yards in length, were to be placed on top of the tower.

Halifax.—The first-class swimming-bath at the new baths, in Park-road, has been opened to the public. The building has been erected from plans designed by Mr. Stevenson, the borough engineer. The baths are divided, as usual, into two classes, first and second. The accommodation for the former consists of the swimming-bath for males. Its dimensions are 53 feet long by 12 feet 9 inches broad. The bath-room is lighted by a glass roof, supported by cast-iron girders. There are seventeen dressing-boxes. A waiting-room, 18 feet by 11 feet, is attached. The bath is paved with smoothed flag-stones. Upstairs, over the dressing-boxes of the plunge-bath, are twelve slipper-baths, which have also a waiting-room attached. The baths for females are all on the ground-floor. A corridor leads to the plunge-bath, which is 23 feet 10½ inches long, by 12 feet 6 inches wide, with five dressing-boxes and waiting-rooms. There are twelve slipper-baths attached. The second-class compartment comprises a swimming-bath, 57 feet long by 18 feet 9 inches broad, and is fitted up in a similar style to the first-class one. There are sixteen dressing-boxes, and, upstairs, eleven slipper-baths. A waiting-room is attached to each set of baths. The exterior of the building is designed in the Italian style of architecture, the façade (170 feet long) being taken up with blank windows and pilasters, with iron caps. At the entrance-door are two pillars, with ionic capitals. The centre is two stories in height, and contains the residence of the bath-keeper. Over the surmounting cornice are groups of carved vases. The contractors for the erection have been Messrs. William Helm and Co. and for the two large boilers, piping, and slipper baths, Messrs. Mellings and Co. of Rainhill, Manchester. The contract by the latter firm was for 1,145*l.* and the total cost will be about 5,000*l.*

CHURCH-BUILDING NEWS.

Holbeach.—*Gedney.*—(Lincolnshire).—The churches of Holbeach and Gedney are to have the chancels restored by the Ecclesiastical Commissioners. As a considerable sum of money is to be expended upon them, it is to be hoped the parish will carry out the restoration of the other portions in the same manner. The works are being done by Mr. Wm. Brown, of Lynn, under the direction of Mr. E. Christian, architect.

Kirk Hallam.—(Derbyshire).—The nave of the church of Kirk Hallam has been restored. The works, which are completed, comprise the erection of two new buttresses, a new porch, under-buttresses, and laying solid new foundations to the south

wall, two windows completely new, and the others restored, a new tower arch, floor paved with tiles, the old pews or "sleeping boxes" removed and replaced with convenient open seats, warming apparatus, and restoration of the ancient font. The whole of the expense incurred for the above, with a new pulpit and other fittings, will amount to about 400*l.* of which sum 270*l.* are already subscribed, leaving a deficiency of 130*l.* The chancel will shortly be restored; Mr. Francis Newdigate and Lieut.-Col. Newdigate undertaking the entire cost.

Preston.—St. Luke's Church, Ribblesdale-lane, Preston, has been consecrated. The church, says the *Preston Guardian*, is built of Longridge stone, in the Early English style of Gothic architecture, and of a plain but substantial character. It is designed so as to accommodate 802 persons, viz. 605 upon the ground-floor, and 197 in a gallery (principally for children) at the end of the church, opposite the chancel. Three-fourths of the sittings will be free. The body of the church is 79 feet 3 inches long, by 50 feet 7 inches wide, and consists of a nave and two aisles. The chancel is 23 feet 9 inches long, by 19 feet 6 inches wide, and is a continuation of the nave, having a lower roof. The tower and spire stand at one corner of the building, on the south side, near Bleasdale-street, and the vestry abuts against the chancel, on the same side. The entrance from Fletcher-road is by a porch on the north side of the church, and that from St. Luke's-place is through the tower. The side of the main building next Fletcher-road is divided into six bays: each bay contains coupled lancet windows (except the second bay from Bleasdale-street, which is occupied by a gabled porch), and plain canopied buttresses are placed between each bay. The clerestory is pierced with six circular quatre-foiled windows. The south side next St. Luke's-place is similar, except that there will be no porch, and that the tower occupies the bay nearest Bleasdale-street. The tower and gabled end of the nave face Bleasdale-street: the former is 137 feet 3 inches in height, has pinnacles at each angle, and is crowned with a plain spire, having two tiers of spire lights, with lancet windows, and an arcade of pointed arches ornament the two upper stages of the tower. Coupled lancet windows, with shafts or pillars on each side, and a wheel or circular window above, fill up the end of the nave against the tower. A triple lancet window, with shafts, forms the principal feature at the end of the chancel. The roofs are slated, and of a steep pitch. The works have been carried out under the superintendence of Mr. T. W. Carter, of Preston, architect. The contractors for the mason's work were Messrs. Ellis and Hinchliffe, of Manchester; for the joiner's work, Mr. T. Ladyman; plastering, Mr. J. E. Jones; slating, Mr. G. Pye; smith's work, Mr. J. Topping; plumbing, painting, and glazing, Mr. J. Dewhurst; all of Preston. Mr. E. H. Shollard, of Manchester, architect, furnished the plans. The estimated cost of the building and land was 4,733*l.*, viz. site, 100*l.*; architect and clerk of the works, 240*l.*; enclosing, 200*l.*; warming and lighting, 100*l.*; and allowance for extras, 60*l.* In the first estimate the cost of the erection of the tower and spire (650*l.*) was not included.

THE CARPENTERS' STRIKE AT DUBLIN.

THE smaller firms, it appears, have, in many cases, acceded to the rise in wages demanded by the men, who, in these circumstances, therefore, now receive 30*s.* a week instead of 28*s.*; and the more skilled carpenters and plasterers, 32*s.*; and for the country, all of them 2*s.* 6*d.* extra. The leading firms, however, such as Messrs. Cockburn, Moyers, G. Farrell, J. Butler, and some others, still resist the demand. The operative bricklayers, masons, and other branches of the building trade have made no movement; but if the carpenters succeed, of course all the others will follow their example. The employers alluded to are resolved to hold out, and the result is that several hundred men are still unemployed.

The carpenters have published a manifesto, headed by the two following quotations:—

"There is too much suffering and too much perplexity in the condition of the working classes: it is a disgrace as well as a danger to our civilization: it is absolutely necessary to render their condition less hard and less precarious."—The late Sir Robert Peel to M. Guizot.

"It was not correct to say that no strike had ever been successful; but those only had been successful which had taken place during a rising market. No doubt a workman was entitled to ask for an increase of his wages if the produce of his labour was rising."—Sir A. Alison, in a lecture delivered in the City Hall, Glasgow, March 18, 1859.

It must be recollected that at Dublin there is a

rising market, although in London the case is so very different that the workmen's strike was actually based on a falling market and a surplus of unemployed hands, for whose behoof the strikers declared that their own demand of ten hours' wages for nine hours' work was made. Sir A. Alison's remarks, therefore, while they countenance the state of matters in Dublin, totally disavow the London movement. On the contrary, it comes under the head of what, in his other remarks on the same occasion, he calls "a most frightful mistake." We do not exactly agree with Sir Archibald, by the way, however, in his use of the word "entitled." A workman is "entitled" to demand or "ask" whatever he may choose for his labour, whether during a "rising market" or during a falling one; but whether he be acting discreetly or foolishly, properly or criminally, in making such a demand during a falling market is another question: "justifiable," perhaps, or "right," was the term which Sir Archibald probably intended to use.

In their manifesto, the Dublin carpenters state that many of their employers have acceded to their demand, and that 450 men out of 530 are now "at work at the increased rate." They then appeal to the public opinion whether they were "wrong in taking a step to advance their social position," and thus continue their manifesto:—

"Look at the builders. When a few years at their vocation they have ranges of houses, a luxurious home, private vehicles, and, more than all this, the consolation that in their old age the comforts they enjoyed through life cannot be abridged. Then turn to the working-man. What has he, or what has he to look forward to? A poor wretch, subject to every whim and caprice of those over him—an unfortunate toiler, whose precarious existence depends as much upon a looked-for obsequiousness as upon the talents that God has given him. What has he to look for in his old age, brought on prematurely by anxiety and incessant toil? As it approaches, his wages are reduced, his chances of employment are lessened, his comforts, small as they were through life, disappear, and he ultimately finds himself burdened to his friends or an inmate of a poorhouse. Are these men to be blamed for endeavouring, at a season like this, when the labour market is up, to procure for it as much as possible?"

We would, in conclusion, wish to contradict a report prevalent through the city, that we intend to look for a diminution of the hours of labour, and other advantages, which would be injurious to the master builders. Such is not the fact.

The stucco plasterers, who are also out on strike for a similar advance of 2*s.* weekly, have not issued any statement, but it is assumed they rely upon the case of the carpenters.

ENGINEERING COMPETITIONS.

SIR,—In January last, there appeared, in the *Builder*, an advertisement from the Local Board of Health, of Bicester, asking for tenders for a survey of the town. Thinking it a *bona fide* advertisement, I went to Bicester in the beginning of February, for the purpose of seeing the district to be surveyed, in order that I might be able to tender. What was my astonishment to hear, after I got there, that there was no Local Board of Health formed! Several others were galled into visiting the place for similar purposes. My object in drawing attention to this, simply, to have the opinion of some of your readers, whether those who suffered from this hoax could not compel the person who advertised, and signed himself "Clerk," to pay for loss of time and expenses.

Another case, very similar to the above, was advertised in the *Builder* about the same time. The Denbigh Local Board offered a premium for the best plan, or scheme, for supplying the town with water. I went to the place, made a survey, an elaborate set of plans, and lengthened report. Since then, I have heard nothing of the Denbigh scheme: my drawings are not returned, as I expressly warned them to be in my report, and the town clerk refuses to answer any letter on the subject.

The above are the only competitions I ever tried for, and I have fully made up my mind that they shall be the last.

CIVIL ENGINEER.

PRINTERS AND THE STRIKE.

SIR,—Will you kindly allow me, in simple justice to the printing profession, to correct an erroneous statement which appeared in the letter of "Ami et Amateur," in your last week's number of the *Builder*, viz. "Some years since, when a strike took place amongst the compositors and other people in the printing establishments, what did Messrs. Hansard do? * * * Being themselves in the business, they sent out into the neighbourhood, obtained a large number of persons who were willing to learn, taught them the work, and in a fortnight (!) had their establishment in full play as if nothing had happened?"

To what strike "Ami et Amateur" refers, myself and fellow-workmen are at a loss to know; but it would appear that this wise generation of neighbours did not "play" to advantage, knowing that Messrs. Hansard's house ranks as one of the first in the profession, and is recognized by the London Composite-printers' Society as being one of the "fairest" houses in London. It is strange what has become of the "large number of persons" who so magically put Messrs. Hansard's establishment in "full play" in a "fortnight!" And it is strange how "Ami et Amateur," by any stretch of his imagination, can conceive it possible that "persons from the neighbourhood," however willing they might be to learn, could so suddenly get put "up" in the printing business, when, as is well known, masters are often very reluctant in employing young men who have just finished an apprenticeship of seven years to the printing business, not deeming them sufficiently "up" or experienced. I have not trespassed on your valuable space with any view of defending the men

in the present strike, which I consider unjust; and I agree with your correspondent, that "no art, and not much education, is necessary, either for carrying hods of mortar or of bricks;" and that probably "a slight amount of tuition would turn men at present running 'wild' in our streets into 'decent' plasterers;" (1) but I do not think it "probable that this may be the case in the present strike;" and I imagine it would take some very clever "Ami et Amateur" to produce either compositors or carpenters, from the present race of "men running wild" in our streets, in a fortnight.

A COMPOSITOR WHO WAS NOT "TAUGHT" IN SEVEN YEARS.

Books Received.

The Mechanical Inventor's Guide; Illustrated by Ten Plates of Diagrams. By James Wyllson, Architect and Civil Engineer. Simpkin, Marshall, and Co. London. 1859.

MANY readers of the *Builder* will recollect Mr. Wyllson as a correspondent of old standing. His present little work comprises a series of familiar treatises on the laws of motion, the mechanical powers, and drums, belts, toothed-wheels, and a collection of nearly 300 mechanical movements, most of them illustrated in the appended plates; the whole constituting a practical introduction to the principles and components of machinery. The plates, with their descriptive letterpress, are especially interesting and curious, and the whole work is ably written.

Guide to the Ruins of the Roman City of Uriconium, at Worcester, near Shrewsbury. By Thomas Wright, esq. M.A. F.S.A. Shrewsbury: J. O. Sandford. London: Kent & Co. Paternoster-row. 1859.

THE subject of this sketch has already been treated of in an original article and otherwise in our columns. Uriconium is fortunate in having an archaeologist like Mr. Wright to bring it into modern notice. Interesting as its remains undoubtedly are, however, there is not so much actually discovered yet as many may suppose, and much remains to be done ere the ancient "city" of Uriconium makes its general reappearance.

One of the most notable circumstances, by the way, connected with the excavations, as we have already noticed, was the discovery of nineteen skulls, eleven of them more or less deformed. They had evidently belonged to bodies decently buried, in ground within some of the ancient walls which have been uncovered. So many deformed skulls formed a remarkable collection, not easily accounted for; but may not the ancient Romans have here had an asylum, or something like it, for deformed persons, idiots, &c.? Again: medicinal stamps have been discovered, and it is notable that these related to eye salves, while it is a fact that one peculiar deformity in the skulls found must have affected the eye, one of which must have had an unnatural or tumour-like prominence, arising from an obliquity of osseous formation, which may have been peculiar to, or connected with, some ancient disease of the eye. The Romans in the west, moreover, are well known to have been peculiarly liable to some sort of disease of the eye; and Mr. Wright alludes to this fact in reference to the eye-salve, though not to the skulls. Is not some such explanation more feasible than that such a strange peculiarity should have been characteristic of the normal conformation of the skull of some unknown and unheard of tribe or race of human beings, as has been suggested? Perhaps after all, however, the shape of the skull has changed by pressure of the earth since burial, though Mr. Wright thinks not.

Miscellaneous.

THE LINCOLN AND NORTHAMPTON ARCHITECTURAL SOCIETIES.—A joint meeting of the Lincoln Diocesan and Northamptonshire Architectural Societies is to be held at Stamford on the 6th and 7th instant. On the 6th the opening meeting will be held at the Town Hall, at two o'clock, when a paper will be read,—"An Architectural Review and Prospect for 1859"—by the Rev. T. James, Hon. Canon of Peterborough. The churches and other points of interest in the town, including Mr. Blashfield's Terra Cotta Works, will afterwards be visited. In the evening, a temporary museum will be opened at the Assembly Rooms, and a meeting held, at which a paper will be read, "On Picturesque Building," by the Rev. G. A. Poole, Vicar of Welford, and (if time permits) observations made upon the contents of the museum.

ROWNEY'S DRAWING MODELS.—Messrs. Rowney & Co. of Percy-street, have published a box of drawing models to facilitate the acquisition of the power of sketching from nature. It comprises a pump, door and steps, hen-coop, a stile, a garden-roller, and other objects, exceedingly well made for the purpose, and capable of combination. For children and beginners, these will be found useful and attractive.

MADAME HENRIETTE BROWNE'S PICTURES.—A very charming artist is the lady who paints under this name (English we should hope, at any rate in her connections). Some specimens of her art have been exhibited at the French Gallery, in Pall-mall, particularly one called "The Sisters of Mercy," which calls for warm commendation. The picture in question is an admirable and touching work. An attenuated sick child lies on the knees of the younger of two Sisters of Mercy, while the elder is mixing the medicine with elaborate care. The child rests on a blanket most cleverly wrought. The story is well told; the expression admirable.

LAMBETH ASSOCIATION FOR IMPROVING THE DWELLINGS OF THE LABOURING CLASSES.—The annual meeting of the members of this association was held on Friday, at the old Vestry-hall, Church-street, Lambeth; the Rev. Mr. Gregory, of St. Mary's, in the chair. The report stated that all the tenements of the association, situate at Salamanca-road, Vauxhall, were at present let to respectable tenants. Each tenement comprised two rooms, with the use of a washhouse, and the rent received for it was 3s. 6d. per week. The gross amount of rent received out of the whole property, consisting of thirty-two distinct tenements, was 93l. 19s. 6d. and after the payment of rates, taxes, and other charges attaching to the property and its management, there remained as net profit a balance of 19l. 6s. 8d. a sum not quite sufficient to meet pre-existing deficiencies. Owing to the exertions of the committee of management the assessment of the estate had been reduced to the extent of 56l. a reduction which would yearly release it from a large amount of taxation.

NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.—We have already mentioned that the third annual meeting of this association will be held in Bradford, on Monday, the 10th of October, and five following days. The fourth department considers the various questions relating to the public health. Papers may be classed under the following heads:—1. The Condition of the Public Health. The subjects, chiefly statistical, referred to this head, will comprise everything that relates to the past or present state of the public health. Papers descriptive of the general state of health of particular districts, or of the same districts at different periods, or under different circumstances, and of persons engaged in the several industrial occupations, as well as of the special diseases to which particular localities, and modes of life or of occupation, are most liable, will be classed under this division. 2. The Causes which modify the Public Health. To this head will be referred papers that treat of the causes which, whether favourably or injuriously, affect the public health, and the mode in which these causes act. This division will thus include the consideration of the production of disease by external causes to which persons, either individually or collectively, are liable to be exposed, such as climate, soil, locality, habitation, diet, occupation, station, or habit. 3. The Improvement of the Public Health. Communications that suggest plans for the amendment of the public health, whether these have reference to legislative enactments, and the machinery requisite for the administration of sanitary law; or to the removal of causes of disease by engineering or other mechanical appliances; or to the prevention of disease by hygienic precautions, will be classed under this head. 4. Social and Economical Aspects of Public Health. This division will include inquiry into the effect of diminished death-rates upon the population—the effect of sanitary improvement on the national wealth, the diminution of pauperism, and the general moral and physical elevation of the community. In the fifth department are considered the various questions relating to Social Economics. Papers may treat of,—1. Conditions of Industrial Success. Accumulation and employment of capital; freedom of trade; apprenticeship system; trades unions; the effects of science and machinery on industrial success; the factory system, &c. 2. Condition of the Working Classes. Habitation; domestic economy; provident habits; recreation, &c. 3. Charity and Relief. The effects of charitable endowments; workhouse relief and management, &c.

BACK AND FRONT.—An Irish newscarrier, who sometimes courts the muses, has given his idea of the church building taste of the people of America in the following lines, which contain more truth than poetry:—

"They puts up a front to the street,
Like old Westminster Abbey,
But thin they thinks to chate the Lord,
And builds the back part shabby."

YANKEE.

TENDERS.

For a Warehouse, 215, Upper Thames-street, on land the property of the Dyers' Company, for Messrs. Hunt & Tanner. Mr. E. C. Robins, architect. Quantities supplied by Mr. T. M. Rickman:—

Hayward	£3,100	0	0
Newman and Mann	2,865	0	0
Heath	2,730	0	0
Brass	2,589	0	0
Jackson & Shaw	2,575	0	0
Browne and Robinson	2,574	0	0
Ennor	2,565	0	0
Wood	2,549	0	0
Batterbury (accepted)	2,459	0	0

For alterations, &c. at No. 17, Argyll-street, Regent-street. Mr. F. Hering, architect. Quantities supplied:—

Bealey	£1,600	0	0
J. Abbott & Son	1,252	0	0
W. Burt	1,246	0	0
Bywaters	1,148	0	0
Matthews	999	0	0

For pulling down and re-building No. 50, Bishopsgate-street Without, for Mr. William Mann. Mr. J. T. Lepard, architect. Quantities supplied by Mr. Joseph Laverdure:—

Patman & Fotheringham	£1,486	0	0
Pritchard and Co.	1,452	0	0
Green and Son	1,365	0	0
Hedges	1,346	0	0
Brake	1,315	0	0
R. Lawrence	1,299	0	0
Carter	1,289	0	0
Thompson	1,276	0	0
Batterbury	1,189	0	0

For Twickenham Church, Mr. G. M. Hills, architect:—

Jacktest, Twickenham	£1,683	0	0
Carter, do.	1,650	0	0
Pope, do.	1,400	0	0
Nicholson & Son, London	1,260	0	0
Holmes, Twickenham (accepted)	1,208	0	0
Patman & Fotheringham, London	1,198	0	0

For a new School, at Roxton, Bedfordshire:—

Jackson, St. Neots	£784	0	0
Widdman & Co. St. Neots	389	14	0
King, Bedford	580	0	0
Thompson & Co. Derby	570	0	0
Cunvin, Bedford	557	0	0

For House and Shop, No. 99, High-street, Poplar (inclusive of fittings). Mr. Joley, architect. Quantities not supplied:—

Willsmer	£789	10	0
Piper & Son	755	6	0
Salt	683	0	0
Blackburn	588	0	0
Wood and Son	525	0	0

For alterations of the Union Workhouse, Isleworth, Middlesex. Mr. Jas. Holmes, architect. Quantities not supplied:—

Easton	£236	0	0
Atlee	225	0	0
Jacklin	223	0	0
Brunden	193	0	0
Burchett	178	0	0
Porter	176	0	0
Crow	174	0	0
Beauchamp	171	10	0
Batty	160	0	0
Neas (accepted)	152	12	0
Harvey	149	14	0

Accepted for the erection of new Cemetery Chapel Entrance Gates, Lodge, and Boundary Walls, for the Township of Farley, near Leeds. Mr. William Hill, architect, Leeds:—

Smith, for boundary walls	£378	0	0
Holdsorth and Co. for masons' work of chapel, entrance-gates, and lodge	405	0	0
Boyes, for carpenters and joiners' work	129	10	0
Shevill, for slaters' work	43	10	0
Story, for plumbers' and glaziers' work	34	12	0
Branton and Son, for plasterers' work	16	0	0
Leach, for painters' work	5	0	0
Total	£1,012	10	0

TUDELA AND BILBAO RAILWAY.

Tenders have been delivered at the Company's Offices, Bilbao, for 91 kilometres or 57 miles of this railway, commencing at Aruncuaga, to near Muranda. The respective tenders were as follows:—

Messrs. Waring, Brothers, & Co.	£963,894	0	0
Messrs. Coulthard	906,114	0	0
Messrs. Cheigne	811,737	0	0
Messrs. Brassey	791,459	0	0
Messrs. Trousdale	785,794	0	0

Messrs. Brassey's tender was accepted, only three directors voting for Trousdale, and twelve for Brassey. The first section of 16 kilometres was let to Messrs. Brassey in September, 1858, and the works are now making great progress, and the first 24 miles are to be opened about the end of 1860. The engineer-in-chief is Mr. Chas. Vignoles, F.R.S. &c.

The Builder.

VOL. XVII.—No. 866.

Labour and Capital. Councils of Con- ciliation.

HE masters, it has been announced, will open their shops on Monday next, to workmen who will make the declaration. Thus, the non-society men may be relieved from the position in which they were placed by the lock-out, and by the asserted inability of the masters to distinguish between those who were connected with the societies and those who were not. In the present spirit of the society men, however, it would be idle to conclude that the dispute will be at an end with this week. Their funds have

increased. The question is, whether the action which he opposes to the tendency, assuming it exist, is calculated to forward the objects, and to solve the difficulty which we ourselves feel. That question, we say, has a broader ground, even than that which is involved in the present strike; for, we do not believe that the workmen in the building trades have made out any marked case of a grievance of theirs: they do not work as long hours as the workmen in some other trades; those who are employed receive good wages; and with ordinary prudence, their condition would contrast with that of other members of the community. Still, they have raised a question which should be met. The poverty amongst the working classes, and the difficulty which there is for many of them of gaining employment, are facts deserving of far greater attention than they have received. Are the ends to be attained by combination,—assuming the individual to be powerless,—that is eventually by strikes?

Now, it is important to say, that arguments deserving attention have been adduced,—after the issue of the Preston strike and lock-out in 1854, and the case of the amalgamated engineers, two years earlier,—in favour of strikes, and with full recognition of the disasters which they had occasioned. The Preston strike lasted thirty-five or thirty-six weeks; and in a report at midsummer 1854, by Messrs. Richardson & Whitworth, secretaries of the associated masters, we find these figures:—

Loss of the employers	165,000 <i>l</i> .
" operatives on strike...	250,000 <i>l</i> .
" contributions to Work-	
ing Peoples' Strike	
Fund	97,000 <i>l</i> .
" shopkeepers, &c.	21,250 <i>l</i> .

Total loss to the community..... 533,250*l*.

Yet Mr. Thomas Winters, Secretary of the National Association of United Trades for the Protection of Industry, who calculated the loss at Preston, exclusive of other towns, at even more, or 520,000*l*. to the workmen alone, had to tell the Committee on Masters and Operatives (Equitable Councils of Conciliation), in 1856, that although "in the end it is an injury to the workmen themselves, as well as to the masters, to have a strike," it is in some cases a "necessary evil." Another witness before the Committee, Mr. G. L. Molesworth, a civil engineer, said that strikes were "almost necessary to keep the master in check, and that they are indirectly useful to other trades," as well as that the threat of a strike against an individual master often served the workmen, and that in this way probability of strikes had eventually the effect of preventing wages getting lower,—allowing that the evils suffered when the strike was of any lengthened duration were greater than any good which the particular workmen afterwards attained, and that masters refused orders in consequence of strikes. Mr. J. Andrews, reasoning from one or two cases, did "not know any instance of a protracted strike in which the masters have not gone to the wall;" whilst another witness, Mr. W. E. Forster, held that strikes were "always an evil, for this reason,—that the master very rarely allows a strike to take place, except when the law of supply and demand would put the seller of labour in the wrong" &c.; & though the fear of strikes, he says, if the question be looked at solely as one of bargain, may be "the means by which the labourer often gets his increase of wages;" but, the relation of limited partnership, quite as much, being that which exists, "if one succeeds, the other must, first or last, succeed; if one fails, still more certainly the other must, first or last, be without daily support;" he, therefore, looked for the prevention of strikes to increased attention to the partnership relation. Mr. C. McDonald, a silk-weaver, at Macclesfield, spoke to the distress caused by strikes, but held that there was no possibility of preventing that "desperate remedy," so long as it was in the power of a single employer to throw the whole trade into confusion by offering a reduction. As we saw long ago, in arguing the question of architects' competitions, there is one essential element of the present question universally left out of consideration by

the political economist, namely, ability of the consumer to judge of quality of the article. The political economist always infers this ability, or assumes the identity of quality as granted; but it is clear that there is by his omission, great defect in the reasoning about "supply and demand" and protection by natural order of things for the workman. There is not that check upon undue reduction of wages that is supposed. The tendency at least is to require for the same pay, more work, without reference to the quality; which is the same thing as the employment of a smaller number of men in proportion to general quantity of building work in progress. The consumer is willing to be deceived, and is humoured through the competition between masters. To that end, wages are lowered; so that either the individual workman suffers, or he must get through a larger quantity of work—the number of the unemployed being not reduced until the increased demand, the result of cheaper supply, begins to exert its influence on the wages and the employment. Assume, in the case of a building, the efficacy of an architect's supervision, and then truly the doctrine of political economy may be irrefutable.

What, however, are the prospects for the workman, afforded by a strike, admitting our belief, as we have done, that it has been the most readily available mode of re-adjusting the value of labour? Labour and capital quarrel only to injure each the other; but they cannot be viewed in present circumstances except as under a chronic state of war. It may serve our purpose if we can trace the progress of the combat *à l'outrance*, or to the issue, however protracted by truces, over a period of years. The normal relations of capitalist and labourer are those of simple barter. The capitalist, however, by holding back, has an advantage over the position of the labourer, who cannot easily wait, or transfer his commodity to a better market. The workmen therefore combine to help one another, and gain the time for negotiation. They have now the advantage on their side—provided only that the employer be really in a position to reduce his profits, or otherwise to afford the rate asked for the labour. If not, it simply happens, after the due number of lessons, that the masters imitate the workmen, and themselves combine. Suppose each organization to be perfect,—though there are those who believe that the workmen have advantages in this respect over the masters, and greater aptness,—and the position of the belligerents or negotiators becomes what it was at first. The men in the particular trade then seek assistance from those in other trades, and from philanthropists, well or ill-judging; and if that succeeds, the masters must still wait, unless they are men who yield to pressure without reference to reason and their own estimates of returns. But, if they need help they will get it, even to the end of importing labour from a foreign market. In any event what may be the respective positions? The case has become one to be settled either by physical force, by relative power of endurance, or by extinction of the trade and means of subsistence altogether. Let the former kind of appeal be tried, and the attempt is put down by the force of the public. It is creditable to the working-classes, that they have abandoned, for the most part, the idea of gaining their end by such means. Could they, by possibility, get into the position of so dictating to capital, it would instantly follow that there would be nothing left for them to dictate to. They have, however, not abandoned the effort to interfere with the freedom of others not in their combination, who are disposed to accept terms offered. Here, again, they will be met by the force of the country. But in any case, supposing that they prevail, they will have to be prepared for the loss of the benefit of that which is now the moving power and means of their support, namely, capital. The public will continue to demand houses; but the previous agent for the supply of these commodities will be occupied in other operations of supply, or in foreign countries where the normal conditions of barter are retained.

slightly increased; they persistently denounce the "document,"—it might almost seem without having read it; they have received the countenance of members of Parliament whose motives, or whose understanding, may be questioned; and judging from the unjustifiable manner of their interference with proceedings of the Anti-Strike Committee, at the Adelaide Gallery, and reports of mal-treatment of non-society men, which have reached us, they are verging to a common issue of previous strikers where reason has failed. Now, the shortening the hours of labour, if that be possible, and directly advantageous; amelioration of the condition of those who are at present unemployed; acquisition of advantages which machinery should afford; protection from whatever evils attend upon competition; and the general elevation of the workman, form one question, and one the importance of which, although the difficulty, we have constantly recognized. What belongs to the present strike and lock-out is a more restricted, and is, indeed, a different question. In the former point of view, not only are workmen right in their aspirations, but their claims are such as have been grievously neglected, and which it depends upon themselves to maintain. Their case is, that without some kind of action on their part, they would be reduced lower and lower; that the tendency is for profits on capital to be increased,—and, so far as these are affected by machinery, by means which tend still further to reduce their class ere they have had opportunity to participate in the public gain; that this capital does not fructify to their advantage in the immediate manner supposed by many, called political economists,—partly because much of the capital is expended out of the country; and that in fine, the contrast between the positions of the capitalist and the labourer is fraught with danger, nationally or in the social state. Each individual looks at the matter as it affects himself, and though he knows that new employment has been given, by the railways for instance, to a multitude of individuals, and that his son may become better off than himself, he feels in the position only that his handicraft has been superseded,—that he is too old to learn another, or too poor to emigrate; and that, although he can purchase food and even luxury at a lower rate, the difficulty of previously earning the rate is to him



Therefore, as we have shown in a former article, the workman's question is whether capital as used, is of any value to him in providing him with whatever it affords, without deduction of such risk and anxiety as are involved in direct dealing with the public, or whether he, the workman, is ready to supply the public through the agency of co-operation, and under difficulties probably greater than those which exist for the negotiator with ordinary capital. Now, we do not think the building-artizans are prepared for either of the inevitable issues of their present course of action, alternatives of which the choice may be forced upon them this year, or in the sequel some uncertain number of years hence. They are too sensible not to value what they have got; and, probably they know that Co-operative Associations are no new idea, and that in spite of aid from sincere well-wishers of the labouring classes, there have been sufficient failures to warn against immediate and exclusive dependence upon such means. The Pimlico Builders' Association, for instance, has, we are told, come to an untimely end. And it must not be forgotten that there are arguments for the direction of one head—arguments which will have peculiar weight with those who understand what is the nature of the building trade. Could such direction, and the negotiation with the public, be maintained by a multitude of co-partners, each of very limited attainments and experience, or the trust be entirely delegated to one or more *gérants*, or managers, having neither the same risk nor the same emoluments as are those of the present holder of capital? Would the public with equal readiness make contracts with the one as with the other? The best friends of the working classes will tell them that they have much to learn, and much to eradicate from their habits and character,—that which is incidental to themselves, and that which is common to them and others in this state of society,—ere they can make for themselves, in the event of their defeat of the present agency of capital, the position which they have now. It is the duty of our own public office to maintain what is for the public interest, and not the special interest of the class of employers: nevertheless we are looking to the interest of the operative classes, because these are the great body of the community. These must be the source of the national wealth and greatness. All that has been said of the importance belonging to the condition of such elements in the wealth and greatness, finds with us acquiescence, as it has had support of argument and illustration. But there are no "rights of labour." There are the rights of property and of citizenship, and the rights which the law allows to every one in this country. The question for each, capitalist or labourer, can be only what is for self-interest, with perfect freedom of action to others. The real rights in the question, are the right to bargain, and the right to the protection of police. This is the only sort of equality which the world in which we live allows. These truths recognized and acted upon, it is impossible that combination either of masters or of men, antagonistic, can secure the objects of permanently depressing or elevating wages, exclusive of other influences. The combination merely disturbs the stream and operation of what is the real influence—public demand. It makes application of a test: it can do no more. Pursue the matter, in the way in which above we have sketched the progress of combination and strife, to the issue in the present strike. Every individual, master or man, being perfectly free to make the best bargain; and, being protected from intimidation, work will be resumed with only this result of the strike,—that there will have been great loss during the contest to the parties in it and to the public. No object of the strike will be gained; because the masters, copying the tactics on the two previous occasions, and those of the men, have advanced the subject a stage beyond its position at the date when strikes necessary may have been, as called, successful. Many of the unemployed will emigrate, as is said to have been a result of the strike of the engineers; but this, if necessary after either strike, was necessary before it, and is only shown to have been the thing wanting to correct the evil without the strike, and prevent the loss, especially on the workmen engaged in it. For that loss, any more than for what may result from importation of fresh hands, or new machinery, it will not be fair to tax the masters.

In the workman, however, to be subject, irrespective of this loss, to depression of his wages, not by the natural operation of public demand, but through either competition or combination of masters? We do not see that he need

assume that there is necessarily any such termination to his efforts. He must help himself, but not in any way which is manifestly wrong in judgment. He must neither attempt intimidation, nor interfere with rights of those who do not choose to join his union. The means which are open to him require labour and time: had, however, the like attention been given to those means which have been to the perfecting a system of combination, directed too much against capital, the protection would have been found.

We have seen from the evidence taken in 1856, by Mr. Mackinnon's Committee, that one of the chief aids to eventual extinction of the strife between masters and workmen,—like as between nations,—would be the growth of the sense of the real interest as co-partners. It is claimed for the Trades' Unions that they have prevented strikes; and it was in evidence, that in numerous instances, where there had been direct communication between the master and his men, or other means of conciliation, the points were amicably arranged and a strike avoided. The tendency towards strikes was increased by having a foreman as a medium; but almost any mode of arbitrament by parties disinterested, it seemed to be thought, would suffice to prevent strikes in the majority of cases; and some of the witnesses thought that a representative of the Government might be delegated in each case, with the best effect. The feeling has grown up on the one side, that a master is always one disposed to screw enormous profit out of labour, regardless of a duty to his fellow-man; and on the other side, that workmen are ready to resort to dictation and violence for their objects. We must say that we were hardly surprised that there should have been some resentment shown, at the dismissal on the part of Messrs. Trollope, of a workman who had presented a petition—while it was supposed that he really was dismissed for the reasons afterwards given: for, it has been the habit of masters too much to regard men in the like position, as troublesome fellows. In this particular case, however, that was distinctly denied. As regards negotiations with their men, masters must be held responsible for injustices done by their foremen: and they should prevent such injustice, or misunderstanding as in the present case, by choosing themselves to meet their men on matters such as wages and hours of work. Workmen must put some one forward as spokesman, and such an individual is not necessarily to be viewed as an agitator: he is made one, however, by being dismissed. The system which has been adopted in the carpet trade in the North of England, and in the Potteries, as well as in some other instances, has led to the best results; and in the Appendix to the Report of 1856, the fact as to the Carpet Manufacturers' Association is testified to by masters and men. The workmen say that for some years the annual meetings of masters and delegates took place, but that latterly the good temper produced by the steady working of the system had rendered the attendances of the men infrequent: they had such confidence that justice would be done, that it was seldom the delegates thought it necessary to attend.

However opinions differed in 1856, as to the constitution of equitable councils,—whether these should be directly on the model of the *Conseils des Prud'hommes* in France and Belgium, or otherwise; there seems to have been every testimony to the value of some medium, even in regard to the most fertile source of strikes—wages; though in regard to these at least, it was not contemplated to give any power of final decision. Indeed, there is at present an Act (5 George IV. c. 96) which permits disputes relating to past contracts between masters and workmen to be settled summarily by a justice of the peace, or referees by him appointed,—though from certain reasons it has been nearly inoperative, and is little known. The same Act permits disputes to be settled by arbitration. Consequent upon the Report, a Bill "To Establish equitable Councils of Conciliation between Masters and Operatives" was prepared and brought in at the close of the last session of Parliament, by Mr. Mackinnon, Mr. Slaney, and Mr. Ingham, and which was intended to amend and extend the provisions of the Act of George IV.

From all evidence, it appears that a better understanding might be cultivated between masters and workmen—through which their labour might be exerted towards that increase of capital which is the true source of their own employment. But there is more to be said.

Whilst we have spoken of the difficulties which there are, to be met in the establishment of co-operative societies, it must not be supposed that

such societies could not be formed. In the supply of articles of food and clothing, there are associations which return very large profits, and afford means of investment for savings. We have now before us a most interesting account of the association called the Rochdale Equitable Pioneers, which every working-man and every friend of the class might with great benefit read.* We will not examine one of the author's points, regarding "the co-operative idea, as opposed to the competitive," though we have shown that we apprehend there is something wanting to the poor, of the benefits asserted to be the result of competition. We will merely express belief that such associations, in the words of one who has written on "Investments of the Working Classes," Mr. W. E. Greg, "may be one of the most powerful of the many influences now at work for the education of the lower orders of the people; that wisdom will be gained, if not wealth, from the industry, self-control, and mutual forbearance needed to conduct them." These gains, we have reason to see, must have accrued at Rochdale, coupled with an amount of profit which had gone on increasing in a period of thirteen years from an amount of 32*l.* 17*s.* 6*d.* in the year, to one of 5,470*l.* 6*s.* 8*d.* The last quarterly report, dated 21st June, 1859, shows a cash account of upwards of 30,000*l.*; assets of upwards of 22,700*l.*; and a balance of profit of 2,525*l.* 16*s.* 10*d.* on the quarter, out of which a dividend was paid to those who had made purchases, of 2*s.* 4*d.* in the pound. Yet, this Association commenced from a small collection of twopences. We have here, then, an indication of means which our friends of the working classes must require for the elevation of their condition. Mr. Slaney, to whom these classes are indebted for the Co-operative Societies Act, and for so many other services, said before the committee of 1856, what is very pertinent to the present subject, that masters and men differing on account of profit and wages would be much aided by knowing what wages were paid by any company of limited liability in which workmen had some shares; because the latter would see, that if wages were kept higher than the prices would afford, the profit of their shares must fall. The men "would by trial be convinced that profits are often not so high as they thought; and the masters, on the other hand, finding, if they insisted on very high profits, that small capitalists combined might compete with them, would be content themselves with moderate profits and steady prices. By these means disputes would be lessened, and the public would be better served."—"If in each great manufacture, as cotton, woollen, or silk, one factory was carried on by limited liability, and the workmen had some shares in it, its account of wages paid and profits divided would be of great use to guide others, and assist in removing prejudices and correcting mistakes, perhaps on the part both of employers and workmen."

Cannot the workmen in the building trades, utilize some of these hints, and acquire independence without the doubtful alternative of strikes? But the end to be attained, like every accumulation of capital, will want like every contrivance, and some denial of indulgence and amusements. It was by such denial that the capitalist attained what the workmen feel to be power, and that which we believe to be the power to do great social good. Let him recollect that each one in this world, has duties as well as rights.

ON THE GENERAL THEORY OF PROPORTION IN ARCHITECTURAL DESIGN AND ITS EXEMPLIFICATION IN DETAIL IN THE PARTHENON.†

I WILL now go over the scheme of proportions by which I conceive the various divisions of the elevation to have been decided, and afterwards give the comparative tabulation of the dimensions as they come out by calculation, and as set down in the measurements of Mr. Penrose.

The proportion of the height of the front to the breadth of the top step is as 9:14. The breadth of the front is to the length of the temple as 4:9, as we have seen; and it is a necessary consequence of these proportions that the height of the front should compare with the length of the temple as 2:7. These therefore are the grand circumscribing proportions of the structure: the only inaccuracy is that the measured height of the front is half an inch higher than it should be by calculation; but the actual length of

* "Self-help by the People: History of Co-operation in Rochdale." By George Jacob Holyoake. Third edition.
† By Mr. Watkiss Lloyd. See page 571, ante.

the temple compares with the height thus enhanced in the ratio 2 : 7, with absolute exactness within $\frac{1}{1000}$ of a foot.

2 : 65·1815 :: 7 : 228·147 Cf. measured 228·141.

It will be observed that the ratios, 2 : 7, 4 : 9, and 9 : 14, have respectively the common difference between their terms, of 5. In the recited order the terms approach towards equality, and the series may be extended by insertion of intermediate and other ratios having the same characteristic thus : 1 : 6, 2 : 7, 3 : 8, 4 : 9, 5 : 10, &c.

It will be found that several of these ratios are repeated with marked intention in the Parthenon, while none whatever are employed in the design that do not belong to the series either directly or as equivalents (as 2 : 3 = 10 : 15, &c.). The height of the front thus obtained is divided between height of column and of pediment in the ratio 10 : 9, which gives 34·288 for the column, to compare with 34·250, the height of the angle column. From the complementary height we have now to deduct a dimension equal to half the height of the column, viz. 17·125, to be distributed between the stylobate and the entablature, so that the height of the column shall be just two-thirds of the height from the level of the peribolus to the base of the antefixal ornaments on flank. The remainder of the complementary height belongs to the pediment, and proves just equal to the breadth of the ordinary columniation.

It will be observed, that it still remains to complete the horizontal division of the front by apportionment of dimension between entablature and stylobate. The problem may be stated to make such an apportionment that the rectilinear proportion adopted shall also bring about or be consistent with a certain number of very important rectangular proportions. On general considerations it may be easily determined to give a larger share of the dimensions at command to the entablature; but the question still remains, how much more? How much more, precisely, and why? In effect the apportionment was made by giving 6 parts in height to the stylobate as against 11 to the entablature: the ratio 6 : 11, it will be observed, belongs to the series already specified.

The rectangular proportions conciliated by such division are these: the joint height of column and entablature comes out exactly commensurable with the hundred attic feet in the breadth of front in the ratio 4 : 9, which is the proportion of the plan; consequently, as the length of the top step is to its breadth so is that breadth to the joint height of column and entablature.

Again, by the dimensions assigned by calculation, the breadth of the top step is commensurable with the joint height of column, entablature, and pediment as 12 : 7 nearly: by the addition—by the adjusting increment—of half an inch to the pediment the comparison becomes exact, with the further advantage of making the height of the pediment equal to one columniation.

Let us now compare the tabulated dimensions as furnished by Mr. Penrose's independent and scrupulous measurements which are accessible to all, and as deducible by the process I have set forth:—

Hecatompedon.	Calculated.	Measured.
101·341 : 14 : 9 : 65·1478 full height of front		65·185
30·859 : 9 : 10 : 34·238 height of angle column.		34·253
34·288 : 10 : 9 : 30·859 complement of front		30·932

65·147 full height as calculated above.

Ht. of Column.		
34·288 : 2 : 1 : 17·144 stylobate + entablature on flank		17·150
11·093 : 11 : 6 : 6·050 height of stylobate		6·058
6·050 : 6 : 11 : 11·093 entablature on flank		
	i. e. + returned fillet of cymatium	11·092
17·143 joint stylobate and entablature as above.		

From calculated height of front	65·147
Deduct calculated entablature	11·093
" " column	34·288
" " stylobate	6·050
Remainder for pediment	13·716
Add height of fillet of cymatium only included in entablature on flank	0·099
Add increment, as referred to above	0·037
	14·052

Height of pediment 14·073	
Entablature on front, calculated	10·794
Column, calculated	34·288
Height from pavement to apex, calculated	59·134

101·341 : 12 : 7 :	
Cf. measured	59·116
101·341 : p : 4 : 45·0436 column + entablature on front, cf. measured	45·046

With respect to the vertical division of the entablature, the frieze and architrave are made equal within a minute difference which is given

in favour of the architrave, and scarcely amounts to $\frac{1}{8}$ of an inch. The thickness of the horizontal cornice on front is derived from the height of the frieze by the ratio 4 : 9. It is therefore easy to divide the height of the entablature by 22, and assign 4 parts to cornice and 9 each to architrave and frieze.

Frieze 4·417 : 9 : 4 : 1·963 Cf. measured 1·951.

The perpendicular thickness of the raking cornice, with its cymatium at the apex of the pediment, is derived from the horizontal cornice, to which it is proportioned as 4 : 3.

I may add here, that the height of the capital is derived from the diameter of the angle column by the ratio 4 : 9 viz. 9 : 4 :: 6·378 : 2·634 to compare with measured 2·883. Again, the breadth of the triglyph is derived by the same ratio from the lower diameter of the ordinary column, viz. 9 : 4 :: 6·250 : 2·777. Compare measured 2·766.

The height of the stylobate is determined by the proportions of the elevation, but it still remains to assign a projection for its lowest step. The projection assigned, the joint breadth of the three lower steps is 4·997, which brings the following relations into harmony:—

5 : 4 : diam. of ord. col. 6·250 : 5·00 (meas. 4·997).

Thus, the intercolumn is to diameter as diameter is to projection of steps,—

6 : 5 : 6·058 ht. of stylob. : 5·048 proj. (4·997).

We cannot too highly appreciate the force and vigour that the composition gains by the feeling with which the artist has tempered the horizontality of the steps by the predominance of verticality in their profile. It is by the thickness of the stylobate exceeding its projection in the ratio of 6 : 5, while that of the column falls below the breadth of its correlative, the intercolumn, in the ratio 4 : 5, that it acquires an expression of superior solidity corresponding to its function of bearing the columns, though in reality of smaller dimension than a diameter. The effect is assisted and enhanced by the steepness of the top step, the proper stylobate, as compared with those below. The height assigned to it seems to have been derived from the diameter of the angle column by the normal ratio 2 : 7, viz.—

7 : 2 : 6·378 diam. of angle col. : 1·822 height of top step (1·814 measured).

We must now proceed to an abstract of the considerations of proportion which seem to have governed the distribution of the plan between peristyle, cella, and divisions of cella. The primary concern is to determine the line of the upper step, or proper basement of the cella, relatively to the parallel line of the upper step of the grand peristyle. The anta is placed at such a distance from the edge of the stylobate, that the sum of its breadth and the interval between it and a flank column exactly equals a columniation. To state this differently, the dimension including diameter of column on flank of anta, and interval between them, exactly equals the sum of the diameters of two adjacent columns on flank and the interval between them; and, inasmuch as the anta is less in diameter than a column, the difference goes to enhance the interval or void. The process of division is, therefore, the simplest conceivable. Set off on the front from angle of top step a dimension equal to an ordinary columniation plus an ordinary diameter, say 20·34; this gives the lateral distance for the inner angle of the anta; assign a breadth to the anta which has a ratio to the diameter of column as 4 : 5, and this gives the outer angle of the anta, and the line of the cella step on flank.

The next, and a most important consideration, is the extent of the top step of the cella east and west; its distance from the parallel line of stylobate on either front. Here we find that by continued gradation the interval between step of cella and edge of top step of grand stylobate is made greater on front than on flank, exceeds it in fact at the east front in the ratio of 8 : 7, being the exact ratio in which the interval from cella wall to flank column exceeds the intercolumn.

(viz. 8 : 8·920 : 7 : 7·805 measured 7·818, &c.).
8 : 7 :: 17·138 : 14·997, measured 15·00.

The artist, however, who decided these proportions had regard at the same time to their compatibility with some others that are of the highest importance; the cells which was to be distributed among apartments could not have its length relatively to its breadth determined at random. Measured on the top step it has very exactly a ratio of breadth to length as 7 : 19; thus, 7 : 71·33 :: 19 : 193·61, which varies from measured length 193·738

by deficiency of 0·123, and this difference seems to be but the reappearance of the error 0·125 that we have noticed in length of the grand stylobate, from just ratio to its breadth. The ratio 7 : 19 seems at first sight unhandsome and undesirable, from the high number it includes, and the great difference between its terms; indeed had the architect made the lower step of the cella longer by 0·68, it would have had the desirable proportion of 3 : 8, the change, however, involving a sacrifice of graces which he did not allow himself to be tempted to make. His justification and purpose became readily apparent. If we deduct an exact square from an oblong 7 : 19, we are manifestly left with an oblong reduced to the ratio 7 : 12, and this is the division which has been adopted. The breadth of the cella 71·33 is just equal to the dimension from the top step of the posticum to the back of the opisthodomus, including the thickness of the transverse wall of partition (71·334), and consequently the same breadth compared with the remainder of length, the dimension from the transverse wall in the naos to the edge of the pronaos step necessarily bears to it the ratio 7 : 12, the same ratio that occupies so important a place in the elevation of the facade.

I believe it to have been in order to help the value of this proportion, that the pavements of the naos and pronaos were made almost exactly upon a level, and thus, when the portal was thrown open, the spectator might easily take both dimensions together within the scope of vision.

From the stringency of the general proportions applied in the opisthodomus it is clear that we must expect at least equal care in the more important naos; it is also clear that whatever difficulties may have occurred in distributing the naos, they were overcome not by sacrificing the proportions of the opisthodomus, but by effectually reconciling them. But by this distribution, the plan of the proper opisthodomus itself is brought out with depth and breadth very accurately proportioned as 11 : 16. The clear interior breadth, on level of the pavement, is 62·570 (namely, 4·380 × 2 = 8·760 + 62·570 = 71·330) and the corresponding depth, as shown on plan, is 48·908. Now, 16 : 11 :: 62·570 : 43·016, a result which may be considered absolutely identical.

The uncertainty that exists, from the condition of the ruins, as to the height originally assigned by the architect to the intellect of the naos and of the opisthodomus, hampers our investigation of the considerations by which he decided the distribution of the plan.

I have shown that the architect divided the platform of his cella by a transverse line, which gave an exact square for partition-wall, opisthodomus, and posticum, and an oblong of the proportion 7 : 12 for the naos and pronaos. Assuming the thickness of the flank walls to be determined, the clear interior breadth of the apartments is given, and it remains to place the walls of the door jambs, on either front, at such distances from the wall of partition as to afford plans for the apartments of desirable proportions, and also leave fitting remainders for pronaos and posticum. Accordingly, the pronaos wall is so placed as to make the length of the naos 98·095, which compares with the sheer breadth from wall to wall of 63·01, in ratio 14 : 9. That is to say, the ichnography of the grand apartment,—of the naos, has precisely the same ratio between its dimensions, taken rectilinearly, that obtains between the breadth of the temple and its full height on front from pavement of peribolus to apex of pediment.

14 : 9 :: 98·095 : 63·06 (measured 63·01).

This is the third example of a repetition of a special proportion, rectangularly on plan and on elevation, and in positions corresponding in relative importance: the former being 7 : 12, and 4 : 9. The thickness given to the pronaos wall equals the breadth of an abacus, and it happily results that the dimensions from the pronaos wall to the line of lowest step on front, is exactly double that from the edge of cella step to the same line of the stylobate returned on flank.

It seems to be a traditional principle that the hecatompedon, or 100 feet, which, as we have seen, measures the breadth of the temple, should also apply to some manifest dimension of the naos. To the naos specifically the title Hecatompedon is found ascribed in inscriptions, and we need not look far to find a coincidence as near as the nature of the case would require. The dimension from the back wall of the naos to the centre line of the threshold measures 101·470, to compare with the exact estimate of 101·341.

I have now reached or rather exceeded the limits allowable for a paper. I am bound to observe that it is due to these limits that I have only been

able to exemplify the theory by a selection of instances, and that there is not one application of proportion adduced that I cannot support by conclusive parallels in other Greek works. Although it is only in the Parthenon that all the refinements of the system are employed in all their perfection, yet each appears elsewhere separately, and so distinctly as to leave no doubt as to its recognition. These corroborations, therefore, I have been obliged to premit, for the same reason that I have avoided discussing rival systems, and the examination of the extent to which they involve truth, and the points at which, as it seems to me, fallacy supervenes.

PROCEEDINGS IN CONNECTION WITH THE STRIKE.

RESUMING the thread of our condensed report of the proceedings in connection with the disastrous state of things still prevailing in the building trade, through which the proper time of the year for all building purposes is being lost, and every one concerned is being damaged, we have to give the pith of certain replies, on the part of Metropolitan Members of Parliament, to a letter forwarded to them by the secretary of the nine-hours movement. In this letter, enclosing a copy of the document and counterfoil, and asking an opinion upon it, Mr. Potter says:—

"The Builders' Association comprise about 226 out of upwards of 2,000 master builders in the metropolis. Upon the question of time, wages, or upon the present unfortunate differences, we do not wish to trouble you, as these questions are matters simply between ourselves and our masters."

The 'document' involves the question of the liberty of the subject after the hours of labour, and it has been condemned by the working classes of every denomination."

Mr. Ayrton says,—

"The Legislature, in the Truck Acts, the Factory Acts, and other laws, has recognized the necessity of imposing restraints on trade engagements between employers and workmen, and even the highest profession in the country, the bar, regulates the practice of its members by a system of combination similar to that which the operatives have established to control the employment of labour. The example thus set by so many of the most educated and able members of society may well be followed by working men, for the purpose of asserting and maintaining the ascendancy of moral considerations, and exercising a legitimate influence over one another in choosing the terms on which they may agree to be employed."

It is, however, necessary to discriminate between the system of combination and its abuses; and I think it cannot be doubted that errors have been committed in conducting the affairs of trades' unions, which have resulted in loss and injury both to employers and workmen. But whilst this affords no sufficient reason for condemning them altogether, it should teach the operatives not to avail themselves of the power of union to attempt to enforce unreasonable demands, in which they will probably fail; and it should also teach employers to endeavour to give a just and right direction to combinations, instead of endeavouring to crush them by starving the workmen into a momentary renunciation of a principle which is too deeply seated in our nature to be eradicated."

Mr. Ayrton ends by expressing a hope, that the committee will leave no means untried to arrange fair terms of employment, and to induce the employers to withdraw the "declaration," which he thinks "they have no moral right to impose on them men."

Sir John Shelley writes,—

"I entirely disapprove of the course pursued by the masters, which, if not resisted, would undoubtedly tend to interfere with the choice as to employment, which is as much the right of the operatives as of the masters; and if combinations are condemned, those who object to them ought to set a good example."

Mr. Thos. Duncombe concurs in the opinion of Mr. Edwin James, and as to the Unions, says, that he had been president of two Central Associations, and that,—

"The records of those associations show, so far from trade societies encouraging strikes, that they instituted and devised those Central Associations for the purpose of being the avenues of conciliation, and that they were, in fact, the means of healing many disputes, of explaining away many misunderstandings, of obviating many approaching difficulties between employers and the employed, and, as Mr. Nelson truly observes, performed many acts of benevolence and usefulness,—acts which I well remember at the time were generally acknowledged by many influential employers in the manufacturing districts, who even went so far as to propose to contribute to the funds of the Central Association if their rules had permitted the acceptance of such contributions."

My opinion, therefore, is, that if the sole object of the master builders, by the course they are pursuing, is to put down trades' unions and societies of that description, they will signally fail, and from past experience I see no honest reason why they should or ought to do otherwise."

"Had the matter been simply confined to the nine or ten hours' dispute, surely it might have been arranged without creating so much loss to trade, inconvenience to the public, and, I fear, ill-feeling among those whose prosperity and interests are identical."

Meetings of workmen have been held in other parts of the country beyond those mentioned in our last, to receive the delegates from the Conference.

At Derby, last week (Mr. Tomlinson in the

chair), the following resolution was carried, after addresses from the two delegates:—

"That in the opinion of this meeting the 'document' presented by the master builders to their workmen and artisans of London is both unchristian, unjust, degrading, and despotic in the highest degree—even denying to them the right of freedom—and altogether such as ought not and cannot be tolerated for one moment. We will, therefore, pledge ourselves to support the men until proper terms can be arrived at."

On the same evening (Tuesday) there was a meeting in

Cardiff, Mr. John Price in the chair, who addressed the meeting (which was not very numerous) at great length. After some speeches it was resolved "that it was the opinion of the meeting that the present lock-out of their brethren, in London, by their employers, was unjust and tyrannical, and that the declaration issued by the employers, for signature, was unconstitutional, and if submitted to, would cause the present liberty of the operative to be serfdom in reality." On the same evening a public meeting of the carpenters was held in the same town.

On the 1st inst. an open-air meeting was held in Birmingham, and was numerously attended. Mr. Taylor (a painter) presided. Mr. Burgess (joiner) then proposed the following resolution:—

"That we, the men of Birmingham, in public meeting assembled, deeply sympathizing with our brother operatives in the London building trades, and believing in the justice of the struggle in which they are engaged, in resisting the tyranny attempted to be imposed on them by the master builders of London, do hereby pledge ourselves to afford them all the support in our power till they have brought the struggle to a successful conclusion."

He strongly urged the meeting to advocate the cause of the London operatives, because it was a question not affecting any city or town in particular, but the working men of the whole country; and concluded by observing that a reduction in the hours of labour would materially assist in supporting such public blessings as the Midland Institute near them.—The resolution was carried unanimously. A second resolution, to the following effect, was also carried:—

"That, recognising the justice of the struggle in which our brother operatives of the London building trades are engaged, we do hereby pledge ourselves to prevent as far as possible the master builders of London from obtaining workmen from Birmingham and the surrounding districts, for the purpose of supplanting the labour of our brother operatives now locked out in London, until the master builders have unconditionally withdrawn the obnoxious 'document' or so-called declaration."

At these meetings it has been stated, with a strange bravery, that the present is not a strike on the part of the men! Surely the speakers knew better. The strike, let it be right or wrong, is a strike on the part of the men, pure and simple. They struck at Messrs. Trollope's because their request to have ten hours' pay for nine hours' work was not granted. By their organization they could have ruined the Trollopes, or forced them into compliance, and so with the rest of the masters, one by one, afterwards. The masters, of course, saw this, and made the strike general instead of particular, but the strike is the act of the men: it is they, and they alone, who have brought about the present melancholy state of affairs.

On the 5th inst. the Conference in London paid another dividend, amounting to 3s. per man, to every man, of whatever class, then out of work, in consequence of the strike and lock-out, while to the men lately at Messrs. Trollope's, were paid 12s. to each skilled workman, and 8s. to each labourer. The men locked out have thus received, irrespective of their own societies, 1s. 0½d. per man, per week. The following is given as an exact list of the number of men in each trade who shared in the distribution. This, however, cannot show the total number out of work:—

Trollope's men	104 skilled artisans at 12s.	62 8 0
	87 unskilled, at 6s.	34 16 0
Carpenters and joiners	2,446 at 3s.	365 18 0
Bricklayers	740 at 3s.	111 0 0
Plasterers	566	99 0 0
Masons	509	75 0 0
Woolwich men	250	37 10 0
Painters	120	18 0 0
Stone sawyers	59	7 1 0
Labourers' Lodge,		
No. 1	491	73 13 0
No. 2	440	66 0 0
No. 3	189	28 7 0
No. 4	278	41 14 0
No. 5	154	23 2 0
No. 6	517	77 11 0
No. 7	250	37 10 0
No. 8	47	7 1 0
No. 9	242	36 3 0
No. 10	167	25 1 0
No. 11	54	8 0 2
No. 12	29	4 10 0
No. 13	12	1 16 0
Labourers from Mr. Macey's	6	0 18 0
	7,815	£1,245 9 0

Of this total of 7,846 the skilled artisans number 4,899, and the labourers 2,957.

On Tuesday evening, the 6th, the delegates from the London Trades' Societies met again, and one of the Conference gave a narrative of the proceedings since the last meeting, and said 210l. 9s. 6d. had been received. He scoffed at the idea of the masters opening their shops with the "declaration" unaltered, and seemed to dwell with some unction on the idea that if the struggle continued, many of the masters would have to go into the Bankruptcy Court. Can the men believe they would derive any advantage from that? Various delegates handed in small sums of money, amounting, in the whole, to 156l.; some of them repudiating the nine-hours movement.

Benefit Societies and the Strike.

A few days ago four of the managing committee of the Society of Operative Bricklayers, namely, John Giffard, Henry Thomas Troff, James Glasscock, and Charles Hamack, appeared before Mr. Dayman, the magistrate at the Westminster Police-court, to declare that the contents of the following document were true:—

"The managing committee of the Metropolitan Society of Operative Bricklayers do hereby jointly and severally, solemnly declare that there is no rule or regulation, printed, written, or verbal, neither has any instruction, direction, communication, or intimation been given, directly or indirectly, to any member or members, nor is there any edict, custom, or usage, with reference to the mode of doing work, using the trowel only in the right hand, restricting the number of bricks to be laid or to be carried in the hod; and the assertions made by the master builders with reference to the same are wicked and malicious falsehoods."

We also hereby solemnly declare that it is untrue that any intimidation has been used by us, or with our knowledge or sanction, to compel men to join the society, to give up piecework, to drive non-society men from their work, or to compel foremen to become members of the society, as recently asserted by the master builders."

Mr. Dayman pointed out to them that it was not usual for magistrates to receive such declarations, and observed that neither their making it nor his signing it would give it any more weight.

In reply to an inquiry, the spokesman replied that money was sent to them from different clubs. Mr. Dayman intimated that that was just what he wished to arrive at, as he had something of importance to communicate upon the subject, which appeared to have escaped the attention of all those who had addressed themselves to the matter. The rules of these benefit societies were certified according to law by a revising barrister, and should be held inviolate. They were originated for specific purposes, having no connection with the maintenance of men upon the "turn out," and the funds could not be properly applied to their aid. Nine hundred and ninety-nine men out of a thousand in a benefit club might vote away the funds for the assistance of men upon the strike, but if the thousandth man objected that it was contrary to the rules, and took the matter into the Court of Chancery, the treasurer of the society or club would find himself in a very awkward position. The question would arise whether the rules of such a society ever contemplated giving money out of the funds to the relief of non-members, and where they really were members, to men out of work, not in the ordinary way, but by their own act. He recommended that the applicants should bring what had fallen from him to the notice of their friends, in order that the funds of benefit societies should only be applied to the purposes for which they were sanctioned by the rules.

The Workers in the Metal Trades.

The following circular has been issued by the Committee of the Operatives in the Iron Trades generally, amounting to upwards of 400 men:—

"Committee-meets, 'The Grapes,'

Duke-street, Lincoln's Inn-fields.
We, the Operatives of the Iron and Metal Trades, in addressing you respecting the present lock-out, beg leave respectfully to draw your attention to the fact, that having taken no part in the present 'Nine-Hours Movement,' we feel aggrieved at being locked out by our employers, and therefore earnestly solicit the sympathy of the public in our behalf.

JOHN EMMS, Secretary.

The committee sit daily as above, where subscriptions will be thankfully received."

Boards of Guardians and the Strike.

The effect of the strike begins to tell seriously upon many of the workmen, particularly on those who have families of children. Many have been driven to seek parish relief, which has been generally refused. Amongst many painful cases, it may be

mentioned that a workman with a large family had a child sick, and was obliged to call in aid of the parish surgeon of the district: the child was sinking under the disorder, and required nourishment which the father, who had been locked out, could not supply. On sending to the workhouse and presenting his order, this relief—the supply of which was a matter of life and death—was refused in consequence of the strike. This seems a hard regulation, particularly to those who are out of work against their will. The other day a labourer applied at the Clerkenwell Board for relief for himself and family, he having been thrown out of employment by the strike. He was offered relief in the workhouse, and his wife and family to receive aid out of it. One of the Board thought that the applicant was entitled to consideration, inasmuch as he had not struck, but had been forced out of employment by the lock out. The applicant said he was willing to work if he could get work to do. Another member said,—"And, although you are willing to work, there is an opposing power which says you shall not do so." A gentleman then asked,—"Have you applied to the Messrs. Trollope for work?" Applicant—"I have not." It was suggested that it would be better to give a trifle of out-door relief for a few days, and in the meantime to let him apply to the Messrs. Trollope for work. A similar application was made by a man who had been out of work three weeks: he had received 5s. the previous Saturday, and 1s. 1d. the Saturday before that: he had not applied to Messrs. Trollope to get work. A similar order was made in the last instance. The case of many of these men is a hard one; and, knowing the evils which result to a workman from the loss of his furniture, thus leaving his children without a home, it is to be hoped that those who hold the difficult position of guardians of the poor will rather err on the merciful side, and, if possible, prevent the breaking up of homes, which, in the majority of instances, involves perpetual pauperism for the time to come.

THE ANTI-STRIKE COMMITTEE.

We mentioned in our last that an Anti-Strike Committee had been formed with a view of reconciling existing differences, and preventing their recurrence. Mr. Alderman Cubitt, on being requested by written requisition, became treasurer, and forwarded 100*l.* as a contribution. An alteration has been made in the Executive since its first establishment, and it now consists of Messrs. John Ballard, chairman; John Ashby, vice-chairman; and Christopher Mills, secretary. In one of their addresses they say,—

"The anti-strike committee is composed of foremen and non-society men of the building trades, who are resolutely opposed to the 'nine-hours movement,' to the interference of trade society influence, and self styled trade conference dictation between master and men in the regulation of the terms and time of labour. They advocate the entire and complete liberty of labour and capital, and are resolved to set the men free from the tyrannous tyranny of 'society' despots, and the pernicious influence of unions. To this end they propose to establish in London—first, and subsequently throughout the country, offices, for the operation of the building trades, and they design by this means to procure employment for such operatives as simply belong to benefit societies, and thus establish recognized offices where masters can apply for men, and where workmen can seek for employment. Consequently this committee will be permanent and by no means terminate when the present strike shall have ended. It is hoped to confer all the benefits of a well-conducted benefit society, conjointly with the advantage of obtaining employment through mutual sympathy and information.

The committee has been in existence only eight days, but it commenced vigorous operations immediately. It has concerted plans of action, and opened committee-rooms. It has had printed and circulated (principally amongst the unemployed) 40,000 well-written handbills, in reply to the misrepresentations and wicked slanders of the trade Conference respecting the 'declaration,' which alone the committee declares to be a true charter of personal freedom and liberty. The committee has convened seven public meetings, four of which consisted nearly wholly of trade society men, who were allowed individually and collectively to express their opinions. At the close of these meetings large numbers of non-society men declared their adherence to the views advocated by the committee by giving their names, trades, and addresses."

At some of the meetings very uproarious conduct has been exhibited and resolutions expressive of want of confidence have been carried. At each meeting, however, as we are informed, a certain number of men gave in their adherence. At a crowded meeting on Monday, whereat we were present, Mr. Ballard reasoned the matter quietly. A workman said he had a question to ask in which they were all deeply interested. He wanted to know if assenting to this document restricted them from belonging to any society which contributed to their relief in sickness, when out of work, or in old age?

Mr. Ballard said the declaration did not require them to renounce any benefit society which provided for their wants when in sickness or old age;

nor did it require them to renounce any trade society which provided for them when out of work, except such society became turbulent and dictated terms to the masters and to the men too.

A Voice.—Have they done so?

Mr. Ballard.—Yes, they have done so. Was there not a trade society in London who told the men at Trollope's that unless they got ten hours' pay for nine hours' work they ought not to work another hour? (Cries of "no.") At all events, when the men struck the Trades Conference ratified what had taken place, and paid the men to stop out; and what was that but interference between master and man?

An obvious remark has been made by several correspondents,—“If the Anti-Strike Committee seriously desire the shops to be opened, and have 500 men ready to go to work on the basis of the 'declaration,' why do they not at once go to Trollope's for employment? as, when Trollope's shops are full, the Masters' Association is bound to re-open the whole of their establishments, thus providing work immediately for the anti-strike men.” Their reply is, that men who went to Trollope's would be marked and banned throughout the country; moreover, that they, the committee, wish to do something more than merely patch up the present dispute. Whether or not they are likely to succeed in this praiseworthy object with the machinery at present in operation we cannot venture to say. They appear to be fully satisfied with the amount of encouragement and sympathy that has been afforded them.

THE BUILDERS' FOREMEN AND THE STRIKE.

A MEETING of foremen was held on Saturday, the 3rd inst. to take measures with a view to bringing the strike to a close by means of mediation.

Mr. Willoughby, foreman of the plasterers at Messrs. Cubitt's, having been voted to the chair, said,—“What the meeting would have to consider, was, whether they should form a deputation to the masters, and if so, whether such deputation should consist of foremen and non-society men, or of foremen only, or of non-society men only. The question as to taking these steps was simply to ascertain whether by means of mediation they could effect anything good and satisfactory; and if they saw that they could not effect anything tangible by means of mediation, then they would simply leave the matter where it was.

Mr. Weston, foreman to Messrs. Evans & Co. was certain that if the deputation to the masters adopted the 'document,' or a modification of the 'document,' as a basis of their mediation, they would undoubtedly fail, for he was certain that the men would never agree to settlements in which that 'document' formed any part.

Mr. Dabbs said, a number of the builders' foremen had thought that the time had arrived when, as an independent body, they could step in and endeavour to effect a settlement between the conflicting parties, and he moved the following resolution:—

"That the meeting agree to form a committee of builders' foremen of London connected with establishments which are closed, to act independently between masters and men, and adopt measures containing some tangible terms by which they could recommend to the masters to resume work, they, the committee, pledging themselves to use their best endeavours to secure a sufficient number of men to carry on the different departments over which they had the control."

This was unanimously agreed to.

It was then resolved that a deputation, consisting of ten builders' foremen, be appointed to wait on the masters on Tuesday, the 6th, and that such deputation take with them a list of all the foremen then present.

Mr. Weston then moved that the business of the deputation be, in the first place, to urge upon the masters the unconditional withdrawal of the declaration or 'document;' and, in the second place, that they submit the case to the arbitration of disinterested parties. But

Mr. Dabbs said he was certain that should they go to the masters with such a resolution, they would meet with the greatest disavowal, and the matter would be exactly left as it was. He would therefore move as an amendment,—

"That this meeting agree to recommend to the masters so to modify the present declaration as to dispense with the book and so-called counterfoil altogether, and make it a shop rule only, that in the engagements between foremen and workmen it be clearly understood that the shop is supplied with non-society men."

Mr. Bromhead seconded the amendment, which, on being put, the chairman declared to be carried.

A person present wished to know whether the

Builders' Foremen's Institution had been communicated with, as he was anxious that the present should not be looked upon as a hole-and-corner meeting.

The Chairman said there need be no apprehension on that point. The reason that the Foremen's Institution was not communicated with was, because it was thought, as the building trade only was concerned, there was no occasion for others to become involved.

The following foremen were then appointed as the committee and deputation:—Mr. Willoughby, of Messrs. Cubitt's; Mr. Allen, of Rigby's; Mr. Webster, from Lawrence's; Mr. Brialey, from Mansfield & Son's; Mr. Gill, of Waller & Son's; Mr. Clements, of Lucas Brothers'; Mr. Lovejoy, of Wilson's; Mr. Lucas, from Axford's; Mr. Brooker, of Holland & Harman's; Mr. Herne, from Kelk's; Mr. Smith, from Messrs. Myers'; Mr. Newall, from T. Cubitt & Co.'s; Mr. Bray, from Piper & Son's; Mr. Elliott, from Brown & Robinson's; Mr. Evans, from Welshman & Gale's; and Mr. Harding, from Jay & Co's.

The foremen held another meeting on the 7th inst., and communicated, what we have stated elsewhere, that the masters were unable to accept their mediation. Mr. Carpenter proposed a resolution, to the effect that, in order to bring about an amicable settlement of the existing dispute, the meeting was of opinion that the interests of both employers and employed would be best consulted by a spirit of mutual concession, and that inasmuch as neither the nine-hours movement on the part of the men, nor the 'declaration' required by the masters, was approved by the public or demanded by the times, both the one and the other should be withdrawn, and the trade operations resumed. This proposition, after being seconded by Mr. Brindle, was eventually carried on a show of hands.

THE CENTRAL ASSOCIATION OF MASTER BUILDERS.

THE relation we have given of the proceedings of the various bodies concerned in the strike now leads us to the meeting of the Masters' Committee, which took place at the Freemasons' Tavern on Tuesday last, Mr. G. Plucknett in the chair. A deputation from the Anti-strike Committee, and one from the meeting of Builders' Foremen, attended to present memorials. The memorial brought by the Foremen was in accordance with the resolutions passed at their meeting already reported. The committee found themselves, it is stated, prevented by one of their rules from seeing the depositions, but communicated with them through the secretaries of the Association. They expressed to the Foremen their regret that they could not entertain the offer of mediation contained in their memorial, and assured them they highly appreciated the motives which had actuated them.

Ultimately the committee determined on announcing that, Messrs. Trollope & Son having resumed their works, the establishments of all the members of the Association 'will be fully reopened on Monday next, the 12th of September, on the basis of the Declaration, as originally directed at the general meeting of the 1st of August.'

In the advertisement they have issued, they say,—

"The committee have anxiously considered various suggestions in reference to the 'declaration.' They have never been in the least degree wedded to any special form of words, or of their administration; but they feel that they are bound to protect the orderly and peaceable workmen admitted into their establishments from the interference and dictation of irresponsible combinations, by excluding from their premises all who are not prepared to give the very simple guarantee afforded by the 'declaration,' that they will not encroach upon the social freedom and civil rights of their fellow-workman."

THE SANITARY STATE OF ST. GILES'S.

IN the medical report for 1858 to the Local Board of Works by Dr. Buchanan, the medical officer of health for the district of St. Giles, the reporter draws attention to the fact that, in his report for 1857, he inserted a table of comparison between the gross mortality of St. Giles's and that of the districts surrounding it, and of the metropolis generally. Having made allowance for all artificial disturbing influences, he found the result was strikingly unfavourable to St. Giles's. He has made a similar table for the year 1858.

In one point of view the comparison in this table is still unfavourable to St. Giles's, for this district continues to present a higher death-rate than any of those among which we should expect it to rank, upon consideration of its natural and social features. Its death-rate is still higher than that of Holborn, and is considerably greater than

in the Strand or St. Martin's. But, in another point of view, the figures of these tables are extremely gratifying:—

London, it has been shown, was less healthy in 1858 than in 1857. In the last column of the above table the increase in the mortality is represented by the number 13½ in the 10,000: the rise in Marylebone, on the same population, was 67: in Eoborn it was 11·3; and in St. Pancras it reached to as many as 25 in the 10,000.

On the other hand, so far from participating in the increase of mortality, the Strand, St. Martin's, and St. Giles's show an actual fall in the death-rate, and that to a very considerable extent. This fall is represented in the first district by 13, in St. Martin's by 24½, and in St. Giles's by 22½ in the 10,000.

Had St. Giles's, in 1858, maintained the same amount of excess that it exhibited in 1857, over the average death-rate prevailing in town, 37 more lives in every 10,000 persons living would have been sacrificed in the year. It appears, then, that there has been some intrinsic agency at work within the district, which has produced an amelioration in it, instead of permitting that deterioration which has characterized the year 1858, in the metropolis at large.

The zymotic class of diseases, which has been in strange excess in London generally, are in defect in St. Giles's, the case of 1857 being reversed, as respects measles, whooping-cough, and diarrhoea especially. Small-pox, however, has been very prevalent. Examination of the distribution of this class of disease throughout the district, in 1857 and 1858, has shown that those spots have made most progress towards a better standard which had been subjected to the most vigorous measures for the removal of their known insalubrious conditions.

The mortality per 10,000, from all causes, in the Northern Drury-lane sub-district, was 404 in 1857, and 303 in 1858; Dudley-street, 377 in 1857, and 355 in 1858; Coram-street, 195 in 1857, and 207 in 1858; Southern Drury-lane, 241 in 1857, and 261 in 1858; Russell-square, 132 in 1857, and 166 in 1858; Lincoln's-inn-fields, 220 in 1857, and 144 in 1858; and so on.

Some useful remarks are made in reference to the upper classes:—

"The sanitary defects most likely to exist about their dwellings is bad drainage. When their homes were built the cesspool was, usually, the only means of drainage, and in several very good streets it has not yet been wholly superseded. People trouble themselves too little about the drainage of their houses: bad smells are not noticed, or are satisfactorily accounted for by 'the wind being in a particular quarter.' But there are found inexplicable ailments in the house: servants lose their healthy looks, and children droop. Or scarlatina, generated in the unknown mews close by, affects the children, and assumes a serious type. Another year diphtheritis is heard of, or typhoid fever appears—is called by some gentle name of slow or bilious fever—and there are speculations how the disease can have been 'caught,' and fears lest it should be 'given' to others. It is important for people to be well assured that, in the great majority of cases, such diseases as these only exist, or only become serious, by reason of some defective condition in the dwelling-house or neighbourhood.

In a poor locality the existence of epidemic disease is used by the sanitary officers as a guide to the existence of cesspools, imperfect drainage, or other defective arrangements. Very rarely, indeed, does the inspector fail in discovering some such cause for the prevailing disease. The wealthier and more intelligent classes should provide for themselves the same security that we are attempting to obtain for the poor, and should make themselves sure that the conditions which surround their dwellings are the best adapted to health."

In 1858, it is said, sanitary operations have been more systematic and thorough,—works of drainage more numerous, &c.—than in 1857. Still an unusually large number of extensive and important sanitary works remained in hand towards the beginning of April, 1859. Most glaring violations of the laws of health, and of the requirements of civilized life, were found, during the sanitary investigations, in Lincoln and Orange courts, and in and around Church-lane, and Hampshire Hogyard, details of some of which cases are given, fully bearing out what is said of them.

It is satisfactory to note, that a clean sweep has been made of the notorious cellar dwellings in St. Giles's.

"The parish authorities have habitually objected to the use of these cellars, but with little or no practical result. The Building Act of 1844, contained stringent clauses against the use of underground rooms, unless they possessed requisites of area and ventilation: such were out of the question in the cellars of St. Giles's. No effective measures, however, were taken to empty them until the present time. The Metropolitan Local Management Act, under which this board is constituted, repeated the prohibitions of the Act of 1844, and in defence of the public health, as well as in pursuance of their commission, the board have lately put this statute in force. This has been done without compromise: it has been insisted that the cellars be simply and absolutely emptied of their tenants,

and permission has been refused* to the owners of the houses to make those alterations which would permit of the cellars being used as dwellings. They may still be employed as shops or store-rooms, but as separate habitations, for occupation by human beings at night, 'a cellar in St. Giles's' is no longer to exist. It would be hard to estimate the value of this bold and admirable measure of the Board of Works, on the moral and physical well-being of their district."

It is evident from his reports, which we have closely examined, that Dr. Buchanan is working zealously in his position as medical officer of a district great part of which stands much in need of his best exertions.

A NEW AND SIMPLE METHOD OF EXTRACTING THE ROOTS OF ALL POWERS.

THE extraction of roots without the use of logarithms has hitherto been a task so tedious and perplexing that a correct and easy solution of all questions in evolution will be welcomed, not only by mathematicians, but also by the schoolmaster, as the time at present wasted upon almost impracticable formulae will be usefully employed in the attainment and understanding of an important process; and the following rule is proposed for adoption in preference to others which, with double the labour, yield only approximate results.

By this method the approach to truth is so rapid that, with a slight exercise of judgment in selecting the trial root, either from memory or inspection, the true root is obtained more easily and more quickly than by the use of logarithms, and the operator is made independent of tables, which are not always available for reference.

The practical utility of this rule in questions of many periods is shown by there being no necessity for prosecuting the division of large numbers beyond two or three quotient figures in each trial. (See example 3.)

The process is based upon the slow increase of the root compared with the expansion of the number raised by any power; and the error of supposition in the trial root is compensated by the mean taken (see examples 1, 2) where the trial roots are purposely taken wide of the apparent roots to show how quickly they converge to the true root.

Rule for the Extraction of the Roots of all Powers.

1st. Divide the given number by the trial root passed to the next less power. To the quotient add the trial root multiplied by the next less power, and divide the sum by the given power for a new trial root, with which repeat this simple operation, if necessary:—

Example, merely to show the process:—

Find the cube root of 8, using its true root, 2, for a trial root:—

$$2^2 \text{ (i.e. raised by } 2 \text{ next less power to the cube), } 4/8$$

2 (see note.)

$$\text{Add } 2 \text{ (the trial root } \times \text{ by next less power } 2), \quad 4$$

$$+ \text{ by given power, the cube, } 3/6$$

2 True root.

Note.—The true root and the trial root need not necessarily agree; but when they do, or when the trial root and the first quotient are alike, the true root is found without proceeding further; also when the root repeats itself in the second operation it is the true root. (See example 1.)

EXAMPLES.

1st. Find $\sqrt[3]{125}$, assuming 4 for a trial root.

$$4^2 = 16/125$$

$$7 \cdot 81 + 8 = 3/15 \cdot 81$$

5·27 New root.

Here we learn that it is nearer the 5 found than the 4 assumed; then try 5.

$$5^2 = 25/125$$

5 The true root at once.

But with 4·9 or 5·1:—

$$4 \cdot 9^2 = 24 \cdot 01/125$$

$$5 \cdot 1^2/125$$

$$+ 5 \cdot 2$$

$$4 \cdot 8 -$$

$$- 9 \cdot 8$$

$$10 \cdot 2 +$$

$$3/15 \cdot 5$$

$$3/15 \cdot 0$$

(Root repeats) —
5 { with either. } 5

2nd. Find $\sqrt[3]{1728}$ by trial of 10, 11, and 13.

$$10^3 = 100/17 \cdot 28 + 20 = 3/37 \cdot 28 = 12 \cdot 42$$

$$11^3 = 121/1728$$

$$149 + 22 = 3/36 \cdot 3 = 12 \cdot 1$$

$$13^3 = 169/1728$$

$$1022 + 26 = 3/36 \cdot 22 = 12 \cdot 07$$

$$12^3 = 144/1728 = 12 \text{ True root.}$$

3rd. Required $\sqrt[3]{10 \cdot 973908978085048}$. Try either 2·1, or 2·2, or 2·3, because we know them to be something near the root of 10. Take 2·2.

$$2 \cdot 2^2 \quad 4 \cdot 84/10 \cdot 97390/2 \cdot 267$$

$$4 \cdot 4$$

$$3/6 \cdot 667$$

$$2 \cdot 222$$

$$2 \cdot 22 \text{ Try}$$

$$4 \cdot 9281/10 \cdot 9739039/2 \cdot 22566$$

$$4 \cdot 44$$

$$3/6 \cdot 66666$$

$$\text{True root } \dots 2 \cdot 22222$$

The facilities and perfect accuracy of the rule are here apparent.

SQUARE ROOTS.

The extraction of the square root is by this method a question of simple division.

4th. Find square root of 785625. Try 880.

$$880/785625/880$$

$$880$$

$$2/1750$$

$$875 \text{ True root.}$$

FORMULA.

Let $\left. \begin{array}{l} a = \text{given number} \\ b = \text{trial root} \\ x = \text{true root} \end{array} \right\} \text{When } x^n = a.$

$$\text{Then } x = \frac{1}{n} \left\{ \begin{array}{l} a + b(n-1) \end{array} \right\} \text{ Nearly or quite.}$$

CHARLES HOARE,

Author of "Mensuration Made Easy," &c.

IMPROVEMENT OF ST. SAVIOUR'S SOUTHWARK.

We are glad to notice that a meeting has been held in the Vestry-room of St. Saviour's, Southwark, to consider the best means of raising a sum of money for the repairs of the church, and to give of some unsightly introductions which were made in the transept at the time of the removal of the nave. There are few more interesting examples of Gothic architecture remaining in the country than the ancient portion of St. Saviour's, which remains. The nave was no less characteristic, but, owing to fire and other causes, it had fallen into a ruinous condition. Although much spirit was shown by several individuals who endeavoured to effect the restoration, it was resolved that this interesting relic of the past should be levelled with the ground, and a new building—such a building!—was erected on the site. In the transept of the old church, the most abominable wooden staircases were erected for the purpose of reaching the galleries; and certainly it is not too much to say that we do not remember anything to have been erected in late years more monstrous or regardless of taste. All this, however, we have told our readers more than once.

It appears that the vestry voted a sum of 370*l.* for repairing, cleaning, and partly repairing the church; and, much to their credit, the churchwardens thought of removing the staircase just mentioned. They also wished to open a window at the east end of the church, above the altar-screen, in keeping with the other architectural features: these alterations would cost about 500*l.* in addition to the sum above mentioned. In order to raise this, the churchwardens called upon some of the chief inhabitants, and obtained subscriptions to half the amount. Barclay & Perkins subscribed 100 guineas; Messrs. Potts, 50*l.*; Messrs. Vickers, 20*l.*; and so on. On this a meeting of the parishioners was called to devise measures to make up the balance.

On this occasion, although those assembled were generally in favour of the alterations, one gentleman strongly opposed the resolution. In sub-

* Except in one or two instances, where the alterations were made before this resolution was come to.

stance, he said,—It is all very well for Messrs. Barclay & Perkins, the Messrs. Potts, and the Messrs. Vickers, to subscribe their hundreds, fifties, and twenties; but, looking at the aspect of the present meeting, which was to a great extent composed of Dissenters, it would appear that the Churchmen took no interest whatever in the matter. As a Dissenter he hesitated not to say that he would not subscribe a single penny for the purpose stated. He simply came there for the purpose of seeing how the voluntary principle acted amongst the Churchmen present. The project had entirely failed. He could not, of course, object to a voluntary rate; but, when he saw those for whom such a rate was raised did not come forward to support it, while he would not propose a negative to the vote, he should hold up his hand against it."

Mr. Newson said he also was a Dissenter, but he took an entirely different view of the matter from the last speaker, and should be happy to subscribe 5*l.* towards the proposed improvement. The motion in favour of the alterations was agreed to, and a committee appointed to call on the principal inhabitants, who will, doubtless, make up the necessary sum. Whatever is done, should of course be done under good advice.

THE STEPHENSON MONUMENT, NEWCASTLE.

MR. LOUGH's design is now on view in the Literary and Philosophical Society at Newcastle. A design for a different sort of pedestal than that proposed by the sculptor is exhibited. The *Gateshead Observer* says,—“Its history is this:—The son of the deceased, Mr. Robert Stephenson, M.P. having thrown out the happy suggestion of a *terrestrial globe* as the pedestal, by way of typifying the world-wide extension of the railway system, the idea has been worked out in a model. The globe rises out of a substructure, and is surmounted by the statue, while, at the four corners, there are places for Mr. Lough's representative figures. There is great merit, certainly, in the idea, whatever may become of it; and we confess to a strong hankering for an escape from the conventional and all-but-inevitable four-sided prop of a public statue.” The idea, we need scarcely tell our excellent contemporary, is not a new one. The late Mr. Goldieut proposed it years ago in the competition for the Nelson monument in Trafalgar-square. On a small scale it was exhibited in a square in Fimlico, where a statue of the queen surmounted the globe. The effect was not by any means satisfactory.

THE DRINKING-FOUNTAIN MOVEMENT.

Bristol.—The fountain in King-street, St. Paul's, is opened to the public. The warm weather has induced its contributor to substitute a temporary basin in lieu of the polished granite one, which is being prepared, and will be ready in a few weeks. The design may be described as consisting of a semi-circular headed niche, surmounted by a pediment or low-pitched gable. The arch of the niche, which is formed of red and white stone placed alternately, is supported by Pennant piers, with carved capitals, illustrating various fresh-water plants, and some of the animal life which frequents our fresh-water streams, such as eels, lizards, frogs, the water-wag-tail, and the kingfisher. At the back of the niche is carved the date, below which is a circular panel of waterlily leaves laid flat, and radiating from a projecting metal waterlily, whence issues the stream. The cornice shows, in its carving, eels and lizards twining amongst ferns and rushes, with a waterlily in full bloom, and a roach springing at a dragon-fly. Crowning the apex of the pediment is a polished red granite shaft, with a carved capital, terminated in a pyramidal capping finished with the leaves of the bull-rush. The fountain will cost about 40*l.* when completed. The carver is Mr. Wm. White; the architect, Mr. E. Godwin.

Edinburgh.—The Sinclair Fountain has at length been opened to the public, after having been delayed for more than a year, one of the causes of delay being an action at law to prevent this great boon being put up at all. Miss Catherine Sinclair, the donor of the fountain, at the time named, lodged 100*l.* in the bank as an instalment for this purpose, and intimated that any further sum that was required would be paid by her, and in consequence of this liberal gift, the late Lord Murray proposed that it should be called the “Sinclair Fountain.” The site selected for the fountain is an irregular triangular space of consider-

able size, at the west end of Princes-street, the principal thoroughfare of Edinburgh, where five streets meet. The fountain has been already widely described. It is of freestone, and has the base and general form of an equilateral triangle, its three sides or façades being of similar aspect. The height of the erection from the level of the street is nearly 15 feet, and the diameter of the base is 5 feet. Descending through the building, the water emerges through an ornamental pipe, of thistle shape, at which pendant ladders are filled by human drinkers, thence to a trough for horses, and finally, at the street level, into another for dogs. Rising some 5 feet above the basement are pillars with moulded capitals, supporting a square upper structure, faced on each side as an arch, of which the outer ring is a scroll bearing an inscription, varied in each case. Above the inscriptions the building has various decorations, among which are a shield surrounded by a thistle ornamentation; Miss Sinclair's monogram, &c. A moulded pediment, surmounted by a vase, completes the structure.

London.—On Monday a free drinking-fountain was opened for use in the Horseferry-road, Westminster, at the point of junction of Strutton-ground, Great Peter-street, and Greycoat-place. It is let into the wall of the Greycoat Hospital. The fountain is formed of white marble enclosed in an oval bronze scroll formed of foliage and figures. In the centre a shell is carved in white marble, from which the water flows in a continuous jet. A barometer and thermometer register the state of the weather. Above the fountain is placed a marble slab with the following inscription:—“This fountain of pure water was erected by Robert Stafford for the benefit of his friends and fellow-parishioners in Westminster, with an earnest desire for their temporal and eternal welfare.”—Spitalfields will have two fountains. The designs are in course of preparation.

Aberdeen.—We have had rather an amusing letter from an Aberdeen correspondent, who sends us a copy of the inscription cast upon a fountain erected there at the cost of Mr. A. Fidler. The inscription is as follows:—

“Aberdeen Fountain Hall, 1st August, 1859.

Water springs for man and beast.
At your service, I am here:
Altho' six thousand years of age,
I am calmer, clean, and clear.

Erected by
ALEXANDER FIDLER,
for the
Inhabitants of the World.”

The inhabitants of the world are, no doubt, much obliged to Mr. Fidler; those of Aberdeen, at least, especially are so. Our correspondent gives a graphic instance of the interest which the horses of that part of the world take in the drinking-fountain movement, one at Aberdeen having taken it into his head to run off from his Sunday's paddock to the drinking-fountain, a full mile off, where he slaked his thirst at his own trough, and then quietly returned to his pasture.

Coventry.—The new drinking-fountain here is from the design of Mr. Thomas Pratt, architect, and was erected by Mr. Mauld. It is 18 feet 6 inches high, and stands upon three broad steps: it is built of the local red sandstone, triangular on plan, with light-panelled buttresses at the angles, and niches in each of the three sides, having a stoup to each, and canopy over, worked and carved. The whole terminates with a central pinnacle, surmounted by an ornamental gas-lamp of copper. The south side niche contains an ornamental pipe and a metal cup, and below a dog-trough, which constantly receives a flow of water. On a brass shield in the niche immediately over the pipe, is an engraving of the City Arms, and the following inscription:—“Erected by the Coventry United Temperance and Band of Hope Association, 1859.”

Norwich.—The first drinking-fountain erected in this city is situated against the end of the Guildhall, facing the market-place, and is a tasteful structure (although a little too much like a chimney-piece), of Gothic character. Mr. James S. Benest was the architect. This fountain was erected by private subscription, the basin and tablet being presented by Mr. C. P. Melly, of Liverpool. It is supplied by the Waterworks Company with excellent water. The overflow runs into the trough below, and forms a drinking-place for dogs. The basin and tablet are of polished Aberdeen granite, the other portions of Ancaster stone, a band of polished slate being inserted to receive the bowls of the drinking-ladders. The number of drinkers in one day was 1163, the numbers being taken after a sufficient

period had elapsed to allow the excitement created by the novelty to subside.

Before long we shall engrave a selection of executed designs.

COMPETITIONS.

Coventry School of Art.—The committee have appointed Mr. James Murray as their architect. The premium of 10*l.* was awarded to Mr. Wilson, of Alfreton, near Derby. Twenty-two designs were sent in.

Stoke Church.—In a limited competition for the restoration and extension of the parish church of Stoke, near Coventry, Mr. Murray's design was selected.

Stoke Newington.—The designs of Mr. Wm. Smith, of Upper-street, Islington, have been selected for the erection of schools and preaching station at Albert Town, Stoke Newington, in connection with Hare-court Chapel, Canonbury.

SOMERSET ARCHEOLOGICAL SOCIETY.

The twelfth annual meeting of this society was held on the 29th ult. at Glastonbury. There was a temporary museum exhibited in the town-hall.

The report of the committee was read and adopted, and Mr. W. A. Sanford then read a paper “On the Natural History of the Museum.”

Another on the word “Pig,” by Mr. H. N. Sealey, was read by the Rev. F. Warre; in course of which it was remarked that in the Saxon language the name for a girl was “Piga,” and its diminutive Pigney was thus explained in Johnson's Dictionary:—Pigney from “Piga” (Saxon), a girl; a word of endearment to a girl.* Bay's English and Latin Dictionary also gave “Piga,” to be a “maid, maiden, girl, lass.” Several quotations were then made from the Danish New Testament, showing that the word “maid” was represented by “Pigen.” Oldmixon, a native of Bridgwater, in his “History of England,” published in 1730, noticed the “Pig Cress” and the “High Cross” in his account of the siege of Bridgwater by the Parliamentary forces, A.D. 1645; and Monmouth's rebellion, in 1685. The “High Cross” stood on the Cornhill, and was pulled down about fifty years ago: the “Pig Cress” stood at no great distance from it, and not far from the parish church, which was dedicated to the Virgin Mary; and nothing was more probable than that the cross should be dedicated to the same saint, and distinguished from the other cross by the name of the “Pig Cross;” or, as he presumed, the “Lady Cross.” If we associated with the cross the Blessed Virgin Mary, all incongruity vanished; the “Pig Cross” became the “Lady's Cross;” “Pig's Hill” and “Pig's Ditch” became the “Lady's Farm” or “field,” the revenue having been applied to the maintenance of the “Lady's” chapel, or of the priest who officiated. The sign of the “Pig and Whistle,” threw much light on the meaning of “pig,” when associated with sacred subjects: if we consider “pig” as the maid or the Virgin Mary, and “Whistle” as a corruption of “Wassail,” from the Saxon *Wasshal* (Johnson), “Your health”—the salutation,—then the “Pig and Whistle” becomes the “Virgin and Salutation.”

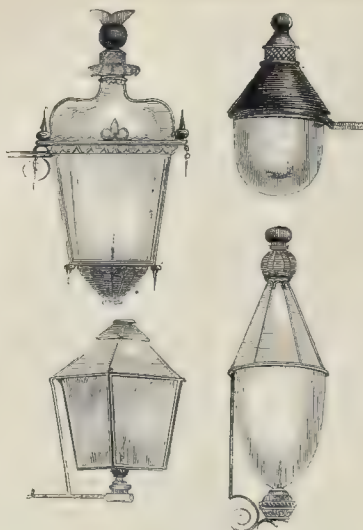
[In respect to the “Pig and Whistle,” we may here parenthetically remark that the wassail bowl may have been anciently called the wassail pig; because to this day bowls, cups, and other vessels of crockery are commonly called “pigs” in the old English of Scotland. As for the Pig Cross, the Pig's Ditch, &c. a less recondite etymology than that converting the pig into a lady might lead one to suggest that at the Pig Cross a pig market may at one time have been held, and that in Pig's Ditch the swine may have heretofore loved to “wallow in the mire.” “Please the pigs” is believed to have once been “Please the Pys.” Cast-iron “pigs” originated, we believe, in nothing more mysterious than the mode of running the metal into hollows branching from a trunk, the branches being figuratively called the pigs and the trunk the sow.]

A paper on the reputed discovery of King Arthur's remains at Glastonbury, in 1170, was read by the Rev. W. A. Jones; and this was followed by one on the history of St. John's Priory, Wells, by Mr. T. Steel.

The party then adjourned to the celebrated Abbey ruins of Glastonbury, where Mr. Baxter interpreted, and to the abbot's kitchen, with the Rev. F. Warre. The Abbey barn was next visited, and sheltered the party from the rain.

In the evening several other papers were read.

* “Peggy” is a common name of females in Scotland; but it is used specially as a diminutive of Margaret.



The Art of our Street Lamps.

OUR STREET LAMPS.

THINGS constantly before our eyes become so familiar that we are liable to pass them by without any particular attention, although, if persons of educated taste had some of these objects put before them for the first time, they would be surprised at their deformity, and wonder how such things could have been so long tolerated. Amongst the most conspicuous objects in the streets of the metropolis are the thousands of lamp-posts which line the highways, and are distinctly in view during both night and day. A glance at one of these, which may be taken as a type of the majority, shows that it has been constructed without attention to any principle of design: it is neither beautiful in form nor symmetrical in its proportions: it is a matter which might have been planned, as no doubt it was, by some ordinary mechanic, who had no knowledge of, or feeling for, art; and yet, for more than half a century, since gas put out oil, the same form, with scarcely a shade of change, has continued to be manufactured in thousands, not only for the use of the metropolis, but also for the provincial towns: the same description of lamp is reared on the same pattern of pole in remote villages, in the railway stations, and in British possessions abroad. The shape of the street lamp is as strictly adhered to as if it were a matter of caste in India. In connection with our public buildings, where the skill of the architect has been called in to devise the form of the gas-lamps, the improvement has been great. The chief lights at Buckingham Palace have a handsome appearance, so have those within the railing of the British Museum; and at the Houses of Parliament the lamps are of artistic design, and in harmony with the architecture. Some will say—"What can you do with a lamp-post?" An inspection of some of those to which we have referred will of itself show that elegance can be imported to what are generally considered matter-of-fact objects.

In the design for lamps for shops, publichouses, and other places of business, great expense is incurred and attempts are made to hit upon matters attractive and novel, and it is instructive to examine such works carefully. Some are monstrous both in size and shape: forms without harmony or meaning are planted together; Chinese taste is blended with caricatured Grecian details, in a manner which shows a lamentable want of artistic training, both on the part of manufacturers and customers.

We have lately noticed some specimens of this kind of work, which are more creditable. Colour, glass, gilding, and a better description of ornament, have been brought into use. There is, however, still a wide field for improvement, which will be yet more evident when shopkeepers begin to consider that the details of their shops are matters of consequence, which require to be made harmonious and beautiful, and that this can be best done by calling in skillful advice.

There is a remarkable instance of the waste of materials and of want of taste at King's-cross, on the spot where the statue of George IV. formerly stood. The lamp-post consists of a basement of no right shape: above this is the shaft of a pillar, in what style of architecture it is not easy to say: above is a shapeless block, surmounted by a duke's coronet, surrounded by singular branches: above is a large lamp of the ordinary shape. The spot seems to be unfortunate in the taste which is displayed, and this is the more to be regretted when we consider that it is such a frequented one.

It is said that they do things better in France. If, however, we may judge from some examples which have been put up in Holborn and elsewhere, it would be difficult to say whether these works or some of our own are the more objectionable.

RIO DE JANEIRO OPERA-HOUSE COMPETITION.

THE great Brazilian competition for the new Opera-house at Rio de Janeiro, which caused some excitement amongst architects at the time it was advertised, has just been decided; and we are pleased to see the names of English architects taking a high premium. There were twenty-five competitors, and the premiums, we are informed, have been awarded as follows:—

First premium (value 2,250*l.*), to Gustavo Wachneldt, Rio de Janeiro.

Second premium (value 900*l.*), to Messrs. W. J. Green and Louis De Ville, 36, Great Ormond-street, London.

Third premium (value 450*l.*), to Samuel Sioan, Philadelphia.

The design to which the first premium was awarded is about to be executed.

WORKS IN PARIS.

It is well known that a large street, twenty metres wide, is to be opened, starting from the Rue du Temple, near its outlet on the Boulevards, traversing diagonally the fifth and sixth *arrondissements*, and abutting at the Church of Saint Eustache, at the junction of the Rues Montmartre and Montorgueil. At the *mairie* of the fifth *arrondissement*, a plan has been posted up of the landed properties and houses necessary to be purchased for the partial execution of the project,—one of considerable interest in the improvements of Paris. This new street is to be a kilometre in length, and is to be continued in the same direction throughout. It will cause the suppression of the several small streets in its way near the *Marché Saint Martin*, where a vast *carréfour*, or open space, is to be left.

The works commenced for the formation of a new boulevard, that of Saint Germain, are in active progress from the Place Maubert as far as the Quai Saint Bernard, at the angle of the wine-stores. The thoroughfare is completely

cleared, and the ground brought to nearly its proper level. After September, the first course of rough pavement is to be laid, and the sewerage is to be commenced, as also the railing, forming the boundary of the wine depot, alongside the boulevard. This new roadway will throw to view the Church of Saint Nicholas-du-Chardonnet in the same way as the Boulevard de Sebastopol disengages the Church of Saint Leu. In the demolition of the adjacent houses, a very interesting discovery has been made of the ancient Carmelite Church, which since the revolution has not been used for any religious purposes. Built at the close of the fourteenth century, it served as a chapel or convent of those monks whose name it bears. In it were to be seen the tombs of Margaret of Burgundy, daughter of John the Fearless; Corroyet, one of the best historians of Paris; Oronce Finé and Sebastian Truchet, celebrated learned men.

The balustrade which surmounts the tower of St. Germain l'Auxerrois, has just been adorned with eight sculptured pinnacles.

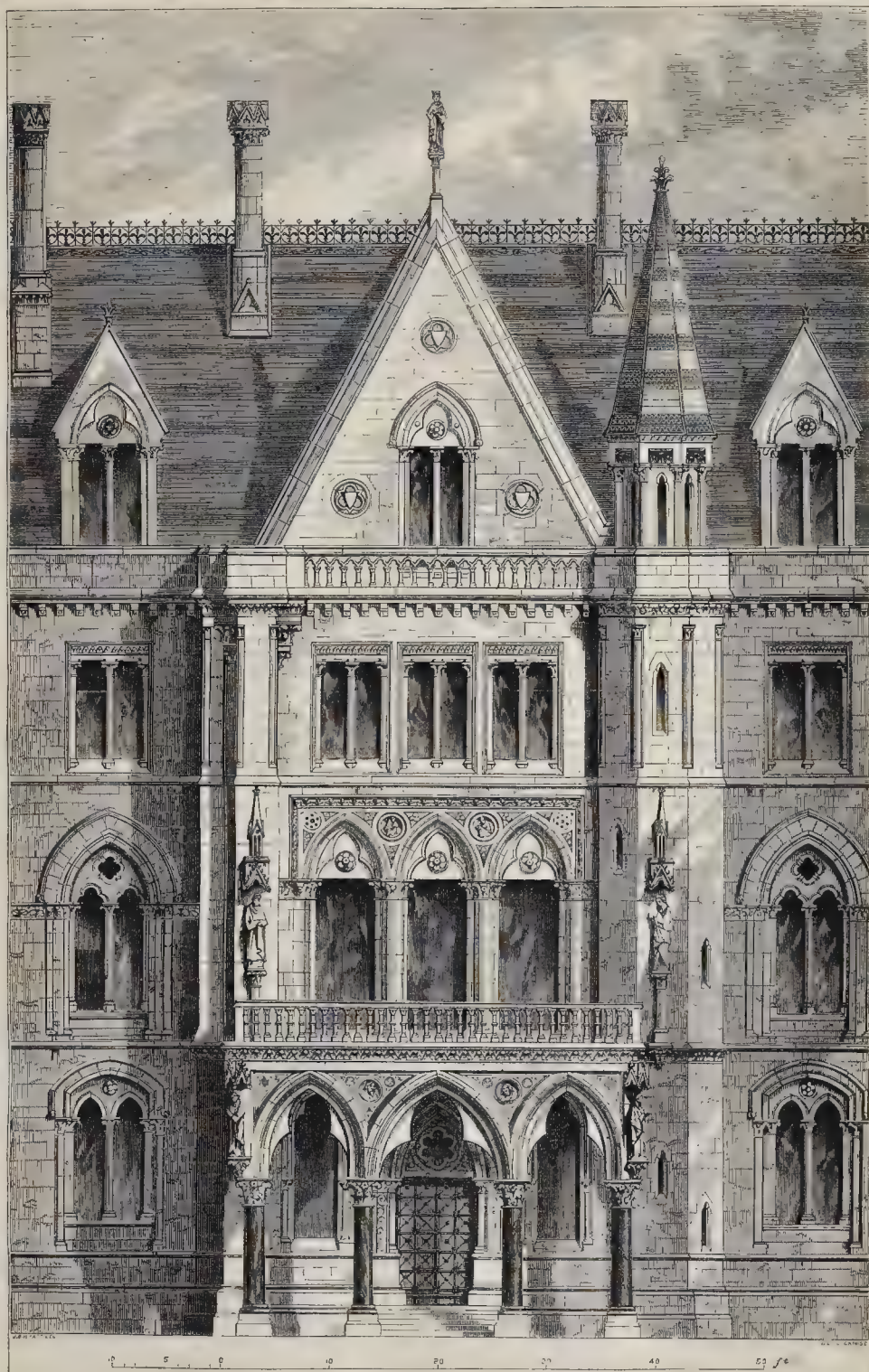
The *Marché du Temple* is to be reconstructed upon the same plan as the Halles Centrales.

A portion of the Quai Jemmapes has lately been literally encumbered with numerous cases containing an entire staircase in Carrara marble, destined, it is said, for some princely mansion in Russia. The carvings appear to be of great richness, and this beautiful work does credit to the firm of Dupuis and Parfoury, whose workshops it has just quitted.

Last month the Duke of Padua, Minister of the Interior, accompanied by M. Corneau, Secretary-General; M. Muttédo, *chef du cabinet*; and M. F. Normand, chief officer of the general charitable institutions at the central administration, visited the model-houses erected on the Boulevard Mazas, for the accommodation of workmen and small families. These houses, sixteen in number, which have been built upon lands forming a portion of the private property of the Emperor, are to be his donation to the Imperial Asylum at Vincennes. The Emperor, to whom the generous initiative is due of the creation of convalescent asylums for the working classes, has been the first benefactor, and gives 10,720 square metres of land. The minister was received by M. Domergue, director of the Imperial Asylum at Vincennes, and M. Godebent, architect of the Minister of the Interior, who is to prepare the plans and direct the works. The houses, of a good external appearance, are built on cellars, and consist of a ground-floor and five stories: they present a frontage of nearly 300 metres. There are 311 lodgings, 36 shops with back parlours, and 16 porters' lodges, or *loges de concierge*, which will accommodate 363 families, or in all a population of 1,200 or 1,300 persons. The apartments, which vary much both in size and importance, are for *employés*, persons of small independent means, foremen of workshops, workmen, &c. Air and light penetrate freely into all the rooms, closets, and staircases. Every house is lighted with gas, and furnished with a supply of water from the town. The apartments consist in general of a small antechamber, a kitchen, a sitting or dining room, and one or two bedrooms. The fifth story is all laid out in bedrooms for bachelors. These lodgings are all to be let at very moderate prices, according to a tariff fixed by the administration. This group of new buildings forms altogether a new quarter between the Rues de Reuilly and de Charenton, and was run up with remarkable rapidity, having been commenced July 15, 1858, and being now terminated. M. Lelubez was the general contractor: the works were superintended by clerks of works under the control of the Prefect of the Seine. The results thus obtained have been very satisfactory; and these houses can be considered as specimens of habitations for the working classes. The minister visited in detail two of the houses, and testified his satisfaction to the architect.

DESIGN FOR THE PROPOSED NEW FOREIGN OFFICE.

DESIRING to place fully before our readers Mr. Scott's amended design for the proposed Foreign Office, we give, as promised, a further illustration of it. Our engraving represents, on a larger scale than that of the Park front already published, the central part, in the quadrangle, which forms the entrance. The position will be seen on the plan.*



DESIGN FOR PROPOSED NEW FOREIGN OFFICE: ENTRANCE WITHIN THE QUADRANGLE.
MR. G. G. SCOTT, A.R.A. ARCHITECT.

THE HOSPITAL AT NETLEY.

CONSIDERABLE progress has been made with this building, which it is computed will swallow up 30,000,000 of bricks, and between 2,000,000 and 3,000,000 cubic feet of stone. The *Times* has recently given an account of the buildings, and points to the mistakes which have been made as to plan and site. If our contemporary had backed up our statements in these respects made before the building was commenced, we might possibly have obtained even greater alterations than were made, and have saved the country a great scandal. Every word that we wrote has been justified. The writer says:—"The die is now, however, effectually cast, for upwards of 200,000l. are already spent, and the building is half finished. The country must therefore make the best of a bad bargain, give 200,000l. or 300,000l. more to complete the edifice, and rely on the rather feeble hope that the authorities will be wiser next time." A poor consolation this!

HAVE WE A NATIONAL STYLE OF ARCHITECTURE?

LORD PALMERSTON said the other day, that we could not call the Gothic style of architecture national, for it was of foreign growth and foreign introduction, and this has led some to ask the question,—Have we, then, any national style of architecture?

In order to come to a fair understanding of this matter, let us glance back to the origin of that style of which the Prime Minister has spoken with so much contempt, but of which we have so many glorious examples in this country.

The transition from the ponderous grandeur of the Egyptian temples to the grace of those of the Grecian period, and again to the famous buildings of Rome, was gradual, but a characteristic difference can be distinctly seen. The early Greek buildings, in proportions and form, bear resemblance to those of a late Egyptian date. As time rolled on, Grecian architecture increased in grace and beauty. The Romans borrowed from the Greeks, but the peculiar characteristics of the former people are shown in the varied proportions and increased skill in construction. The general introduction of the arch gave Roman architecture a greater difference in aspect as compared with the Greek, than Greek architecture has as compared with Egyptian.

The so-called Saxon architecture, in various districts of Europe, is a more or less debased copy of the Roman style, decorated and proportioned according to the artistic ability, materials at hand, skill, and taste of the various people.

An examination of the few remains of Saxon architecture which now exist in Great Britain, or of which we have record, shows that the Roman architecture was incorporated with features of a Scandinavian character, and embellished with details which cannot be found in that architecture which had an Egyptian source. This style of architecture continued to be used in churches, palaces, and other buildings in England, in greater or less perfection, for about 600 years. But although this had peculiarities not found in the architecture of other countries, we cannot claim it as an original national style: it was, notwithstanding, for all that time, the architecture in use in these islands.

When the Normans invaded England, the conquerors introduced a more purely Romanesque description of architecture, and larger and better built structures were erected. This style did not continue for more than 130 years, when, by a sudden transition, the Early Pointed or Early English architecture came into use.

This style of architecture was a natural growth from the Byzantine, Anglo-Saxon, and Norman styles, and yet displayed as much difference as there is between the buildings of the Romans and the Greeks. This style of architecture and its developments may be said to have continued in use in England, in various forms, until the sixteenth century, about 350 years.

During the reigns of Henry VIII. and Queen Elizabeth, the last lingering traces of the Gothic disappeared. Circular and square forms began to take the place of the Pointed, and the Italian style, in a debased form it must be admitted, came into fashion, and continued in use from 1509 to about 1620, something more than a century.

About 1620, a more pure Italian style came into use, and was continued, with various degrees of success, until the reign of George III. about 1775. If we put this period at 155 years, we shall have the architectural phases in England as follows:—

Roman, more than 400 years.

Anglo-Saxon, in a great measure founded on the Roman style, 600 years.

Anglo-Norman architecture founded on the Roman, 150 years.

The varieties of the so-called Gothic, 350 years. The Elizabethan, a revival of the Roman, 100 years.

A more pure Italian style (an adaptation of Roman tower), say 155 years.

From these figures it appears that since the time of the Roman invasion, architecture in England has, in its general form and detail, been of a Roman character during 1,400 years; whereas, the varieties of the Gothic continued in use only for about 350 years. During this period Gothic art in this country rose suddenly, and gradually fell.

Considering that up to a period in the reign of George III. a Romanesque style of building prevailed, for more than four times the number of years during which the Gothic was in use, it must be admitted that so far as regards the length of time, the Romanesque has the greatest claim to a national character.

Notwithstanding the affinity which exists between Egyptian, Greek, and Roman architecture, they stand clearly and distinctly forward as marked and separate styles of architecture. They are each in their way as different from the other as they are from the Gothic and Moorish architecture, and each, notwithstanding the resemblance just referred to, is undoubtedly a national style of architecture. Admitting this, it becomes a question which style of architecture which has been used in England up to the present day can, from its distinct features from that of other nations, be called national. It cannot be shown that Gothic architecture was originated in this country, or even that any of the varieties can clearly be shown to have originated with us. The best authorities agree that it rose at nearly the same time throughout the northern countries of Europe—earliest, perhaps, in Germany.

In examining the great cathedrals, the churches, and domestic buildings erected during the Gothic period in England, and comparing them with structures of a similar date in France, Belgium, and Germany, it can scarcely be shown, although there are marked peculiarities, that the Gothic architecture of England can lay claim to a national character. The Gothic buildings of England, France, and Germany, have characteristics which can soon be recognized by the practised eye; but can it be said that the Gothic buildings of France are national, or can Germany or England claim the style expressly as its own?

Elizabethan architecture, and its corresponding fittings, which remained in use little more than a century, can scarcely be called the architecture of England. For about the same time a Roman or Italian taste was introduced throughout the countries referred to, which like the Gothic was varied according to the peculiarities of each people. Can we, therefore, claim for ourselves the Elizabethan style as national, which, under different names, but with little other difference, was in use about the same period throughout a large portion of Europe. Can the Italian architecture (beautiful as it is), introduced by Inigo Jones and others, be considered to be the national architecture of England?

Since those days, the Gothic and Tudor styles of architecture have been revived. Noble buildings of great beauty have risen up, which, however admirable in both design and execution, will not be viewed in future ages as British architecture. The most important public buildings which have been put up in the metropolis and provinces, are some in the Gothic style; others in the various styles called Greek, Roman, Italian, or Elizabethan. They pretend merely to be the adaptation of other works to peculiar circumstances.

Notwithstanding the general lack of originality, no doubt, a century or two hence, it will be as easy to recognize the architecture of Queen Victoria's reign as it is now to distinguish that of Queen Elizabeth, William III. and other reigns. The reign of Queen Victoria, we hope, will not be ended for long years to come, and who can say what changes may be made in that time. We notice the advance of artistic education and taste. We see different materials brought into new combinations: palaces of glass have risen, which are magical in effect; the large dome of the new reading-room at the British Museum; the daring exhibited in some of the commercial buildings in our great cities, all hold out a hope that a national style may rise up which may be claimed, and handed to the generations yet to come, as the

architecture of England. Is it too much to hope for this in a country which has produced Shakespeare and Milton, amongst the poets; Newton amongst the philosophers; Watt and Stephenson amongst the engineers; Flaxman amongst the modern sculptors; Reynolds and Turner amongst the painters? Who can say how soon the Shakespeare or the Newton of architecture may arise?

LAW NOTES IN IRELAND.

Collum v. McClelland.—Plaintiff owned two houses in Enniskillen, one occupied by the National Banking Company, and which that body found it desirable to rebuild. Defendant became contractor for that purpose, and the action was brought for his alleged neglect in not sufficiently shoring plaintiff's house during the progress of the work, and thereby causing damage to same. On behalf of plaintiff evidence was given by Mr. Creaden, a local builder, that previous to commencement of the work, plaintiff's house and return were perfect; but subsequently, that the hall door would not open, floors had lost their level, cracks in the wall became numerous, and he attributed the cause to the way the underpinning was done, only half-brick party wall carried up interiorly, and at top increased to 14 inches, &c.; but on cross-examination he admitted that the two houses were originally built by a man notorious for using bad materials, that the bridging of plaintiff's house was done as well as possible during the re-building. Mr. Wilkinson, late architect to the Poor-Law Commissioners, testified that the underpinning was defective, being only one-half under party wall; would not swear that some of the cracks were not old. For the defence it was alleged that the old bank was in a dangerous and ruinous state, and its re-building indispensable for public safety, that the plaintiff's house, erected at the same time of bad materials, was similar; that the cracks were caused by the insecure manner in which the new return was built on the old wall, and not by the re-erection of the bank; further, that the plaintiff, being solicitor to the bank, and having inspected the plans and specifications previous to drawing the contract deed, was fully aware of what was going to be done. Mr. R. Gray, the architect, deposed that the underpinning was done with the greatest care, in portions of 2 feet at a time, with stones, flags, and Roman cement; specified underpinning, but not how; did not know if it went the whole way under the wall. Mr. D. Gresham never saw more care taken in laying a foundation. If the bank had not been taken down, it might have fallen down, and taken plaintiff's house with it. Several other professional gentlemen deposed in favour of defendant's precaution in the workmanlike proportion of the work.—Verdict for plaintiff 125*l.*, damages, and costs; allowing that on the fourth count, the 5*l.* lodged in court was sufficient.

Nagle v. Dalsell.—Plaintiff is an architect in Limerick; defendant, his client, and a farmer, for whom he superintended certain works, and paid 31*l.* for timber for his use, which defendant subsequently refused to pay.—Verdict for full amount and costs.

Healey v. Allan Pollock.—Action for 327*l.* odd, for work and labour, and materials furnished. Plaintiff is a builder, and defendant a Scotch gentleman and extensive landed proprietor. Defendant pleaded that the plaintiff was only entitled to 173*l.* 8*s.* and that this had been paid.—Verdict for defendant.

ELECTRO-TELEGRAPHIC PROGRESS.

MR. SAWARD has forwarded to the newspapers a report from Mr. Webb, who is said to be an engineer of experience, on the present state of the Atlantic cable. He comes to much the same conclusion as was long since announced, that a serious fault exists at about 263 statute miles from Valentia; that if this fault could be removed, and also the one at Trinity Bay, Newfoundland, it is probable that the cable could again be rendered available for signalling. An American paper—the *Cleveland Plain Dealer*—publishes some rather curious details as to the use made, or attempted to be made, of a portion of the Atlantic cable. The Western Union Telegraph Company, it says, have purchased ten miles of the Atlantic telegraph cable, at 250 dollars per mile, to lay across rivers and bays. The first laid was across the Mississippi, at St. Louis, 2,700 feet. This worked well at first, but was a total failure at the end of twenty days. It was then underderrun from shore to shore, so as to see every inch of it; but no defect was visible. Another 2,700 feet were laid,

which worked two days only and failed also; yet there is no defect visible externally. Still another was laid, which has now worked well for six days. About thirty submarine cables, however, have been lost there by snags, anchors, &c. As to the supposed cause or causes of these failures of the Atlantic cable, the writer says: "It would not be surprising to find the great cable [strained and] parted in 10,000 places, or drawn so unevenly fine as to be melted by the first current of electricity passing through it. It is far more probable, however, that the sky electricity has perforated the isolating gutta percha, by flying off to the water, when overcharged, in a storm. Is not this the trouble with the Atlantic cable in the ocean as well as in the river; and, if so, is it not confined to a small section of a mile or so of the ends of the cable?" A mechanic named Richards, employed at Woolwich dockyard, is said to have invented a hopeful apparatus for paying out telegraphic cables without straining. Does not the radical fault, however, as regards straining consist in the fact that submarine telegraphic cables are so made that the main strain falls on the *straight* conducting wire, while the twisted enveloping wires can yield to the strain by untwisting? Had the conducting wires been twisted round a core, as we suggested, while the enveloping wires perhaps were straightly laid, the conducting wires would have really been protected to a great extent from injury by strain; but as it is, they are liable and likely to be either parted here and there or unduly drawn out. The following remarks from the paper just alluded to seem really to indicate that this must be the case. "In cutting the cable, however well the end of the cable is secured by binding before it is cut, the iron wire almost immediately protrudes 1-16th of an inch beyond the conducting wire; and, if a single foot is cut off, each end will do the same, making the conducting wire appear to draw in that amount. This is no doubt caused by the imperceptible untwisting of the cable, which lengthens the outer wire wound spirally round the conducting wire."

Messrs. Newall & Co. are said to have successfully laid the submarine cable which establishes telegraphic communication between Constantinople and Smyrna.

A submarine cable has been laid from Point of Ayre, Isle of Man, to St. Bees Head, on the coast of Cumberland. The cable, which was made by Messrs. Glass, Elliott, & Co. has a coating of hemp, saturated with pitch, outside the iron covering, to protect the latter from rapid oxidation. This process is a patented invention of Messrs. L. Clark, Braithwaite, & Preece. The lines of the Isle of Man Telegraph Company are placed in connection with those of the Electric and International Telegraph Company, and consequently are in communication with England, Scotland, and the Continent. There are two stations on the island, namely, at Ramsay and Douglas.

At the half-yearly meeting of the Submarine Telegraph Company, the report stated that the Boulogne cable was laid, which was the strongest and most perfect that had hitherto been manufactured, and that the company possessed ten efficient conducting wires for telegraphic purposes between England and France, besides six to Belgium and five to Hanover, Denmark, and the north of Europe. A cable would also shortly be laid by the company between the Channel Islands and the French coast. A dividend of 7 per cent. was declared, and 10 per cent. of the net revenue was appropriated to the reserved fund.

At the first meeting of the London District Telegraph Company it was stated that the paid-up capital of 10,740*l.* is more than sufficient to meet all the liabilities for contracts, &c. and that an agreement for interchange of traffic has been concluded with the British and Irish Magnetic Company, at whose new establishment in Threadneedle-street will be the chief station of the London District Company. Sites have also been secured for three other principal stations. The eighty-nine sub-district stations will be taken as the work progresses, and it is expected that the whole will be ready for opening by the commencement of next year. It was also mentioned that the number of applications for employment from highly respectable and well-educated young women had both astonished and grieved the directors, the maximum emolument being only 10*s.* a week.

The telegraphs in this country appear to have been very unusually and generally disturbed by the prevalent electricity of the atmosphere of late. The deflections of needles have been strong and erratic. The *Manchester Courier*, in allusion

to an instance of this kind, says,—"The needles instead of being obedient to the ordinary magnetic current, were violently agitated and deflected, the result being that the telegraphic clerks could only decipher a word or two of a sentence, leaving the information incomplete, consequently valueless. These phenomena occurred in connection with the wires of both the Electric and the Magnetic Telegraph Companies, and were not merely local in their manifestation, but interfered with messages from London, Liverpool, Birmingham, and more distant places. So great a disturbance of the electric currents has not been known for many years, scarcely since the invention of electrical telegraphing." Such disturbances, though very usual in America, have not hitherto been much felt in this country.

SCHOOL-BUILDING NEWS.

Swindon.—New school buildings have been commenced at Purton, to accommodate 250 children. They comprise a mixed school for boys and girls, with class-room, a school-room for infants, and a residence for the master. The buildings are to be constructed of the local rag stone, with Bath stone dressings;—the school-rooms, with open timber roofs, and the walls lined throughout with ashlar. Mr. Edward W. Mantell, of Swindon, is the architect, and Messrs. Gray & Titmarsh, the contractors for the work.

Stone.—The corner-stone of new schools has been laid in the village of Oulton. The schools, which will probably cost about 500*l.* will be erected partly by subscriptions and partly by a grant from the Committee of Council on Education. The building will be erected from designs by Messrs. H. Ward & Son, of Hanley; the execution of the work being entrusted to Mr. John Turner, builder, Stone. The principal room will be 40 feet by 18 feet, in addition to which there will be a class-room, which may be used also as a vestry. The building will be of brick with stone dressings, covered with ornamental tiles, with an open timbered roof in the interior. There will be an open porch at the front with a bell turret. It is contemplated to have the building licensed for the celebration of divine worship.

Prestwich.—As a memorial to the late Countess of Wilton, a Sunday school is to be erected in connection with St. Margaret's Church, Rooden Lane, and a memorial window put up in the parish church. Up to the present time the amount subscribed for the objects named, in various sums ranging from fifty guineas to one penny, is nearly 900*l.* Messrs. Travis & Mangnall are the architects who have made the plans for the school, which is to be of stone, in the Decorated style. In the building there will be two school-rooms, one for boys and the other for girls, and each apartment will be 35 feet long by 26 feet wide. The estimated cost of the schools is 550*l.*

PROVINCIAL NEWS.*

Great Horton (Yorkshire).—The Wesleyans of Great Horton have commenced the erection of commodious new schools on a piece of land in Paternoster-row, Great Horton, the foundation-stone having been laid by Mr. Thomas Farmer, of Arthington Hall. The schools are designed to accommodate 500 scholars, and comprise an infant school for both sexes under seven years of age, a mixed school for children above that age, with a sewing department for girls, and a mixed-class room. The schools, which are in the Italian style of architecture, will be one story high. The estimated cost of their erection is 2,500*l.* including a detached residence for the master. Of this sum 1,007*l.* have been raised by subscriptions, and the promoters expect 1,050*l.* from Government. The architect is Mr. Jackson, of Bradford.

Doncaster.—In consequence of frequent deaths from bathing in the river Don, the inhabitants have had a public meeting, at which the corporation were memorialized on the subject, and requested to erect public baths for the town.

Middlebro'.—A public meeting of Middlebro' ratepayers has been held in the Town-hall, to decide whether the town council were to proceed with the erection of baths and washhouses. The meeting was called by the mayor, at the request of the council. Alderman Thompson stated that the original estimate of the cost of the proposed building was 2,500*l.* This being considered a large outlay, the estimate was reduced to 2,000*l.* by dispensing with the swimming-bath. He calculated the working expenses would be about 100*l.* per

per annum. The receipts would average 12*s.* per day. He had no doubt but that they would be a paying concern, and supposing they did not pay one farthing, the present amount of rateable property was 32,000*l.* The proportion would be 1*d.* in the pound. It was moved "That the income derived from baths and washhouses would not pay either interest or redemption, and recommend that the town council take no further steps in the matter for three years." An amendment was proposed, "That the council be empowered to proceed with the erection forthwith, and that a swimming-bath be included, the total cost not to exceed 2,500*l.*" The original motion was carried.

Sunderland.—The Monkwearmouth police have had premises erected at the corner of Barclay-street, lately occupied by the Savings Bank. The new station comprises, on the ground-floor, a charge-room, private office, and three cells for prisoners. Below the ground-floor are two cellars, kitchens, behind which a boiler is placed, from which iron pipes are laid through the cells to heat them in winter. The rooms on the upper floor are fitted up as a dwelling-house for the inspector and two other members of the force.

South Shields.—The foundation-stone of the new building of the South Shields Literary, Scientific, and Mechanical Institution, in German-street, at the corner of Fowler-street, has been laid by Mr. R. Ingham, M.P. for the borough. The ceremony excited great interest in the town, and in the afternoon the shops were closed, and South Shields made holiday. The building will occupy a site of 800 square yards. The ground-floor, says the local *Gazette*, is approached from the street in the principal front by a short flight of polished stone steps leading through a double entrance into an outer vestibule, 14 feet by 10 feet, communicating with an inner vestibule, 26 feet by 14 feet, on the right and left sides of which are doors leading to the news-room and a library, each 40 feet by 32 feet. At the end of the inner vestibule is the main staircase, on the right and left of which are two short corridors, one leading into a reading-room, 29 feet by 18 feet, and the other into a room 30 feet by 18 feet, intended to be used as a school for instruction in geometrical and landscape drawing. The first floor is approached by a staircase 20 feet wide, the first flight of which will be 8 feet wide, ascending to a landing 20 feet by 6 feet; and from this landing on the right and left two flights of stairs, each 5 feet wide, ascend to the first floor, terminating upon a broad landing; from which you enter through two doorways, each 6 feet wide, into a large hall, 80 feet in length by 40 feet in width, and 35 feet in height, having at one end a platform elevated 3 feet, and at the opposite end a gallery elevated 12 feet above the floor of the hall, and supported upon ornamental iron columns. The body of the hall will contain 600 sittings, the platform, 100, and the gallery, 200. The access to the gallery of the hall will be by a staircase 6 feet wide, ascending from the landing of the main staircase; and at the top of this staircase, on the left opposite to the gallery door, will be a door leading into a large room, 80 feet by 15 feet, running the entire length of the building above the class-rooms and staircase. This room is intended for a museum and lecture-room. The building will be in the Italian style, with red brick front and fire-brick pilasters, moulded stone base and string courses, rock-faced quoins and arches, with moulded tracery, label moulds and key stones. The double entrance is placed in the centre of the building. The building will finish at the height of 55 feet, with a fire-brick frieze and corbelling, surmounted with a projecting stone cornice and blocking course. The total length of the front will be 83 feet, which will be enclosed with ornamental palisading upon a dwarf wall. The architect is Mr. John Wardle, jun. of Newcastle-upon-Tyne; and the contractor for the building, Mr. Joseph Wright, builder, South Shields.

Peebles.—The "Chambers Institution" at Peebles has been inaugurated. The institution as a whole consists of a museum already stocked with specimens of art and natural history; a local museum for contributions in geology, mineralogy, zoology, and other departments of natural history from the neighbourhood, and a library of 13,000 volumes; the whole the gift of Mr. William Chambers to his native town. The ceremony of inauguration commenced with a religious solemnity conducted by the Rev. Dr. Guthrie.

Nairn.—A Marine Hotel, the property of a joint-stock company, is now in course of being erected at Nairn, according to the *Forres Gazette*. The estimated cost is 2,500*l.* on the limited liability principle, at 25*l.* per share. The site is on the west side of the Links, immediately south of the

* The greater part of this article has been some time in type.

Bath-house, and within a short distance of the sea margin. The building occupies an area of 80 feet from east to west, by 54 feet in breadth. The building is in the Elizabethan style. The south elevation or wing, shows a gable ornamented with verge-boards and finials. The second or middle gable, rising higher than the first is 3 feet recessed, and contains the principal entrance, circular-headed doorway, and bar-window to correspond—all polished freestone. The third or eastmost section rises in the form of a tower, 16 feet square, over walls, and 70 feet in height to the top of the vane. The top or spire of the tower is to be covered with slates, scale-wise, after antique models. In the higher part of the tower there is to be an observatory. The building materials for the hotel are from the neighbouring quarries of the Links, Auldearn, and Seabank. The design is by Mr. Matthew, of Aberdeen, architect. The contractors are—for the mason-work, Mr. John Fraser, Auldearn; carpenter, Mr. George Bain Mackintosh, Nairn; plasterer, Mr. James Watson, Forres; slater, Mr. Wm. Innes, Nairn; plumber, Mr. Wm. Smith, Forres; bell-hanging, Mr. Smith, Inverness. Mr. George Manson, from Glasgow, inspector.

Jersey.—The main portion of the Jersey Hospital for the aged, the sick, and the insane, has been destroyed by fire. According to the *Jersey Times*, the circumstance is attributable to lightning. None of the 370 persons in the hospital were injured. The company formed in London for supplying St. Helier with pure water, says the same paper, have raised subscriptions to it, it is said, the amount of 15,000*l*. We understand that their plan is to have the main always full of pure water, with branches to every house, so as to insure an unfailing supply, without the necessity for cisterns or pumps.

CHURCH-BUILDING NEWS.*

Barkston (Lincolnshire).—Barkston Church is undergoing repairs. For a number of years the chapel on the south aisle has been in a very ruinous condition. This chapel, which is now being restored, is a continuation of the south aisle, and connected with the chancel on the north by means of a pointed archway, which, till very recently, was filled up with brickwork. The old gallery at the north end has been removed, and thus is given to view the groined archway which connects the belfry with the body of the church. The font has been placed in the belfry, and the windows and archways have been relieved from their coating of whitewash. Several traces of decorations have been discovered on the walls. Over the doorway was a fresco of St. Christopher, with a child (representing Christ) on his shoulder, crossing a river. Care, says the *Lincolnshire Chronicle*, was taken to preserve it from mutilation, but the whitewash adhered so tenaciously as to separate only with the portions of drawing.

Heigham (Norwich).—The first stone of Heigham new church has been laid by the mayor of Norwich. The part of the straggling parish of Heigham which the new church is intended to accommodate was a few years ago but thinly inhabited, but the growth of the city and the attraction and salubrity of that quarter have converted it into one of the most populous suburbs. The site of the new edifice is nearly opposite the Asylum-lane on Unthank's-road, and the design has been entrusted to Mr. William Smith, architect, Adelphi-chambers, London, the contract for building it having been taken by Mr. Balls, of Norwich. The new church will consist of a nave 105 feet long by 43 feet wide, a chancel, with an apsidal termination, and having an aisle on each side—north and south transepts, each having two arches open to the nave—a vestry and a tower rising over a part of the chancel. The style adopted for the design is that which prevailed in England in the thirteenth century, but it is very simple in detail, the amount proposed to be expended by the committee being quite inadequate to produce a richly ornamented structure, affording the required accommodation without sacrificing stability. Essentially the east elevation will be composed of the apse of the chancel, with the tower rising immediately behind it: on each side there will be the chancel aisle with hipped roof, and again on each side will be the gable of the transept. Internally, effect will be produced by the arches supporting the tower, the arches opening into the chancel aisles, and by the three windows of the apse, &c. The walls of the nave will be buttressed externally to resist the thrust of the roof, and in each bay there will be a window of three lights.

The western gable will have a large window of four lights, with three single light windows on each side of it, and an entrance beneath. Flints are to be used for the external facing of the walls, and stone for all the windows, angles, piers, arches, &c. The accommodation provided will be for 950 adults and 200 children, and the contract for the building alone is 4,000*l*. This amount does not include the cost of the tower above the chancel roof, which, however, the committee hope to be able to complete.

Waltham Abbey (Essex).—The Abbey Church will be closed for some time for the purpose of undergoing reparation and improvement. The gallery on the south side will be pulled down, the old pews removed, and modern seats substituted. The pulpit will be removed to within a short distance of the communion rails, and the pillars and arches, now disfigured by whitewash, will be restored. Voluntary subscriptions to defray the cost have already been received to the amount of 800*l*. A London builder has contracted for the work, which will cost over 1,000*l*.

Haselbeech (Northamptonshire).—Haselbeech Church has been re-opened for divine service, after its restoration from a state almost of ruin. The nave and aisles had become so dilapidated and unsafe, that it was found necessary to rebuild all the north side, to renew all the roofing of nave and aisles, and to make extensive repairs and restorations to the south side, and to the flooring, seating, and other parts of the interior. All this has been done. The roofs are of English oak, and are covered with lead; the flooring is new: such of the old oak benches as could be preserved have been replaced, and new ones made, also of English oak, with tracery and moulded work to correspond. All the works have been designed by Mr. William Slater, of London, architect, who is a native of Haselbeech, according to the *Northampton Herald*; and carried out under his superintendence by Mr. Parker, Thrapston, excepting as to the new seats of carved oak, in church and chancel, which were executed by Mr. Reeve, Guilsborough; the font carved by Mr. Forsyth, London, and the decoration of the chancel screen, which was done by Mr. Lea, Luttworth.

Reading.—Considerable improvements have been effected in Broad-street Chapel by lowering and sloping the pews, lowering the pulpit, &c. A new gaselier has also been suspended from the centre of the dome. Externally the appearance of the chapel is improved by the substitution of a palisade with sliding gates, for the unsightly wall and heavy paling which formerly stood there. The whole of the works have been carried out under the direction of Mr. Smith, of Reading, architect, and have been executed by the following contractors:—carpenter, Mr. Sheppard; plasterer, &c. Mr. Perring; gasfitters, Messrs. Williams and Biven; painter, Mr. George; and smith, Mr. Peover, all of Reading.

Gloucester.—A stained glass window has been completed in the south aisle of the cathedral. It is the first memorial window ever erected in the body of the church, as remarked by the local *Chronicle*, the former memorial windows being in the cloisters. The window is to the memory of Mrs. Ellis, of Minsterworth, and was executed by Messrs. Clayton and Bell, of London. It may be called an Edward the Second window; and the tracery or upper portion of it is divided into five lights. The centre one shows, in a medallion, the entrance of the king into Berkeley Castle. The subject of the next medallion is the assassination. In the third is the Abbot of Gloucester demanding the body. The two other head openings or lights in the upper part of the window, which are not sufficiently large for medallions, contain severally the Royal Arms and those of the monastery. The main body of the window consists of three lights, the glass of which has been divided into six compartments. The upper three, extending across the entire breadth of the window, contain the funeral procession: underneath, on the left hand, the body is being lowered into the tomb; the centre showing the building of the shrine, as it now stands in the cathedral; and upon the right are pilgrims making their offerings. When the eye first turns upon the window, says the *Chronicle*, in describing the design, it is arrested by the figures of the monks bearing the royal body, attended and followed by more monks and acolytes, carrying the cross and the *Vesica Piscis*; and the artists have contrived to give a shade rather than a colour to the vestments, avoiding inkiness and gloom on the one side, and glare on the other.—The restoration of the exterior of the west end of the nave of the Cathedral has been completed under the direction of Mr.

Waller, architect to the Dean and Chapter; and the memorial window, erected by the Rev. Canon Browne, to the memory of the late Bishop, being finished, is to be open to public inspection. The artist is Mr. Wailes, of Newcastle-on-Tyne. The memorial window to the late Mr. J. N. Balme has also been completed. It is next to that raised to Mrs. Ellis, of Minsterworth. The chief subjects are the Crucifixion (in the centre light), with Delivering the Talents and Tendering the Talents, on the right and left. The window has been erected by Mrs. Balme. The artist was Mr. Warrington, of London.

Nechells (Birmingham).—St. Clement's Church, Nechells, has been consecrated. The church is in the Geometric style of Gothic architecture, and consists of a nave, 93 feet by 23 feet, divided from the aisles and transepts by twelve arches of stone resting on octagonal piers. The timbers of the roof are exposed, and the arched principals spring from ornamental stone corbels. The woodwork is stained and varnished, and the floors are laid with Staffordshire blue and red tiles. The chancel is 22 feet by 20 feet, having an east window 20 feet by 14 feet, with geometric tracery. The transepts are lighted by large windows, 10 feet in diameter, and with two five-light windows, filled in with tracery. The west walls and the aisles are perforated with windows of a plainer kind. There are small galleries in the transepts, for school children. The cost of the building, including spire and boundary-walls, is 3,200*l*, and this sum is increased to 3,500*l*, by architect's commission and other expenses. There is accommodation for 852 persons, 477 free. The architect is Mr. J. A. Chatwin, and Messrs. Branson and Gwyther are the builders. St. Matthew's Church was the first of the ten churches proposed to be erected by the original Birmingham Church-Building Society, and St. Clement's, which is built in St. Matthew's parish, is the eleventh church, or the first offshoot.

A WORKING MEN'S LIBRARY.

WHILE the working classes are excited with strikes and rumours of strikes, documents and declarations, it is refreshing to turn to another subject, viz. the means now being adopted by some for self-improvement. We have often noted the establishment of libraries by workmen, and our attention has just been called to the progress of one established in the printing-office of Messrs. Cox & Wyman, the printers of this journal. This library was originated in the year 1854, by the men themselves; and though at first a few presents formed a nucleus, by a subscription of a penny a week, and the liberal assistance of the firm, they have now a first-rate library of 700 volumes. At a meeting of the members recently, an address was delivered by the chairman, Mr. John Bate, who congratulated them on the fact, that the institution prospered with undiminished vigour, and they were now in a position to abolish the entrance-fee, and thus open the library to all new comers without restriction. He then sketched the character of the valuable little library they had collected, passing—

"From grave to gay, from lively to severe."

and reminded them that the advantages of the library were not to be lightly neglected, certain that they could not fail to be, by its use, instructed, improved, and advanced as well in general intelligence as in their daily occupation; in proof of which he had only to mention such men as Franklin, Hugh Miller, Dr. Kitto, and Stephenson, whose biographies they had, and which he recommended them to peruse.

AN APPEAL FOR HATCHAM.

STR.—The inhabitants of Hatcham, after ten years of anxiety and difficulty to obtain a church for their parish, were offered a contribution of 1,000*l*, through Archdeacon Sinclair, by the munificent lady who erected at her sole cost St. John's Church in an adjoining district, which had at that time no ecclesiastical existence. This offer, however, was hampered with one condition, viz. that the Hatcham Church Building Committee should pledge themselves to begin the work within one year from the date of the offer. If not accepted, the 1,000*l*. were to be given to St. John's, which was to be begun immediately with money the lady in question had provided for the purpose. The committee refused the responsibility of the offer, not having enough funds to justify immediate progress with the work; and it is quite certain that the 1,000*l*. would have been lost, and that there would not be existing at the present time a church and parish at Hatcham had

* A portion of the following has been more than a week in type.

it not been for the Rev. A. K. B. Granville (the incumbent), who bravely accepted the responsibility of the offer, whereby he has made himself responsible for a debt of 2,500*l.* for the benefit of his parishioners. The church also remains in an unfinished state, wanting a steeple, peal of bells, finished organ, accommodation for 200 more persons, &c.

The contractors of the work, who promised the rev. gentleman any period of time to discharge the debt, have since suddenly died, and the executors, treating it as a business transaction, are now pressing him to pay the sum for which he has become personally responsible. The parish is far from being wealthy, and the rev. gentleman has cheerfully expended the whole of his private resources (amounting to upwards of 5,500*l.*) towards this debt, incurred under such peculiar circumstances, as by making a general appeal to those "who have enough and to spare," and whose hearts and purses are always open to a good and charitable cause.

If any of your readers may wish for farther particulars, they may be obtained from,

Yours, &c. CHARLES F. REDMAN.
High-street, Deptford.

THE OBELISK FROM PHILE.

You were so kind as to forward to me, some time ago, a letter to you, from Mr. Philip Brannon, in which he alluded to an error I had made in my paper read at the Society of Arts, in May last, and reported in your journal, as regarded the Obelisk from Phile, of 22 feet in height, which I had stated to be at Corfe Castle. I communicated with him in consequence, and have been favoured in return with a letter containing the following correction and information, which he has received from his friend Mr. Shipp, of Blandford, Dorset. The following is an extract from Mr. Brannon's letter to me:—"The Obelisk was sent from Phile in 1822 by the late Mr. Wm. Banks, Mr. Banks being proprietor of Corfe Castle, and that edifice being the most important object on the family estates, and honourably connected with his history, will account for your supposing the valuable antiquity being deposited there. It was, however, taken to the mansion which is at Kingston Lacey, near Wimborne, where it is carefully preserved. It was lithographed by Hullmandel, and the inscription translated and published at the time."

JOHN BELL.

THE STRIKE AND THE PRESS.

SIR,—Your number for this week will, of course, contain the announcement, so welcome to many, and so interesting to many more, that the strike in the building trade, or at least the "lock out," is at an end. I am not one of those who consider themselves entitled to offer remarks upon the questions involved in the controversy; but I think the present is the proper time for some one to direct attention to a certain extraneous point of common sense, which it is to be hoped will henceforward be kept in view.

In short, I cannot help thinking that the dispute would never have acquired the serious character it has, but for the accidental circumstance that the newspapers have been short of news: parliamentary intelligence is a blank, Villafranca has become a bore, the Queen is in the highlands, even *L'Empereur* is drinking dirty water in private for his stomach's sake; and *Times* and *Telegraph*, and all between, are actually at their wits' end and for "copy." There could not possibly be a more unfortunate time for Jack and his master to fall out, in all the year round. The penny-a-liner grabs them, and they are heroes. Being equally unaccustomed to public speaking, they are equally intoxicated by being set up in the tribune and publicly cheered and countercheered. British pluck is on its trial. Adherence from all quarters rush to either side. "Principle," that most treacherous of all idols in human controversy, stimulates the combatants. The little dispute between Jack and his master about the length of a fair day's work, becomes a great social question—a state question—a class question—a political-economical question—and deuce knows what all, for Jack and his master do not.

Jack has been spluttering about sending his master into the *Gazette*. His master in return has been hinting at sending Jack and his wife and little children into the workhouse. They don't mean a word of it—either of them. Next Christmas time Jack and his master will be sitting in repletion over their treat, for all that's

come and gone yet, and chuckling just in the old way at the governor's jolly speech, read surreptitiously out of his hat, in the old way ("Lord!" says Jack with a wink, "ne'er a one of us would 'a seen the paper if he'd 'a took it out bold like a parson!") and this temporary tiff will be all forgotten, so that Jack would punch any man's head who would mention it.

But if this desirable end is to be arrived at—as both parties sincerely wish—by the shortest and most effectual way,—that way, I will be bold enough to affirm, is this:—Let Jack and his master, firstly and foremostly, mutually punch the head of the penny-a-liner.

I regard the announcement of the masters for the re-opening of their shops as a fair offer of armistice in our great Battle of the Bricks. It is made with a certain affectation of cock-crowing. I admit,—for the sake of the penny-a-liner,—to save appearances, this is. I hope Jack will look beneath the surface, and see what others can see very plainly, that his master is simply anxious to go on again with his work for the sake of common sense, and to let bygones be bygones if Jack himself do not rake them up. It is creditable to the masters that they make the first advance.

The interference of the press, in its accidental want of occupation, has gravely complicated a controversy which but for this would have gone no further than a private practical solution. Now that an opportunity of reconciliation is offered, let it be gracefully accepted—and accepted with all its apparent faults—if for no other reason than to bring back the dispute from public and theoretical ground to the common-sense field of the builders' yard, where it will soon be settled. In short, for the sake of all concerned, let the parties now keep the matter to themselves.

In accordance with a general law, I presume there are grievances of some sort on both sides. We all have our grievances; if the world could only settle off its grievances, there would be an end of all that is worth living for, straightway. But, perhaps, in this case, there may be grievances worth looking into. If so, I venture to say to masters and men alike, that the process they have been carrying on for the last few weeks is one by no means cleverly derived on either side. Better end it, and begin again. Take a month or two to cool; and some way of inquiry and adjustment is sure to turn up when heads are cool. But, as a first and indispensable measure,—punch the head of the penny-a-liner.

ROBERT KERR.

OFFENCES IN CONNECTION WITH THE STRIKE.

At the Southwark Police Court, Michael Collins, a bricklayer's labourer, and one of the men belonging to the society now on strike, was brought before Mr. Secker, charged with committing a cowardly and unprovoked assault upon William Aldridge, a labourer in the employ of Mr. Greenwood, the builder, of Arthur-street West, not belonging to the society, and using threatening language towards him in the lawful performance of his calling.

The complainant, on being sworn, said, I am in the employ of Mr. Greenwood, who is building houses in Tooley-street for the Fire Brigade. I am a labourer, and do not belong to any society. Yesterday afternoon I was by the scaffolding loading my hod with bricks, when the prisoner came up to me and called me a scamp, and told me I was depriving him of his bread. I told him I was exercising my lawful calling, when he said, "You are not: you are robbing others of their just rights, and you would not do that if you belonged to the society." I told him to leave me and let me go on with my work, when he threatened to serve me out, and shook the pole of my hod as I was ascending the ladder. He then went away, but returned about an hour afterwards, when he again made use of threatening language and struck me. He said, also, if I attempted to carry any more bricks he would pull down the scaffold.

Prisoner, in reply, said, I was drunk at the time, and did not mean any harm. It was only a little chaff.

Another charge was here brought against the prisoner by Charles Henry Griffith, another labourer employed on the same building.

After evidence had been given,

Mr. Secker said,—You have committed a gross outrage by insulting these two respectable, honest, hard-working men in the lawful performance of their avocations, by attempting to force them from earning their subsistence by their labour for themselves and families, by means of cowardly threats. You not only threaten, but you assault

one, and use him in such a manner that it is a wonder he did not fall from the ladder with his load of bricks. You also threatened to pull down the scaffold because these men do not like to join in the strike, and allow themselves and families to starve. You say that you were drunk, and did not know what you were doing. That is denied by Inspector Mackenzie. What business have you or any other person to interfere with men in their lawful occupations? They have a right to dispose of their labour as they please, without being interrupted. You must pay a fine of 3*l.*, and, in default, you are committed to prison for two months, and you must also find two sureties in the sum of 10*l.* each for three months.

The prisoner was then removed to gaol.

PROGRESS OF GLASS-PAINTING.

SIR,—I have for years been interested in glass-painting, and my attention has been lately again directed to the subject by two visits to Lincoln and Canterbury Cathedrals, and by a desire myself to put up a memorial window in an Early English triplet. But I am very much dissatisfied with the progress of English work since the exposition of it at Hyde-park in 1851. I don't profess to be a connoisseur, but I have meditated with much pleasure on the glass at Chartres, Bourges, Rouen; also at Beauvais and Amiens; and both at Amiens and Paris I have seen the imitation of the ancient Early Pointed glass by the Paris artists. I am under the conviction that the French modern work is very superior to any that I have seen in England. The large east window at Lincoln seems to me a confirmation of my opinion. I think you would be doing good service to open your pages to this subject,* for I cannot but think there is much truth in the remark of the workman I saw at Lincoln Cathedral. He said that glass-painting now was made too much a matter of bargain and cheapness. On the other hand, I believe if it were once understood, by gentlemen desirous of erecting memorial windows, that any one artist did really use cobalt for his blues, instead of precipitate of iron, silver for his gold colours instead of antimony, and so on, to obtain the best approach to the brilliancy of the twelfth and thirteenth century glass, they would not hesitate to give the necessary extra price. If I am wrong in supposing that modern work in Lincoln, Doncaster, and, above all, Ely, is not what it might be, I still think I shall have done good service in eliciting opinions on the subject.

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DECISIONS UNDER METROPOLITAN BUILDING ACT.

TEMPORARY BUILDINGS.

At the Westminster Police Court last week, Mr. Samuel S. Wilson, of Burton-street, Eaton-square, appeared to a summons obtained against him by Mr. Samuel Beachcroft, district surveyor, of St. Luke's, Chelsea, charging him "That in erecting a building he had constructed the enclosure walls of wood, being a combustible substance, instead of brick, stone, or other hard and incombustible substance, the foundations resting upon the solid ground or on concrete, or other solid substance," and further, "that he had omitted to cover externally the roof of the said building with slate, tile, metal, or other incombustible material."

Defendant admitted the matter and said,—Owing to a recent fire at a large draper's in Sloane-street, by which the premises were entirely destroyed, it was found necessary to erect a temporary building of wood, which was covered with asphalt. Before commencing this defendant made application to Mr. Beachcroft, who informed him that he could not give him permission to violate the provisions of the Building Act, upon which defendant, under a special clause in the statute, applied to the Central Board, submitting the plan and soliciting their permission, which was given.

Mr. Hayman, one of the firm whose premises were destroyed by the fire, said that, after the plans had been sent in to the Board, showing how the temporary building was about to be constructed, Mr. Hart, a gentleman who represented himself to be one of the surveyors to the Board, came and inspected the premises, approved of the plan, and gave permission for the construction of the premises for nine months, informing him that if he then required an extension of the time he must again apply to the Board.

Mr. Beachcroft said that, as accidents soon occurred, he had felt it his duty to write to the superintendent at the Board of Works, to inquire whether permission had been there given for the structure, in order that he might be released from any responsibility, and the result was, that on the 14th of July he received the notice he produced, stating that permission had been refused.

Mr. Dayman thought that it would be hard upon the defendant now to render him amenable to the Building Act, upon the refusal of permission, which had been issued something like six weeks after consent by the visiting surveyor, upon faith of whose approval and consent they went on with the structure. Mr. Hart, whom he assumed to be a proper officer of the Board, might have taken upon himself to give a permission which he had no right to do, but that was a matter between him and the Board, and the defendant ought not to suffer for it.

After a conversation, the summons was adjourned for.

* Our correspondent is evidently not an old reader of the *Builder*.

six weeks, by which time Mr. Hayman's firm will, in all probability, no longer require the temporary structure in question.

RECENT PATENTS CONNECTED WITH BUILDING.*

CLAY EARTHS FOR BUILDING PURPOSES.—*J. Eccles*, Blackburn. Dated January 15, 1859.—The patentee takes material as free from impurities as possible, and after tempering such material moulds it into the shape of the articles required, either by compressing the material through moulding orifices, or by placing it in mould boxes. At the time of moulding he makes hollows or perforations of such number and extent as the shape of the articles admit of, then carefully removes the moulded articles so as to be readily subjected to the drying action of currents of air both hot and cold, produced by mechanical means described in the specification of a patent granted to him on the 2nd of December, 1857. When thoroughly dry he places the articles in a kiln so arranged that every part shall be subjected to as nearly a uniform temperature as possible, carefully avoiding the direct action of the flames of the furnace upon the articles: by this means he is enabled to produce articles from clay earths, as substitutes for stone and other materials, free from cracks and other imperfections, which have hitherto been the great objections to the use of such articles.

NAILS OR DRIVING ARTICLES.—*M. Wigzell*, Exeter. Dated January 1, 1859.—The forms of nails described by the patentee are wholly or partly twisted or spiral, and are such that nails made as described offer a greater resistance to drawing than the ordinary nails or other driving articles, as they cannot when driven be withdrawn by a direct strain without tearing away the wood into which they are driven.

FIXING DOOR AND OTHER KNOBS.—*J. Gibbons*, Oxford-street. Dated January 12, 1859.—In place of the outer end of the male-screw or projection being closed by a fixed cover or plate forming part of the male-screw or projection as heretofore, a movable cover is employed, which is separated from the projection on the fixed rose, and also separate from the female-screw on the movable or covering rose. This cover and the fixed rose are made with notches, slots, recesses, or parts, which, when they come together, and are in use, connect the cover with the hollow male-screw or other parts of the fixed rose, so that the cover will be prevented turning when the knob is turned; and such connecting of the cover with the fixed rose or instrument on the door may be such that the pull to open the door may be on the fixed rose without acting on the covering rose.

BAKERS' OVENS.—*J. E. Drouot*, Paris. Dated January 1, 1859.—This invention consists in a mode of constructing bakers' ovens, by means of which the patentee can bake, and produce, at the same time, the steam necessary for working a motive-power. He obtains this result by fitting one or more series of boiler-tubes in the arches of the ordinary ovens. The whole is disposed so that the steam produced goes in the boiler, from which it may be taken for working the motive-power, heating water, or any other purposes. The boiler may be heated without heating the oven.

RACKS AND WATER-CISTERNS.—*W. Hood*, Upper Thames-street, London. Dated January 4, 1859.—This invention consists, first, in hinging a flap or grating, or flaps or gratings, to stable-racks, by means of spring hinges, or by means of hinges acting in conjunction with springs, in such manner that the said flaps or gratings shall constantly press upon the hay or other fodder in the racks, and prevent the cattle from withdrawing it wastefully; second, in fitting in water-cisterns, covers (by preference in the form of perforated plates or gratings), and supported at one end on a rest or rests of any suitable kind, and having at the other end pins or projections moving in slots (by preference angular in form), or otherwise, in such manner that one end of the plate may be so moved as to allow the other end to fall when the horse or other animal is about to drink.

CHIMNEY-COWL AND VENTILATOR.—*A. Bedborough*, Southampton. Dated January 4, 1859.—This cowl consists of an inner tube or conical-shaped flue surrounded by an outer case, in the sides of which are transverse openings with deflecting plates, to give an upward direction to the air entering through them, about 2 inches to 4 inches, more or less. From the top of the central tube there is a stop-plate, which entirely covers all direct access to the tube from the top of the

cowl; but the smoke and vitiated air ascending through the tube are carried off through apertures made and fitted in the form of an ornamental top, which communicates with spaces outside of the covering-plate before alluded to. Rain or other water is carried off from the covering-plate through side apertures and through tubes, which direct the water through the transverse openings in the case outside of the inner tube, and tend to keep them clean.

Miscellaneous.

THE WAX-TREE.—In the nursery gardens established by the French government in Algeria a trial has lately been made, with perfect success, of a tree—new in Europe—the goingmadon, or the wax-tree of Cayenne, which furnishes a species of wax exactly similar to that in common use, and possessing all the properties of bees'-wax. The tree grows freely and costs little, and it has been calculated that each full-grown stem will yield from twenty to twenty-five kilogrammes annual produce. A hectare is to be planted on the government lands.

A PICTURE BY JOUVENET.—A discovery has been made, in a country church in the department of the Seine-Inférieure, of a painting by the celebrated Jovenet, born at Rouen. The subject of this work of art, which is 3 mètres 4 centimètres high, by 1 mètre 55 centimètres wide, is "The Assumption of the Virgin Mary." It is signed and dated, bearing the name of "Jean Jovenet, Pinxit, 1713," the very year in which the artist was struck with a paralysis, and lost the use of his right side and limbs. There is then every reason to suppose that this is one of his last productions when he had the use of his right hand, and when his talent was in full vigour: it is even said to be one of his best. The Virgin is represented clothed in draperies of brilliant red and blue, rising up to Heaven, surrounded by angels and cherubim, and bearing a crown of light, or halo, in an atmosphere delicate and transparent. The figure occupies three-fourths of the canvas.

ELECTROTYPED FOUNTAIN IN PARIS.—In front of the Bibliothèque Impériale, at Paris, is a bronze fountain which has just been coated with copper by the electrolyte process. The operation was carried on in a workshop at Auteuil. While the upper basin, from which the water flows through sixteen tigers' mouths, was in the bath of sulphate of copper, a violent thunderstorm burst over Paris, and the lightning fell close to the workshop. Immediately after the storm had subsided, M. Oudry was extremely surprised to discover that the copper had been deposited on the tigers' heads in streaks or lines about the twenty-fifth of an inch in height, separated by equal intervals, and so happily arranged that they form a veritable tiger's skin covered with hair, in as perfect a manner as if they had been produced by the hands of a skillful engraver. This curious effect of the electric fluid has accordingly been allowed to remain, and a square garden round it, in imitation of those of London, was inaugurated previous to the emperor's fête. The successful completion of this work will be followed by a copper deposit on the fountains of the Place de la Concorde, and all the iron and bronze statues in Paris.

THE SOUTH STAFFORDSHIRE IRON TRADE.—The circular of Mr. Samuel Griffith, metal broker, Wolverhampton, states that the iron trade of South Staffordshire continues satisfactory. The official list of prices of finished iron is stated as follows:—Common Staffordshire bars, 77. 10s. at the works; best bars, 82. 10s.; sheets, 94.; doubles, 107. 10s.; nail sheets, 84. 10s.; latten, 124.; boiler plates, 94.; best and best in proportion; common rods, 77. 10s.; hoops, 84. 10s.; Canada plates, 124.; and all sorts in proportion. The current prices of pig iron, Staffordshire coal blast, 44. 10s.; best native hydrate pigs, 34. 15s. to 44. 5s.; first class all mize grey forge pigs, 34. 7s. 6d. to 34. 15s.; good mine pigs, with a modicum of flue cinder, 34. 5s.; mine pigs deteriorated by cinder, 27. 12s. 6d. to 34.; melters, Nos. 1, 2, and 3, 27. 17s. 6d. to 34. 2s. 6d.; superior makes of all mine melting iron, 34. 10s. to 44. according to make and quality. Favourite Shropshire and Forest of Dean brands, 44. 10s. The Glasgow market for Scotch pigs is said to have been steady. Warrants, 52s. 9d. to 53s. No. 1, G. M. B. 52s. 6d. to 53s.; No. 3 ditto, 52s. 6d. to 53s. Gartsherrie, 55s. 6d.; Calder, 55s.; Coltness, 54s. 6d.; Glegarnock, 54s. 3d. Shipments for the week, 12,041 tons, against 12,393 tons for the corresponding week of last year.

"SOUTH KENSINGTON MUSEUM."—During the week ending 3rd September, 1859, the visitors have been as follows:—On Monday, Tuesday, and Saturday, free days, 4,393; on Monday and Tuesday, free evenings, 3,594. On the three students' days (admission to the public, 6d.) 633; one students' evening, Wednesday, 166. Total, 8,786.

COVERING JOINERY WORK WITH METALS.—Mr. Drouin, of Paris, provisionally specified an invention, which consists in covering or lining with metal articles such as doors, windows, Venetian blinds, or other such articles of ordinary joinery. The objects thus covered are less liable to suffer, are stronger, and protected against fire.

NEW CEMETERY FOR LIVERPOOL.—At a vestry meeting held in Liverpool, on Tuesday week, a report was adopted recommending the purchase of between ninety-seven and ninety-eight acres of land in the Walton district (to the north-east of Liverpool), for the purpose of a cemetery. The cost of the land will be 51,000*l.*; and an additional sum of 25,000*l.* was authorized to be expended in defraying the expenses incident to the completion of the cemetery.

IRON P. WOODEN DOCK GATES.—The acceptance of a number of timber contracts for dock purposes led to a discussion lately, at the meeting of the Mersey dock board, upon the comparative merit of green-heart timber, and iron in the construction of dock gates. Mr. Boulton, one of the members, instanced the iron gates at the Victoria docks in London as an example of the efficiency, durability, lightness, and ease in working, which characterized iron as a material for this purpose. Mr. Hartley, the dock engineer, said his attention had been called to this adaptation of iron, but that the gates in question were found very expensive, and involved frequent repairs. In the construction of the gates for the new works at Birkenhead, he intended to use iron, but only for the ribs, the planks being of green-heart.

UNIVERSITY COLLEGE, TORONTO.—Progress is being made at University College. The central doorway of the great tower is now approaching completion. The halls of the University are being laid with tiles, from the works of Messrs Maw & Co. Broseley, Shropshire: a man was sent by Messrs. Maw and Co. from England, for the purpose. According to the *Toronto Globe*, Messrs. Cumberland and Storm, the architects of this work, experienced, at first, considerable difficulty in finding men capable of executing the masonry and stone cutting required. For some years past the buildings erected in Canada had been of a very inferior description in an artistic point of view, and the best workmen had left the province for places where their skill was required. The clerk of the works, Mr. Morris, upon whom, in reality, the whole burden of the erection has rested, had, therefore, to pass many of his men through a regular educational course, with what success the magnificent college, which now rears its head, is the best proof we can offer. These men will be at liberty in time to exercise their skill upon the buildings in Ottawa.

THE LAST NOVELTY IN AMERICAN HOTELDOM.—**VERTICAL RAILWAY.**—The *New York Herald* describes a new and monster hotel which is in the course of erection in Madison-square, at the intersection of the Fifth Avenue and Broadway in that city. This gigantic establishment, which is six stories high, exclusive of basement, covers an acre of ground and contains 500 rooms for guests. It has 125 parlours, with suites of rooms, and each has a bath attached and a water-closet. Some of these parlours are 27 feet by 15 feet. The accommodation is in every respect perfect; but, perhaps, the most powerful feature in this hotel is that it will contain a vertical railway, that is, a carriage will move from the top to the bottom of the building, and from bottom to top. It will be forced upwards by the application of steam power, and the descent will be regulated by the resistance of hydraulic power, so as to guard against accidents. The car will be attached to a shaft, which, being turned by steam, will cause the car to proceed upwards by means of a screw, or on the principle of the inclined plane. The car stops at each floor, and passengers are landed, and others taken in. In the same way, in making the descent, it stops at each floor. It is stated that there will be contrivances at each of these landings to prevent accidents. Behind the vertical railway is a baggage elevator, moved by the same power. The object of this is obviously to save the necessity of taking trunks up and down the stairs—a great convenience. Near the vertical railway there is a capacious staircase for those who prefer using their legs. The cost of the erection and furnishing this hotel will be upwards of a million of dollars.

* From the Engineer.

BLACKFRIARS-BRIDGE.—Sir: In the year 1854 I submitted to the Bridge Committee in the City, and also at the House of Commons, a design for the renovation of Blackfriars-bridge, substituting one opening for the three centre existing arches, and, therefore (since there is no novelty in an arch), I claim the originality of the "idea" of thus dealing with the bridge. You will, I doubt not, do me the justice to make as public this statement, as you have your notice of Mr. Coombs's plan.—SAMUEL PEYTON, Architect.

ACCIDENT AT WESTMINSTER NEW BRIDGE.—A young man employed at the Westminster new bridge has met his death in the following manner. The deceased (William Allen) was at work on an iron girder, from which he fell into the river; but in his descent he came in contact with other portions of the ironwork. He had been but a few minutes immersed when he was brought on shore and carried to the surgery of Mr. Dodd, 91, Bridge-road, Lambeth, but life was quite extinct.

NEW RESERVOIR FOR HALIFAX.—In addition to the large reservoirs of the corporation in the neighbourhood of Halifax, another is about to be constructed. It will be at Pellon, a distance of about a mile and a half from Halifax. It is to be a storage reservoir for spring waters (250,000 gallons per day) running to waste in the Ogden valley; and to provide for the increased quantity which will flow from the conduit in the Ludden valley, when that branch of the works is completed. The new reservoir is designed to hold some twenty-eight millions and a half gallons, and will have ten acres of water surface. Mr. Stephenson, the borough engineer, has the superintendence of the project, and Mr. Dan Skelton, of Moor end, is the contractor, who is to complete it for 10,500l.

BREACH OF CONTRACT.—At the Sheriff's Court, Stafford, a writ of inquiry to assess damages for breach of contract in the non-delivery of iron was lately decided. The plaintiff, Thomas Wood, an ironmaster at Bilston, bought of the defendants, Messrs. Dinmuck and Co. the Parkfield Iron Company, in September last, 500 tons of iron at 3l. 5s. and the usual form of contract was entered into as to delivery and payment. The plaintiff proved the contract, and that he had paid under it 1,155l. that defendants had delivered to him 242 tons 10 cwt. which, less discount, 30l. 6s. 3d. was valued at 757l. 16s. 3d. having been overpaid by plaintiff 397l. 3s. 9d. Under the contract plaintiff claimed 2½ per cent. on cash payments, amounting to 28l. 17s. 6d. and 96l. 11s. 3d. for damages in non-delivery, being increased value of iron. Plaintiff also proved that defendants were admittedly indebted to him on a general account for work 1,150l. 17s. 8d. making a total due to plaintiff of 1,673l. 10s. 2d. for which the jury gave a verdict. The defendants did not appear.

NEW PROCESS FOR WATERING STREETS.—A curious experiment is now being tried at Lyons for laying the dust in public promenades. A chymist of that city having accidentally spilt some hydrochloric acid on a terrace, found that it maintained the spot on which it fell in a state of permanent moisture. This led him to think that by watering the streets with water tinged with this acid the dust on large macadamized roads might be laid, or rather prevented from rising. Experiments were first made on the Cours Napoleon, between the Rhone and the Perrache station. The success, according to *Galignani*, was complete, and has proved durable, the carriage-way having now been several months free from dust; and another experiment is now being made on the Place Bellecour. The acid forms one of several deliquescent salts, which attract the moisture of the air, especially during the night.

BELFAST.—A terrace of houses are being erected on the Elmswood property, which is situated opposite the Queen's College, and which has lately been laid out in building lots. The proprietor purposes calling the terrace the "Queen's Elms," in commemoration of her Majesty having been driven through this property in her progress to visit the college on the occasion of her visiting Belfast in 1849. The central house of the seven intersects the old avenue, by which her Majesty approached the college, and is opposite the entrance tower of that building. The owner of the estate has stipulated that the row of elms, which stands parallel to the road, is to remain. The houses, which are Tudor-ish in style, are built of patent dressed red bricks, the dressings round doors, windows, gables, and parapets being of cut stone, from near Dungannon. The houses are being erected by Messrs. Connor & Co. of Belfast, their tender being 7,350l. exclusive of grates, chimney-pieces, railing, and the erection of stable offices. The architect is Mr. Thomas Jackson.

ASSOCIATION OF FOREMEN ENGINEERS.—On Saturday night last, at the ordinary monthly meeting of the Association of Foremen Engineers, Mr. C. F. Hayes read a paper on the manufacture of rifles. The reader detailed with much minuteness the processes practised at Enfield and elsewhere in the construction of the death-dealing weapons, and obtained a vote of thanks for his pains. Mr. Newton, of the Royal Mint, presided on the occasion.

THE STRIKE IN DUBLIN.—Advertisements have been issued from four of the leading building firms in this city for carpenters, at wages ranging from the old standard of 4s. 8d. to 5s. per day, the present demand of the men on strike. The following counter advertisement appears in the journals:—"Notice: The employers of this city advertising for carpenters are those refusing to give the advanced rate of 4d. per day to their workmen. P. McDonald, Secretary." Some firms are making arrangements with an extensive saw-mill factory for the supply of a large assortment of every article in the building line that machinery can perfect, and, by the general adoption of this course, think they may be able henceforth to reduce considerably the number of carpenters, while the work will be at less cost.

BUDRUM AND CNIDUS.—The expedition under Mr. Newton being now concluded, the whole of the plans, drawings, and photographs made during the excavations have been deposited in the British Museum. These consist of the following:—1. Plans of the Mausoleum, and other sites excavated at Budrum, Cnidus, and Branchida, and of several ancient sites in Caria visited in the course of the expedition. All these plans have been executed by Lieutenant Smith, R.E. 2. Drawings of the architecture of the mausoleum, the castle at Budrum, the lion tomb at Cnidus, also various architectural remains and picturesque views taken at Budrum, Cnidus, and Cos, by Mr. R. P. Pullner, architect. 3. Upwards of 300 photographic negatives, containing views of sculpture, excavations, and scenery at Budrum, Cnidus, and Branchida, by Corporal Spachman, R.E. 4. Facsimiles of the armorial bearings and inscriptions placed on the walls of the castle at Budrum, by the Knights of St. John. These facsimiles have been executed by Corporal Spachman, R.E. The plans, drawings, and photographs form a series of documents for the History of the Expedition, and it is to be hoped that they may be published without delay in a suitable manner.

GAS.—The *Herts Mercury*, in reporting the third annual meeting of the Hertford Gas Company, says:—"The report of the directors recommended that a dividend of 7½ per cent. less income-tax, be declared, which would leave a balance in hand of 1697l. 16s. 9d. The report was adopted. A resolution was agreed to, authorizing the payment in future of 10s. 6d. each to the directors for every attendance, and 3l. 3s. per annum to the auditor. A vote of thanks to the directors and auditor for their past gratuitous services was agreed to unanimously. Mr. Church, manager of the works, being about to leave Hertford, to take charge of extensive gasworks at Weymouth, Mr. Sworder proposed a resolution expressing the entire satisfaction of the shareholders with his conduct during the last eleven years, and an opinion that the success of the company was mainly owing to his energy and skill; and also wishing him great success in his new undertaking. The resolution was seconded by Mr. Folkard, and agreed to unanimously."

At the annual meeting of the Aylesbury Gas Company a good dividend was declared, and it was also resolved to reduce the price of gas to 5s. per 1,000 feet.—At a recent meeting of the shareholders of the Ashford Gas Company it was resolved that the recommendation of the directors to reduce the price of gas from 6s. 8d. to 6s. per 1,000 cubic feet should be adopted.—"In London, where coals are comparatively dearer than in any other city in the kingdom," says a Glasgow paper, "gas is only 4s. per 1,000 cubic feet, in Liverpool it is 3s. 9d., in Birmingham 3s. 3d., and in Whitehaven 2s. 6d. against 5s. in Glasgow. Why should gas be dearer in the very centre of the great coal district of Scotland than in any other part of the kingdom? In twenty-five years the price of gas has been reduced in Liverpool from 40s. to 4s. per 1,000 feet. By a constant pressure of the interest of the consumers on the springs of production, the price has dropped down in a quarter of a century at the rate of about 1s. 6d. a year. In 1850, when the price was 4s. 6d., the gross income of the gas companies was 101,000l.; and in 1858, when the price was 3s. 9d., the gross income was 165,000l. The consumption of gas in that period had doubled."

SINKING OF THE BIRMINGHAM CANAL AT TIPTON.—The ground under a portion of the Birmingham Canal at Tividale, near the new tunnel, has suddenly sunk 8 to 10 feet, the water pouring out into the adjoining fields. Fears were entertained that the water would enter the mines. The accident is attributed to workings in the limestone underneath. Some two acres of ground sank.

FORGED IRON PLATES.—In the exhibition of the Rouen foundries are to be remarked two forged iron plates for the steam-frigate *La Gloire* in course of construction at Toulon. They weigh 1,050 kilogrammes, are 11 centimetres thick, and 70 centimetres by 1 metre 75 cent. All these shot-proof plates were forged on templates of the vessel, and are ready to be put in place.

COATING IRON AND STEEL WITH METALS.—Mr. Beslay, of Paris, employs an alkaline bath, his claim being for the use of caustic alkalies in the bottom or decomposition baths in coating or covering iron or steel with tin, zinc, or lead. The alkaline bath he forms somewhat in the following proportions:—Metal, 5 to 6 parts; caustic potash, 15 to 20 parts; water, 1,000 parts. In operating with tin he boils the metal, or its oxide, in a solution of caustic potash.

NEW FRENCH WHEELBARROW.—A new wheelbarrow, which was worked by the men employed to repair the damage occasioned by the *flees* in the gardens of the Tuilleries, is attracting much attention. The two legs are replaced by two wheels, smaller than the one in front, and fixed under the body of the barrow. The handles are on a level with the hands of the workman; and thus, upon a level road, a slight push is all that is necessary for the transport of the heaviest load. The three wheels, being almost close together, the act of turning the barrow in the smallest place becomes as easy as possible. The workman has but to lean upon one of the handles, and the front wheel is lifted from the ground, leaving the barrow free to be manoeuvred like a common hand-cart.

DEATH FROM FALL OF A WALL AT ABBINGTON.—A correspondent of the *Reading Mercury* narrates the particulars of the death of a woman, from the fall of a wall in Oak-street, Abbingdon. Surprise and indignation appear to have been felt, on the part of some of the inhabitants, that, in taking down the house where the accident occurred, the builder "pulled all the back of the place down, and left the front wall standing all the way up, only a brick thick." The coroner's jury returned a verdict of accidental death, with a reprimand to the builder for his negligence; whereupon, it is added, he presented the husband of the woman with a solatium of 5l.

RAILWAY MATTERS.—A patent, says the *Quebec Gazette*, has recently issued for an improvement in locomotive engines. It is the magnetising of the driving wheels, thereby causing 75 per cent. additional adhesion to the iron track; thus enabling a light engine of 17 tons weight to perform the work of a heavy engine of 30 tons. An experiment was lately made, when the track and wheels were greased, and the locomotive chained to a post: steam power was then applied, without this attachment, when it required 19lb. steam to the inch to slip the driving wheels. With the attachment, it required 35lb. steam to slip the wheels. On a clean rail it required about 50lb. steam per inch to slip the wheels without magnetism,—with magnetism and the same kind of rails, 88lb. of steam.—Although the cost of railways in the United Kingdom has averaged 34,243l. per mile, viz. 38,779l. in England, 27,533l. in Scotland, and 15,061l. in Ireland, the average cost of lines of railway for which acts have been obtained since 1848, and which are now opened for traffic, has amounted to 10,500l. per mile, namely, 12,600l. per mile in England, 8,700l. per mile in Scotland, and 6,600l. per mile in Ireland. Of the total amount of money raised, 81,683,179l. has been raised by loans, 61,854,547l. by preference shares, and the remainder, namely, 181,837,781l. by ordinary share capital.—Of the 140,000,000 railway passengers (in round numbers) conveyed last year, 18,302,384 were first-class, 41,693,289 second-class, 79,145,464 third-class and parliamentary, and 52,562 holders of annual or season tickets. The other "live stock" included 2,323,305 head of cattle, 6,930,160 sheep, and 2,048,619 pigs.—The railway works in and near Sherborne are progressing. To the west are a couple of miles of rails in an unbroken line. On the east, the Osborne embankment is approaching the homestead of Castle farm. The bridges at Castleton and Westbury are all but complete. The river is being diverted, the goods sheds are marked out, and the foundation-stone of the Sherborne station has been laid.

The Builder.

VOL. XVII.—No. 867.

Wooden London—Lingerings of the Past.

ITS of old London come now and then into view, when new thoroughfares are opened or alterations are made in ancient neighbourhoods, that show us the mode of construction practised, and prevent any feeling of wonder at the fact that when a fire did break out its ravages were very extensive. We are not speaking of Roman London, or even Medieval London, but of London in the reign of Queen Elizabeth, and from that time to the occurrence of the fire of 1666, the Fire of London, *par excellence*.

Looking at some of those buildings, inconvenient in plan and composed of very combustible materials, the divisions between houses being, in many instances, entirely of wood, with beams running from one

set of premises to another, and the highly-pitched roofs, supported by a forest of wood-work, it is a matter of surprise how the fire-men contrived to prevent even more terrible calamities than those which occurred.

It is shown by the evidence of a number of persons of both sexes, and of various conditions, present at the fire of 1666, together with Lord Clarendon's report in connection with that event, that a strong belief existed at the time that the fire was not caused by accident or incendiarism in a single house, but that foreigners and other malicious persons had systematically fired the city in numerous places. The evidence in favour of this idea is so vague and unsatisfactory, that it seems scarcely worthy of attention; and when we look at such a clump of buildings as the one we have represented below, and recollect that the entire city was a close mass of dwellings similarly formed and situated, that the means of extinguishing fires were of the most primitive and insufficient description, and that owing to the imbecility of the Lord Mayor no efforts were made to check the conflagration, we cannot feel surprise at what took place. The fire was allowed to gain such an ascendancy that when the men began seriously to battle with the conflagration, it had become master, and roamed at will, until almost the whole of the combustible materials were burnt out. The sketch we have engraved was made in Commercial-road, Whitechapel.

As an example of another sort of timber building, or rather "half-timbered," we give a view of the grotesque front of the first East India House. It will serve to compare with the intended new one in Downing-street, and give us comforting assurance that we have made some progress since the date of the old one at any rate. This odd affair, of which there is a scarce etching in the British Museum, was surmounted with two large dolphins and the figure of a man, some say of the first governor. Below are some ships, the royal arms, and arms of the company. Our sketch is copied from a venerable volume of the "Gentleman's Magazine," which took it from an engraving of the house on a tradesman's bill-head. It was situated on part of the present site in Leadenhall-street. According to Mr. Timbs, here originally stood the mansion of Alderman Kirton, built in the time of Edward VI. It was rebuilt on the accession of Queen Elizabeth, enlarged by

its next possessor, Sir William Craven, Lord Mayor, in 1610, and leased in 1701 to the company.

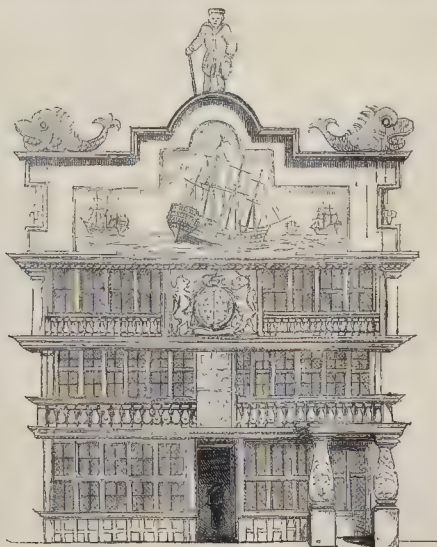
A pleasant writer on Old London some time since surprised the public by stating that there was not a street in the City in which, either in one part or the other, the wayfarer might not see a tree. At first thought of the general dinginess, the truth of this assertion seems unlikely; if, however, the wanderer in the busy streets has time to look about, he will find, although many trees have withered away and been removed since the observation was made, that it is tolerably correct. Look in Holborn: in St. Andrew's churchyard and the Old Bailey. There are some very fair trees in Chancery-lane, on the east side, towards the quaint-looking inn and court; in Fetter-lane; behind the old gate of Bernard's-inn; and in some other parts. In Shoe-lane glance towards the burial-ground, which is now closed for burial purposes, and down some other openings; trees are to be seen which look as fresh as may be reasonably expected in such a smoky atmosphere. In Fleet-

street you catch a sight of the trees around St. Bride's church. In Farringdon-street the foliage roams over the walls towards the Stationers'-hall. In New Bridge-street you have another view of the St. Bride's trees; in the other roads running hence westward trees are also to be seen: the same is to be said of Ludgate-hill. In St. Andrew's-hill, Upper Thames-street, and other streets in this direction, there are some very luxuriant trees branching over the roadway. Even in Great Knight Ryder-street you get a peep through the gateway of Doctors' Commons of pleasant green foliage. This street, by the way, is worth examination, as a characteristic example of an Old London street. In Godliman-street, in Bennet's-hill, in the Roman roadway, Watling-street, the dingy brickwork is pleasantly enlivened by City trees. On the south side of St. Paul's some young trees have been planted, and seem to be thriving: on the north-east part of the churchyard the trees have grown wonderfully during the last few years, and look well against Wren's grey building. Who would expect to

WOODEN LONDON.



In Whitechapel.



The Old East India House.

find any growing in Paternoster-row, dedicated to leaves of another sort; strange to say, such is however the case. There is a very capital clump of trees near the Post-office, to be seen from Aldersgate-street, and from other directions. Then there is the well-known tree at the corner of Lime-street, Cheapside, on which some rooks built their nests not long ago. In Newgate-street there are the Christ's Hospital trees, which are also seen from Little Britain and some of the streets close by. In most of the City graveyards great improvements have been made, and the shrubs and flowers seem to flourish better than might be hoped. It should cause still greater exertions to be made in this way, and induce care of the trees which still remain; for the sight of green boughs, and the sound of the rustling of leaves in the heart of this great metropolis, are almost as pleasant to the senses as water-wells in the desert.

It is very desirable to keep London from becoming all new; and fortunately English tendencies help to preserve suggestors of the past. Memorials of the old practices, even, linger to a greater extent than is obvious to the mass. Notice, for example, the tradesmen's Signs, which were so striking and inconvenient a feature in Old London. As the traffic increased, such projections became more and more a nuisance, and enactments enforced their removal. Nevertheless, the custom lingers. The fishing-tackle maker still puts forth his golden trout; the optician his colossal spectacles, or a naval officer takes an observation with a quadrant at the optician's; the pawnbroker still exhibits the cognizance of the merchants of Lombardy; and although the sturdy and once well-known Highlander of the tobacconist, with snuff-box in hand, is becoming very scarce, there are still a few specimens left: some of them were well carved and painted by artists of the same school as those who executed the figures of Gog and Magog in Guildhall. The barber still obtrudes his variegated pole; the grocer the tin canister and Chinese figures. There are also the black dolls, large bones, and other devices of the rag merchants; as well as examples of the suspended golden fleeces of the woollendrapers, the corn-sheaf of the baker, the gilt hand of the glover, the goldbeater's arm, the golden boot, the harlequin of the oil and colour shop, and the iron-pot, gridiron, and dustpan of the ironmonger.

These evanescent reminders of the past are mostly met with in bustling neighbourhoods, close to large populations of the poorer classes, such as Tottenham-court-road, the City-road, and elsewhere. In the City-road a baker's shop is surmounted by a coloured figure with a sheaf of corn on her head and gleanings under one arm; at the sides are corn sheafs.

It is well for the Present to know of the Past for the sake of the Future: in this respect something may be gained even from Wooden London.

THE BRITISH ARCHAEOLOGICAL ASSOCIATION IN BERKSHIRE.

THE British Archaeological Association opened its sixteenth annual congress in the Mansion-house, Newbury, on Monday last, with particular success. The Earl of Carnarvon presided; and there were probably 300 persons present, including a large number of ladies, and the Bishop of Oxford, the Rev. Charles Kingsley, Archdeacon Randall, Mr. W. W. Beach, M.P.; Mr. W. S. Portal, Mr. H. R. Eyre, Mr. T. J. Pettigrew, F.R.S.; Mr. W. Mount, Mr. N. Gould, F.S.A.; Mr. E. B. Bunney, Alderman Gray, Dr. Palmer, Mr. Planché, Mr. James Heywood, F.R.S.; Major Moore, F.R.S.; Mr. Godwin, Mr. C. E. Davis, Mr. Vere Irving, Mr. G. R. Wright, Mr. Edward Roberts, Mr. Solly, F.R.S.; &c.

The chairman delivered a very admirable address, in the course of which he said he thought he should best fulfil the duty devolving upon him by calling their attention, in the first place, to the causes which had brought them together that day; secondly, to the particular sphere of the labours of the week before them; and, lastly, to the character and object of their proceedings. In his opinion, nowhere in England could this meeting have been called together with greater advantage than in Newbury. It occupied as it were a central position, standing upon the borders of

two counties—Hampshire and Berkshire—both of them very rich in historic associations, both of them counties whose historic associations have never been properly worked out. The longer their task was delayed, the greater and more formidable would grow the difficulty which surrounded it. Year by year our local traditions and legends, which after all showed the real spirit, feelings, affections, and faith of our forefathers, were slowly dying out, and a great portion of them had already perished. It would be their task that week to arrest, as far as they could, that decay, and give fixity and the light of record to those legends and traditions. It was very difficult to preserve them in the present age, when the very circumstances which contributed to the increase of education and the augmentation of the material comforts of the working classes were laying, as it were, the axe at the very root of those legends; just as the early converts from heathenism destroyed all the ornaments, bronzes, statues, and shrines which breathed of the ancient classical art, and as in the present day the certificated schoolmasters and pupil teachers ill appreciated any legend or tradition, or superstition, as they called it, which had not received the official imprimatur of the Committee of Privy Council. But if there was an inevitable tendency to these local legends passing away, on the other hand, there never was a time when the substantial monuments and ruins of the past were more strictly observed or more justly cared for than at present. The reason was, that every meeting like this both created and deepened that feeling, and that a knowledge of, and a taste for, archaeological studies had now been diffused amongst the great body of the community. There was a strong feeling of conservatism—using the word in its widest and truest sense—which taught them to respect and reverence the past, the different ruins and relics of which were bound up as firmly with our history as the ivy clinging to some mouldering wall. His lordship, after giving an erudite sketch of the antiquities and history of Berkshire, together with an account of the remarkable characters it had produced, next treated of archaeology, which, he said, was not a curious dilettanteism, which saw an especial virtue in the accumulation of minute and meaningless oddities, but rather that study which preserved the golden thread of romance and poetry in a practical age. It was that study which preserved us our border minstrelsy, which inspired that delightful book, "Southey's Doctor," and which culminated in the masterpiece of all Sir Walter Scott's works—"The Antiquary." It was not merely that archaeology was valuable in itself; it was valuable, also, for the thousand ideas and suggestions it awakened in the mind with regard to the people, the events, the habits, and the customs of far distant ages. Nor was archaeology only suggestive; it was a commentary on history, the handbook of history, and just as a knowledge of common things should precede the study of abstruse subjects; and great and learned historians would often avoid error, and arrive at juster results, if they made greater allowance for local details as to character and climate. But he even still would put in a higher claim for archaeology—it was an integral part of history; in fact, history itself.

Lord Carnarvon's address, which was a very remarkable one, and is only hinted at in this outline, lasted an hour and a quarter, and was loudly cheered.

The Bishop of Oxford, in proposing a vote of thanks to the earl for his address, observed that it came with peculiar gracefulness from Lord Carnarvon, the inheritor of a name than which no name was brighter in English annals. For on what part of that old English history on which they had been dwelling in thought could they look back and not see the name of Herbert shining everywhere,—in literature, in politics, in war, and all those noble and dignified acquisitions which belonged to the old English gentleman? He believed it was no little boon that a person in Lord Carnarvon's position conferred upon society when he addicted himself to these pursuits, and came forward to show the good which was to come from its study. The treasure of good to proceed from the study of archaeology was great. It was, in point of fact, man study—that which man should study—namely, man himself. When a good archaeologist or a good antiquary studied these things, what was it for? It was not for the things themselves, but to obtain from them results that should be useful to future generations. It was a linking together of the present with the past time, and deducing from its history and peculiar features connected with it that which was

calculated to afford instruction to those who came after. The bishop then proceeded, with an eloquent earnestness that was somewhat startling, to point out that, in going back to learn, for example, what our forefathers with their good hearts had done with their branch of yew, it was not the desire of antiquaries to go back to such a weapon, but by the knowledge thus gained our own hands and hearts were strengthened to defend our homes, should bad times chance to come, with those improved arms and means science had given us. And, if faith, the stalwart bishop looked when he said it as if he would willingly have led a forlorn hope, whether with bow or rifle.

The meeting then broke up, and visits were paid to Newbury Church, the Almshouses, the Museum, which has been increased for the occasion by many contributions, and other places. At the church Mr. C. E. Davis pointed out such matters of interest as it contains. It is a specimen of late Perpendicular, very homogeneous and regular, but without a story. Some bull's-eye lights, introduced at the east end, materially interfere with its appearance; and a fine tower-arch is shut out by an organ and gallery.

At the evening meeting Mr. Heywood, F.R.S. presided, and Mr. Pettigrew read an elaborate paper on the antiquities of Berkshire, giving a sketch of the various places to be visited by the members during the week.

A paper by Mr. James O. Halliwell was then read, on the Elizabethan romance of "Jack of Newbury," the remains of whose residence in the town now form a part of the commercial Hotel, called Jack of Newbury. The writer said:—

"Warwick is not more popularly associated with the adventures of the celebrated knight, Sir Guy, nor Southampton with those of the equally renowned Sir Bevis, than is Newbury with the name of the prosperous clothier, John Winchcomb, who for nearly three centuries, if not for a longer period, has been distinguished by the familiar appellation of Jack of Newbury. There is, however, this distinction peculiar to the history of the last-named personage, that, whereas even the names of Guy and Bevis are fictions, the popular novel of Jack of Newbury concerns not merely a real individual, but describes circumstances founded partially on well-ascertained facts, and partially on details derived from traditional sources. Jack's real name was John Winchcomb, *alias* Smalwoode, an eminent clothier of Newbury during the reigns of Henry VIII. and Henry VIII. He realized a large fortune, and, amongst other benefactions to Newbury, is said to have built the church vestry. In his will, dated in January, 1519, the year in which he died, he is described as 'John Smalwoode the elder, *alias* John Winchcombe, of the parishes of Seynt Nicholas, in Newbury.' He gives 'to the parishe church of Newbury, towards the building and edifying of the same 40*l*.' besides donations to the various altars. He directs that he should be buried 'in our Lady Channell, within the parishe church of Newbury aforesaid by Alice my wife, and a stone to be leyde upon us bothe.' His wife Alice had been long dead at the date of this will, as he had again married, and left a widow named Joan, who is mentioned, and liberally provided for. There are also legacies to numerous individuals, and to every one of his servants. Amongst the former may be mentioned 40*s*. to Sir John Waite, parson of Newbury, 'for the recompens of my tithes negligently forgotten;' the 'Sir' it is hardly necessary to observe, not being the title of knighthood, but the ordinary Anglicised one from *Dominus*, the scholastic denomination of clergymen, as we have the parson Evans termed Sir Hugh Evans, in the 'Merry Wives of Windsor.' The will was proved on the 24th of March, 1519, by the testator's son John, who was residuary legatee.

"John Winchcomb died within a few weeks after the date of this will, as appears from a brass effigy in Newbury Church, bearing the following inscription:—'Oyf your charitie pray for the soule of John Smalwoode, *alias* Winchcomb and Alys hys Wyfe: John dyed the XV. day of Feb. a.d. 1519.' This memorial, as is noted by Mr. Pettigrew, must be distinguished from a stone monument of a man in armour, with three wives, six sons, and five daughters, which is sometimes vulgarly stated to represent Jack and his children, but which really belongs to another family. Winchcomb died at an advanced age, six years after the battle of Flodden; so that the tradition that he was present at that celebrated contest is probably an error, though it is very possible that he may have furnished a company for the service of his country. There is also a tradition that he entertained Henry VIII. and Queen Catherine at Newbury. The site of

his house is believed to have been partly the ground upon which the inn bearing his name now stands, and it is said that his workshops extended to the Marsh. Certain it is that ancient carvings, some of which undoubtedly belonged to the Winchcomb family in the sixteenth century, were discovered some years ago in pulling down old buildings in that locality. Jack's family attained to some social distinction, for his eldest son, John, attained a grant of arms, and one of his descendants was the owner of Donnington Castle. A portrait of this son, taken in 1550 when he was in the sixty-first year of his age, is, I am told, still preserved at Newbury. Supposing, therefore, that Jack himself married very early in life, this fact of the son's age in the year 1550, would incline us to place the father's birth in 1470 at the very latest; but he probably first saw the light some years before the date last mentioned.

Some of the principal facts in the life of Winchcomb were unquestionably in traditional circulation at Newbury at the close of the sixteenth century, for when that prolific pamphleteer and novelist, Thomas Delony, made him the subject of a romance, the leading circumstances of his history were faithfully adhered to. Delony's novel of 'Jack of Newbury' was licensed to T. Myllington, on March 7th, 1596, and it was undoubtedly published soon after that period, but no copy of so early a date is now known to exist, the earliest one I have met with being the ninth edition, published by Cuthbert Wright, in 1638.*

The Rev. Charles Kingsley expressed an opinion that Jack of Newbury was not a Berkshire man, but an apprentice named John Smalwoode, of Winchcombe, in Gloucestershire, who had brought from that place to Newbury the woollen trade; and that Winchcombe was not his surname, being only attached to Smalwoode to show the place whence he had come, and to distinguish him, probably, from others bearing the same name. He also expressed a doubt as to Jack of Newbury having been actually present at Flodden Field with his 100 bowmen. The rev. gentleman, however, gave to Delony's works the merit of presenting, with all their absurdities, as complete and accurate a picture of our forefathers as we possessed.

On Tuesday, an excursion was made to the "first battle" field at Newbury, the mounds in Craven Park, and to Avington Church, a fine Early Norman building. Wickham Church; a breakfast at Mr. Eyre's; Donnington Castle, and a little bad weather, sufficed to occupy the day. In the evening Lord Carnarvon presided, and Mr. Thomas Wright read a paper, which led to some discussion, "On the Legendary History of Wayland Smith," of whom it is said some relics remain in the country. This was followed by a paper by Mr. Pettigrew, "On the Death of Amy Robsart, at Cumnor Hall, near Abingdon," the object of which was to show that Ashmole's narrative of the event, on which Sir Walter Scott grounded the catastrophe in "Kenilworth," was inconsistent with the facts, and that her husband, Sir Robert Dudley, Earl of Leicester, was entirely guiltless of her murder.

Mr. Blundell said, the paper had not in the least shaken his opinion that Leicester was guilty of the crime which had been attributed to him by Ashmole and Sir Walter Scott. He thought that his letters to Thomas Blount were what lawyers knew as "showable documents," but, unfortunately, they proved too much.

Mr. Wright continued entirely in the opinion expressed by Mr. Pettigrew.

Mr. Planché observed that the letters might be viewed as the productions of a man who, though not guilty of the murder, had desired her not to live, and had his conscience smitten when the news of her melancholy death arrived. He thought, however, that every part of the story respecting her murder had been clearly disproved.

PROGRESS OF THE METROPOLITAN MAIN-DRAINAGE WORKS.

THE NORTHERN HIGH-LEVEL SEWER.

THE strike in the building trades interrupted the bricklayers' work on the main line of the Northern High-Level Sewer, defers commencement of the Southern High-Level sewerage, and left the works at Old Ford, in what seems to be a critical state—having regard to the approach of winter, and recollection of the floods which have been witnessed repeatedly in the valley of the Lea. The influx of water from land-springs at Old Ford, is at present kept under by steam-pumping machinery; but in case of flood, it would be scarcely possible in the present state of the works, to prevent the filling up of the excavation

which there is eastward of the North-London Railway, extending up to the coffer-dam at the Lea; and which, including the length of sewer, or sewers so far as these are completed in brickwork, would measure upwards of 1,100 feet by, we should judge, in most places, 40 feet in width and depth. Close to this excavation, the stream of the Hackney brook diverted from its old place of outfall, which was southward, runs parallel with the excavation for a short distance to the Lea. The brook has been turned to account for the access of barges loaded with the materials for the sewer. Active progress, however, is being made with the more bulky part of the permanent work, to fill in the excavation, namely, the concrete, which is in some places as much as 12 feet thick, on which brickwork will be commenced.

Less than half the distance from point to point we have spoken of, has been completed; and this comprises considerably less than half the quantity of brickwork which will be required throughout the distance from point to point. Westward of the railway, the large excavation has been made for the parallel overflow-chambers and penstock-chambers, and other contrivances for the escape of the storm-waters into the Lea, and for the junction with one another, of the High-Level and Middle-Level sewers. The peculiar arrangement of plan and construction, for this object, was mentioned in a previous account,* and it may be necessary further to describe or elucidate it. The whole length of ground comprised by the storm-outlet channels, the 1,190 feet lineal of outfall-sewers so far as at present contracted for and in progress, and the chambers and contrivances adverted to, is slightly over a quarter of a mile; of which length, 220, or 230 feet, are to the westward of the railway. From the limit of the latter number of feet, the main High-Level sewer continues as a single channel. It is 9 feet 6 inches by 12 feet at the commencement; and, diminished in sectional area, it will, when completed, extend for 7 miles 1,230 feet, to the existing sewer at the point of junction of Lismore-road and Southampton-road, west of the Hampstead Junction Railway and Kentish Town. Of that portion of the works, there has been completed, since the commencement of operations on the 31st January last, a length of the sewer, extending across Victoria Park and Hackney Common, to Wells-street, Hackney, or about one mile and a quarter from the point of the outfall into the Lea.

The whole course of the sewer itself will be through the London clay, except close to the outfall; but during the progress of the works hitherto, sufficient gravel and sand seem to have been obtained from the cuttings, materially to affect, in a favourable manner, the cost to the contractor. The line of the sewer passes under Sir George Duckett's Canal, just above the lock near the rope-walk, making use, with slight alterations, of a length of 160 feet of sewer which had been constructed some time back, under the canal, in anticipation of the present works. We proceed to note down what we have observed at Old Ford, and to give particulars of the arrangements, which may facilitate comprehension of the nature and object of the works with those who visit them. An account of the whole scheme of metropolitan main drainage, north and south of the Thames, will be found in our first number of the present year†.

It will be recollected, that whilst separate channels will be provided, running parallel, as outfall sewers for the northern High-Level and Middle-Level drainage, though built as one piece of construction, extending across the Lea, and separate storm-outlet channels into the Lea at a lower level,—whilst, in fact, there are four channels so far as the Lea, built chiefly as the same work of construction, or two above and two below,—the two sewers are so connected by openings in the party-wall at the penstock chambers and elsewhere, that one can be relieved by the channel of the other. The High-Level Sewer conveying chiefly surface water and land-drainage, and the Middle-Level, chiefly sewage proper, larger means of escape for the contents of one, and greater dilution for those of the other, will be afforded by means of the communication, than by keeping the channels separate. Contrivance of an elaborate and extended nature is resorted to with the object of ensuring the success of the work in this point of view, and under all contingencies of storm-waters. The reader only has to consider that each sewer, whether High-Level, or Middle-Level, considered separately, is provided with a dip and storm-outlet at a lower level, the outlet to be made available by raising

a penstock,—or otherwise, on rise of the water in the overflow chamber, and its falling over the weirs or sides of the trough-constructed channels (which are to be formed in that chamber) into these just-mentioned lower storm-outlet channels. The intercommunication and the lateral sewers and channels are arranged, as we have said, with the object of providing against all contingencies of storm-waters in the sewerage system, and rise of the water in the Lea, or to whatever other circumstances of the available outfall; but the provision for the storm-waters is, in one respect, the opposite of that which we described as to be adopted at Deptford in the case of the southern sewerage: for, whilst on the north side, the sewage is intended, under ordinary circumstances, to pass on the upper level, that is to say by aqueduct across the Lea, and thence to Barking, and in emergencies the escape is to be by outfalls as described, to be made available by raising the penstocks; on the south side, the sewage ordinarily will flow by the lower channels (to be extended to Halfway Reach); and the upper channels with outfalls in Deptford Creek, will convey the storm-waters when these have accumulated so much as to render it desirable to open the penstocks to be provided in those outlets. There is considerable difference as regards the form and working of the penstocks, between the northern and the southern system of sewerage: in the former case, the penstocks are intended merely to be made to slide with the help of counterbalance-weights; in the latter case, the penstocks of the upper channels are constructed in two parts in height, so that a body of water might be pent up in the lower part of the storm-water outfall if necessary, a contrivance being provided in the penstock for keeping such portion closed, say whether it be against the sewage, or the influx of the tide. The difference of circumstances between the southern sewerage, and the system for the north of the Thames, should not be forgotten: on the north side, the only pumping will be at Abbey Mills, to get the low-level sewage to the level of the outfall line of three parallel sewers; in the other case, the outfall sewer having to be formed at a much lower level, the whole of the sewage will have to be pumped at Halfway Reach, in addition to the pumping required to get the sewage of the Low-level and the Bermondsey Branch into the outfall extension of that high-level sewerage, the scheme of which we very recently described.*

Some slight alteration has been made in the plan of the river-wall, and outfall, at the Lea, since the date of the specification, chiefly by extending the wall for a greater length along the river than the originally proposed 56 feet, north to south, and by projecting it farther into the river,—the concrete and paving in advance of the wall, as we understand, being now intended to occupy a breadth of 6 feet instead of 30 feet. The coffer-dam at present formed, does not yet take in the whole of the space, on account of the necessity for keeping open the Hackney Brook; but it appears to include the space for the abutment of the bridge or aqueduct. The piles and other timbers of the dam are arranged somewhat less expensively than usual in this description of work: there is no sheet-piling; but after the main piles were driven, inside and outside, at the angles of the polygonal-formed plan of the future space of the clay and timber construction of the dam, smaller guide-piles were driven, and deals were placed edgewise and horizontally, to form the cavity for the clay-filling. This, besides being less expensive in the first instance, will cause reduction of expense of sawing, on removal of the dam. The piles of the "permanent dam," at the river bed, to protect the paving, appear to be as first specified.

Before depositing the concrete, a 12-inch iron pipe is laid at the bottom of the excavation to receive water which drains into the works. The water is pumped into the Hackney Brook. Gwynne's centrifugal pump was one of those employed at the time of our visit. The pump, by the same inventor, in 1851, was reported as capable of discharging 280 or 290 gallons per minute.

Commencing from the Lea, the storm-outlet channels will start upwards from a somewhat different position on plan to that of the line of the outfall sewers; but the two lines converge to the same point, about 200 feet from the Lea. Thence the four channels will form absolutely one construction of brickwork for about 1,070 feet, or to a point west of the railway. The lower, or storm-outfall channels will be continued 150 feet farther; whilst the corresponding distance in the

* See page 739 in last volume.

† Vide page 2.

* See page 390, ante.

upper floor (as it may be called) will be occupied by a bell-mouth and weir, the overflow-chambers, and the penstock chambers, and junction of the Middle Level sewer. The Wick-lane Branch, for the sewerage of Hackney Wick and parts westward thereof, a length of 1 mile 2,520 feet, part of the present contract, but belonging rather to the Low-Level drainage, since it will eventually be continued and connected with that drainage, was commenced only within the last week. The outfall of this branch will be temporarily into the storm-water channel of the Northern High-Level sewerage, with future opportunity of discharge by the same course, a small penstock being provided at the junction.

The separation between the outfalls and channels, or sewers upper and lower, is merely the arch and invert, except in the case of the trough-channels of the overflow-chambers, where there are landings, double and breaking joint. The walls of these troughs, as we have called them, are to be strutted from those of the chamber and from the external counter-forts by iron castings. There is a difference as to the clear height of the storm outfall-channels, between one end and the other, caused by the provision of the "tumbling-bay," or fall of steps in the middle of the distance. The entire height of the construction is considerably above the level of the ground; and the brickwork will, therefore, be contained in an embankment differing but little from that of the railway. It was originally intended to carry the sewer under the railway, supporting the rails during the traffic; but we believe this hazardous proposal has been abandoned, and that each line of rails will be diverted till the arch which will form the crown of the sewer has been turned, and till the new support to the rails by brickwork and girders has been completed.

The ground at present opened near the Lea is a dirty black gravel, above the London clay: it was intersected by the brook, as already mentioned, and by one or more ditches or pieces of water joined to the brook. These have been for some years past in a very bad condition, as most of our readers are aware.

CONDITION OF LONDON.

THERE are certain times in the summer months when the need of sanitary precautions in so vast a city as this is most fully felt. One of these days occurred lately. From early morning, in the northern suburb of London, the sky was of a leaden deadly hue. Towards the more dense part of the town the haze was thicker. No sunshine made its way through this blighting mist, yet the heat was oppressive; the leaves of trees did not move; the smoke from chimneys rose lazily, almost perpendicularly from its source: when it had reached a considerable height it inclined very slowly from the east: birds and animals seemed still, and even in the most bustling thoroughfares the crowds seemed oppressed with care.

Although the duty is unpleasant, it is on such days as this, when the atmosphere is in a state of congestion, that the health officers and sanitary inspectors should carefully explore their districts. They will, in poor neighbourhoods, be able to arrive at some idea of the thickness of the population by the multitude of children who are lying, lounging, or sleeping on door-steps, and in front, almost blocking up the pavement. The interiors of these refuges on such a day are intolerable: over all the places a poisonous smell hovers: in one place it is increased by the gases from a gully-hole: in some parts the smell of unwholesome cooking is sickening; and around the shops of the cheap bakers the air is almost as unpleasant.

At the entrances of the narrow courts, existing in too many places, you may detect that peculiar fever scent which positively speaks of sickness and death.

The cow-yards and stables make themselves known afar. In these places men are busily washing with floods of water; but pits of refuse remain which render this process of little avail. On such days, the miasma from undrained places is intolerable. Now is the time to test the ventilation of hospitals and schools, and when the greatest attention to cleanliness should be paid by all. Any neglect of this is, in such a condition of the atmosphere, clearly perceptible. On the evening of the day named, we had occasion to call at some of the houses in the back streets east of Judd-street, in the New-road, and at others in Chapel-place, Brompton. To a stranger, they were unbearable. It is dismal to see the crowds of pale-faced, dwarfed, and rickety children in such places. Women, miserable-looking, wander about the

first-named neighbourhood, seemingly without object, and those who have good opportunities of judging say that drunkenness amongst the women in such districts is too common, to which often their circumstances have led. The excesses of the lower classes of our population are deeply to be deplored, preached against, and checked; but before judging too harshly, condemnments should visit some of the homes, and remember that grapes are not gathered from thistles.

The Metropolitan Association of Medical Officers of Health will, doubtless, produce beneficial results. These gentlemen are mostly of high attainments, and most zealous in their wish to arrive at facts, and to promote the general good: the frequent meeting together of a body of men who have the opportunity for extensive observation, for the purpose of comparing notes, and of making inquiry or answering questions, will be sure to lead to advantage, not only in the metropolis, but throughout the country. In a circular issued by this association, it is stated that, "by the same means the causes of chronic ill health in families have, in numerous instances, been detected and removed; conditions, injurious to health, which from want of knowledge, would never have been complained of, have been ascertained and diminished; and, in numerous instances where overcrowding existed, the tenant has been compelled to register his house as a common lodging-house, thereby assuring to the lodgers all the sanitary provisions of the Act for the better regulation of Common Lodging-houses." The association further state, that, in those districts in which a house-to-house visitation has been adopted, the inspector has, with but few exceptions, been hailed as a benefactor, both by the rich and the poor. By the regular visit of the inspector, the periodical cleansing and lime-whiting of dwelling-rooms and passages may be secured; the state of drains, the ventilation of rooms, the condition of cisterns and water-butts, the construction of privies, water-closets, and dust-bins, may be attended to; and by the experience which an intelligent officer soon acquires, he is able to suggest the best remedies for existing evils. It is only by constant watching, and removing the causes of disease, that we can expect to prevent an increase of mortality in the rapidly increasing population of London.

Experience has shown us that a regular system of house-to-house visitation throughout the metropolis, would be the means of yearly saving some hundreds of lives. In some instances, as the report truly says, the people are ignorant of the evils which surround them; and in others, people are so situated, that it is inconvenient to make formal complaint: in many cases people do not like to be interfering; and, rather than do so, suffer their children to die. An independent officer of health would discover the state of things, and do what would be necessary.

The reports of the district officers of health, in a collected form, will be valuable for reference, if they are preserved so that access can be had to the whole at once. On inquiry at the British Museum, we could only find a few of these in the shape of printed pamphlets, under the name of each author. On making further inquiry elsewhere, we found that some of these reports have not been printed, and could only be seen by special application. We suggest that it is a matter of importance that copies of all such reports should be placed in some accessible quarter, such as the British Museum, where they could be consulted by those who are investigating the conditions that govern the public health.

The Registrar-General, in his weekly report of the health of the metropolis, shows in a clear and rather startling manner the extent of the waste of human life within his district, through the want of proper sanitary arrangements. He says, "that 1,111 persons died within the week ending Saturday, September 10, that is, rather more than 158 daily. About fifty persons are destroyed every twenty-four hours in London by sanitary defects." At this rate we have 18,250 preventable deaths accruing in the metropolis in the year. This is more than half the number of the available army at the present time in Great Britain. In ten years these lives wasted in the metropolis alone would amount to 182,500! Very nearly as many as formed the entire population of London in the reign of James II.

THE NEW CAPITAL, CANADA.—Sixteen architects have sent in designs for the public buildings at Ottawa, consisting of the Parliamentary buildings, the public offices, and viceregal residence. By the 1st of October the contractors will, most likely, be at work.

INTENDED HORTICULTURAL GARDEN AT BROMPTON AND KENSINGTON-GORE.

WE have already shown by an engraving how the ground will be laid out in terraces for the garden of the Horticultural Society: a model of the arrangement has just been placed in the Museum, at the north end. As we stated, the whole garden will be surrounded by Italian arcades, each of the three levels having arcades of a different character. The upper or north arcade, where the boundary is semicircular in form, will be a modification of the arcades of the Villa Albani at Rome. The central arcade will be almost wholly of Milanese brickwork, interspersed with terra cotta majolica, &c.; whilst the design for the south arcade has been adapted from the cloisters of St. John Lateran at Rome. None of these arcades will be less than 20 feet wide and 25 feet high. According to the Sheffield papers, Mr. Godfrey Sykes, the late second master of the School of Art there, has been appointed to design and superintend the decoration of these arcades.

THE STRIKE.

THE Associated Masters opened their shops on Monday last, as arranged, to such workmen as were willing to declare that they would not "support any society which, directly or indirectly, interferes with the arrangements of this or any other establishment, or the hours or terms of labour." Mr. Lucas, Mr. Myers, and some others, during the day, severally addressed the men, who were gathered in considerable numbers about their establishments, explaining the intention of the document, and showing in what way they had been driven to require it. It was shown, as has been stated over and over again, that employers have not been masters in their own shops; that they could not employ what foremen they pleased, and that many workmen were forced by the tyrannous conduct of the Union either to give up their employment or to join the Society. Further, that it was found impossible to conduct business on such a footing, and that there was no alternative but calling upon the men for such a declaration as that which was proposed.

At Messrs. W. Cubitt & Co.'s a considerable number of men have gone in, but the other employers have as yet received but comparatively few accessions. They have recommenced, however, at many of their jobs with a lessened staff, and expect gradually to fill their shops. It will be seen from the relation we give below, that the men, wherever assembled together, express their determination never to make the required declaration. Indeed, in the case of many of them, it can scarcely be expected that they will, looking at the matter in a merely business point of view. They have subscribed for years, possibly, to societies (whose proceedings bring them within the category named by the declaration), for the sake of contingent advantages in the event of illness or death, and should they now accede would, we suppose, lose all or the greater part of the money they have paid: it is in fact requiring a man to drop his policy of assurance after he has paid the premium for years. A revision of the rules of these societies might of course be made to meet the case, but no mode of bringing this about has been shown. This same point has been treated more at length by a correspondent in our present number, and should have the serious consideration of the masters. For anything we know to the contrary, the Committee of the Association of Masters may already have considered it, but no observation on the subject has escaped from them.

We must take the liberty of saying, that we cannot compliment this committee on the mode in which they have managed the affair. They have done their best to strengthen the hands of the men, and have succeeded to a considerable extent.

On Friday, the 9th, the "Conference" convened a public meeting in the Surrey Music-hall, which was very numerously attended, and the following resolution was passed:—

"The executive committee of the Central Association of Master Builders having determined to open their establishments on Monday next, September 19, with the obnoxious document, although it had been condemned by all classes of society as both arbitrary and unjust, this meeting, consisting of society and non-society men, supported as it is by the working classes of the country, publicly declares that it cannot, without degrading itself and insulting those by whom it is supported, resume work in any shops or job where the document is presented, and pledges itself not to do so unless it is unconditionally withdrawn."

The foremen's proposition, that the request for ten hours' pay for nine hours' work on the part of the men, and the declaration required by the

masters, should be respectively withdrawn, was rejected at once; Mr. Potter saying the declaration must be withdrawn first, and then they would discuss the other question.

The Conference paid another dividend on Monday last, at the rate of 3s. 6d. per man, for the lock-outs, and to those ordered to strike at Messrs. Trollope's, 12s. skilled, and 8s. unskilled artisans.

Subjoined is an official list of the actual payments made by the Conference:—

	£.	s.	d.
Carpenters and joiners	2,216	..	336 19 11
Masons	500	..	87 10 0
Painters	87	..	15 8 0
Plasterers	660	..	113 10 0
Bricklayers	900	..	157 10 0
Stone-sawyers	74	..	12 10 0
Woolwich men	208	..	36 8 0
Labourers,—	240	..	87 10 0
" " 2 no returns.			
" " 3	132	..	23 2 0
" " 4	278	..	49 13 0
" " 5	87	..	19 8 0
" " 6	490	..	85 15 0
" " 7	197	..	34 8 6
" " 8	39	..	5 18 6
" " 9	325	..	56 17 0
" " 10	273	..	42 12 0
" " 11, 12, 13, no returns.			
Total ..	6,676	£1,168	6 11

Meetings continue to be held throughout the provinces, at which sympathy is expressed for the men out of work. At Hertford it was moved by Mr. Seales (joiner), seconded by Mr. Crawley (tailor), and resolved:—

"That it is the opinion of this meeting that the builders of London have acted in a tyrannical, and unjustly in locking out their men; that the document put forth by them is most insulting and degrading to the feelings of every working man, and that its inventors would be more fit to rule a slave population than the free-born English artisan."

It was further resolved:—

"That we, the working men of Hertford and its vicinity, in public meeting assembled, deeply sympathizing with our brother operatives in the London building trades, and believing in the justice of the struggle in which they are engaged in resisting the tyranny attempted to be imposed upon them by the master builders of London, do hereby pledge ourselves to afford them all the support in our power till they have conducted the same to a successful termination."

At a large meeting in Glasgow held last week, the following resolutions were passed:—

1. That the enormous increase of scientific power, said to be equal to the labour of one thousand millmen in Great Britain, should, as a means of progressive civilization, under proper direction, enable the working classes to obtain a share of its advantages by a reduction of their hours of labour and increase their means of subsistence; that it is the undoubted legal right of the industrious classes, and also their bounden duty, to associate for mutual protection, to regulate their hours of labour, and to determine their wages from time to time, as circumstances shall arise, to enable them to improve their physical, moral, and social conditions."

2. That this meeting, after hearing the statements of Messrs. Potter and Grey, the delegates of the London building trades, is of opinion that their employers obtained ample warning of the workmen's intention to reduce their time of work to nine hours per day, and that, in anticipation of such reduction of time, the employers increased their prices and estimates to the public without giving any benefit to the workmen; that the 'lock-out' of about 20,000 men without any means of subsistence, and many of whom were not connected with the builders' strike, was an arbitrary, unjust, and cruel act, to which they wish to add insult and tyranny by demanding the workmen to sign a degrading and debasing document."

In Manchester it was resolved,—

"That this meeting views with regret the conduct of the combined master builders in London, throwing every man out of employment until he has abandoned every trade benefit society, by which agency the operative is enabled to command a free and fair market for his labour; and that the London building operatives are entitled to, and we hereby pledge them, our warmest sympathy and support in resisting the demands of the combined employers."

In supporting this, one of the operatives from London said, that of the 25,000 or 30,000 locked out in London, not more than 8,000 were now in the metropolis, the rest having obtained work or were in search of it in the provinces.

Other meetings have been held in Wolverhampton, Portsmouth, Sheffield, and elsewhere. On the 13th, the delegates of the United Trades met to receive reports, when the Amalgamated Engineers handed in their contribution of 1,000*l.* and other contributions were announced, to the extent of 131*l.* Mr. Potter said at this meeting, that the men had sought to arrive at an amicable settlement, and they were waited upon by Mr. Travers, a merchant in the City, who offered his services as a mediator. Accordingly he (Potter), went to a place where he found Mr. Travers, and, to his surprise, also Mr. Sidney Smith. Certain propositions were drawn up and handed to Mr. Sidney Smith to be submitted to the executive committee of master builders. Mr. Travers waited in town for a week, expecting to be called upon; but at the end of that time he left town, and he (the speaker) had since been informed by a mem-

ber of the executive committee that Mr. Sidney Smith had never laid the propositions before the master builders' committee.

The Non-society Men's Relief Fund.

The Anti-strike Committee merged into a new society, described as above, at a meeting of non-society men, held on Saturday last at the Preventive and Reformatory Institution, Euston-road. Mr. Ballard said that, henceforward, the object of the society would be to establish sick and provident clubs for the benefit of non-society men, as also reading-rooms, libraries, and houses of call. These institutions it was intended to establish all over the metropolis, and he had no doubt but that they would be the means of conferring great benefits on the working classes. These institutions would be governed by a committee of gentlemen, as also master builders, foremen, and mechanics. With regard to the manner in which they should act on Monday, he could only speak for himself, and he would leave it to them to exercise their own judgment in the matter. So far as he was concerned, however, at six o'clock on Monday morning he intended to go into the establishment with which he was connected, sign the document, and resume work. As regarded the relief fund, no man would on going to work on Monday forfeit his right to a share of that fund. The fund was raised for the benefit of those who were thrown out of work in consequence of the lock out, and who were non-society men who had never taken any part in the nine-hours movement or belonged to any society; and among such men it would be divided, as affording them some compensation for the time and money they had lost in consequence of the cessation of business.

Mr. Bowyer, the governor of the institution in the school-room of which the meeting was held, remarked that he did not wish to refer to the dispute which unhappily existed between them and the master builders, but he wished to do something which would benefit the men. He believed that he was speaking to what were called non-society men, and the want of sick and provident institutions had long been felt by that class, more especially as the system of shop clubs having that object did not seem to work well. His object, therefore, was to establish these clubs for the benefit of the men on an independent footing, and along with them to have reading-rooms, libraries, and houses of call, where the men could receive instruction and refreshment, and where the masters or their foremen would know where to find them, for the purpose of employing them. He had that morning called upon some of his friends in the City respecting the matter, and he had met with the best possible reception. Some of them had promised him subscriptions of ten pounds, and Mr. P. E. Gurney had promised him one of fifty guineas, intimating that were other fifty guineas required to carry out so good an object he was ready to give it. He hoped, therefore, soon to see such establishments in full operation in every district of the metropolis. In the meantime, they would have the use of that room and the committee-room above.

On Monday evening the builders' foremen met at their hall in Lyon's-inn, Strand. Mr. Newall presided, and Mr. Wales attended at the request of Mr. Alderman Cubitt (treasurer of the Non-Society Men's Relief Fund) to inform the meeting that the Anti-Strike Committee, of which Mr. Ballard was the chairman, had formally resigned, and to invite those present to undertake the distribution of the fund subscribed for the relief of the non-society men.

The Chairman suggested that the meeting should resolve itself into a committee, and begin operations under the name of the "Committee of Management of the Non-Society Men's Relief Fund."

The suggestion being adopted, Mr. Dabbs moved,—

"That this committee, consisting of builders' foremen connected with the establishments which have been closed, accept with much pleasure the invitation to become the distributors of the funds so benevolently subscribed for the relief of non-society men, and pledge themselves to discharge the duty so honourably conferred upon them to the best of their ability, by an honest and impartial administration of the same."

Which was carried unanimously.

After deliberating on the various suggestions offered, it was resolved,—

"That the distribution of the Non-Society Men's Relief Fund be confined to men who have been locked out from their employment, but who have returned to their work, or are willing to do so (provided employment can be given to them) on or before Thursday next; the first distribution to take place on the following Saturday morning."

It was further resolved,—

"That the various firms which have been closed be re-

quested, through the medium of advertisements, to send a report to the secretary of this committee, stating the number of men entitled to be recipients of the fund upon the terms of the preceding resolution, and agreeably to the form stated in the advertisements."

WAGES AND HOURS OF ARTIZANS IN BELGIUM.

MR. EDWARD T'ANSON writes:—I have made inquiries in Brussels as to the rate paid to bricklayers and labourers, and find that those bricklayers who choose to work from six a.m. to six p.m. are paid 2 f. 56 c.; labourers, 2 f. 10 c.: those working from seven a.m. to five p.m. are paid, respectively, 2 f. and 1 f. 36 c. When a bricklayer works from six to six, he is expected to lay 700 bricks.

Bread and meat are, I believe, as dear here as in London; lodging cheaper.

This, in reference to the present strike, is information which may be useful to masters and men.

CAUSES OF CONFLICT.

IN the recent discussions upon the strike there is one branch of the subject which has received less attention than its importance deserves; and, I trust, you will allow me, in respect of this their greatest grievance, to raise my voice on behalf of the body of working men, not in justification of all their doings, but in explanation of their difficult and critical position.

Many persons regard the struggle as between builders and societies; others as between society and non-society men; but it is in reality a smouldering, secret struggle between the deluded and the deluding of the Trades' Unions. The men are perhaps, as a body, hardly aware of it themselves; but, in reality, the great grievance is, that thousands of the society's members would gladly, nay thankfully, renounce all connection with the society, could they but break from the tyrannical fetters to which they have in an evil hour unwittingly subjected themselves. It is not that they have leaders on whom they can rely;—it is not that they have been taught to regard all employers as despots, and all submission as slavery;—it is not that they merely fear persecution (technically called "suspension") from the more stanch members of their community;—it is not that they would grudge a full day's work at the old wages, or fear any lack of full employment; still it would be absurd to say that all these reasons have no weight; but the real difficulty is, that if they break with their society they shut themselves off from all communication with that body in which their interest has been so long bound up, and they deprive themselves irremediably of all participation in its benefits.

These benefits may be in a great measure imaginary, and are often very questionable; but whether real or imaginary, they will still weigh with the men. Agitators are aware of this, and know but too well how to use their knowledge to maintain the present state of things. Is it reasonable to suppose that any considerable number of a body of men will all at once sacrifice such interests and such claims without some more promising prospect than is at present held out to them, when for weeks and months, and perhaps for years, they have been doing their part towards the accumulation of large funds in which they have good grounds for supposing they possess a considerable interest? Not that all societies are therefore to be denounced, but some societies were formed for the express purpose of trades' co-operation, under the cloak of their being for beneficial purposes—the inducements for joining held forth being certain provisions for sick, aged, and infirm members. And many societies may be able to show enough of the good element to afford an apparent justification of their motives. Moreover, it is well known that the numbers are greatly swelled, and the prosperity of a club is vastly increased and its coffers are filled by the toil of other hands than those which wield its power and dispense its revenues. And surely it is not to be wondered at that men should think it hard to be turned out—nay, in a manner to turn themselves out—of their own fraternity, and not only to be branded as traitors, slaves, and aliens, but to be deprived of all possibly contingent benefit from, and interest in, an institution which they have helped to raise. It is not surprising that such men should catch at the straws and take the baits held out by others, whom they feel and know to be their superiors in leadership and in intellect, rather than desert their ranks and leave to those that remain true to their colours the "lion's share" in allowances which they might receive when out of work, or in any dividend which

might remain to them at the possible dissolution of their respective societies. Still less is this to be wondered at when a promise of high wages and eventual success is held out by those who have obtained this influence over them. It has been for years notorious, that whilst many societies have been from the very nature of their statistical construction doomed to last but forty or fifty years, others have been worked and drained, and at last dissolved, with a miserable dividend of three or four shillings per head, not by those whom age and long-continued contribution would have given good claim to a greater voice in their disbursements, but by the younger members—the "new blood," which outnumbers and swamps all votes in the proper distribution of relief.

Such societies can be formed only under Act of Parliament, and the supervision of a revising barrister, and all abuses are amenable to Chancery. But who is there to bring the matter into court? Who will be found willing, in such a body, to take the initiative in complaints which by a majority of members would be denounced as merely invidious?

Surely it is cruel, under such circumstances, to stigmatize the operatives as simply obdurate and obstinate. Rather let some commission be issued for inquiring into the management, or mismanagement, of all enrolled Friendly Societies; let the abuses be remedied, and the alienators of sums to other purposes (such as the maintenance of a strike) than are contemplated by the act of enrolment, be indicted; let such societies as are worked for coercive or improper purposes, and are not legally enrolled, be put down; let such men as are willing to break through the trammels of such tyranny be in some way indemnified for their loss. This might be done to some extent by the formation of veritable Benefit Societies, of which builders and others might be honorary and subscribing members (as is now in some few instances the case) whereby a bond of union might spring up between masters and men tending eventually to become the interest of each, the one heartily to work for and the other freely to employ, the same individual as long a time, rather than as short a time, as possible.

Again, let a verbal promise be accepted in lieu of a written pledge, for it is by a written pledge that, in the eyes of his fellows, a man cuts himself off from the benefits of his society; let a registration be kept of all men so promising; let instant dismissal follow any breach of the promise, or any interference with the rights and liberties and free choice and action of another workman; let a proper staff be appointed for the detection and prosecution of the "pickets" and their abettors and principals; let operatives be paid, with their own free consent, according to their industry and ability, not according to a conventional rate of wages dictated by others; let country builders be invited to co-operate with the metropolitan in carrying out some such scheme; and then see if men do not flock in and gladly resume their work, in spite of this present grievous and apparently hopeless bondage.

Some societies have disclaimed all intimidation, and all part in "pickets;" others as certainly are guilty of it, if not through their leaders, at least through their members. And surely any persons who will have the audacity to stand at the corners of the streets leading to employers' premises, and will intercept and intimidate men looking for work, justly deserve punishment, as legally they are amenable to it, for conspiracy. The good fruits of this appeared in the prosecutions at the time of the engineers' strike a few years since.

Once more: just as societies have, at times, in former days become dangerous to the State, till legislation became necessary for their abolition, or else for their better management, so assuredly is the time again come round for a searching inquiry into their constitution, and into the way in which they keep to the terms of their charter,—according to which alone they are allowed to have their existence, and to secure or distribute their funds. Had time and space allowed, there were several minor matters upon which I should have touched,—such as the unfair conduct of some masters, who, in order to save the few hours' loss of the Saturday's partial holiday, discharge men on Friday to take them, or fresh hands, on again on Monday morning.

There can be but few so short-sighted as to attempt this, but an association of masters will, of course, be careful of admitting any such to co-operation with them; for the innocent almost always suffer with the guilty if found in company with them, as employers soon will find, and as operatives already have found to their cost.

WILLIAM WHITE.

THE STRIKE IN DUBLIN.

THE carpenters' strike at Dublin is at an end; the employers, as we understand, having yielded under pressure to the demand for increased wages. From what we learn, however, the memory of the victory will not be easily effaced from the minds of the vanquished; and we could have wished the same result under circumstances more mutually satisfactory. The new Commercial Mart, in Grafton-street, is approaching completion; and the contractor, Mr. Meade, was necessitated, under the apprehension of heavy penalties looming in the distance, at once to yield. He was similarly situated with his contracts for the new block of buildings in progress in the rear of the Four Courts, the new street in the vicinity, and several other extensive matters. Messrs. Cockburn & Son, the largest employers in Ireland, for a time held out; but the new National Gallery, the Kildare-street Club-house, and a number of other large works being in an incomplete state, they too, for self-protection, yielded. With reference to this firm we are informed, that some machine made carpentry having been imported by them from this country—and previous to the strike—men would not fit the work. Such a jealous course is hardly likely to narrow breaches arising from national prejudices on the one hand, or to cement a good feeling between local employers and their men on the other.

THE ARCHITECTURAL COLLECTIONS IN THE MUSEUM AT BROMPTON.

"A NATIONAL MUSEUM OF ARCHITECTURE."

In the last Report of the Government Department of Science and Art, recently noticed in our pages, reference is made to some reports on the collection of architectural casts now in the South Kensington Museum. We have been requested by several readers to publish the reports, and are enabled, with the permission of the Committee of Council on Education, now to do so:—

First Report.

In accordance with the invitation on the part of the Lords of the Committee of Council on Education, conveyed to us in your letter of April 20, 1857, that we should assist in naming and dating the casts of ornament in the possession of the Department of Art, with a view to arranging them in a series, and containing the intimation that their lordships will be happy to receive any report from us "offering suggestions for rendering the series complete and useful for public instruction," we beg leave to state, that we have examined all the architectural casts—Greek, Roman, and Renaissance—belonging to the department, and have made on the accompanying list such observations, with reference to their date and character, as have occurred to us.

If these views are adopted, it will be necessary to re-hang and re-number these casts; and, in doing so, it will be desirable, in order to carry out more fully the evident intention of the present arrangement, and to make the collection available as an educational series illustrative of the progress of architectural detail and decoration, to use some such classification as the following:—

1. To maintain the main divisions of Greek, Roman, and Revival distinct, and as much as possible without mixture.
2. To keep together the various parts of the same monument, which are in many instances now scattered; and, where possible, to combine these into complete orders, columns, or entablatures, &c. as the case may be. Otherwise they are only fragmental and deficient in the sentiment and meaning conveyed by the entire work. If the head of the Apollo Belvidere or Venus di Medici were placed on one screen, the arms on another, and the torso in a third compartment, no one could form an idea of the beauty and harmony of these noble statues, and much even of the beauty of detail in the fragments themselves would be lost in the absence of their proper relation and significance. The analogy exists with regard to architectural fragments. It would also be desirable, in some cases, that portions, which may be occasionally wanting, should be obtained, so as to make the illustration complete.
3. To maintain a chronological sequence, as strictly as may be practicable.
4. To keep together as much as possible (consistently with suggestion No. 3) those examples, which belong to the same city as Athens, Rome, Venice, Paris, Ronen, &c.
5. To keep together in each division the same class of subjects, of which there are frequent examples—as the *tele*, *antefixa*, *paterae*, *cinerary coffers* (*areocippi*), and *panels*; thus affording

more immediate facility of comparison and illustration.

The system, already commenced, of placing near the casts models of the perfect building from which they are taken, and photographs, engravings, and drawings, showing its present and original condition, is excellent, and may be carried further with peculiar usefulness.

The use of group-labels and special labels, adopted with great advantage in other departments of the Museum, should be applied here; the group-label setting forth succinctly the period, during which the style prevailed, and its leading characteristics, and the special labels describing, as far as practicable, each example. As it is evidently intended that the collection should contribute to the instruction of the general public, as well as to the advancement of the student, the larger the number of persons who can be led by such means to acquire clear perceptions of the progress of the art, the peculiarities and analogies of style, &c. the greater does the value of the collection become.

It is desirable that the labels and catalogues of casts should state, when known, the material of which the original consists; whether marble, stone, alabaster, wood, bronze, or otherwise.

Inasmuch as the grouping proposed above may require a somewhat less crowded arrangement than the present, and additional screens cannot perhaps be afforded, we would recommend that, firstly, all duplicates, and, secondly, such a number of the specimens of least interest, should be removed, as may be necessary to obtain sufficient space for the new classification.

Looking to the terms of their lordships' communication to us we would refer to the fact, that the Government building contains another large collection of architectural casts, mostly mediæval, known as the "Architectural Museum," which is under the management of a committee of the body of subscribers to whom it belongs. It is obvious that both collections will become more useful for public instruction if they be classified under the same system, and the specimens arranged in a like sequence. And we venture to hope that means will be adopted, gradually, to make the collection more perfect; and, ultimately, to add illustrations and characteristic examples of the use of the semicircular and pointed arch, vaultings, windows, &c. and to enlarge the sphere of illustration by specimens of Eastern architecture.

The country would then have, at a comparatively small cost, what has long been desired—a *National Museum of Architecture and Architectural Decoration*—which could scarcely fail to be of the greatest service in an educational point of view, whether as affecting the progress of art in its noblest works, or the improvement of taste in the application of art to the production of our manufactures.

T. L. DONALDSON,
GEORGE GODWIN,
F. C. PENROSE.

Second Report.

SIR,—In accordance with the request communicated to us in your letter of August 13, ult. that we should give the Right Hon. the Committee of Council on Education our opinion on certain questions which arose out of our Report on the arrangement of the collection of architectural casts in the museum at South Kensington, we beg to inform their lordships that we lately met at the museum to consider these questions, and have agreed to the following answers:—

Q. I.—"Do we consider the various styles are sufficiently represented?"

A.—If, as we venture to hope, the Committee of Council are desirous of forming a Museum of Architecture, which shall do justice to the subject, the present collection can only be considered as a nucleus, and that a small and imperfect one.

Q. II.—"Should it be our opinion that the various styles are inadequately represented, is it desirable that the illustration of the styles should be rendered more complete before a systematic re-arrangement of the casts is undertaken?"

A.—As it is evident that in forming an adequate architectural museum the appropriation of additional space as well as the enlargement of the collection itself must be contemplated, to wait for which would occasion considerable delay, it seems undesirable to withhold from the student the advantage that the present collection, with moderate additions and better arrangement, is capable of affording him. To this end we would recommend the putting together, in each subdivision, two or three monuments of the best character in each style, made as complete as possible, and of a scale of dimension as large as the

gallery will admit. These would serve as a key to the student as to the meaning of many other examples suspended on the walls, which in their present fragmentary arrangement can serve little purpose for reference or comparison, except to persons far more advanced in the study of architecture than the class of students for whose use the Museum is especially designed.

It has occurred to us also, that the ceiling of the galleries is adapted for the reception of a few well-chosen examples of ornamented ceiling work; and are being taken that it should not be crowded to an extent that would distract too much the attention from the objects on the walls.

We venture to offer the following additional suggestions as to obtaining examples.

Casts of many beautiful Roman specimens might be obtained from some of the early Italian churches, such as St. Lorenzo, from Il-Muro at Rome, and cinque-cento examples of the finest character from some of the other churches at Venice. Probably, if inducements were held out to the possessors of private collections, many casts might be presented or bequeathed to the Museum. But the public museums, such as the Soane Museum at home, and the foreign museums, furnish as yet an unexhausted mine for the enlargement of the collection. A valuable addition would be made, for instance, by obtaining from the Capitoline Museum at Rome two or three casts of the heroic statues of the Roman emperors, for the sake of the magnificent ornamentation of the cuirasses and other parts of the armour, and which are admirably instructive in the application of decorative detail both as to subject and treatment.

THOS. L. DONALDSON,
GEORGE GOWDIN,
F. C. PENROSE.

Henry Cole, Esq. C.B. &c. &c.

THE STATUE OF NOTRE DAME DE FRANCE, PUY.

On the 28th of July last, the inhabitants of Puy held a *fête*, on the occasion of the arrival of the colossal statue of Notre Dame de France, at Givors. Five vehicles, laden with the first pieces, had been on the road for three days, and their approach to the town was signalled by the ringing of the church bells, and welcomed by a vast crowd, eager to gain the first sight of the castings which were to compose the statue, to be erected on Cornhill Rock. Only eight pieces arrived, and the rest are to follow: the pedestal is nearly finished. M. Bonnaux furnished the model. M. Fournier, the skilful foreman of M. Prenat, enlarged the details. The statue is of cast-iron, from the guns taken at Sebastopol, and given to the bishop by the French Emperor. It is 16 metres high, and is composed of upwards of 100 pieces, weighing in all 100 tons. A cast-iron staircase encircles the interior, and contains fifty-eight steps, in three flights. Each landing forms a chamber, four paces long by as much broad, lighted by windows skilfully introduced, so as to be invisible from the outside. The winding staircase stops at the fourth story, near the height of the shoulders, and is continued by an iron ladder of sixteen rungs, by means of which the ascent to the head is easy. On opening the top of the head a magnificent view of a vast horizon is presented. Colossal as the statue is, the workmanship is said to be so perfect, that at twenty paces distant it is viewed to perfection. The subscription amounts to 214,649 francs 71 cents.

RISKS OF LODGERS.

We have before now directed attention to the manner in which the collection of the ground-rent acts in houses let in tenements. The persons, in certain instances, who hold the premises, neglect to pay the ground-rent, and the goods of the lodgers are distrained upon and carried away. This is also the case in respect of taxes, and many instances might be mentioned in which ruin has been brought upon families by the loss of their furniture. A hard case has recently come under our notice, and it is unfortunately the truth that there are many such constantly occurring in the metropolis.

In a house, in which nearly every room was let to separate families, the person renting it, himself a working man, got into debt three quarters' rent: he was also heavily in arrear with his taxes; and expecting an execution would be levied, he hurried away with his furniture, and left his lodgers in the lurch. The rent had been regularly gathered from each weekly; and, in one instance, when a tenant had fallen in arrear to the extent

of a few shillings, a broker was put in to enforce payment. Considering how many thousands in the metropolis are obliged to occupy tenements, it is a serious evil that persons who have honestly paid their rent should be exposed to so much risk and uncertainty. In this instance, the man to whom the place had been rented received upwards of 30*l.* from the tenants, and from not doing his duty they were constantly at the mercy of the law. We know few more cruel injuries that one person can do to another than this, and yet such acts generally go unpunished.

In the house referred to, some of the lodgers managed to get away their furniture, but others, who were less active, will have everything they possess sold, although they do not owe a shilling. In one room a woman had recently been confined; in another there was sickness. It seems necessary, in order to put a stop to this practice, that persons holding property of this description, and so dealing, should be liable to punishment in the same manner as a robber or a swindler, for the money has been clearly taken from those poor people on a false pretence.

Persons engaging rooms of strangers should never do so without seeing that all the receipts for rent and taxes are right, and it would be well if it could be made a general practice for those who let houses in tenements to show the rent receipts, &c. to their lodgers, quarterly, or at other times. This is but just; and, if it were commonly done, it would not be considered to be offensive to be asked for such documents.

FOREIGN RAILWAY WORKS.

A skew bridge has just been completed over the road leading from La Chapelle, in Paris, to St. Denis, and about half-way between the two places, to carry the Paris and Soissons Railway, which joins into the Northern Line near the middle of the plains of St. Denis. There are three openings: the centre one, over the roadway, is a girder beam bridge, and the two side arches are cut stone segments.

The Eastern Company is laying a second line of rails between Rheims and Epernay. This branch line has become an important one since its extension towards Ardennes and the North. In the workshops of the same company there has just been completed an Imperial train, intended by the Great Russian Railway Company for the Emperor Alexander. Our readers may recollect that this work had been previously executed, but the whole of the carriages were lost in the shipwreck off Cronstadt. This new train is of rare magnificence, and consists of eight carriages; one for the Emperor, others for the Empress and the Grand Duke Constantine, a saloon carriage, one for the aides-de-camp, one for attendants, a refreshment carriage or dining-room, and the last for baggage. The three first contain each a bedroom, a saloon, and cabinet; but all the carriages have communication throughout. The furniture and hangings are of silk. A hot water apparatus warms the whole train. On the exterior, covered with every possible species of ornament, the Parisian decorators would seem to have used up and worked out all their talent for tasteful embellishment. The Grand Duke Constantine's carriage is remarkable for the magnificent armorial bearings and insignia of his two-fold duties of Grand-Admiral and General. The train cost about 400,000 francs, or 16,000*l.*

The shareholders of the Mortara and Vigevano railway are called together in a general assembly to deliberate upon the proposition of continuing the line from Vigevano to Milan.

The Tuscan Government has, within these last few days, authorised the formation of a company entitled "The United Tuscan Railways Company," and having for object the completion and the working of the Leopold, Luca, and Pisa lines, and that of Luca to Pistoja. The company undertakes at once to construct, at its own cost, the line (with a bridge over the Arno) of junction between the Leopold line and that of Luca and Pisa. It will be of great advantage to the public for these three lines to be in the hands of one company alone.

In the *Builder* of Jan. 2, 1858, page 13, we mentioned the several railway passes of the Alps, and among them that of the Simplon, conceded to the Italian railway company by the Sardinian Government. This pass is occupying the attention of this company and the neighbouring Governments, so that before long it is likely to follow the example of Mont Cenis.

The Simplon tunnel is to be eight or nine kilometres, according as the height above the sea be fixed at 1,200 or 1,250 metres. This will be 400

or 450 metres above the last station of the railway in the plains. To attain that height, the line is reported to consist of practicable curves with gradients not exceeding 1 in 28.6.

CAUSE AND CONSEQUENCES OF THE DIMINUTION OF RAIN IN ALL COUNTRIES.

It is demonstrated that, during the last eight years, an increase of rising tracts of land has taken place, and that the majority of rivers recede to much lower beds, losing a great amount of their usual volume of water, and raise an abundance of fossils and weeds, which soon form layers for dry land, and increase the solid matter of the globe. The same effect is caused by the increase of population and the progress of science and arts by the decay or refuse of matter. Large forests are consumed by the great demand for the erection of habitations, ship building, domestic and agricultural employments and industry, by which means the reflection of light must increase, and thereby a smaller amount of evaporation or humidity must be caused, and in consequence a less amount of rain is produced, so that the formation of land is favoured. The phenomenon of the Nile in Egypt not having overflowed during the last month of June, and the coast area of the Baltic having receded for about a quarter of a mile, and similar events visible in all rivers, substantiate the fact.

We come now to the question.—What results and consequences will emanate from it? And, as far as human calculation permits, we find already striking proofs in the great change of climatic condition, the increase of heat, and a great amount of atmospheric electricity, producing virulent diseases, the prevalent afflictions of the respiratory organs, the uncommon emigration of animals and fishes from distant climates, the frequent boreal reflection of the sun, and several other indications which would require volumes to describe. One universal blessing, however, will ensue; and that will be the disappearance of the potato disease.

All bulbous plants, if for many years reproduced by bulbs, and not by the cultivation of seeds, lose a great deal of their saccharine and starchy substance, and incline to an unhealthy fermentation of the juice in the plants, which, during continued rain, attract certain atmospheric animalcules, and which, penetrate into the plants, to metamorphose, and thus produce an almost invisible maggot, which, at its maturity, descends from the stalk into the bulbs, and causes the potato disease. If, during a long interval of dry and hot weather, the fermentation referred to is prevented, the disease will surely disappear. This result has been established on the Continent, where sandy soil is prevalent, principally in Mark Brandenburg, in Prussia, where, by order of the Government, extensive trials were instituted and produced the said effect.

Agriculturalists ought to improve the cultivation of potatoes by the seeds, and their products in the third season would confirm my assertion. It will be useful, sir, if you direct their attention to this important subject.

A. DEMBINSKY, Professor of Chemistry.

WORKS IN IRELAND.

THE Ecclesiastical Commissioners are having works executed at the churches of Rathormac, co. Cork; Killesher, co. Fermanagh; Currin and Inniskeen, co. Monaghan; Longfield Lower, co. Tyrone; St. Luke, Dublin; Kilrush, co. Clare; Odogh, co. Kilkenny; Burrischoole and Kilmorrmoy, co. Mayo; Monasterevan, Queen's co.; and Achonry, co. Sligo;—for all of which contracts have been, or are being, entered into.

The county prison at Galway is to be adapted to the separate system of confinement, and plans have been prepared by Mr. S. U. Roberts, county surveyor.

A new Roman Catholic church is to be built at Raheny, near Dublin, on a plot of ground immediately opposite the Protestant church, and which was gratuitously presented by Mr. Moore. The edifice will be of Gothic character, and inexpensive. It will consist of nave, 60 by 25, and chancel, dimensions seemingly disproportionate to accommodate 500 persons, not to speak of provision in future for the congregation of a growing locality. Mr. P. Byrne is the architect.

A new tower is to be erected at the Roman Catholic church of Dunmore, co. Galway, according to plans by Mr. J. S. Butler, architect.

The Board of Public Works are about having a coast-guard station built at Clontarf, on a site known as the North Bull.

The Towns' Improvement Act is to be extended to Fermanagh.

It is intended to erect workrooms at the Royal Dublin Society house for the director of the Natural History Museum.

The Earl of Granard is erecting at Castleforbe, co. Longford, a new and "architectural" range of stabling, which will cost 4,000*l*. The style is Castellated, and a lofty tower and other characteristic features are introduced. Mr. J. J. McCarthy, architect; Mr. R. Farrell, builder.

The Dundalk and Enniskillen Railway Company proposes to form a branch line from Clones to Cavan, and the project will be aided by subscription to preference shares as far as 20,000*l*.

The first stone of the new church of St. Patrick, Mayo-bridge, was laid last month. It is proposed to accommodate 1,400 persons. Style, Gothic. Expenditure, 3,000*l*. Mr. J. J. McCarthy is the architect; Mr. John Murray, of Dundalk, the clerk of works; Mr. McGaughey, of Armagh, the builder.

A new convent chapel will be commenced next year, adjoining the convent of Mercy, Tralee, from designs by the same architect. It will contain a chantry for the founder, and accommodate the inmates of the house of Mercy, the nuns, and the public.

A monument is to be erected at Mount Jerome Cemetery, near Dublin, to the memory of the late John Mitchell Kemble, the well-known Saxon scholar and antiquary.

A manse is being erected at Ballinderry, for the Presbyterian clergyman, after plans by Mr. Matier, of Belfast; Mr. John Scott, builder.

Galway.—The new church of St. Augustine, Galway, has been dedicated. The high altar is composed of Italian and Irish marbles, before which is hung a corona, the gift of the architect, Mr. M. B. Moran, of Dublin.

Drogheda.—The new church of St. Augustine, Drogheda, will shortly be commenced. The plan consists of nave, aisles, lateral chapels, and tower. The sacristy stands on the south-east angle, and is connected with the church by a cloister. The internal dimensions are 145 feet by 60 feet. The nave will be separated from the aisles by an arcade of arches, supported by piers of Dougal polished marble. The nave will be lighted by seven long and narrow lancets, under a single dripstone in the west end, and double lancets in clerestory. The style is Early Gothic, the windows throughout showing the distinctive characteristics of an early approach to tracery. Mr. M. B. Moran is the architect.

THE EXPLOSION ON BOARD THE "GREAT EASTERN."

WHEN, recently, we gave some particulars of this wonderful ship, we mentioned that Mr. Scott Russell had resisted numerous propositions for the introduction of improvements and inventions in the construction of his engines, being determined that there should be no experiments, considering justly that the size and build of the vessel were experiment enough. It would seem, however, that one experiment was permitted, an experiment, too, which had often failed elsewhere, namely, a feed-pipe casing; and this has, unfortunately, led to a disaster that imperilled this noble ship, and caused the loss of five lives as well as injury to others. The occurrence bears strong testimony to the prudence of his resolve; we are anxious to learn under what circumstances he was led to depart from it. The arrangement is this: the funnel is double for 40 feet of its length, the inner cylinder being 6 feet in diameter, and the outer 7 feet, so that there is between the two a run 6 inches broad, and this run constitutes a water-jacket or casing. The object of the water-jacket is to prevent cold water being fed to the boilers, and to keep the cabin through which the funnel passes cool. Attached to the water-jacket, to prevent any excessive pressure taking place within it, is a stand pipe. This reaches nearly to the level of the top of the funnel, and is intended to act as a safety-valve. Being open at the top, as soon as the pressure exceeds a certain amount the water is forced out at the top, the height of the pipe being the measure of the pressure.

But for this, as is quite evident, the moment the steam generated in the water-jacket exceeded in power the resisting strength of the water-jacket, or casing, an explosion would occur. Now, in this stand-pipe was a cock, introduced, it would seem, simply for the purpose of testing the strength of the casing; and this cock, it appears clearly, was shut. It happened that no water was taken from the water-jacket for the boilers (the means of communication is simply a stop-cock, which may

or may not be used), and the result was, quite as a matter of course, a terrific explosion. The sad results of it, including damage to the extent of, it is said, 5,000*l*., have been graphically described. The wonder is, and for which all should feel grateful, that it did not occur when the saloon was full of people. The accident, we are glad to say, is not calculated to lessen confidence in the slightest degree in the vessel, however strongly it may impeach those who manage it. Tremendous as the power exerted evidently was, the body of the ship is uninjured.

The questions now are, and these must be most seriously considered, 1. Under whose authority were these evilly constructed water-jackets introduced? 2. By whom was the cock in the stand-pipe closed? And 3. Whose duty was it to see that the arrangement was in order before starting,—to see that in such a magazine of gunpowder there was no fuse burning?

THE STRIKE AND HOUSE-RENT.

THE operative builders forget that the building trades generally have been in a depressed state since the commencement of the Russian war, which diverted capital from internal improvements to external defences, and which divergence has continued ever since, and at the present time exists, and is operating as strongly as ever, and which is the principal cause of many or any building operatives being out of employment: the nine-hours movement is not the best remedy, but emigration; and this is offered free to building operatives, in preference to any other class, by the Government Emigration Society, Park-street, Westminster.

The horrible places which poor people herd in, breeding fevers and consumption, and causing habits of intemperance, through there being no quiet comfortable corner or room for a man to sit in when he has done his day's toil, because rents are so high, should awaken the consideration and even compassion of all who are trying to increase the cost of house building. If any should gain by the introduction of machinery into this branch of industry, it is the public, and especially the poorer portion of it. But every addition to the cost of a house building, entails a heavy and never-ending tax upon the occupants, and necessitates the unhealthy and demoralizing system of a house, intended for one family, to hold five or six families, each family paying double rent for half space, that the real owner may get a high rent, and the tenant-landlord live rent-free. And to produce these results, half the children born are buried before the age of fifteen, after suffering all manner of dreadful diseases, produced by foul air of small rooms, and sudden and continual transitions from heat to cold. There must be an Act of Parliament to enforce that never less than two rooms shall be let to a family, and those rooms to be of adequate size.

Increasing the cost of house building, besides destroying the health of the community, checks the investment of capital in this class of national wealth, diminishes the demand for labour in the building trades, and spoils the market for every man who has the ambition or chance of becoming an employer himself some day.

J. L. MARON.

ARCHITECTURAL SOCIETIES OF LINCOLN AND NORTHAMPTON.

A JOINT meeting of these societies has been held at Stamford, whence an excursion was made to various places of interest. The gathering was a good one, though not so numerous as on a previous occasion. The societies are both in a flourishing condition, and supported by influential gentlemen and the clergy of the respective districts and dioceses.

The first of the two days of meeting was devoted to public meetings, and an inspection of the Stamford churches and other objects of interest, and the last to a country excursion to various churches, &c. in Northamptonshire. Papers were read on both days.

The mayor presided at the opening meeting, at the town-hall, on Tuesday, the 6th, when the Rev. T. James read a paper titled "An Architectural Review and Prospect for 1859." The company afterwards visited St. Mary's, St. John's, and All Saints' churches, Brown's Hospital, and Mr. Blashfield's terra-cotta works. The Rev. G. A. Poole offered a few remarks on each of the three churches visited.

Dinner was partaken of at the Stamford Hotel by upwards of forty guests, and in the evening a meeting was held at the Assembly Rooms, where

a temporary museum was arranged. The Rev. G. A. Poole read a paper on Picturesque Building, and Mr. Blashfield one on the History of Pottery. The chairman, the Rev. E. Trollope, then addressed the assembly on the subject of Archaeology.

On Wednesday an excursion was made from Stamford, by Wittering, Elton, Warrington, Tansor, and Fotheringhay, to Apethorpe, the seat of the Earl of Westmoreland, to which the party were invited; churches and other objects of interest having been visited by the way. The Earl had issued 250 invitations to luncheon, nearly all of which were accepted. After luncheon the Roman remains, lately discovered in the Park, were visited, and the Rev. Mr. Trollope here delivered an address on the subject.

These remains were discovered by accident. Some workmen were digging a drain, when they found some Roman mortar. This circumstance induced his lordship to give orders for the excavation of the pasture land in the vicinity, and in a short time a hypocaust was bared; subsequently tessellated pavements, baths, various rooms, and a great extent of stone walls showing "herring-bone" work. The Earl, being desirous of personally watching the progress of the excavations, caused them to be suspended during his sojourn in town for the season. Having recently returned to Apethorpe, however, the men were again employed to excavate the site of the Roman villa, and they soon exposed to view another tessellated pavement, a drawing of which was taken by Lady Westmoreland. Walls extending about 120 yards from north to south have now been bared.

At the conclusion of Mr. Trollope's address, the Rev. W. Elwin (the editor of the *Quarterly Review*) moved a vote of thanks to that gentleman, which was seconded by the Rev. Lord Alwyn Compton, and carried with acclamation. The visitors then inspected Apethorpe Church, and proceeded to King's Cliff, the church of which also was viewed, after which the party returned to Stamford.

A meeting was again held at the Assembly Rooms in the evening, when an additional paper was read by the Rev. Mr. Trollope on the Roman remains at Apethorpe, and the contents of the Museum were illustrated by remarks from the same gentleman.

ST. JAMES'S, GERRARD'S CROSS.

ON the occasion of the consecration of this church on the 30th ult.—a church erected as a memorial of Major-General Reid by his sisters—we gave a somewhat full description of it, and showed that it varied in character from those usually erected.

The leading masses of the composition were adopted in deference to some associations of early life on the part of him whom it commemorates, and which gave a special interest to the monuments of Pisa; hence it appeared desirable, by a very free modification of style, to treat such forms without any servile antiquarianism.

We now add a view of the exterior. Within the walls, which are 1 foot 10 inches thick, the whole length is 100 feet: the width of the nave is 21 feet 6 inches: the length in the transept is 59 feet 6 inches. The tower is 12 feet 9 inches square, and about 75 feet in height. Brick, it will be remembered, is the material chiefly used.

The organ, which is placed on the south side of the church, was built by Messrs. H. Jones & Co. of West Brompton. Mr. J. T. Birch, R.A.M. of Uxbridge, has obtained the appointment of organist.

The church has hot water pipes for the winter months, fixed by Messrs. Grainge, of Uxbridge. Mr. Tite, as previously mentioned, was the architect; his friend, Mr. Trotman, giving his assistance in carrying out the design. Messrs. Hardy & Son, of Cowley, were the builders.

The inhabitants of the district of Gerrard's Cross have reason to be thankful to the Misses Reid. These ladies have no large estates in the neighbourhood to benefit by such an outlay, nor have they any pecuniary interest in the erection. It is one of a purely religious motive, coupled with a desire to carry out the wishes of a beloved brother. This feeling has already cost the ladies nearly 10,000*l*.

The district of Gerrard's Cross is taken from five parishes:—Upton-cum-Chalvey, Langley Marsh, Iwer, Fulmer, and Chalfont St. Peter.

The Rev. W. J. Bramley Moore has been nominated perpetual curate by the Misses Reid: hereafter the right of nomination will pass into the hands of the Dean and Canons of St. George's Windsor.



ST. JAMES'S, GERARD'S CROSS. —MR. TTE, M.P., AUCHMUTY.

REPORT ON THE DEODORIZATION OF SEWAGE.

Dr. Hofmann, F.R.S. and Dr. Frankland, F.R.S. having been requested by the Metropolitan Board of Works to advise them as to the selection, from the various schemes proposed for the deodorization of sewage, of a process combining both efficiency and economy, have made their report. They say,—

In conducting our investigation, we have carefully kept in view the final plan of dealing with the sewage adopted by the Board, the principal features of which were lucidly described to us in a letter from your chief engineer.

Not the least arduous part of our labours consisted in the careful examination of the numerous, and in many cases ponderous, documents addressed to the Board on this subject, and transmitted to us for consideration. Short abstracts of these proposals will be found in the Appendix.

This examination led us to the conclusion that a comparatively very small number only of these proposals admit of application in conformity with the plan of dealing with the sewage finally adopted by the Board.

The comparatively small number admitting of such application, experienced a further limitation when the several processes were submitted to experimental trial. In fact, of all the proposals, old and new, referred to us, there is only one which appears to satisfy in the necessary degree the conditions involved in the circumstances of the case.

The agent to which we allude is that described as "Dales' Murate of Iron," essentially a concentrated solution of perchloride of iron, the disinfectant properties of which were some years ago pointed out by Mr. Ellerman. This we have submitted to an extensive series of comparative trials with the well-known disinfectants, lime and chloride of lime, which, probably owing to their long-established character, are not included in the proposals before us.

These trials lead to the conclusion that the deodorization of sewage may be effected either by the perchloride of iron, chloride of lime, or lime; but that, if quantities of equal value* be applied, the perchloride of iron is markedly superior to either of the others, whilst chloride of lime acts much more powerfully than lime.

These statements refer both to the immediate action of the three agents upon sewage, and to the permanency of the effect produced; but, when examined from the latter point of view, the superiority of the perchloride of iron is exhibited even in a still more marked degree.

It may be stated that these results were obtained by operating upon sewage, such as flows from the mouths of the chief metropolitan sewers during the hottest season of the year, our experiments having been performed during the latter half of the month of July.

Since the calculations as to the cost of deodorization are based upon these experiments, it may not be out of place here to mention briefly the mode in which they were conducted. In order to enable us to operate upon a sufficiently large scale, brickwork tanks, lined with cement, and holding 7,500 gallons each, were constructed at the outfall of the King's Scholars' Pond Sewer. The sewage was lifted into these tanks by means of a steam-pump, and the various deodorizing agents were incorporated, either by their gradual introduction into the shoots during the process of filling, or by diffusing them through the mass of the liquid by means of mechanical agitation.

From a number of experiments thus conducted, it appears that each of the three agents above mentioned will effect the immediate deodorization of 7,500 gallons of sewage when applied in the following proportions:—

Perchloride of iron ½ gallon.
Chloride of lime 3 lbs.
Lime 1 bushel.

From these results it follows that 1,000,000 gallons of sewage require respectively:—

66 gallons of perchloride of iron, costing £1 13 8
400 lbs. of chloride of lime " 3 2 16
132 bushels of lime " 3 0 6

* We have endeavoured to arrive at the average prices of these three agents. It appears that they are subject to considerable fluctuation. As the average result of our inquiries, we have taken the value of lime at 9s. per cubic yard = 18 bushels, the value of chloride of lime at 36 per cent. (about the strength of that used in our experiments), at 12s. per ton; and that of the perchloride of iron solution, specific gravity 1.45, at 6d. per gallon. Probably these prices would be subject to a certain amount of reduction if very large quantities were purchased. We should state further, that the estimation of the value of perchloride of iron is founded upon our knowledge of the price of its ingredients and the cost of manufacture, although Messrs. Ellerman and Dales, who have proposed this liquid, quote 1s. 6d. as their maximum price per gallon.

During the performance of these experiments, which, as already stated, were made during the hottest portion of a dry season, we were surprised to find that the liquid flowing from the outfall of the sewer was by no means strongly offensive: it was only after preservation in tanks for twenty-four hours, or upwards, that a really powerful odour manifested itself. This circumstance rendered it of the highest importance to inquire more closely into the degree of permanency of the effect produced by the several agents under consideration.

For this purpose three equal quantities of sewage were collected, and perfectly deodorized respectively by perchloride of iron, chloride of lime, and lime. They were then allowed to stand. After two days the sewage disinfected by lime became slightly tainted, whilst that deodorized by chloride of lime and perchloride of iron remained perfectly odourless. At the end of three days the lime sewage had become decidedly offensive, whilst the other two specimens still remained free from smell. After four days the odour of the lime sewage had become worse, but that treated with chloride of lime likewise began to exhibit an offensive character, whilst the sewage to which perchloride of iron had been added remained perfectly inodorous. Even after the lapse of nine days the condition of the latter had not changed. In other experiments the same relative permanency of effect has been observed.

Another important element in estimating the comparative fitness of an agent for the treatment of sewage is the time required for clarification after the addition of the disinfectant. In this respect, also, the results of the preceding experiments lead us to give a decided preference to perchloride of iron.

It now remains to apply the results thus obtained to the circumstances of the case before us. From the statements in Mr. Bazalgette's letter it appears that it is at present contemplated to collect the larger portion of sewage in two reservoirs, to be constructed respectively at Barking Creek and Crossness Point, in which it would be allowed to settle for about nine hours and a half, in order to be discharged into the river during the first two hours and a half of the ebb tide. The third portion of the sewage, we learn from Mr. Bazalgette's letter, will be pumped into the river all the year round at a point near Cremorne Gardens, termed the outfall of the western division. The subjoined table gives the quantities of sewage discharged at present daily, according to Mr. Bazalgette's estimate, and likewise the quantities anticipated in future years.

	Present.	Prospective.
Discharge of Sewage at Barking Creek	56,535,875	62,500,000
Do. Crossness Point	20,000,250	35,937,500
Do. the Outfall of Western Division	4,646,875	9,375,000
Total	81,250,000	107,812,500

The sewage discharged at Barking Creek and Crossness Point would probably not require deodorization, except during the hot season of the year—say during three months. Supposing the deodorization to be effected by perchloride of iron, the disinfection of this portion of the sewage at the present rate of flow would involve an expenditure of 11,620l. 13s. 9d. for the three months. We are, however, of opinion that in practice the sewage discharged into the river at this distance from the metropolis would rarely require deodorization for so long a period as three months. In fact, we are not without hope that the sewage, supposing it to arrive at these outfalls in a condition similar to that in which it is at present discharged from the King's Scholars' Pond Sewer, would, when properly freed from suspended matter, only require deodorization under particularly unfavourable circumstances.

With regard to the sewage discharged at the outfall of the Western Division, it will be indispensable to submit it to a systematic deodorization the whole year round. Owing to the comparatively small fraction of the sewage delivered at this point, a very moderate sum would cover the expense—2,821l. 8s. being the cost of the disinfectant for the year.

Having thus stated the results of our experiments regarding the process of deodorization, it remains only to draw particular attention to the importance of discharging the sewage into the river as free from mechanically suspended matter as possible. We have found that this suspended matter, when separated even from the deodorized sewage, rapidly passes in warm weather into a state of active putrefaction. The removal of

this matter would, in a great measure, prevent the formation of any offensive deposit upon the banks of the Thames, not to speak of the improvement in the appearance of the river which would thus be secured. We are therefore of opinion that filtration should be invariably employed at the outfall of the Western Division, and that subsidence, if not actual filtration, should be resorted to at the two remaining outfalls.

The putrefactive tendency of the deposit separated by filtration or subsidence, renders its rapid removal from the reservoirs or filters a matter of the utmost importance, especially during summer; for the process of putrefaction, when once commenced, can be arrested only by quantities of disinfectants practically impossible.

It is not within our province to enter into details respecting the mechanical arrangements necessary for the application of the disinfectant, or for the filtration and subsidence of the sewage; but we beg to express our opinion, based upon the experience acquired during this investigation, in manipulating with comparatively large quantities, that the disinfection of vast volumes of sewage can be more easily accomplished than is generally believed, and than we ourselves anticipated at the commencement of our inquiry. The actual process of deodorization will probably present less difficulty than the mechanical separation of the deposit by filtration or subsidence. This separation will involve the temporary storage of immense quantities of sewage, the rapid removal of large quantities of deposit, and a number of operations which can be successfully carried out only with considerable system and under strict inspection. Operations of this kind should be, as far as possible, conducted at a distance from densely populated districts; and we consider it therefore a happy feature of the scheme adopted by the Board, that a small fraction only of the total amount of sewage requires to be manipulated in the immediate neighbourhood of London.

August, 1859.

A. W. HOFMANN,
E. FRANKLAND.

APPENDIX.

In the body of the report we have alluded to the considerable number of proposals addressed to the Metropolitan Board of Works, and referred by them to us for examination. In order to divest the report as much as possible of embarrassing detail, we have refrained from entering into a description of each of the several suggestions which have been made. We have, however, thought it desirable to give condensed abstracts of these proposals in this appendix.

John T. Barry, esq., proposes proto-sulphate of iron as a disinfectant for sewage, and also suggests that charcoal will be introduced into the air-spaces of sewers, in order to destroy noxious gases.

G. Lindsey Blyth, esq., recommends that superphosphate of magnesia should be mixed with the sewage, which should then be precipitated with lime, or another alkaline earth, the object being the production of a manure.

W. Burness, esq., recommends separate systems of drainage, for sewage, and for surface water. The latter he would filter, if necessary, before its discharge into the Thames: the sewage he would pump to the proper level, and pass through suitable pipes for distribution in the surrounding agricultural districts, completing the distribution before the sewage had time to putrefy and become offensive. He is of opinion that the value of liquid manure is much greater than that indicated by its constituents, because "during the process of decomposition of animal and vegetable matter, oxygen is worked up both from water and the atmosphere; consequently hydrogen is liberated from the former, and nitrogen from the latter; so that these two uniting, form ammonia, one of the best fertilizers."

Gurney Burt, esq., states that he will shortly make a proposal for utilizing the London sewage, without deodorization, by distributing it over the country, by means of the railways.

Henry Callen, esq., recommends the deodorization of sewage by galvanic or electric agency.

John Chisholm, esq., makes a similar proposal.

Henry Bollenman Condy, esq., calls attention to the manganeses and permanganates as powerful agents of deodorization and disinfection.

Henry Cornfoot, esq., suggests ferrous sulphate of alumina, commonly called Mells Patent Reactive, as a deodorizer for sewage.

Daniel Dealey, esq., chemist, and William Richards, esq., engineer, propose to generate chlorine from "a mixture of muriatic acid and quicklime," on board a barge, which is to be "constantly running up and down the river, and discharging the gas on both sides as it goes along."

Richard Dover, esq., advises to flush the sewers daily "with the antiseptic hydrochloric acid, and liquid protosulphate of iron and chloride of sodium combined."

G. F. Ellerman, esq., recalls attention to the use of perchloride of iron, which he proposed some years ago as a disinfectant.

Richard Ely, esq., intimates that he has a process for the precipitation of sewage in reservoirs, of which no further description was obtained.

Charles F. A. Glassford, esq., proposes to carry off the rain water in the sewers, and to make such arrangements in the houses as to allow only a limited quantity of water to become mixed with the excreta. This mixture is to be collected in vessels to be daily discharged into reservoirs, where it is to be mixed with sulphuric acid, and allowed to settle. The liquor is to be then evaporated, and the solid matter squeezed through such filter-presses as are used at the Leicester Manure Works.

G. Garbert, esq., of Mauritius, suggests the abolition of

water-closets, and the substitution of boxes containing peat charcoal.

M. Gravelle proposes to deodorize by means of a pyro-aluminous lignite, commonly called "cendre noir," which is stated to be extensively used by the scavengers in Paris.

William Goreham, esq. communicates the following plan:—To form reservoirs at the mouths of the sewers; to allow the sewage to settle in these reservoirs; to remove the sediment by trays, and to disinfect and dry the contents of the latter by placing them in chambers through which the products of combustion of a suitable furnace are passing.

John Hitchman, esq. gives his arguments in favour of

"The rainfall to the river,
The sewage to the land."

Mr. Howard, British Minister in Lisbon, reports on a contract between the municipality of that town and a company formed for collecting the excreta and converting them into sewage. The company propose to supply each house with a separating apparatus, and with the necessary disinfectant (the nature of which is not stated). The municipality will compel the inhabitants to use the apparatus, and proposes to furnish the land for the works.

Henry Kemp, esq. suggests "pyrites peat" for deodorizing sewage. In a second communication Mr. Kemp enters into some details regarding the mode of applying the peat, which he proposes to enclose in wire cages attached to the stems of the river steamers; and he advises the introduction of similar cages into the mouths of the sewers.

Charles F. Kirkman, esq. offers to exhibit upon a large scale the practicability of a plan which he has successfully employed upon a small scale. He does not state the nature of the plan in his original communication, but in a subsequent letter mentions that his method is not a chemical one.

James Knight, esq. proposes to establish a number of filter-beds on each side of the mouth of a sewer, and to allow only the clear water, from which the solid matter has been deposited, to flow into the Thames.

C. N. Kotulla, esq. proposes to remove the Thames' nuisance by increasing the specific gravity of the river over that of sea-water, "so that the river-water may become heavier than that of the sea; whereby the former, instead of being driven back by the incoming tide, will give way to the flow of the sea-water, and will allow it to flow up, while the river water will run out, or, at all events, remain under the sea-water." He thinks he can accomplish this object "by dosing into the river at various points common salt."

M. G. Legé suggests to attach to the drain of each house a receptacle so constructed as to allow of the separation of the liquids from the solids; the former to be permitted to pass into the sewers, and the latter being removed once in eight or ten days, to be converted into manure.

M. Louis Napoleon Legras states, that he has invented a deodorizer which is applicable to London sewage water, and which produces a valuable manure. The nature of the agent is not stated, and no information could be obtained on application.

A. McDougall, esq. and Dr. Angus Smith, propose the use of carbonate of lime in solution, and also of a solid mixture of sulphates and carbonates. These substances are to be added to the sewage to produce immediate and permanent deodorization.

F. C. Maguire, esq. advises to convey the sewage to railway stations, and then to transmit it to the surrounding agricultural districts through earthenware or iron pipes. If necessary and practicable, he would filter it through dry sewers constructed over the present drains, converting the solid matter into manure, and deodorizing the filtered liquid in subterranean deodorizing docks; the deodorized fluid to be then pumped into reservoirs at levels sufficient to allow of its being conveyed in pipes along the various lines of railway to the provinces. He proposes no method of deodorization.

M. J. Marino, of Copenhagen, communicates a plan for noxious water closets.

Dr. Henry Medlock suggests that sewage would probably be deodorized by means of scrap iron, and subsequent filtration through beds of sand and charcoal; but he states that he has not yet had an opportunity of testing the efficacy of this suggestion on a sufficient scale and by a sufficient number of experiments.

M. Moll, *vide* Henry Cornfoot, esq.

George F. Morrell, esq. calls attention to the deodorizing properties of chloride of zinc.

The Rev. Henry Moule proposes to separate the sewage from the rainfall; the liquid portion of the former to be evaporated, the solid to be dried and deodorized. The ordinary modes of evaporating are stated to be chimerical, but the plan proposed is rendered perfectly possible "by the discovery in November last of something in the nature of steam which was hitherto unknown."

W. Oldham, esq. suggests to separate the solid filth from the sewage, and to distribute the liquid over the land in the neighbourhood.

M. Paulé, *vide*, recommends the use of a mixture of sulphate oleate and chloride of zinc, and of sulphate of manganese, for the deodorization of sewage.

William Richards, esq. *vide* Daniel Dealey, esq.

Dr. T. Angus Smith, *vide* A. McDougall, esq.

Rudolph Turecki, esq. states that he has discovered a material which enables him to disinfect excrementitious matters, and to convert them into manure; but he does not state the nature of the materials which he employs.

Mr. Wells is in possession of a method for the treatment of sewage, but states that it is not chemical, and is communicable only by personal interview.

Sir William Worsley suggests the conveyance of the sewage to a cesspool in the Greenwich Marshes, thence to Bow into the river at the turn of tide. No method of deodorization is suggested.

A glance at these proposals will show at once how few of them address themselves to the special question submitted to us for inquiry. A final plan of disposing of the sewage having been fixed upon by the Board, our investigation was of necessity limited to a comparison of the efficiency of the several deodorizing agents proposed.

After experiments continued for several weeks, we arrived at the conclusions already stated in our report.

In these experiments we had occasion to observe, that most of the agents proposed possess the distinguishing power which their inventors have pointed out, and many of them in so marked a manner as to render them undoubtedly valuable for a variety of special purposes. Not one of them, however, in our opinion, possesses the reputation of the agent suggested in the report—possesses that com-

mination of properties which could warrant us in recommending it to the Metropolitan Board of Works for the deodorization of the London sewage.

SCHOOL-BUILDING NEWS.

Sutton.—The following tenders have been received for the new schools, master's residence, and the laying out of play-grounds:—

Beddington Sutton	£998
Reddin, ditto	990
Frohook	987
Feast	986
Smith & Co. Penstanton	974
Piggott and Ingle	945
Allen and Wheatly, Bluntisham	908
Johnson and Feast, Chatteris	875
Bunting, Fenstanton	853

The buildings are in the Gothic style; the walls of red and white bricks, with steep-pitched roofs and ornamental bell turret. Mr. Robert Hutchinson, of Huntingdon, is the architect.

Eldersfield (Worcestershire).—A new school has been opened here. The buildings, which are constructed according to plans prepared by Mr. G. R. Clarke, architect, London, comprise a school-room and residence for master and mistress. The contractor was Mr. James Griffiths, builder, Eldersfield. The total estimated cost of the buildings was 713*l*. The school-room is 37 feet by 18 feet in length, 16 feet 6 inches wide, and 11 feet from the floor to the wall-plate. It is constructed of Bath and Burghill quarry stones (the latter all supplied by Sir Edmund Lechmere), and the roof is covered with blue and ornamental Broseley tiles. The inside walls are plastered, the floor being boarded. There are five windows, namely, three square-headed windows on one side of the room, and one five-light lancet-headed window at each end.

Newton-le-Willows. — The *Warrington Guardian* gives an account of the laying of the chief stone of new national Sunday schools at Newton-le-Willows, by Mrs. Legh, of Lyme. The buildings comprise an infants' school-room, 40 feet by 20 feet; boys' and girls' school-room, each 65 feet by 18 feet, with class-room, 18 feet by 15 feet. The whole are calculated to accommodate 320 children. Attached to the girls' school is a house for the mistress, and to the boys', a master's house. The style of the building is Early Decorated. The infants' school, gabled to the front with bell-turret, forms a centre, and right and left run the boys' and girls' school-rooms, the class-rooms to which, and the houses, form wings. The contract for the whole, including fitting up, is rather more than 2,000*l*. Mr. William Poulson is the architect, and Mr. Thomas Stone the builder.

PROVINCIAL NEWS.

Lowestoft.—Sir Morton Peto, in addition to his gift of a stained glass window for the west end of the new Town-hall, the design of which, we hear, is a combination of the English and French arms, and the cost 700*l*, has intimated his intention of giving two other windows, the one to contain Sir Morton's arms, as lord of the manor of Lowestoft, and the other the town arms.

Salisbury.—The chief stone of the Staffordshire wing of the Sallter Reformatory has been laid by the Hon. Mrs. Adderley. The present building is adapted for the reception of fifty boys, and the addition will accommodate fifty more. The ground floor will be chiefly occupied by shoe-making and tailoring rooms, and the upper story by two large dormitories, the minor apartments being devoted to the masters, and to lavatory, bath, and infirmary purposes. Alterations in the existing building will also be made, so as to adapt it to the prospective requirements of the establishment as a whole; but everything will be done in the plainest and least expensive way. The architect is Mr. Martin, and the builders are Messrs. Webb & Son, of Birmingham.

Liverpool.—The Free Public Library and Museum building, Shaw's-brow, the gift of Mr. Brown, is progressing under the superintendence of Mr. Jacob Crieve, clerk of the works, acting under the directions of Mr. Weightman, surveyor. The wings of the building have been roofed, and it is expected that in three or four months the whole of the building will be covered in. Messrs. Holme & Nicholls, the contractors, will then proceed with the carpenters' work in the interior. The inferior buildings that formerly fronted Shaw's-brow have nearly all been cleared away.

The Markets Committee recommend that an application be made to Parliament next session for a bill to enable the corporation to acquire the property between Queen-square and Williamson-

square, and to devote it to the purposes of a wholesale market. The whole area available for the purpose, including portions of the two squares, and after allowing for the improvement of the surrounding streets, would be about 9,000 square yards, being an increase upon the present accommodation, including Great Charlotte-street, of nearly 7,000 square yards. The surveyor's estimate of the cost of purchasing this property, and of forming the market, was 41,000*l*, exclusive of street improvements. The surveyor's report, on which that of the committee was founded, said that by this plan it was proposed to remove all the buildings lying between Queen-square and Williamson-square on the one hand, and bounded by Murray-street and Roe-street upon the east, and Marble-street and Hood-street on the west, with the exception of the premises on the north-west side of Roe-street, the destruction of which might be avoided. It is proposed to widen several of the streets. The estimated cost of the property required for street improvement was 9,300*l*. The scheme involves the destruction of the Theatre Royal, the Fish-hall, and six public-houses.

Bingley.—The erection of a new church, and a new mechanics' institute here, are being contemplated.

Banbury.—The first stone of the Banbury Cemetery Church was laid by the mayor [of this town on Wednesday last, in the presence of a large crowd of spectators. The chapels are detached, and will be built of rubble, with stone dressings to the windows, &c. They are precisely similar in detail, comprising a *porte cochère* of dimensions sufficient to admit the hearse and mourning-coaches. From the *porte cochère* you enter the nave, of ample proportions, with pewing on either side, for hearers and mourners. From the nave, under a moulded arch, is the chancel, also of ample size. The exterior has the sides of nave gabled. The style adopted is Early English. The western gables support an arched and moulded bell turret. The roofs are to be covered with ornamental tiles, laid in colours, and the woodwork to both interior and exterior to be stained and varnished. The lodge, which will stand upon a raised terrace, is in keeping with the chapels, and built of brick, with coloured arches to all external openings, and has the usual accommodation for sexton. The contract is being executed by Messrs. Orchard, builders, of this town. The architect is Mr. H. Edwards, of London.

CHURCH-BUILDING NEWS.

Lowestoft.—A new chapel has been erected and opened at Carlton Colville. The building is Early English; the outer walls being of rustic pebbles, with rusticated quoins and string-courses in white brick. The interior is of rustic plastering, with open roof, stained and varnished. The benches are open. The window borders are of stained glass, with Tudor roses in the angles. The chapel was built by Messrs. Tuck and Bracey, from designs furnished by Mr. Edward Allott, of Lowestoft. It will seat 180 persons.

Humberstone (Leicestershire).—A stained glass window has just been inserted in the chancel of Humberstone Church, the gift of Mrs. Huskisson, of London, to the memory of the late Rev. John Dudley. The window is divided into three compartments, the subject of the centre compartment being the Resurrection of our Saviour. The east compartment is the Raising of the Widow's Son of Nain; that of the west compartment, the Raising of Lazarus. These are surmounted by tracery lights, containing in the upper part a shield, with the emblems of the Crucifixion; the two principal lower ones containing shields with the family arms, surrounded with ornaments suited to the style of the church, which is Early Decorated. Under the window is affixed a brass plate, bearing the inscription. The window and brass were designed and executed by Messrs. Baillie & Co. of Warden-street, London.

Newcastle (Staffordshire).—The new Independent Chapel here was opened on the 6th inst. From the front, which is enclosed with stone buttresses and iron rails, with sliding gates, a flight of steps leads up to a triple-arched porch, divided with clustered shafts of Peterhead granite, and carved capitals: over the porch is a rose window. On the angle of the chapel rises an octagon tower and spire of the height of 90 feet. A feature in the exterior of the building is the brick facing, which consists of yellow bricks, with bands of blue brick 14 inches deep at regular intervals. The complimentary nature of the two colours is said to give variety and brightness as the result.

The stone-dressings are from Hollington. The interior is divided into nave and aisles by the introduction of iron columns, instead of the usual stone ones. The end of the nave, being continued in its full height and width, forms a recess for the organ, lighted by a circular window of stained glass, by Messrs. Drury and Smith, of Sheffield. The iron columns have twisted shafts, and moulded and gilt capitals, which support timber arches, with tracery in the spandrels. Over the timber arches is a continuous clerestory about 2 feet deep. From the arches are suspended gas pendants, executed in wrought brasswork, by Mr. Thomas Brown, of Birmingham. The pewing is arranged in the usual manner, and all the woodwork is stained and varnished. A school-room occupies the whole area under the chapel, and will accommodate some 350 or 400 children. The windows are glazed throughout with rough quarry glass. The cost of the whole, including heating, lighting, fence-walls, draining, &c. will be about 2,200*l*. The builder was Mr. John Pooley, of Peterborough; the architect, Mr. R. Moffat Smith, of Manchester, who is also architect for chapels built this year at Peterborough, King's Lynn, Norfolk; Erit, Kent; Peckham, Surrey; and Droylsden, near Manchester.

Marchington Woodlands.—St. John's Church, Marchington Woodlands, Hanbury, has been consecrated and opened by the Bishop of Lichfield. The building is now completed, with the exception of the upper part of the tower and spire. The style adopted is Geometric Decorated. The arrangement consists of a nave and chancel, with side chapels to the chancel, and an octagonal vestry on the north side of the church. The accommodation provided is for 220 persons—180 adults and 40 children. The tower is placed at the north-west corner of the nave. It will terminate with a lofty broach spire. The general walling is of grey Hollington stone, scapelled or hammer dressed, and the quoins, plinths, strings, window cornices, and other ornamental details, are executed in white Hollington stone fine dressed. Some of the interior construction, such as the chancel arch, is in alabaster and Derbyshire marble. The roofs throughout are covered with brindled Staffordshire tiles, with rounded ridges and ornamental cresting. Internally the dimensions are as follows:—Nave, 50 feet by 20 feet 8 inches; chancel, 21 feet 8 inches by 14 feet; side chapels, 11 feet 8 inches by 10 feet. The height from the floor to the ridge of the nave roof is 32 feet; from the floor of the chancel to the ridge of its roof, 26 feet; and the side chapels, 15 feet. The chancel windows are filled with stained glass. The centre compartment of the east window represents the ascension of our Lord. The four Evangelists, under canopies, under the pedestal below, make up the side compartments of the window. The tracery head consists of thirty-three pieces, the centre part representing the firmament, with cherubim and gold and silver stars, &c. This is a memorial window. The church has been built from the designs and under the direction of Mr. A. D. Gough, architect, London. The general contractor is Mr. W. Evans, builder, Ellastone. The artistic carving in alabaster, &c. has been executed by Messrs. Purdy & Duthwaite, of Dublin, and their assistants. The stained glass was done by Mr. Charles Gibbs, London. The organ was built by Messrs. Walker & Son, of London.

Llanrhaidr, near Denbigh.—St. James's District Church, Llanrhaidr, was consecrated on the 25th August, by the Bishop of Bangor. The church, which is of the Gothic style of architecture, was designed by Mr. R. Lloyd Williams, architect, and the work done by Messrs. W. and J. Hughes, builders, Denbigh: it contains 250 sittings, all free, and was built by public subscriptions.

Birkenhead.—The foundation-stone of St. Paul's United Presbyterian Church, Birkenhead, was laid in the 6th inst. The church is seated for 650 on the ground floor, and 150 in the gallery, divided into nave and aisles by cast-iron columns in five bays. The whole interior length is 65 feet by 41 wide, and 45 feet high to the point of the treched ceiling of the nave. The main entrance is by a lobby, 20 by 13 feet, from Jackson-street. In consequence of the site being considerably under the level of the street, there will be a large and lofty school-room to accommodate 300 children, besides a lecture-room and a minister's vestry. There will be a spire 132 feet high. The style of the architecture is Middle Pointed. The cost of the church is to be 2,200*l*. Messrs. W. & J. Hay are the architects, and Mr. John Pooley is the contractor, who has nearly completed for the

same architects the Wesleyan Chapel at Egremont, and the church of St. Mary Magdalene in Finch-street.

Burnley.—A new congregational chapel and schoolrooms are to be erected in the Blackburn-road, Burnley. The design furnished by Mr. H. J. Paull, of Cardiff, has been adopted, and the foundation-stone is to be laid on the 8th October next. The style of the new building will be Modern Italian, and the proposed outlay is about 3,600*l*.

Blackburn.—St. Peter's Church, Blackburn, has, during the past seven months, been undergoing considerable alteration and improvement, and has now been re-opened for Divine service. The chief alterations made consist of the setting back and lowering of the galleries, so as to give them a greater slope; the removal of the free seats in the area, and the substitution of pews; the erection of a children's gallery on the unoccupied space previously used as free seats under the organ gallery, which has been lowered and enlarged; and the enlargement and adaptation of the whole of the pews to the prevailing system. Besides these numerous improvements, heating apparatus has been erected, and the church is about to be fitted and lighted with gas. The beam ends of the southern gallery, which were decayed, have been replaced, and repairs have been made to the window frames. The beams supporting the galleries have been cased and stained, so as to take away the plainness of the whitened roof. A coloured window supercedes the partially coloured one at the east end of the edifice. The new window has been executed by Messrs. Edmundson & Son, of Manchester, and is one of the largest in Lancashire, containing nearly 300 square feet. The figures and the compartments, separately or together, embrace certain facts of revelation, which are, in a sense, inclusive of the whole. The tracery and canopies contain the symbols of the Evangelists, the dove, the Lamb of God, and angels and texts. The design and workmanship of this window are somewhat allied to the two windows inserted by the same artists in Manchester cathedral. Mr. Dean, coal proprietor, is about to place a monumental window in the north aisle: it will be by Messrs. Edmundson & Son, of Manchester, also. About 900*l*. have been expended, and about 200*l*. are still required to make other necessary improvements. — Christ Church, Grimshaw-park, has been consecrated. It is situated nearly on the summit of the park, and has been erected from designs prepared by Messrs. Taylor & Forgett, architects, Blackburn. The style adopted is the Geometrical Pointed of the thirteenth and fourteenth centuries. The plan consists of a nave, separated from the aisles on each side by alternate circular and octagonal columns, with moulded caps and bases. The nave is 90 feet by 29 feet, and 53 feet high; the south aisle, 90 feet 6 inches by 12 feet, and 22 feet high; the north aisle, 91 feet by 12 feet, and 22 feet high; the chancel, 28 feet by 18 feet, and 34 feet high. There is an organ room at the east end of the north aisle, and a tower at the east end of the south aisle, 21 feet square, and 70 feet high, surmounted with an octagonal spire, 78 feet high, and making a total, with tower and spire, of 148 feet, and, with nave included, 156 feet. The church contains 900 sittings, including a small western gallery, one-third of which are free. The roofs are open timbered, of deal, stained and varnished. The seatings are of deal, stained and varnished a light colour, which contrasts with the dark pulpit, reading-desk, and communion railing. The nave, aisles, and chancel are paved with coloured Staffordshire tiles. The materials from which the church has been built are Haslingden Grane wall stones, with Buttler stone dressings, the carving having been executed in Burnley stone. The schools and master's house, which were opened some time ago, and designed by the same architects, are built of the same kind of materials. The works have been carried out under the superintendence of the architects. The total cost of the construction, including heating, lighting, boundary walls, gates, and iron palisading, will be about 6,800*l*. the greater proportion of which has been raised by private subscription. The contractor for the mason's work was Mr. Henry Sellars; for the joiner's work, Messrs. Walker and Higson; plastering, Mr. Archibald; plumbing and glazing, Mr. T. Howarth; painting, Mrs. Charles Boardman, all of Blackburn; slating, Mrs. Cross, Lancaster; heating and gas-fitting, Messrs. Seward, Preston; ironwork, Mr. Ashworth, Burnley. The heating apparatus in the school was fixed by Mr. Brooke, of this town, as also the palisading around it.

Worsbro' Dale (Yorkshire).—The church of

St. Thomas, Worsbro' Dale, was consecrated on the 6th ult. It is erected just at the cutting on the road from Barnsley, fronting the road down the dale. The edifice is in the Early English style of Gothic architecture. It consists of nave, aisle, and chancel, with the tower and spire rising from the south-east corner of the nave to an altitude of forty yards. Both exterior and interior are simple in outline. All the seats are open, consisting of stained wood. The windows, when not stained, consist of cathedral glass, those in the aisles having stained-glass scrolls, each of which bear Scripture texts. The roof is open throughout, having double rows of rafters, stained, the interstices coloured blue. The east window was presented by Mr. J. Jeffcock, Cowley-hall, and consists of five compartments of stained glass, and early mosaic and geometrical characters, embracing the following subjects.—In the centre, the Crucifixion and Resurrection; on the sides, the Rising of Lazarus and the Resurrection of the Saints; in two smaller compartments, the Brazen Serpent and the Offering of Isaac. The west window illustrates the life of St. Thomas, and was presented by the children of Mr. W. Newman, of Darley-hall, in memory of Mrs. Jessop, their grandmother. The carpenters in the employ of Mr. Sharp have presented the carved seats for the choristers; and the colliers in the employ of that gentleman gave an octagonal piece of hard coal, cut and highly polished, for the pillar of the baptismal font. Messrs. Wood and workmen, of Worsbro' Glass Works, have given a bowl and cover for the same made of the best crystal glass, and blown by Mr. Edwin Barratt. It is elaborately cut with antique diamonds, and the cover is finely finished, the knob being cut with lapidary diamonds: below are six Gothic arches, two of which are ornamented, to represent the east and west windows: in another one is the Crucifixion, and in another the inscription: the whole was designed and partly executed by Mr. John Broadbent, of Worsbro' Dale; the remainder being finished by Messrs. T. Broadhead, J. Gibson, T. Plummer, and T. King. The whole building has been erected under the superintendence of Mr. Robinson, jun. of Wakefield. The contractors were:—Masonry, Messrs. Taylor, of Worsbro' Common; plumbing, slating, and staining, Mr. Brown, of Barnsley; joiners' work, Mr. Goodwin, Tinsley. Entire cost of the erection, 2,500*l*. The site was presented by J. Jeffcock, esq. Cowley Manor. F. W. T. V. Wentworth, esq. of Stainborough Park, gave 2,000*l*. towards the erection, and has promised 1,000*l*. towards the endowment.

Skirwith (Cumberland).—The small church of Skirwith, Kirkland, has been consecrated by the Bishop of Carlisle. It is dedicated to St. John the Evangelist. It consists of a nave 49 feet by 21 feet; south aisle, 38 feet by 11 feet 3 in.; chancel, 21 feet by 18 feet wide; tower and spire at west end of south aisle, and vestry. The interior dimensions of the tower are 9 feet 9 in. square, and the height to top of parapet 44 feet, and to top of vane or spire 28 feet additional, making a total height of 72 feet. The height of nave and aisle walls is 18 feet, and that of chancel 15 feet 6 in. from ground line to stone string under eaves. The style of the church is Decorated Gothic of the fourteenth century: it is built of Skirwith stone, obtained near the site, laid in even courses, and axe-dressed on the face, with Lazonby stone for all the dressings and other details. The spire also is carried up in this stone, and has been purposely kept low, to avoid the too great action of the winds, known in this neighbourhood as the Helm winds. The church will accommodate upwards of 200 persons. The seats in the nave are of deal, stained and varnished, with plain bench ends. The whole of the windows are of stained glass by Mr. Wailes, of Newcastle. The east window in the south aisle contains full-length figures of St. Peter and St. Paul under canopies, and other windows are filled with borders and medallions containing angels bearing scrolls, with diaphanous quarries between. The total cost of the church, glebe house, and offices for future incumbent, repair fund and endowment, will amount to about 9,000*l*. Messrs. Francis, of London, are the architects, and the works have been executed under their superintendence by Messrs. James and Son, of Penrith.

MAPS FOR WALL-HANGINGS.—With reference to an extract in yours of 27th ult. recommending maps in place of the usual patterns on paper-hangings, I beg to inform you that I have seen the idea carried out in an office, 8, King Edward-street, Christ's Hospital. The hangings, however, are of foreign manufacture.—R. S.

CORRESPONDENCE AS TO NEW FOREIGN OFFICE AND GOTHIC ARCHITECTURE.

SIR,—As an ardent well-wisher to the revival of Mediæval art, I must deplore, in common with many of your readers, the deputation to Lord Palmerston, since the discussion that ensued has started many points hitherto unnoticed, but fatal to the present arrangement. Have we not, however, to thank ourselves for the untoward turn things have taken? Can we regard these methods of expressing professional opinion as any other than the natural result of the doubtful means by which the subject of mediæval art has been advocated by those who are called its leaders, suggesting to our antagonists that any weapons they could employ were justifiable, and depriving our own cause of those grounds of remonstrance which more manly conduct on our own side would have afforded?

Not less than the deputation to Lord Palmerston now, did I deplore, at the time, the attempts, while the result of the competition was undecided, to influence and warp the judgment of the public by lectures in which the gravest misstatements on the subject of the relative claims of the two styles were made, denouncing Classic architecture by appealing to that which is no architecture of any kind, ignoring its great merits and the many noble and valuable lessons it teaches, and claiming for the Revival that merit which is due only to the great masters from whose works we have hitherto only tamely copied,—gaining thus a temporary triumph, but forfeiting claim to credit and consideration from reasonable and reasoning men on both sides; for, unbounded as is my admiration for the great masters of the thirteenth century, I can as yet give but very qualified praise to my brethren of the Revival. I could not, I say, but deplore this resort to misstatements and uncanonized argument, because I knew that at some future day it might be turned against us with damaging effect, and I knew that the cause was too good to require such unskillful advocacy.

We have, in truth, been more anxious to pick a hole in our adversaries' case than to mend our own, and we have therefore fallen as much from our own internal weakness and deficiency as from the vigour of our adversaries' assault.

We complain that Lord Palmerston has not done justice to our art, but are we quite sure that it is art that we have presented to him? Art should express the feeling of the day, and accept its conditions. Now, we have simply heaped together scraps from many countries, of many dates: we have charged the classicists with importations from Italy, and yet to France and to Italy have we gone, and returned loaded with spoil. We cannot even put our sculpture in modern attire, so evident is the want of concord between our designs and the spirit of a modern day. Our adversaries have detected and exposed the imposture, and denounced us as ignoring that which is the primary condition of art properly so called. We ought so to design, that such a charge should fall to the ground of its own accord. We have talked about progress and advancement in art so much, and in practice have advanced it so little, that our discourse reads like a homily on our own sins, and has furnished to our adversaries the most damaging weapons for our own discomfiture. It must be confessed that we have not been equal to this great opportunity.

We have been betrayed into calling a new invention and an original thought, what was simply a new "crib": we are now approaching the end of our stores; and, just as we are declaiming on their exhaustible amount, our antagonists step in, rip up our bag, and expose its emptiness to the gaze and ridicule of the profane: they discovered what we wilfully closed our eyes to too long, viz. that we were really inventing nothing, but simply extending our area of plunder.

But it is really a very sad state of things: we ought to be able to meet our adversaries, by appealing to our works, but these are unfortunately already in the hands of the prosecution, as proof positive against us; and, like the French soldiers, we have dragged so much that something we must do: we have exhausted our stores of crib: our own resources are *nil*, or next to it. Mr. Ruskin is only eloquent in abuse: his teaching will only be like a will-o'-the-wisp—a sort of jack-a-lantern, leading us into deeper mire, where he will hold us up to the derision of the public. There is clearly only one path, viz. to set to and work; extend our field of study and observation, leave off abusing our antagonists; admit some of the charges they make, and remedy them as quickly as possible. That they may no longer be true, let us start where every one else has started

who has won the race; let us go on our own legs, and not on wooden pins and crutches of other people. Let us make the revival such a thing that neither Lord Palmerston, nor Mr. Tite, nor Mr. Donaldson shall be able to make a charge that shall stand for a minute. Let us strut no longer in borrowed plumage. Let us make the revival a thing that shall convince and convert even our adversaries, as all great masters have done before us, leaving to the small fry to scribble and abuse; but themselves pressing forward—always forward, conscious that if right, they must win, and feeling within themselves the power of controlling success, and extorting admiration. Δ

HAVE WE A NATIONAL STYLE OF ARCHITECTURE?

SIR,—In an article in the *Builder* of last week, under the above head, the observation is made:—"All hold out a hope that a national style may rise up, which may be claimed and handed to the generations yet to come as the architecture of England." I would ask, could there be a better opportunity to accomplish this, and to display the great genius and taste that are now rising up, than to allow the rising men of the present century to put forth their strength, and to afford them the opportunity of accomplishing this in a design for a royal palace? We have not, with all the wealth that has been lavished away on such buildings in this country, one that deserves the appellation of a royal residence. Only look at Buckingham Palace,—a heterogeneous mass of bad taste. Again, regard Windsor: there is nothing palatial about it. I would suggest that such a competition should be entered into, under the patronage of her gracious Majesty and the Prince Consort, who, by the interest they have taken in art, have been the main source of the great improvement that has been displayed in art since the Great Exhibition; and here is a subject worthy of their consideration and patronage, and one that they could not and would not be proud to sanction. Let Government offer liberal premiums for a decided royal palace, but not in the Gothic style. Lord Palmerston was perfectly right and just in his observation on style; and if this opportunity were now afforded to the architects of the present day, his lordship would have reason to congratulate himself on a move in the right direction, and we should see designs set forth equally worthy of being executed as would that grand composition of Inigo Jones, in his palace for Whitehall; and this was under royal patronage. I would suggest that the instructions for the internal arrangement should be also perfect. This subject would make a most interesting exhibition, showing both taste and talent, without being too extravagant or impracticable. Might not Kensington be suggested as the site? The designs would form an interesting portion of the Exhibition of 1861, if held, and would at once show the progress of architecture in this country, in an appropriate, useful, and practical subject, and form the basis of a national style. W.

THE VENTILATION OF THEATRES.

By accident, a French newspaper, *La Patrie*, of recent date came under my notice. The following remarks on the ventilation of theatres struck me as amusing and true. The Parisian season is usually from January to May, when fashion seeks renovation *à la campagne* or *aux eaux*. As the London season commences in May, and continues even through the dog-days, it seemed to me that the sarcasm was still more applicable to London than to Paris. Should you hold the same opinion, perhaps you will find room in your valuable paper for the following extract:—

"Let us suppose we should read, in some foreign paper there exists a city where fashion and custom demand that each evening a host of strangers, the fashionable and the pleasure-seeking public, shut themselves up in a building of moderate size, never visited by the refreshing light of the day; there unheeding the corrupted emanations escaping from so many chests and so many mouths, no air is breathed but what is charged with dangerous miasma; moreover, a terrific heat augments the perfidious properties of this atmosphere. Without taking into account the disgust which such promiscuous breathings should inspire,—without reflection on the fatal consequences to health,—without recollection of the diseases it caused,—night after night they crowd therein. They leave bathed in perspiration, caused even more by the carbonic acid and oxide of carbon than by the elevation of the temperature,—and without intermediate prepara-

tion rush into the open air, frequently freezing, which inflames and destroys the lungs."

Would one not be inclined to consider insane those who betray such imprudence? *Eh bien!* These imprudent persons are you, I, all of us. Yes, those pretty delicate girls, those elegant handsome women. Fashion has familiarized us to the dangers to which, without thought, we expose ourselves. In a country where the simplest citizen must understand everything, know everything, analyze everything, criticize everything, ay, and govern everything, we never think of attributing to the wretched conditions of our theatres the colds, consumptions, and brain-fevers of which they are the infallible and undoubted cause."

Remark, too, he has spoken only of our great theatres: what shall I say of those infectious boxes wherein hundreds after hundreds crowd nightly into galleries, almost touching upon the low roof, and almost without openings. The heart sickens in penetrating one of these "dens," unless prepared, it is, by degrees, like Mithridates, of old, with his poisons. Frequently the women are carried out fainting, and even the most robust among the spectators are obliged to leave the place. Science has surely made sufficient progress that we might demand from her the means of preventing that pleasure should become a peril, and that when one buys a ticket for a theatre it may not be exposing ourselves to the reproach of the young Athenian who apostrophized Diogenes as an inhaler of regret at a very high price.

PURE AIR.

EXTRACTING THE ROOTS OF POWERS.

YOUR last number contained an article on a "New and Simple Method of Extracting the Roots of all Powers," in which it was stated that "the true root is obtained more easily and more quickly than by the use of logarithms." That assertion may be quite true as regards extracting such roots as these— $\sqrt[3]{8}$, $\sqrt[3]{64}$, $\sqrt[3]{9}$, &c. where, of course, logarithms would be a great deal too long, and take too much time. But in example 3rd (as given in last number), and in nearly all cases, there is a great saving both in time and figures by the use of logarithms. To work out this example by Mr. Hoare's method, requires 182 figures, and by logarithms only 31! which is a great difference compared with the other, and time also is saved.

The simpleness of extracting $\sqrt[3]{10973903978}$, &c. (Ex. 3), by logarithms, is here shown:—

Log. 10.97390397 = 2.10403612

Log. 2.2222 = .3467871

Or 2.2 nearly.

I dare say this new plan will answer in a great many instances, but when a good set of logarithms of numbers from 1 to 100,000, and to seven places of decimals, together with other very useful tables, can be obtained for the low charge of 3s.* I think no one in any way connected with figures would be without so valuable a book.

A SURVEYOR'S PUPIL.

SIZE OF FLUES IN TOWN AND COUNTRY.

WILL you allow me to ask through your journal, what is the least dimension, required by law for a smoke flue, in the metropolitan district, and also beyond the limits of the metropolis? It appears, by the 3 and 4 Vict. cap. 85 (1840), "An Act for the Regulation of Chimneysweepers and Chimneys," that every chimney or flue, not being a circular chimney or flue, 12 inches diameter, shall be, in every section of the same, not less than 14 inches by 9 inches, and that the Metropolitan Act, 7 and 8 Vict. repealed so much thereof as relates to the construction and regulation of chimneys and flues within the limits of this last Act, and which requires smoke flues to be not less than 8 1/2 inches diameter; but does the Metropolitan Building Act, 18 and 19 Vict. by repealing the Act 7 and 8 Vict. renew, in full force, in the metropolis, the Act 3 and 4 Vict. requiring the dimension of flues to be at least 14 inches by 9 inches? The present Metropolitan Building Act, 18 and 19 Vict. does not specify any dimension for flues, neither does it repeal that portion of the Chimneysweepers' Act, 3 and 4 Vict. as did the Act of 7 and 8 Vict. Is it not, therefore, to be inferred that, in the metropolitan district, the least dimension for flues is either 14 inches by 9 inches, or is unlimited? while here in the

* Mathematical Tables published by W. and R. Chambers, Edinburgh and London.

country the Chimneysweepers' Act is strictly enforced in requiring flues to be 14 inches by 9 inches in their least dimension: and as the penalty for non-compliance ranges from 10*l.* to 50*l.* it is a matter of some moment.

I believe the more general practice, in London, for several years, is to make flues 9 inches square; and, in referring to the *Builder* of last April 23rd, which contains the "Report to the General Board of Health by the Commissioners appointed to inquire into the Warming and Ventilation of Dwellings," the commission recommend, in regard to fire-grates in general, that the chimney-flues be of small dimensions (not above 9 inches diameter at the widest part). Under these circumstances, ought not architects and others to be relieved from the restriction of making flues in every case not less than 14 inches by 9 inches? as frequently in rooms of small dimensions a smoky chimney is the consequence.

Burslem. THOS. MEYER.
* In the metropolis there is understood to be no restriction.

FREE DRINKING-FOUNTAINS.

YOUR kind and liberal notice of the free drinking-fountain movement is, in my opinion, a very valuable aid, highly honourable to your widely circulating journal, and well calculated to induce more attention than the notice in other journals, because the public look to you expressly to see what is moving in regard to architectural erections, and such questions.

As a devoted admirer of the movement in all its bearings, and your constant reader, I venture to make a few remarks, resulting from considerable inquiry, search, and inspection, of the few erected, and the difficulties that have presented themselves in their progress, for additional public information, if you think proper to afford them a space in your columns.

The Metropolitan Free Drinking Association liberally offers facilities for their erection, to parish vestries and boards; allowing them to choose sites and models, contributing fully 30 per cent. to the cost, and all future necessary care, claiming only the application of their apparatus for filtration through prepared charcoal, and a lien on the fountain in case it should be abolished. Too much praise cannot be accorded for such liberality. There are, however, some objections, on the part of parish authorities, to give any power or control out of their own hands, and also to the filtration of water already filtered by the public companies, which they consider complicated, and not really necessary. Certainly we are bountifully supplied by these companies with a reasonably pure element, and a second filtration seems a disreputable imputation on the great efforts they have made of late years, at enormous cost, to comply with Acts of Parliament, and secure purity. The parish of Kensington has decided to erect several. One has been given by a parishioner, and has been in full operation at Kensington-gore, nearly two months, where the benefit has been gratefully appreciated by hundreds hourly, and the water from it is carried under the foot-path to the road-channel, where a miniature lake has been formed, with little trouble, by raising two or three of the channel stones sufficiently; from whence it passes in a continuous stream to the nearest gully grating, and affords ample drink to dogs and sheep, well removed from the public gaze of the fountain.

The water is supplied from the West Middlesex main, regulated to afford half a pint in ten seconds, day and night; and, being on the south side of the road, in a shady place, answers admirably. Such position is an advantageous desideratum, as any fountain exposed to the full power of the sun must naturally become more or less heated, as you prudently remark. Mural fountains are desirable for several reasons. They are the cheapest, equally efficient, and not so liable to disrepair as standard ones. Most of those in Liverpool (where above fifty are in use) are of the mural class; and although it may not be so easy to find wall spaces in the metropolitan parishes, still such sites are doubtless attainable, particularly in the suburbs. This new question seems to me of great public importance; and I hope, as I believe, it will be a fashionable one in the spring of 1860, for the present season is passing fast away, and few have been yet erected, though many have been proposed and are in progress.

Although the one at Kensington-gore has not been ushered into public notice under the auspices of any ceremony, it is perhaps equally worthy of observation as any others erected, and claims attention for several reasons. The pro-

jecting basin enables the public to get at it more conveniently without making the slop, almost unavoidable where there is no such projection; and the water flows from a rough block of granite left in the polished arch, so that it can never be injured or displaced. In the metropolis itself, it may not be convenient to permit this projection, but it will be found very desirable where it does not interfere with public traffic. I believe it would be advantageous in all cases, and detrimental in none.

The beautiful designs in your last number, and your valuable observations on the question generally, will be gratefully acknowledged, and I have little doubt adopted in sites appropriate, where architectural grace is sought, and expense is not the material consideration.

The question of drinking-cups is of some importance. The old-fashioned ladders, chained, are not quite convenient for the general public; and the fountains hitherto erected have been generally supplied with enamelled iron cups and small chains: these in course of usage get chipped, become rusted, and then look unsightly. In the eight weeks' usage of the one at Kensington-gore, four cups and chains have been abstracted, and four fairly worn out. It is not believed they were stolen, but abstracted for idle, foolish fun; and as when removed they cannot be readily identified, it is intended to have white earthenware ones, lettered black, to stand loose, without chains. If they are stolen or abstracted in mere fun, they can be identified, are not marketable, and are only liable to occasional breakage. It is believed the use of such will be generally adopted as the cheapest, cleanest, and best cup. The trial will be made; but, doubtless, as the question progresses, some better plan may be discovered.

KENSINGTONIAN.

STAINED GLASS.

Window for St. Sepulchre's, London.—The large east window of this church, on Snow-hill, is to be filled with stained glass at a cost of between 300*l.* and 400*l.* A competition was invited between Messrs. Clayton and Bell, Messrs. O'Connor, and Messrs. Lavers and Barraud. The design of the last-named firm has been selected.

INSTITUTION OF MECHANICAL ENGINEERS.

THE annual meeting of the Institution of Mechanical Engineers commenced in the Town-hall, Leeds, on Tuesday in last week, under the presidency of Mr. John Penn, of Lewisham, Kent. The attendance of members from various parts of the kingdom was large. The first paper read was on the "File-cutting Machinery," by Mr. Thomas Greenwood, of Leeds. Then followed a paper on the "Economy and Durability of some Classes of Steam-boilers," communicated by Mr. B. B. Longridge, of Manchester. Other papers read were:—"Description of a Direct Steam-acting Crane," by Mr. Robert Morrison, of Newcastle-upon-Tyne; "Description of a new Pressure Gauge," by Mr. Alexander Allan, of Perth; and "Description of Haste's Safety-valve for Steam-boilers," by Mr. W. Naylor, of London. The members of the society afterwards visited several of the principal manufactories in Leeds; and in the evening a *conversazione* took place in the Victoria Hall. Among the most interesting objects exhibited was Hattersley's type-composing machine. On Wednesday morning the reading of papers was resumed in the Civil Court. The following is a list of the communications:—"On the Application of Super-heated Steam in Marine Engines," by the President; "Description of Fryer's Apparatus for supplying Locomotive Tenders with Water," by Mr. James Fenton, of Low Moor, Bradford; "On the Construction of Steam-boilers," by Mr. Benjamin Goodfellow, of Manchester; "On Improved Break Power for Stopping Railway Trains," by Mr. Alexander Allan, of Perth; "Description of a Steam Crane," by Mr. J. Campbell Evans, of London; and "Description of the Pumping Engines at Arthington Water-works, near Leeds," by Mr. Filitier, the Leeds Borough surveyor. The members of the society proceeded in the afternoon to Arthington to view the water-works which belong to the Leeds Corporation, and in the evening they dined together at the Scarborough Hotel. An excursion to Low Moor Iron Works, and to Saltair, the establishment of Mr. Titus Salt, M.P. terminated the proceedings.

THAMES TUNNEL.—During the week ending 10th September, 15,341 passengers passed through, and paid 63*l.* 18*s.* 5*d.*

"SOMETHING TO DRINK."

To a great extent the "vails" which used to be looked for by servants are amongst the practices of the past. The abominable and uncertain tax of the stage-coachman and guards has also luckily passed away, and much more general comfort and convenience have been the result to all concerned. The expectation of uncertain gifts destroys all notions of independence, and leads to a want of that civility and attention in all cases which should be forthcoming. Remembering this, I have often felt regret when called to visit some of our manufacturing or building works in progress, to notice respectable workmen descending from their right position and asking persons who have come from curiosity or information for something to "drink your health with, sir." I have blushed to see this done in the case of foreigners of intelligence, who are thus liable to take away wrong opinions of the British workman. The sums of money thus raised are generally spent in ale, which, taken during the hours of labour, often does more harm than good. In some manufactories where a large number of visitors are constantly calling, considerable sums are raised in this way, and rapidly wasted. Most people would be glad to pay according to their means for the civil attention and information given by workmen; but what I object to is, the practice of asking for it. If those sums, instead of being spent as at present, were collected, they might usefully be devoted towards the formation of a library for the workmen, or some other permanent purpose. A money-box, stating the object in view, might be placed so that visitors could see it, and would be better than the present method.

LOOKER ON.

CAPITAL AND LABOUR.

DOES the writer of the article on the Social Movement, in the number before last, wish to prove that, with the increased facility machinery has given us for doing work, the labourer has no right to share the benefits derived therefrom, but that all is to be absorbed by capitalists, when every labourer who thinks at all must know that capital is derived from labour? I know if labour be respected by capital it will return the respect due to capital. From experience, I know if masters, one and all, would strive to improve the condition of their men, they would derive a good from so doing, as every one who has been much with men must have seen the difference between men working under a tyrannizing master and one who may be strict, yet honest in his intentions towards his men. I am aware of injury consequent upon a master's letting his men go to any length, as well as that injury done to a master whose strictness amounts to coercion. Men working on buildings where clerks are employed know full well that their masters are suspected by their employers, and well do I know that some of them ought to be suspected. Having been behind the scenes with masters, I have been disgusted with the mean and deceptive ways which some of them advised to take advantage of their employers, and bring architects into discredit.

A PROVINCIAL MASTER.

THE WALLACE MONUMENT COMPETITION.

At a recent meeting of the Wallace Monument Committee, before proceeding to adjudicate on the respective merits of the models and designs, the committee unanimously resolved to remove all the models or designs not conformable to the specifications which had been submitted for the guidance of competitors. Four coloured designs were then removed from the walls. It was then resolved by fourteen to one that the design bearing motto, "Nothing on earth remains but fame," should receive the first premium (fifty guineas). The second premium was awarded to a design bearing the motto, "Liberty, B.," and the third to one inscribed "Caledonia, W. 2." The chairman then proceeded to open the sealed notes, when it was found that the first premium had been gained by Mr. J. T. Roched, architect, Glasgow; and the second by Messrs. Peddie & Kinner, architects, Edinburgh. The design third in order was found to be the production of Messrs. Haig & Low, Glasgow. The design to which the first prize was awarded represents a mediæval Scottish tower, the proposed height of which will be 220 feet, with a staircase leading to the summit.

SIR.—The Wallace Monument competition has furnished another instance of injustice on the part of a committee, and of the adoption of illegitimate means by a competitor to influence the decision. As seventy-six ar-

chitects engaged in it—and it has been regarded in Scotland as a national matter—I trust you will allow me space to inform your readers of the facts of the case.

The conditions of competition bore, that the designs must "be tinted in Indian ink only: no coloured drawings will be received." Of the design to which the prize has been awarded, there were exhibited two copies, identical in every respect, except in the extent to which the rules of the competition were violated in them,—neither of them being "in Indian ink only," but both having been coloured, one as highly as possible, the other to a less extent. Yet the committee have accepted this design, and thus they are stated to have done after having unanimously resolved "to remove those not conformable to the specifications provided for the guidance of competitors," in consequence of which resolution, it is stated, "four designs were removed from the wall."

I need not point out the injustice which has thus been done to all honourable competitors, an injustice not rendered less by the show made of enforcing the conditions.

But even supposing that one of the two copies of the design had been in Indian ink only, the course adopted by the committee would not have been the less unfair; for, while bound by their own pledge, that "no coloured drawings will be received," to reject the coloured copy, they received it, they hung it up side by side with the copy (which for argument's sake, I suppose to have been uncoloured), they exhibited them, in this position, eleven days in Glasgow, in Edinburgh, and in Stirling, and they call on the public, in these circumstances, and without letting them even know the terms of competition, to compare this coloured drawing (a drawing certainly beautifully executed), with the others around it in "Indian ink only," and to record their votes on the designs in a book kept for the purpose. This drawing was before the committee at all their meetings, and it was only at the moment of decision that they went through the ceremony of taking it down from the walls.

The provision prohibiting coloured drawings, was thus as completely defeated as if the coloured copy had been allowed to remain on the walls while the vote was being taken, or as if no uncoloured copy had been received. Whatever effect the coloured copy was intended to produce, it had already produced, and, to say it aside at the moment of decision, when it had for three months been allowed to do its work on the public and on the committee, was a mere pretence of obeying the conditions.

The coloured copy had formed the opinion of the committee on the design, and its influence could not be done away with by merely taking it out of sight. It was not the copy, but the design which ought to have been laid aside.

Even on the supposition therefore that one of the copies was uncoloured, the committee have acted most unfairly. But they have not even the benefit of this supposition; for, as I have said, neither of the copies was "in Indian ink only."

A COMPETITOR.

MASTERS AND MEN.

Intimidating a Master.—Dennis Maher, a journeyman plasterer, was summoned before the Southwark police magistrate, on the 11th instant, charged with threatening his master, Mr. H. Beadle, and so compelling him to give him 1s. 1d. beyond the sum before paid as wages, Mr. Beadle being at the time occupied in paying away a large sum of money which lay upon the table before him. The magistrate ordered Maher to pay the costs, and enter into his recognizances in 10l. to keep the peace for six months.

Men's Wages demanded by Boys.—At the same court, a youth named George Hepden summoned his master, Mr. John Seale, a stonemason, for 4s. 6d. balance of wages alleged to be due to him, at the rate of 6s. 6d. a day. His master, he said, refused to pay him more than 12s. The master brought other workmen in evidence to prove that the lad was not capable of doing more than half the work of an experienced and able man, and that 18s. or 1l. a week was ample wages for him; and he only paid him, therefore, 4s. a day, being 1s. more than he was worth. The magistrate dismissed the complaint. "There was one circumstance very remarkable in the case," says the *Morning Herald*, in its report of it, "and that was the extremely insolent tone and manner of the complainant and his witness towards the defendant."

Strike of Stonemasons at Cambridge.—Four masons employed, on the works at Trinity College, along with a fifth, having come to know that the fifth (a superior hand) received 4s. 10d. a day, while the wages they had agreed for amounted to 4s. 6d. a day, gave notice to the contractor, Mr. Smith, that he must either reduce their fellow-workman's wages, or increase theirs, otherwise they would strike, "as such a difference was not recognized, either by the rules of the trade, or the Society of Operative Masons." The malcontents were told that they might strike if they liked. They resumed work, however, apparently, but shortly after found a fresh cause of complaint, in the employment by the contractor of a man as a waller, whom they declared to be a bricklayer, and not a mason. They "would be infringing the rules of the society," they said, if they put up with it; and yet they had put up with it, but hitherto without objection; the waller, however, was a non-society man, and had been seen handling bricks! We seem to be fast merging into the Hindoo caste system, only that originated in Brahminical compulsion, by superiors keeping down conquered natives and inferiors to certain

lower and still lower levels; whereas, with us, the system is rampant only amongst the working classes themselves, who exercise the preposterous and absurd tyranny upon one another with about as much sense and right reason as the benighted Hindoos had in getting up a rebellion because they were obliged, as they erroneously imagined, to handle pig's fat! In the case at Cambridge, a club meeting of the masons differed in opinion on the brick-handling question, some considering that the waller had not lost caste by handling the bricks, and was still a mason; but the majority ruled otherwise, and authorized (or compelled) the malcontents to strike for the excommunication of the waller. Thus this momentous matter stands in the meantime, the waller pursuing his own (rubble) course as a mason, under his master's protection. One of the men themselves, employed along with the waller and the others, objected to the strike on the pretence complained of, and was ill-used in the club-room in consequence, as the *Cambridge Chronicle* reports.

PERAMBULATORS.

THE increased traffic and overcrowding of the streets in the metropolis enforce the removal of all things which impede the wayfarer; consequently the monster vans and other street advertisements which were once so familiar and troublesome have been moved on by the police. There are still obstructions which stop the way: amongst them are children's perambulators, now so much used in the bustling thoroughfares. These carriages are very inconvenient, and that is not the worst complaint which is to be made against them, for we are disposed to think they will be the cause of much disease and lameness in children. It is painful often to see infants strapped into the perambulators tightly across the chest. Strong nurse-maids walk lazily along; and, deeply engaged in gossip, allow the little things to sleep in the most uncomfortable positions. It is evident that the placing and tying of very young children in positions which are quite unsuitable to their strength are liable to cause deformities. In a mother's or a careful nurse's arms, the infant, while it is kept properly warm, is allowed that amount of exercise that gradually develops and strengthens its limbs. The attitude in which young children are generally placed in the perambulators is unnatural and unwholesome. These carriages are not so injurious when the children can sit up, but even then walking exercise should not be abandoned.

THE COST OF CRIME.

THE annual criminal statistics of England and Wales, made by Mr. S. Redgrave, from a startling announcement: the little bill paid for crime in those parts of the island is as follows:—

134,922 criminals at large in England and Wales, who live in wasteful extravagance one day and in great want the next, but who spend each on an average 21s. per annum raised from plunder, but who cost the public double that sum	£.	s.	d.
Expenses of criminals in gaol not less than	10,000,000	0	0
Total cost of the police last year	1,447,019	3	7
	18,183,119	3	7

The above sum is more than half of the interest of the national debt, and would, if the sum could be saved, pay the whole of this terrible burden in a little more than forty years.

For the accommodation of this numerous army and other persons ill-disposed there were:—

Houses of receivers of stolen goods	3,122
Public-houses, the resort of thieves and prostitutes, 2,402, besides others of a similar description in all	7,066
Brothels and other houses of ill fame and bad character	15,120

During last year there were of persons charged with—

Drunkenness	85,472
Assaults	83,068
Felonies	57,698

And it is a sad feature of this black list, that the youth of both sexes form a large proportion of the criminal class, numbering 18,807, or 13.9 per cent.

Although the criminals at large amounted to 134,922, there were actually 160,346 in all. Of these there were 58,689 females and 101,657 males.

This is truly a monster evil, which it is the interest of all, each in his particular walk, to endeavour to abate.

A NOVEL BUILDING IN SCOTLAND.

A RESIDENCE erected near Merchiston Castle, Edinburgh, by Mr. James Gowans, has excited some attention. The *Daily Scotsman* gives the following particulars of it:—"The villa is erected on a site that is likely to form a corner to a new street, already partially laid out and traced. It is square in plan, and is what may be termed three stories high; and, exclusive of kitchen and other offices, which are detached from the main structure, covers a space of some 54 feet.

Externally, the novelty of the building consists in the design adopted and the material employed in its realization. Mr. Gowans, who is both architect and builder, has designed upon the "square," having planned the accommodation required upon geometrical lines, and a 2-feet scale rules not only the plan, but the character of the exterior, while the apartments in the interior are exactly so many feet of this measure in length, breadth, and height. The prominent features of the exterior appear to be brought out by the intersection of lines; and the architect has given full scope to the facilities this system of designing seems to afford for variety of combination and form. Indeed, the building may be said to represent three or four styles of architecture, the Italian, the Gothic (both French and Norman), being blended with a strong "dash" of the Oriental. In the first and second stories the windows are varied in design, being, in some instances, arranged in bays, and in others in squares with shades. The roof is broken up by bold storm windows, a curious grouping, of chimneys, and one or two of those sloping, tower-shaped terminations, enclosed by iron railings, after the style of the Louvre. A tower at the south-east, rising to a height of some 84 feet, completes the more striking external objects. This tower is Indian in character, and is surmounted by a gilt ball. If the design and its results are peculiar, the material of which the building is constructed, and the manner in which it is used, are no less novel. From the beginning of the first story to the ledge of the roof, the elevation consists of panels two feet square. These panels are composed of pieces of different kinds of rock roughly dressed and arranged in geometric form—each panel being enclosed by a slightly projecting belt of rough ashlar work. This composition, from the varied colour of the rocks, imparts to the building a curious "knespeckle" aspect—the panels, when viewed from a distance, looking like so many cavities or "pigeon-holes." The two lower courses of the building are wholly composed of specimens of the old rocks, such as granites, traps, &c. Above this level, on the north and east fronts (with the exception of six panels above the main entrance) the rubble is principally from the brown or crop rock of Redhall, mixed with fossil from the same source, and quartz from Perthshire and other trap districts. On each side of the main entrance, which is placed to the south, the panels represent various Scotch metals, such as iron, copper, lead, &c.: the panels immediately above are filled with specimens from the Braid Hills; while the upper story of the west front is chiefly built with material from China, which in nature is somewhat like the porphyries of Argyleshire. The offices are built with stone from the lower bed of the coal measures, strongly marked with specimens of the plants belonging to that formation.

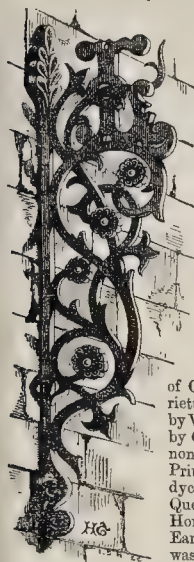
POLICE PROCEEDINGS IN CONNECTION WITH THE STRIKE.

Westminster.—Two workmen, who were accompanied by a foreman, from Messrs. Trollope's, builders, applied to the magistrate for protection.—Inspector Ross, of the B division, said that the two men, who were working for Messrs. Trollope, had been followed from their workshop at Eccleston-bridge, to their houses in Berwick-street, Vauxhall-bridge-road, by a number of men upon the turn-out, and grossly insulted.—One of the applicants said he was a stranger in London, and the conduct exercised towards him was very disgraceful: he had been obliged to leave his work at Messrs. Trollope's since.—Mr. Arnold: I will grant summonses against the offenders.—Inspector Humphreys: They are unable to obtain the names of these men, so processes cannot be served upon them.—Mr. Arnold: It will be unnecessary to obtain their names and addresses where the parties can be identified. I can sue a workman for a person whose name is unknown, but whose person is well known, upon which the offender may be brought before me.—One of the Workmen: We are afraid to walk along the streets to or from our work for their violence. They have even threatened to take the money we earn at Messrs. Trollope's away from us.—Mr. Arnold: I am very sorry that things have come to this pass. If men in the employment of a builder are subjected to conduct of this description from men upon the strike or lock-out, as it is termed, it becomes a serious matter. Where a body of men associate together to prevent a man following his honest employment, there can be no doubt that they render themselves amenable under the criminal laws; and, if such parties are brought before me and the cases proved, I shall know what to do with them.

The Builder.

VOL. XVII.—No. 868.

Archæologists in Berkshire.—Relics in Reading:
Things to be done.



AST Saturday terminated the Berkshire Congress of the British Archaeological Association. We have already given some particulars of the introductory proceedings, and will now add some notes of what took place later in the week. The Mansion-house in Newbury, where the meetings were held, was adorned with tapestry, armour, and some admirable pictures, especially portraits of Charles I. and Henrietta Maria his queen, by Vandyck, contributed by Capt. Leicester Vernon, M.P.; and of Prince Rupert, by Vandyck; and Elizabeth, Queen of Bohemia, by Honthorst, lent by the Earl of Craven. There was an original picture of Chaucer, too.

Mr. Pettigrew, in the course of his paper on the Antiquities of Berkshire, mentioned in our last, said:—

It has been justly remarked by a learned associate of our body that "archæology in these days is no longer pursued for the mere gratification of curiosity, and the satisfaction of possessing some object, prized merely for its antiquity: archæology has fallen into the hands of able men, who have advanced it to the dignity of a science, and as such it is daily making a progress which gains us an accurate insight into the history of mankind." The attainment of an object so important is unquestionably in no little degree attributable to the establishment of our association, and its institution, in the year 1844, of annual congresses to inquire into the special antiquities of particular localities. These gatherings have been the means of creating and calling into action many local societies, by the members of which considerable information has been collected together to constitute materials for the more perfect inquiries, and the inferences to be drawn by the antiquary and the historian. One of the objects in the establishment of our association was to oppose the too prevalent spirit evinced in the destruction of ancient monuments. In many cases, the propriety of attempting their restoration may be questionable; but, as to aiding in their preservation, I presume, in an archaeological association, that there can be only one opinion on the subject. The extent to which this species of conservation has in some cases been carried has perhaps not unjustly exposed us to some degree of ridicule; but, with that admirable and quaint writer, whose writings I never fail to consult with delight,—Dr. Thomas Fuller,—I would say, "Condemn not this our diligence for needless curiosity, but know that every meere stone that standeth for a landmark, though in substance but a hard flint or plain pebble, is a precious stone in virtue, and is cordial against dangerous controversies between party and party." A Welsh antiquary has well observed that it shows a little soul, a narrow mind, as well as bad taste, to pull down the walls of any sort of ancient ruin, for—

There is a power
And magic in the ruin'd battlement,
To which the palace of the present hour
Must yield its pomp, and wait till ages are its dower.

Entering upon the business of our congress in the county of Berks, it is necessary first to remember that no complete history of Berkshire is to be found. It remains to be written. Elias Ashmole's

work, as far as it goes, is important; but the reader will, upon rising from its perusal, have no distinct idea of the county, its monuments, or its products. Lysons has done much in regard to its antiquities, but an arrangement of the subjects is demanded. The whole field, embracing primeval, Roman, Saxon, and mediæval, requires careful examination, and we may not unreasonably hope that the occasion of this congress may promote in some degree this object. In 1759 Mr. E. Rowe Mores circulated certain queries addressed to the rectors and vicars of the several parishes in the county, the replies to which are printed in the *Bibliotheca Topographica Britannica* (vol. 4): they, however, yield but scanty information. Indeed, the rector of Newbury in 1759, the Rev. Thomas Penrose, in his reply says:—"I do not know any person in this neighbourhood who is curious in matters of antiquity." It is precisely the contrary now, for we have the gratification of holding a special congress in the Mansion-house of the town, the object being the illustration of all matters of interest connected with the history and antiquities of the county. My purpose at the present moment is simply, and, in conformity to the practice usually followed by us at these meetings, to endeavour, by a brief survey of the various places which time and convenience will permit us to visit, to direct attention to the particular subjects of our inquiries. Like to the names of many English counties, the origin of that of Berkshire is neither well nor completely settled. Asser Menevensis, an English historian, derives it from a word signifying a wood, "Barroc," which, he says, abounded with box. Barroc wood, we are told by Lysons, is mentioned in a charter of King John as having been the property of the nuns of Ambresbury. Leland follows Asser, derives Berkshire or Barkshire from Berroek, a bare oak, beneath which the English Saxons held their assemblies. The Saxon Chronicle writes it Beurscire and Barroscire, which became Berscire or Barroscire. In the ninth century it was known as Berroscire; and, in the Domesday, it is written Berroches-scire, Berroche-scire. The ancient inhabitants of Berkshire, according to Camden and other authorities, are known as the Atrebatii or Attrebates, a tribe migrating from Gaul anterior to the Roman Conquest. Whitaker, following Camden, has expressed an opinion that the south-eastern parts of Berkshire, including the hundred of Bray, were occupied by the Bibroci. The Segontiaci also constituted a portion of the ancient inhabitants, and the arrangements of these tribes may perhaps be fairly stated thus—the Attrebates occupying nearly the whole of the western part; the Bibroci, the south-eastern part; the Segontiaci, a portion of the southern part. Thus the Attrebates appear to have been the principal inhabitants; yet some have conjectured the county to have derived its name from the Bibroci mentioned in Cæsar, Broc and Bark meaning the same. Bibroci is, however, derived from Bibrax, a place not far from Rheims. The most interesting portion connected probably with the most ancient history of Berkshire, is that particularly known as "The Vale of the White Horse." It is scarcely necessary for me to remark that the name of the White Horse has arisen from a representation of a horse, 325 feet in length, cut out of a turf upon a chalky soil, and that it has been usually regarded as a monumental record of the great victory obtained over the Danes in 871, by Ethelred and Alfred. Ashdown is generally esteemed as the spot on which the conflict took place; and in the neighbourhood there are seven remarkable barrows of a circular form, and several others of a very irregular shape, in which bones almost innumerable have been found. Wise acquaints us that the Vale of White Horse was known by that name in the reign of Edward III., as it occurs in an entry in a Close Roll 1368-9, where it is recorded: "Gerard de Lisle tient en la Vale de White Horse the fee," but we are indebted to the research of Sir Henry Ellis for an earlier notice, it being named in the two Cantuaries of Abingdon, written in the reign of Henry II.: "*Prope Montem ubi ad Albun Equum scanditur, &c.*," and in relation to Sparsholt, "*juxta locum qui vulgo Mons Albi Equi nuncupatur, &c.*" Mr. Thoms, in a communication to the Society of Antiquaries, esteems the monument commemorative of the ancient religion of the country, the worship of the horse having been common to the Celtic and Germanic, as well as the Slavonic tribes. This would render the memorial as of British origin, an opinion entertained by Lysons; and it must be admitted that the figure of the animal, as represented on the hill, and on the ancient British coins, bears a very strong and striking resemblance. Mr. Thoms has brought his familiarity with German literature to bear

with advantage on this point; and he refers to "the sacred horses," which form no unimportant objects in the mythology of the ancient Saxons and other peoples of the Germanic race. "From those sacred horses (he says) it is probable that many of the ancient heroes derived their names, of which Hengist and Horsa furnish a striking example, these names being nearly synonymous; although the former, Hengist or Hengst, is, in the German and some of the Teutonic tongues, more particularly applied to stallions. Notwithstanding these expressed statements, Mr. Thoms coincides with Wise, and looks upon the memorial as formed by the Saxons, and, he thinks, at the time of their conversion to Christianity, and of the sacred white horse, which, in the days of Paganism, had pastured in the sacred grove of ashes. Mr. Akerman holds to the opinion, that it is of Celtic origin, and has given a cut of it from a drawing made by Mr. Christopher Edmonds. The horse, we must not fail to remember, was equally a Celtic as a Saxon badge, and is constantly found represented on Gaulish and British coins. The subject is worthy of discussion.

At about a mile and a half from the White Horse is another ancient memorial known as Wayland's Cave, which the more precise knowledge of the antiquaries of the present day has shown to consist of the remains of a cromlech. It is a cromlech of the Celtic period. The several stones are in disorder and thrown down. They are what are commonly called Sarsens, of which we saw specimens on occasion of our visit last year to the grand monument of Stonehenge. Cromlechs are burial-places formed of upright stones, covered by a large slab or slabs. Many of Wayland's Cave have been taken away to serve a variety of purposes, but there remains sufficient to denote its character. There is still enough to show that this cromlech had transepts or lateral chambers.

The tradition held in regard to this monument is that, if a traveller's horse cast a shoe on his way, he had only to lead the animal to the cave, and there leave him, at the same time placing a groat upon the capstone and withdraw. After a short time, upon his return, he would find his horse shod and his money removed.

Silchester was the first place visited on Wednesday, and was illustrated by a paper from the Rev. Beale Post. The scale of its importance among the cities of ancient Britain and Roman Britain, and its position as a Roman station were the points chiefly treated of. The old chronicles invariably speak of it as the centre of the principal public acts in this part of the kingdom. This was the rank the city held when the walls, considerable portions of which now remain, were built, evidently dating towards the end of the Roman occupation of Britain, as the Saxons began to harass the Britons as early as the year 364. There was no difficulty in surmising that the wealthiest and most influential inhabitants retired from Londinium to this place, choosing it as a place of security, and making the walls and fortifications. After referring to the various names given to Silchester, he remarked:—There had been some dubitation expressed, in comparatively late times, whether Silchester be Vindonum or Calleva, and he considered it best to concur in the formerly universally received opinion, the one held by Camden, Gate, and other great names, that Vindonum, or Vindomum, is Silchester, which also has this advantage of agreeing far better with the known Roman British topography of this part of the kingdom.

This paper was followed by commentaries by Mr. Vere Irvine. The church was visited, and the relics at the farm examined; and as the day's round was a long one, the carriages were soon rolling onwards to Upton Court—a curious relic of domestic architecture. Mr. Pettigrew having made some general remarks on the original monastic use of the house, Mr. E. Roberts conducted the party over the whole of it, pointing out the probable dates of each part—the earliest being as far back as Henry VII. and the latest as recent as George III. The secret ways and passages were explored as far as time would permit.

The church at Thatcham appears to have been very ill-treated.

At the evening meeting the Rev. J. Adams read a paper on the Roman encampment at Speen, and produced a curious glass bottle dug

up near the railway station, bearing a figure supposed to be that of Esculapius, as well as several beautiful specimens of Samian ware, also found near Newbury, with regard to which some discussion arose. The rev. gentleman said it had been remarked by the writer of the article on Roman roads and stations in Lysons' history of this county that, although there were not less than three undoubted Roman towns within the limits of Britain, the site of one only had been ascertained, and that not without some difficulty. The town thus alluded to was known by the name of Spina, and is generally supposed to have covered part of the site of Speen. That Newbury sprang from the ruins of an older town its name, no doubt, indicated; and that Spina stood at no great distance did not, he thought, admit of question. Mr. Adams then gave a detailed account of the encampment, objecting to the theory that Roman encampments must be either square or oblong. The Romans adapted their camps to the situation in which they were placed, and they are to be seen in almost every possible shape.

The Rev. E. Kell then gave a description of the Roman villa discovered last April near Carisbrook Castle, in the Isle of Wight, of which discovery we printed early intimation; and, afterwards, Mr. Thomas Wright described the progress made in the excavations at Wroxeter, and pointed out the difficulties which now beset the work. On the motion of Mr. Pettigrew, it was resolved that:—

"The members of the British Archaeological Association, assembled in their annual congress at Newbury, cannot let pass the opportunity of expressing their sense of the great importance of the excavations now going on at Wroxeter, on the site of the Roman station of Uricion, and of the gratitude which every one interested in the history and antiquities of his country must feel towards his Grace the Duke of Cleveland for the readiness which he has shown to allow and encourage such excavations on his land, and they entertain no doubt that the continuation of them will lead to discoveries of still greater importance. They think, further, that it would be very desirable, if it were agreeable with his grace's convenience, that a portion of the Roman ruins should be left permanently uncovered, as a monument of great interest to the public, and, in fact, unique in this country."

On Thursday an early start was made towards Grimbury Camp, where Mr. Brown offered some remarks upon the camp and barrows, two of which were in the course of being opened, but up to the time of the Association leaving the spot nothing had been found in them. The Rev. J. Adams and Mr. T. Wright derived the name from "Grim," great or fearful, and "bury," town. Nothing ancient appears to be preserved, if any such things have been found: several pieces of pottery with ashes in them, a Roman spear-head, and some coins were said to have been dug up, but none were forthcoming except two coins, which were pronounced to be one of Henry VI. struck at Calais, and the other a more modern token. Perborough Castle was next examined, and it was understood that a Roman villa was discovered, and some directions were given to excavate it.

Hamstead Norris Church was next in turn, and was briefly described by Mr. Davis. It includes a piscina on the south side of the chancel, and a double ambury on the north side: there are two niches in the window-jamb of the nave for images of saints. Aldworth Church received considerably more attention. Mr. Davis first conducted the visitors round the interior of the building, which, it appeared to him, had been intended as a family mausoleum. He pointed out the peculiarities, stating that the canopies to the tombs were of Early Decorated character, with a peculiar form of ball flower very unusual. The piscina, and ambury over it, were good. Here Mr. Planché gave some account of the monuments of the De la Beche family, which he said were of the date of the Edwards II. and III. and were exceedingly interesting and beautiful. He was not prepared for their beauty and worth, but had conceived a very mean opinion of them. He had engravings of them in his hand in the work by Ashmole, but anything more unlike could scarcely be conceived, and he had been entirely misled. He minutely described the armour and clothing, and explained, with regard to the cross-legged effigies, that the idea that they were crusaders had long since been found to be incorrect. He had observed in

ancient illuminated manuscripts and other works, that kings, judges, and even women who were in possession of power, were constantly drawn with crossed legs, while inferior persons were never so delineated, and he came to the conclusion that it was an indication of the possession of power of life and death, in those so represented. It was known that some of those persons represented cross-legged had never been to the Holy Wars.

Isley Church, on the way home, was rapidly examined and described.

At the evening meeting, the Hon. P. P. Bouverie, M.P. in the chair, Mr. Henry Godwin, of Newbury, read a paper "On the Worthies of Newbury and its Neighbourhood." The larger portion of it was of great local value, and brought forward some facts with regard to Donnington Castle, in which every Englishman will take an interest. The writer, having observed that it was generally stated that Chaucer purchased Donnington Castle in 1397, from John o'Gaunt, Duke of Lancaster, said the result of his diligent inquiries was to ascertain, in the first place, that the poet was too poor to purchase such property; and in the second, that John o'Gaunt had never been the owner of this Donnington Castle, although he had possessed an estate called Donnington, in Leicestershire. He therefore said that, much as he loved Chaucer, he declined to own him as one of the worthies of Newbury. It appeared, however, that the estate in 1418 came into the possession of a knight who married a granddaughter of the poet. This paper was not a mere compilation from easily available sources. The facts stated were confirmed by reference to existing charters and chronicles, and the whole was rendered exceedingly interesting. It was somewhat shortened, in order to enable

Mr. W. H. Black to give a general sketch of the corporation records of Newbury. It appears that the earlier and more important records have been either lost or destroyed, but many ancient deeds are still in the possession of the municipality; some of which date as far back as the reign of Edward I. By reference to one and to some of the parish records he set at rest the doubts which had been raised as to whether Charles I. at the time of the first battle of Newbury, really stayed in the house of one Gabriell Cox, then mayor of the town. It appeared that Cox was the owner of it at that time, and that the person in whose house other authorities said Charles lodged subsequently became the owner, thus perhaps accounting for the mistake which had been made. The skill with which Mr. Black reads old contracted Latin charters, pitching at once on the important passages, is very remarkable, and leads us to ask how it was that the Government lost the services of this gentleman at the cost to the country of a pension? Perhaps Sir Frederick Madden will tell us.

Friday was a busy day. At half-past nine in the morning every vehicle in Newbury was in requisition to convey the party to Beacons-hill and Castle Highclere, the seat of the president, Lord Carnarvon.

Beacon-hill, close to the mansion, affords to tourists an extensive and beautiful view. After the archaeologists had examined, under the guidance of Mr. Vere Irving, a Roman station on the top of the hill, they returned to their carriages and drove to the castle, where they were received by the noble owner and Lady Portsmouth, his sister. His lordship had also invited a large number of the gentry, clergy, and tenantry to meet them, and the company altogether could not have consisted of less than 400 persons. The castle was nearly entirely rebuilt a few years ago, under the superintendence of Sir Charles Barry, who has adopted a mixed style, which may perhaps be called Jacobean. It is of considerable extent, and has a large and lofty central tower. The interior is disappointing. If we judged from appearances alone we should say that Sir Charles could have had little to do with it. It contains a few very good pictures, particularly some by Sir Joshua Reynolds. There the Association were joined by the Attorney-General; Mr. Walter, M.P.; Mr. P. Bouverie, M.P.; Mr. Mowbray, M.P.; Sir Joshua

Walmsley; Alderman Cubitt, M.P.; Archdeacon Randall; the Rev. Mr. Kingsley; and many other persons of note. An admirable luncheon was disposed of, and then, the visitors being gathered on the lawn, Mr. Pettigrew expressed, very effectively, the general thanks to the host, confirmed by many cheers.

Lord Carnarvon, in returning thanks, said that although taken by surprise by the demonstration he had just seen, he hailed the opportunity it gave him to express his high sense of the deep pleasure he felt in being able to welcome there so many old friends, kind neighbours, and learned and distinguished archaeologists, and still more, in the words of the old Spaniard, in placing himself and his poor house at the disposal of all present, and in laying his heart at the feet of so many fair ladies. The last discussion he heard at Newbury was connected with legends and fables. He did wish it were possible to realise one legend and one fable in his own person. He wished much, for the moment, and merely for the moment, that he could be one of those fabled giants of old, with 100 heads, 100 hands, and 100 tongues, to bid welcome to all his friends, and to interchange with them a cordial and a hearty greeting. He trusted that the association, when they left, would carry away a favourable opinion of the neighbourhood.

Returning to Newbury the party were then conveyed by railway to Reading, where they were received by the Mayor, Mr. C. J. Andrewes, and other members of the corporation, and then proceeded to perambulate the town under the guidance of Mr. G. Godwin. The principal places visited were the ruins of the Abbey (partly visible from the railway station), the Abbey gateway, St. Lawrence's Church, the Abbey mill, St. Mary's Church, and the Friary. To avoid constantly referring to the speaker, we will put a condensed abstract of what was said, into a connected form.

The Abbey was founded by Henry I. in the year 1120 or 1121: the Abbey church was completed about 1164. The walls, of flint concrete, were cased with freestone; but, after the dissolution, the Abbey was destroyed, and parts were used in the construction of St. Mary's and St. Lawrence's, while some of the materials were taken to Windsor. The ruins, in fact, served as a quarry, as the Coliseum did at Rome. Henry I. it should be mentioned, was buried here about the year 1135. The remains are very considerable, and serve to show that the pile must have been one of great dignity. The Chapter-house, which looks about 84 feet long and 42 feet wide, has walls of considerable height, and a plan, which had been prepared, showed how the various portions remaining formed part of the great church, the cloisters, the kitchen, and so forth. Some large bases (in the church) have been recently exposed. Great credit is due to the local board, and their surveyor, Mr. Marshall, for the pains taken to preserve the ruins. The land around them has been purchased, and formed into a public pleasure-ground. Additional purchases, with the same end in view, are contemplated.

The Abbey gateway, a later erection, and close to the Assize Courts, now in course of erection under the superintendence of Mr. Clacy, is in a miserably dilapidated state, so much so indeed, that a part of it positively may fall at any moment. It was urged by the speaker that the authorities should forthwith take steps, under proper advice, to restore it to its proper shape.

In excavating for the Assize Courts, contiguous, as we have said, to the Abbey gateway, and on the site (according to local history and tradition) of "an hospital for poor pilgrims," some foundations and walls were discovered, of which Mr. Clacy supplied a plan.

The surface of the ground had been raised about nine feet by the debris of the fallen buildings. The old walls above the original surface were mostly faced with squared free-stone, and filled in with concrete of chalk, flint, lime, and sand. In the centre of the wall, about two feet above the original ground surface, the remains of three human skeletons were found embedded in the concrete, the bodies having apparently

been laid in the wall, and the concrete or rubble thrown around them. The bodies, it was thought, had been placed in the wall whilst building. There was no appearance of decayed wood or covering, and the remains were mostly in dry powder; but with a sufficient portion of bones to identify them as human, and to indicate the position of the bodies—one had apparently been placed with the knees bent.

The Church of St. Lawrence, the well proportioned tower of which is also seen from the railway, is described as having been "rebuilt or considerably repaired in 1434." Notwithstanding this statement, the chancel is of the thirteenth century. This church is viewed as a sort of rival to St. Mary's, and the tradition is that it was built by an apprentice of the builder of that church, and that the master, annoyed by its superiority, threw himself off the steeple and was killed! Every one will remember the same story in connection with Roslyn Chapel, Edinburgh, and some of the French Cathedrals. There are interesting old church books remaining. The inventory of the plate, taken a few years prior to the Reformation, includes,—

"Item. A gredyrion of silver and gilt, with a bone of Saynt Lawrence therein, weying iii grs. of an ounce."

The various altars were restored at the accession of Queen Mary, and the Queen and King Philip came to Reading to see this done. The tower arch is blocked up with a pile of ugly galleries and an organ. The tower, externally, has been messed with restorations in "compo." A charge for wire for the clock, 1499, shows that there was an early instance of a clock in a parish church. The quaint-looking covered way, on the south side of the tower, having a range of gables, was built at the cost of John Blagrove, esq. in 1619. The church, coming to our own time, is intimately connected with the late estimable Justice Talfourd, who, as a scholar of the late Dr. Valpy, cut his name in the pew where he sat, and as a man put up a stained-glass window in the chancel in memory of a friend.

Away now to St. Mary's church, which was called the Minster. The statement is that it was taken down, except the spire, in 1647, and rebuilt in 1551; that the spire was left till 1594, when, being blown down, it was rebuilt. Over a door on the south side, too, a tablet says this church was rebuilt in 1551. It is quite evident, however, that the chancel and north transept are of the thirteenth century. The former contains, too, an Easter sepulchre, with two canopies, and Purbeck marble columns, disguised by an ugly support erected in the centre. Some main columns in the nave, whether brought from the Abbey or not, are apparently of the twelfth century. The churchwardens' books show amongst the entries:—

"1555. Payde the man for watching the sepulchre	a. d.	0 8
1557. Payde to the mynstrells and the hobby-horse upon May-day ..	3 0	
1570. Paid for two paxe of cardes ...	0 4	
1626. P ^d for carving Mr. John Kenrick's arms over the south arch of the tower	2 6 ^d	

In 1670 it was ordered that a boy should be carried to London to be touched for the king's evil at the charge of the parish!

Amongst the entries as to charges for getting the spoils of the Abbey are found:—

	£	s.	d.
"Payde for takyng downe of the quyer of the abbeye, and the carriage home of the same, 21 lodes	0	10	6
Payde for the rowfe in the abbeye	6	18	8
Payde for the door that stood in the cloyster	0	0	8 ^d

Some maintain that the roof of the nave here came from the church of the Friary. Whether this were so or not, that edifice is unroofed; and, when the Association proceeded thither, and found parts of it occupied as a gaol, and steps in contemplation for further destroying it, lamentations were expressed. It belongs to the thirteenth and fourteenth centuries, and displays a fine imbricated window. Mr. Godwin urged the duty devolving on the authorities of a rising town like Reading of preserving those

ancient buildings which remained within it, and, deploring the fact that there was no museum in the town, suggested that the Friary should be restored, and so appropriated, if a church were not needed.

Messrs. Poulton and Woodman showed, by a plan they had prepared, the existence of various foundations around indicating the extent of the establishment originally.

We have already alluded to some of the ancient records of the town. Let us add a few notes from the same source. Amongst the by-laws of the corporation, one passed in 1443 is somewhat curious. It is this:—The mayor and burgesses "grant and ordain that no barber in Reading open any shop nor have any man after ten at night between Easter and Michaelmas, nor after nine from Michaelmas to Easter; but if [except] it be any stranger or any worthy man of the town, he shall pay three hundred tiles [teglus] to the Guildhall of Reading, as oftentimes as he is found faulty, to be received by the cofferers for the time being."* An instance of the payment of the fine is given, and it is suggested that the motive for levying the penalty in tiles was a desire to introduce these into general use, and to discourage thatching, which increased the danger of fires.

The records of the exercise of what the corporation of Reading thought "privileges" seem to us especially interesting at this moment. Man says that "no individual member of one company was allowed to interfere with the exclusive rights of another." Every man was obliged to confine himself to his own trade. The carpenter, for example, was not allowed to do anything that was the business of the joiner, and neither could presume to interfere with the work of the sawyer! In 1662, the cobblers petitioned the corporation against the shoemakers for mending old shoes, contrary to the rights of the town; whereupon it was recommended to the shoemakers "not to offend therein at their peril!" Through this exclusive and trammelling system trade was stagnated, natural talents remained unimproved, exertions were stopped, and the town was half ruined. The writer in question says, that, thanks to enlightenment, "These shackles on trade have been taken off, and every man, wherever born, is now entitled to the same privileges as the natives, without its being in the power of any individual to molest him in his trading concerns." He would surely have been astonished had he lived till our day to find workmen imposing shackles upon themselves—to see able and, in many respects, most intelligent artisans, banded together to prevent each other from working more than a limited number of hours each day, enforcing equal payment per day to all, whether able or stupid, and denying to each other the right to undertake "piece-work," which gives to the clever, ready, and energetic workman an advantage over the drone. The past teaches to little purpose!

On the return of the association to the Mansion-house, the mayor took the chair, and Mr. Pettigrew commenced to read a paper on the history of the borough; but the inexorable horn of the active curator, Mr. George Wright, gave note that the hour for the return train had arrived, and the majority of the members therefore departed. Mr. Black, however, having looked over the charters and other deeds belonging to the corporation, remained and made known to a Reading audience the interesting nature of many of the documents. A descriptive list of them should at once be prepared. At Newbury, a *soirée* in the Mansion-house wound up a long day.

Want of space prevents us from entering fully into a report of the doings on the last day, Saturday. Amongst the places visited was Welford Church, a Norman structure recently restored. The reverend incumbent stated that on removing a portion of the old foundations, openings where coffins had been placed were found in the clay, and that he therefore supposed the present edifice was erected on the foundation of an ancient British church. This was confirmed by a silver coin which had

been dug up in the course of the works, and which he produced.

Welford Church has, like Wickham, which is in the same hands, been rebuilt in the same manner, so that very little remains of that old church which has charmed and instructed so many. The round tower, it is true, has been imitated, and the string courses said to have been copied, but the "architectural" associates seemed to doubt the truth of the representations of former mouldings. In one respect the Rev. Mr. Nicholson obtained praise—for rebuilding the spire and the upper octagon of the tower with the identical stones of the former building. Care had been taken to mark every stone, and they now occupy the same positions as before. The sedilia were thought to have been much altered by the "drag tool" of the masons when attempting to preserve them in the chancel in the same manner.

Having spent some time in examining the church, the party adjourned to the residence of Mr. Eyre, adjoining, and partook of refreshments, which he liberally supplied.

They next drove to East Sheffield Church, to view there the remarkable monument in alabaster of a warrior and his lady, about the identity of whom much discussion has been raised. Mr. Planché pronounced the male figure to be the most perfect one of a knight of the reign Henry V. he had ever seen, and said that the lady represented at his side probably died in the following reign, as she wore the dress of that period. There is no inscription on the tomb, but Mr. Planché read an elaborate paper to show that she might have been a princess of Portugal who had married a Fetiplace—a name associated with the church, and appearing on another monument, observing that her position on the right instead of the left side of her husband indicated her higher rank. The church is a deplorable example of the want of care and energy prevalent in Berks in regard to such edifices. The pavement is green with vegetation, and slimy damp is streaming down the walls,—forcibly reminding one of the semi-submerged tombs and chapels of Ravenna.

Speen Camp was next visited and Speen Church, which, like many others, is in course of destruction. Nothing remains but one aisle and one nave arcade, which has magnificent Purbeck marble shafts of large size, but completely cased in coats of paint and whitewash. The association has had the satisfaction of insuring the safety of these shafts, and of obtaining a promise to have them repolished. Mr. Planché also succeeded in preventing the repainting of an altar tomb and its effigy, a monument to John Baptist Castillon; 1597. Several ancient crosses and other remains of antiquity were likewise examined under the guidance of Mr. Roberts, and it was understood that they would be preserved, in compliance with the wish of the association.

At the closing meeting in the Mansion-house the same evening, Mr. Walter, M.P., presided, and spoke ably. Votes of well-deserved thanks were passed, and the 16th Congress of the British Archaeological Association came to an end.

THE STRIKE.

It would seem to be impossible to get at some of the facts in the present dispute; but there can be no reason to doubt that the masters are gradually obtaining workmen under the declaration, sufficient in number to carry on the work which was in progress at the time of the strike, and what is likely to be undertaken in the present year. The statement of the Executive Committee of the masters is, that upwards of 4,500 men, according to reports and information from members of the Central Association, have resumed employment; but, no doubt, many of these are men from the country, and men previously unemployed, and possibly, in some cases, are not to be classed in skill with men who are on strike. It must not, however, be forgotten by the Conference, that excellent bricklayers and masons are now to be found in the provinces; and we are disposed to think it will not be from want of skill in those engaged, that any long-continued difficulty will be met with. The question will be resolved into one of the amount of London work, and the number of those

* As quoted by Man.

who can be got to do it. Now, the strike has diminished the work of the year considerably; and were the masters to abandon the declaration next week, the probability is, that on all accounts, the number of the unemployed would be much greater than it was before the commencement of the strike. By the reasoning of the workmen, perhaps, eight hours would then be desired as the day's work. The whole tendency of the strike in diminishing the quantity of work and increasing the number of claimants for it, seems obvious from facts as we may reasonably assume them to be.

On the part of the workmen it is shown that their funds have been increased; and that the number of recipients, 6,955 on Monday last, was only 21 less than on the previous Monday; and thence it seems intended we should infer that the objects of the strike are in the way of being attained. We apprehend that no such inference follows. The men to the number stated have refused to accept the declaration, and the requisite support for them during their refusal is being given by the workmen in other trades. The question is not, how long the support can be continued, or how long the men would be able to maintain themselves on the slender pittance which the sum allowed by the Conference, added to one from a society, amounts to; but whether the support may not last long enough for the places of the old hands to be supplied—on what is now the probability of demand for labour reduced by the circumstances of the strike. In short, strikes should never be undertaken except under something approaching to a certainty of success; and that result cannot follow unless speedily: for, the strike can be successful only when circumstances are such as would have allowed the master, with profit, to give the increased rate had there been no strike.

The state of the case seems to be that the men are neither getting employment under the declaration nor without it, and are only imperilled as to the future. It would be useless to tell them that the better course might have been to give up an hour's wages, when asking for the reduction of time to the nine hours, and to wait for the increase of capital to bring wages back again to the old rate. Such would have been the natural and certain tendency if the number of claimants did not again increase,—or would be so in any case of capital great in proportion to the number of workmen wanting employment. Judging from what has fallen from speakers at meetings of the men very lately, they have not abandoned the object as to the nine hours. The views under which the particular diminution of the hours of labour is demanded, if correct or allowed, would naturally lead to a fresh demand, that is to say, from circumstances created by the very operation of the diminution; and it is wonderful that the fallacy of the arguments which led to the strike is not yet perceived.

The present strike, like all others brought to the issue in which the masters necessarily follow by combination the tactics of the men, having become a trial of endurance, has been attended by many attempts at intimidation and some acts of violence,—exceptions, however, to the general conduct—which shows there has been progress since violence was a chosen instrument. These acts have been severely punished, and very properly; and it would have been well had more efficient protection been given, both by the police and the masters, to the non-society men who were indisposed to join with the movement. Had this course been taken, Messrs. Trollope's works would have been provided with hands some time earlier, and the question might have come to its solution sooner than now seems likely.

The masters also might have done more to show they would carry out their intention of supporting friendly societies disconnected from trades' unions. They have, through their committee, stopped some attempts at conciliation. We are not suggesting the withdrawal of the document: this, however desirable in some points of view, would now be hailed as a victory on the part of the men, and in their present attitude and delusion would conduce to no object; but a counter-declaration might perhaps be offered by masters, as to their disuse of combination; or means might surely be taken which would lead to better views as to the real objects of the declaration, namely, the maintenance of the same rights on one side that the workman on the other expects. Why could not the whole be thrown into the form of a mutual agreement?

Mr. Williams has added such influence as he possesses as a member of Parliament, to that of other representatives of metropolitan boroughs, to keep up the perversion of view under which the

men regard the "document." He speaks of "the conditions proposed by the master builders to be imposed on those whom they will employ," as "a violation" of the principle which gives the working man "a right to take his labour, or the produce of his skill and industry, unshackled to the best market." Pray, what is there in the declaration that violates such a principle, or interferes with the right? It is surprising that men deemed fitted to an office which requires the understanding of these questions, should, in anxiety to catch a few votes, utter language denying to one side the rights which equally belong to one and the other. We feel hopeless of a settlement of the question in dispute, whilst there is unwise encouragement of the fallacies and prejudices that prevail, rather than real effort at explanation and conciliation. The condition of the artisan requires to be improved, and that greatly; but difficulty of finding out the right way to such improvement in some particulars is no excuse for sanctioning positive errors. The masters would, we doubt not, readily give up the requirement of assent to the declaration, provided they were shown other means of preserving their own freedom, and that of many of those who are in the rank of artisans.

A new phase in the progress of the dispute has been introduced by the Conference, in the calling out men employed on country works by London masters; men, none of whom had had a word said to them about the declaration. It is impossible to understand what it is the Conference expect to gain from such a course. The theory of strikes seems to involve use of the earnings of workmen who may be employed, towards the success of the strikers. The object can be merely to embarrass masters: the blow dealt by the Conference, however, wounds chiefly their own order. Messrs. Waller & Son's letter in the *Times*, speaking of the acts to which we have alluded, also shows how directly the machinery of combinations interferes with the kindness which should exist between master and workman, and which feeling it is argued that the political economists and masters generally, by their doctrine, fail to ensure. There could not have been more convincing testimony to the course taken by the masters as favourable to the best interests of the men, than is presented by facts to be gathered from the letter.

CORRESPONDENCE ON THE POSITION OF MASTERS AND MEN.

SIR,—At a time when every fault of a single man is brought to bear against the class to which he belongs, if he is one of the building operatives, surely it is but fair that the conduct of the employers should receive some notice also. By your permission I will simply tell an unvarnished tale of what took place in the firm to which I belonged. Throughout the agitation for the nine hours our employer often expressed his willingness to concede the same; and when the "Masters' Association" was formed, he expressly told us that he would have nothing whatever to do with it. Judge, then, our surprise, when on Saturday, the 6th of August (without any previous intimation) he walked into the shop, told us he had joined the Masters' Association, and should close his establishment until Messrs. Trollope's shop was re-filled. Letters also were sent to those away from home to the same effect. To one, he sent a note at eleven o'clock, requesting him to arrange his accounts, and go a distance of some miles to do a little job of pressing importance, and *stop and finish it the same night*. He did as requested, and returned to shop—to be thrown out of work for the next six weeks. Now, it was not because we were society men, for out of about sixty men, only about six were society men. And as to their character as workmen, let our employer speak for himself. He said:—"Never, since he had been in business, had he so capital a set of men in all branches of the trade. No matter whether he looked after them or not, the work was sure to be done." After this character from his own lips, have we not a right to ask whether his treatment was justifiable? Did those who had served him so faithfully for years deserve thus to be thrown out of work without previous warning? We leave to the public the decision of these questions.

On behalf of the Men,

A LOVER OF FAIR PLAY.

SIR,—Now this unhappy struggle is approaching to a conclusion, let me once more, through your columns, offer a few words of advice to the deluded men on "strike." As the declaration seems to be the stumbling-block to them, let them, as they were the aggressors, at once give up this

absurd and utopian nine-hours movement (for, to be consistent, in all probability, as the winter advances, there will be a greater number out of work than there were when the strike took place; consequently they must strike again for eight hours, so as to bring those out of work into employment, and so you may carry out this ridiculous argument *ad infinitum*);—and also pledge themselves not to molest their fellow workmen, because they are acting the part of sensible men in making the best terms they can of their labour: then I think it extremely probable "the declaration" would be withdrawn.

Again, the winter is coming, and although the man is out of work, his wife and children's garments and shoes cease not to wear out. The shops are rapidly filling (spite of the Conference), and work will be falling off. Now is "the accepted time;" every day's delay makes the probability of a winter's work doubtful, and when the employer has filled his shop, and the artisan's former place is occupied, he cannot reasonably expect that the new comers will be sent away because he chooses to go to work. Let him then embrace, before it is too late, this opportunity, lest, like the man in our Lord's parable, he find "the door is shut," and the master knows him not." A.

THE STRIKE.—HOW ARE DISPUTES TO BE SETTLED?

Now that the masters have opened their shops a week, and find that men resume their work so reluctantly, will the masters ask themselves this question,—Is there any fault on our side, and if there be, will they retract the steps they have so hastily taken? I am inclined to think they will not, as an Association of Master Builders is now formed; and whether we speak of Trades' Unions or Masters' Associations, they are alike societies formed either for oppression, or protection against oppression; but the combination of masters and the document do not appear to give any hopes of diminishing the so much talked of tyrannous oppression of the Trades' Unions. And so long as the document is enforced, masters and men cannot meet as they ought; but meet each other they must, either on friendly or unfriendly terms. Now, in order that they may meet and continue upon friendly terms, I would advise the masters wholly to withdraw the document, on condition that the Trades' Unions expunge the objectionable articles contained in their rules, and admit the masters who choose to join a society which might be formed, and called the Amalgamated Society of Master Builders and Operatives, and formed (as is proposed by the non-society men) for the establishment of reading-rooms, libraries, and houses of call, which ought not to be held at public-houses, but in places where men might meet for mutual improvement and social intercourse. And masters ought to prevail upon their men to spend less of their time and money in gin-palaces, &c. and more on books and lectures. If masters would aid in so good a work, I am sure many really good men would hail it as a great boon, and by the presence of the masters at their meetings the men would feel that their employers took an interest in their welfare. Let a list of all the masters subscribing to their society, whether by annual or occasional subscriptions, be printed yearly; then will both employers and employed know that societies are a blessing and not a curse to any one, as is now so erroneously supposed to be the case. With respect to employing society or non-society foremen, it is a matter of indifference which they are, so that they are worthy of the name they bear; but as I know of many who are unworthy of it, I would advise masters to know what men they select to serve as foremen. I would advise them not to select men who are only skilled in tyrannizing over others who are often their superiors in ability, but not able to use the bombastic rant that foremen too often do. Let masters look to this, and they will be much enlightened upon the subject now before them.

A PROVINCIAL MASTER, WHO WAS ONCE A WORKMAN.

EXPLOSION OF A SEWER.—An explosion of gas has occurred in a sewer near to the railway station, North Shields. An extensive alteration had just been completed in the system of sewers in that neighbourhood, and it is thought that the workmen must have damaged a gas-pipe. A young man, after lighting his pipe, had thrown a lighted match down a "man-hole," which was followed by a considerable explosion. Two of the man-holes were much injured, and a flag was broken and torn up in the back yard of a house adjoining.

COAL IN FRANCE.

No country, except our own, is so richly supplied with coal as Belgium: it is found in three districts,—those of Mons, Charleroi, and Liège. That country contains 304 mines, divided as follows:—Mons, 69; Charleroi, 85; Namur, 38; Liège, 88; Huy, 24. The extent of the coal-fields is 150,000 hectares, or 370,671 British acres (a hectare being 2·471143 acres), and its production was, for 1855, 8,258,416 tons of 1,000 kilogs. each. France, which, by its coal-fields of 300,000 hectares (741,343 acres), ought to occupy the second rank, only deserves the third, on account of its not having been properly *exploité*, it having yielded in 1855 only 6,282,700 tons of 1,000 kilogs. each. In looking over the numerous coal-basins of France, the first is that of Valenciennes, which is a prolongation of the Mons basin in Belgium. This is covered with an unprofitable thickness of strata from 50 to 100 metres thick at Anzin, and up to 200 metres near Aniches, where water-beds are so abundant as to render the working unprofitable. This basin has many beds of good coal, but only a dozen can be worked with advantage. The maximum thickness is about 0m. 70c. (a little more than 2 feet 3½ inches).

The Anzin coal is sticky or cindery in burning, with not much flame and scarcely any sulphur. That of Denain is more bituminous, and burns better in a grate. The Raimse mines furnish a poor coal for grates: those of Fornes and Vieux Condé furnish a dry anthracite sort of coal. The Aniches coal is similar to that of Anzin. The Departments of the Pas-de-Calais yielded, in 1857, 22,383,800 hectolitres (a hectolitre is 22·009668 gallons), and employ 3,870 workmen, namely, 1,300 French miners, 120 Belgian ditto, and 1,150 dragsmen and pitmen.

The coal-basin most important in France is that of the Loire, reposing on a primitive formation, and divided into two portions, the centres of which are Saint-Etienne and Rive-de-Gier. Here the coal is found at the surface, and consequently not subject to the inroads of water. The area is 200 square kilometres, rather hilly, and consequently divided into a number of smaller basins which are worked separately. The mean thickness of the beds is from 1 to 5 or 6 metres, furnishing two varieties of coal,—one culm for smithies of the best quality, the other more compact, fit for the fire-grate. In the Loire mines it is well to remark that the small coal or dust is often 30 per cent. of the quantity extracted: much is sold in that state, and the rest is made into coke on the spot.

The environs of Brassac, in the Aveyron, contain many beds of coal, which furnish some of good quality for the grate.

Alongside the Canal du Centre there exists a vast coal-field, having two principal mining points, one of Creuzot, the other of Blangy. The Creuzot mines contain a nearly vertical bed 15 to 20 metres thick, fit for the furnace, also for coke.

At Monceau, which is joined to Blangy, the coal-beds are equally vertical and close to the surface, being in depth about 20 metres. This coal will not make good coke, but is adapted for furnaces. For obtaining a strong heat, as in forging iron, it has to be mixed with equal parts of the Loire coal.

The Décise mines, near the Loire, only have beds 1·20 m. to 1·50 m. in thickness. They yield a sort of coal similar to that of Blangy, but more lasting in the furnace.

The mines of Fins in the "Allier" produce a coal equal to that of St. Etienne for forges. Those of Commeny, in the same department, give a coal of very good quality, fit for the manufacture of coke for railways. Epinac furnishes, in the department of the Saône and Loire, a very fierce coal for furnaces; but which is more clinkery than that of the Loire.

Alais, Decazeville, and Carmaux are equally fertile in producing a coal which for many years has been consumed on the spot by the smelting works of the two first towns. Carmaux produces a good coal, sold in the neighbouring departments. The mines of Graissac add to the produce of Alais, La Grand' Combe, and Carmaux in the following proportions. In 1853, the Grand' Combe furnished 269,000 tons; in 1854 it yielded 277,121 tons; and in 1855, 359,896 tons were extracted, out of which 357,000 were sold. The progress is still more remarkable for the coke which is 37,000 tons in 1855, whereas 32,739 tons were only made in 1854, and 24,353 in 1853.

The importance of the Carmaux mines is well known: they furnish the coal for the principal foundries and smelting furnaces of Languedoc and for the haulage of the Orleans line as far as Tours. They can with difficulty furnish sufficient



DRINKING FOUNTAIN, IN THE RECREATION GROUNDS, NOTTINGHAM.*

FOUNTAIN IN THE RECREATION GROUNDS, NOTTINGHAM.

In the recreation grounds, at Nottingham, is now being erected a curator's lodge. At the base of the clock tower are to be placed two of the drinking-fountains, shown in our illustration, designed by Mr. C. H. Edwards, architect, under whom the works are being carried out. They are executed in Ransome's silicious stone, at a cost of eight guineas each. The height is 5 feet 6 inches. The ever supply might be dispensed with, the makers suggest, if another method of service were considered desirable.

THE HEALTH ON BOARD SHIPS AND STEAM-PACKETS.

We have already noticed some fatal cases of cholera on board Hamburg vessels in the Thames. Another death is reported to have taken place on board the *Moselle*, shortly after it had passed Gravesend. The person attacked was a merchant's wife, and the case proved fatal in twelve hours. She had suffered from choleric diarrhoea at Rostock; and, leaving that place in rather a weak state, went on board the steamer at Hamburg, on Friday night, at twelve o'clock; was attacked by cholera on Sunday morning at about twelve o'clock, and died soon after eleven o'clock at night. This death took place on August 28th. Some time ago, when referring to the deaths on ship-board which had occurred from this disease in the river, we expressed an opinion that in the case of cholera it did not necessarily depend upon infection for its spread and propagation. This has been borne out by what has taken place; for on

SARNIAN INTELLIGENCE.

Marine News.—The *Express* steamer struck on the rocks, on Tuesday morning, at a quarter to seven, on its way from Jersey to Guernsey. The vessel itself foundered, but all the passengers, to the number of 200, were happily saved.

The telegraph-wires from Jersey to Guernsey have broken, at four miles' distance from Jersey: the rest of the line is safe.

Building.—A new school has been erected in the parish of St. John: it was commenced through the zeal of its late lamented pastor. The foundation-stone of a Methodist New-Connection Chapel was laid a few weeks ago by the Rev. W. Cook, of London.

School Inspection.—Her Majesty's Inspector arrived on Monday, from Jersey, to inspect our schools.

board the vessels in which those cases have occurred the disease has not spread to others; and in those neighbourhoods in the metropolis and the suburbs in which cholera has appeared, it has not extended to the adjoining houses.

The Registrar-General remarks, that it would be satisfactory to know the real sanitary state of the steamers which ply between Hamburg and London. This is undoubtedly a most necessary inquiry.

Cholera has also appeared in some of the sailing vessels in the Thames; and it should not be forgotten that it has at early periods of its attacks shown itself in the old-fashioned vessels which still throng the river. Anything worse as respects sanitary arrangements than the sleeping-places of the sailors can scarcely be imagined: the space in all instances is quite insufficient. This, perhaps, in the ordinary sailing vessels, such as colliers, is not a matter which can be easily remedied. Methods of ventilation might be introduced with excellent effect, but in nine cases out of ten it is not thought of. To add to the evils of overcrowding, the bed-clothes are often not so clean as they ought to be, and dirty linen is in use during voyages of considerable length. Sometimes the places for the beds, which are about the size of coffins, are placed one above the other with a space barely large enough to allow each person to enter. Sometimes, in addition to these, the other small part of the space is occupied by hammocks closely hung together. "You cannot find fault with the drainage here," said a north country captain, showing the writer, with some complacency, the interior of the sailors' cabin. "What about the bilge-water," we remarked. "There's that, no doubt; but I never knew a craft of this kind to be without it, and plenty of it too: we cannot do without bilge-water." However this may be, such a collection is decidedly injurious, and adds much to the danger of the sailors' life. Even supposing that this putrid water cannot by any process be made more wholesome, the ill consequences might be mitigated by the better ventilation of the cabins. We have been in some of those interiors in which the atmosphere was so bad that it seemed wonderful that the men could exist for even a few hours. In storms it may be necessary to use such precautions as may cause it to be not easy to admit the air in sufficient quantities. These are, however, comparatively rare occasions; but, when this cause does not require it, seafarers are careless about ventilation. Great improvements have been made in the education and general attainments of the captains and mates of vessels of all classes, and some have set a worthy example. Others, who have been accustomed to the present state of things, have been careless on this point; but when the bad effects of this neglect have been pointed out, have set about improvements. Then it is often difficult to get the men to change their habits. However, we strongly urge both the owners and captains of vessels to consider this question, and see that what is necessary be done; and, in case of not having sufficient knowledge and sanitary arrangements, some competent adviser should be called in.

EDUCATIONAL WORKS.—PERSPECTIVE.*

JUDGING from the number of books on Perspective, added to the not inconsiderable number which were in existence previous to the recent steps in popular art-education, there must have been great want of clear and concise directions for the student in this hitherto much neglected element of the knowledge essential to acquirement of skill in drawing. Bulkiness and verbosity, intricacy in the diagrams, and general repulsiveness, have been characteristic of the majority of the works professing to explain a matter which can be very easily learnt when the apparatus of instruction is of the *vis a vis* kind, and is laid before one who is familiar with the architect's mode of representation by geometrical drawings. Both perspective included in the ordinary drawing, which means the method of representing objects as they appear, and the geometrical drawing, which represents objects as they are, should

be taught in schools; and there can be no question that a method of instruction on principles recognizing both these, would be the best means of overcoming the difficulty which perspective seems to occasion to master and to pupil. We have often put this view of the subject forward in noticing books for instruction in drawing; and we like Mr. Dicksee's book, because it is based on a similar idea of the requisites for tuition. Perhaps it would have been better had the author stated the nature of "the difference between geometrical and perspective representations" with greater perspicuity, and shown the characteristic of any single geometrical drawing, namely its incompleteness for representation at least of solids, or of more than *superficies*. Representation of "an object geometrically" would rather necessarily than "frequently require several diagrams." And to get rid of our objections, we may note there is little said by our author of shadows; that we doubt whether the student is not misdirected to the 60° as the angle to be taken in the field of view, except by way of compromise and convenience, since the observer in nature sees much less or more, actually, or according to his volition, that one or two of the illustrations which have been selected from other works are not accurate in their details as they should have been drawn; and that the usual form of stating the rules about parallel lines, and their representation as in oblique perspective, from which form the author does not sufficiently differ, creates confusion at the outset in the mind of any school-boy who has learnt that parallel lines are those, precisely, which tend to no point. The object is to show that lines not parallel to the transparent plane, which are parallel to one another in the object to be represented, appear in receding from the eye, to tend towards the same vanishing point, and should be so represented; and, in this case, additional words would have aided perspicuity, and not have produced the effect alluded to as characterizing many works on perspective. Generally, Mr. Dicksee's work is remarkable for its clearness, and for features which are the opposite of most previous elementary treatises; and it will be found of service as well to teachers as to their pupils.

The work is grounded upon the lectures and exercises of courses in which students of the British and Foreign School Society's College for Training Teachers, have been prepared for the Government Examinations. It is divided into two parts, theoretical and practical; and into chapters explanatory of the meaning and foundation of the theory of perspective, "of the organ and laws of vision," "of the visual rays and angle," and "the fundamental rules of perspective," and on the representation of different lines, superficies, and solids in parallel and angular perspective. There are questions at the end of each chapter, and numerous exercises.

The merit of the author's method is shown in his constant reference, numerically, to dimensions of the object to be represented, and of those of the distance from the spectator, and of the position of the horizontal line, and to a defined scale of representation. This, of course, is necessary in any system of teaching which recognizes the proper foundation—geometrical drawing. There are works on perspective, by Nicholson and others, which, as being designed primarily for architects, recognize the same principle for teaching, and for the practice, and which illustrate the application to a much greater number of forms or buildings; but few of these go to effect any reduction in the labour of practice necessary in all circumstances, or which on the whole are better calculated to serve the student even in drawing applied to architecture, than the plain, straightforward work which is before us. Perspective can be acquired from it; and how great is not that point of comparative merit?

The second title on our list is that of an Appendix to a work which has been some time before the public, and which, like the work already spoken of, recognizes that orthographic projection is "indispensable to the clear understanding of the theory of perspective." It therefore laid down primarily the principles of such projection. It also entered into the subject of representation on a cylindrical medium as used in panoramic views and other surfaces for representation, and into an analysis of the effect produced in the camera, as well as into the matter of shadows and of the reflection of objects in water. The few pages now added are designed chiefly to facilitate the representation in sketching, of groups of objects varying in their position relatively to the plane of the picture. The writer incidentally says:—"A rule held

level and parallel to a line passing through the two eyes, is very useful for marking off the apparent horizontal distances of the various points, also for determining the relative heights of the objects; but great care must be taken that it is held perfectly level, and as parallel as possible to the two eyes. I believe great fallacies have arisen respecting perspective from not attending carefully to this point." Our own practice is to make use of such aids as little as possible; and, having found out some lines of the building which mark a regular figure—a square, if possible,—to draw everything with reference to such leading and easily represented form.

The "memory-aids," in waistcoat-pocket form, by Mr. Tiffin, are good in idea, and could be usefully imitated for objects other than instruction in perspective. These "aids" also are good in the execution. Most of them suppose a certain amount of previous familiarity with perspective. Teachers cannot safely take it for granted that anything is known; and "projection" is a word requiring to be defined. We notice approvingly the author's statement that the field of view is to be left to the experience of the artist, though it may be better to limit it to 60 degrees, or at most 90 degrees, the angle of perfect vision being not more than one degree, whilst it is possible to obtain a *glimmering* of objects within a visual angle of nearly 170 degrees. Also we notice that some of the rules are very clearly defined, and all the more so because apparent exceptions to them are mentioned and explained: therefore, as "memory-aids," the little book will be found serviceable.

THREE STATUES.

WHEN viewing the statues raised to the memory of eminent men in various parts of the metropolis there is much to be noted which is incongruous and offensive to good taste. There is one statue, however, which never fails to induce feelings of pleasure: it is admirably executed, of good general design, and remarkable for the ability shown in introducing objects suitable to the subject. This work of art is the monument erected to the memory of Francis Duke of Bedford in 1809, in Bedford-square, and to which before now reference has been made in these pages.

The stone base of this memorial is simple and suitable, and is of sufficient size for the support of the superstructure. The inscription is on the front of the pedestal on which the principal figure stands. On the east side, in bold relief, in bronze, is a group of figures in the harvest field. The chief is a beautiful female with a sheaf of corn upon her head. This throws broad and picturesque shadows, and gives an idea of the summer heat. On the west side, on another panel, are the husbandmen in the field: one is drinking from a water-barrow; others are arranged in various attitudes. The oxen are in the yoke, and agricultural implements are ranged about. The cornice is also of bronze. A bull's head, evidently modelled with great care from nature, is at each corner. The space between is occupied with basso-reliefs of domestic animals—pigs, sheep, oxen, horses, &c. Above the bull's heads at each corner of the pedestal there are four figures representing the seasons of the year. Winter is represented in the form of a sturdy child seated on a withered stump. The wind blows the coarse robe in which the figure has been wrapped. It seems, clear, however, that the blast will not destroy this vigorous infant life.

The figure of spring is more fully developed. The face is looking upward, as if admiring the blue fresh sky and listening to the first sweet notes of the lark. A butterfly is resting on one hand. Summer reclines listlessly. The drapery is thrown aside. The figure is most expressive. Autumn is next, loaded with fruits and other produce. The ripe corn is strewn around; and it is worth while to observe how carefully these and the other objects have been copied from nature, and treated in an artistic manner. Between spring and summer a young lamb is well introduced, and above, on an unheaven stone, stands the bronze statue of the Duke, dressed in peer's robes. The right hand is resting on a plough, and in the left are some ears of corn. Famous for his encouragement of agriculture, this monument is most appropriate. The accessories, suggestive as they are, do not destroy the effect of the principal figure, which is evidently a good portrait. The costume is that in which he had often appeared when in life.

If we walk hence to the other statue which is in sight, in the next square, to the memory of Charles James Fox, the contrast is striking. Here, on a plain, unadorned base, sits, in solid massive-

* "The School Perspective: being a progressive Course of Instruction in Linear Perspective, both Theoretical and Practical. Specially designed for the use of Schools." By J. R. Dicksee, Principal Drawing Master to the City of London School; to the Normal College for Training Teachers of the British and Foreign School Society, &c. 8vo, pp. xiv, 79. Many cuts and 40 plates. London, 1859. Simpkin, Marshall, & Co.

"Perspective." By G. B. Moore, Teacher of Drawing, University College. Appendix, 1849. Application to Sketching. 8vo, pp. 8. London: Walton & Maberly.

"Memory-Aids for Drawing from Solids in Outline."

By W. F. Tiffin, of Salisbury. Demy 32mo, pp. 16. London, 1859. G. Rowney & Co. Salisbury: Brown & Co.

ness, the famous statesman, dressed in a Roman toga. What astonishment it would have created in the House of Commons if he had appeared in this disguise! It would have been considered as wonderful as if some celebrated Roman had appeared in the senate in the costume of an ancient Egyptian. With the exception of the unfit dress, the general outline of this memorial is good, and the base harmonizes well with the figure. The gardener has trained a figtree at the back of this statue with excellent effect.

Another statue not far distant from the last is that to the memory of Captain Coram, at the Foundling Hospital. The worthy founder of this institution appears in the same style of dress that he wore in life—the flowing wig, the long waistcoat, and broad-tailed open coat: in one hand he holds the charter of the hospital. The countenance is most animated and expressive, as if talking to Hogarth, or some others who worked with him in establishing this foundation.

No one will say that the costume of this statue is unpicturesque as treated; and the circumstance ought to encourage us at the present day boldly to delineate our great men in the form in which they appeared on the stage of life.

THE SPREAD OF FIRE.

A FIRE, not long ago, it will be remembered, deprived three persons suddenly of life. It appears that fire, through some unknown cause, spread rapidly throughout a house, the lower part of which was occupied as a store for the sale of unredreemed pledges, and the upper portion as a dwelling: the attic windows are hidden by a wall recently run up on this and three or four of the adjoining houses, for the purpose of making the houses look more imposing from the front. The accounts of the fire state that Mrs. Burton, the deceased, and other members of the family, were seen at the second-floor windows, imploring aid from those below. The fire was gaining a rapid ascendancy, and smoke issued from both the first and second floor windows before even a ladder could be obtained. Presently one was brought, and a policeman named Allscomb, 197 L, in spite of the smoke and danger, ascended to the first floor of the burning house. He heard the cries of the sufferers for assistance, and begged of them to come down; but this was impossible, for the staircase was in flames, and the unfortunate inmates, either fearful, or perhaps not able, to descend, went up to the front attic, probably hoping to escape over the parapet. The space between the front wall and the attic window was not more than 12 inches—a mere gutter, in fact—while the height of the division wall between the houses and the false front was at least 7 feet. Into this space, with the fire raging below, the whole family, in spite of the difficulty of exit through the attic window, appear to have crowded. The father and eldest son seem to have been able to climb over the parapet on one side, and the second son over that on the other side.

Every one knows that the staircases are the chief means of conducting the fire from floor to floor, and that, as the doors or windows of rooms are opened, the fire spreads in these directions. A non-professional correspondent inquires—"What would be the difference of the cost of introducing metal or stone steps into dwellings of this description, instead of wood?" In a previous volume the question was considered.

If stone or metal can cheaply or safely be used for this purpose, it would be the means of preventing a great number of fires which destroy life, and entirely destroy premises. If this is so, it ought to cause a reduction of the rate of insurance of this description of property; and the competition amongst the offices would soon cause offers to be made, which might be the means of saving in the end the extra expense. It has been suggested that in all houses escape from fire should be provided at the roof. Experience, however, shows that in those cases where narrow wooden staircases are provided, the opening of a trap-door would cause the flames to shoot rapidly upward. The introduction of iron or stone would in a great measure prevent this, provided that care was taken to close the doors of apartments while endeavouring to escape. In the instance of the fire now under consideration, it is said that if the inmates of the house had had the coolness and presence of mind to have waited in the upper room, with the door and window closed, until the arrival of the fire-escape, they could have been easily rescued. It is, however, not often that, in the panic of the alarm of fire in the night, persons have the presence of mind to calculate chances: it, therefore, becomes the more

desirable that measures should be taken to prevent the large number of deaths from fire which take place every year. Look in what direction you will in the metropolis, in the houses built but yesterday, and at others of more ancient date, and it will be found that it is not in one case in a thousand that any means of escape from such danger has been thought of.

The fire-escapes have been the means of doing much good, but their numbers require to be multiplied, and then a better understanding is needed between the conductors of them, the fire brigade and the police: in matters of life and death, these useful bodies should all work harmoniously together. It is to be feared that in some instances this is not the case at present.

The question of fires in the metropolis and other large towns is a matter which still requires investigation. We want to know how many deaths from fire are caused by suffocation, owing to the system, adopted by the police, of keeping doors, &c. closed in cases where it is known that persons are on the premises? how many lives in proportion have been saved by means of apertures in the roof and attic windows? To learn from the best authorities how many of those deaths are to be attributed to the present manner of construction now generally in use in dwellings, and what saving might be expected from the introduction of less inflammable materials for staircases? There are other considerations, such as the placing together stores liable to spontaneous combustion, naphtha, spirit of turpentine, saltpetre, and such like commodities in neighbourhoods; lucifer match manufactories and shops, firework makers and sellers' premises, &c. which are sources of mischief.

It would be also worth while to inquire to what extent of per-centage fires are to be attributed to the introduction of gas, and to gather knowledge of the nature of these accidents.

INSURANCE OF WORKMEN'S TOOLS FROM FIRE.

It is a matter of such common occurrence for the tools of carpenters and other workmen to be destroyed by fire, that it seems surprising that measures are not more frequently taken for their insurance against the loss. The destruction of a carpenter's tools is a loss so serious that it is not easily replaced; and it is often necessary for subscriptions to be opened to enable him to commence work. In a workshop where, say fifty men were at work, whose tools are worth 20*l.* each, if they could be insured in a lump, the amount per annum would form a mere trifle, a sum per head which could not be of the least consideration to each. The value of the tools of workmen in London, and throughout the country, which are exposed to risk, must be very great: it might, therefore, be well worth the while of some respectable insurance company to hold out inducements for insuring this description of property. Hundreds of cases might be mentioned in which the masters of cabinet-makers, pianoforte manufacturers, joiners, and other shops are either not insured at all, or else for any part of the value of the stock, &c.; and they cannot in consequence give assistance in the case of those accidents to the workman. Take one of these calamities which cause, sometimes, ruin and always trouble to families, which is of recent date. A fire occurred on the premises of a builder named White, at Hackney-wick, whereby the workshops were destroyed, and the entire stock of tools belonging to sixteen carpenters and joiners, in value between 60*l.* and 70*l.*—many of them being expensive articles. The property was uninsured, there being steam power therein, which was considered dangerous, and Mr. White, himself, is consequently a sufferer to the extent of 400*l.* The men have since that period been unemployed, not possessing a tool to work with, and great sympathy has been manifested on their behalf: they were certified by their master to be hardworking, steady, respectable men,—most of them with large families: in fact, no less than eighty-seven persons, men, women, and children, have been, and still are, suffering from the calamity. Mr. D'Eyncourt, the magistrate of the Clerkenwell Police Court, headed a subscription with 5*l.* for the re-purchase of tools, and others have kindly offered other sums; but, at the time of writing this, the sum collected was far below that required to place them in their former condition.

This and other similar circumstances give rise to some considerations. The report of this accident states that, owing to the introduction of steam machinery, the master was unable to insure the premises owing to the additional risk. There

is no doubt that, before long, steam power will be generally introduced into all the workshops of this description which are of any extent. In some of these places, and in other works in which tool-handles, &c. are turned, where only a few hands are employed, steam-engines of very small power have been introduced. In consequence of this general change, it becomes necessary that arrangements should be made for the construction of this description of property, in order that they may not be dangerous to surrounding houses, &c.; and so circumstanced, that the cost of insurance becomes so great that risk is preferred to the payment necessary to prevent it.

If, however, the risk is great, and the cost of insurance proportionally large, it is better to incur this than to feel so much anxiety and the evil consequence (to the workman) of such a great loss.

REDDITCH RAILWAY.

THIS railway, which was inspected by Captain Galton, on behalf of the Board of Trade, on the 8th instant, was opened for public traffic on Monday last. The day was made one of rejoicing by the inhabitants of Redditch, which town has, up to the present period, been cut off from all railway communication. We understand that Captain Galton reported most favourably as to the stability of the works, which have been completed within the period of fourteen months from the date of the Act authorizing the construction of the railway.

Mr. J. B. Burke is engineer to the company, and Mr. George Furness the contractor.

GAS.

THE Steyning Gas Company have nearly completed their works. Mr. Knapton, of York, put up the apparatus; Mr. Attwood, of Lewes, obtained the contract for the mains and service pipes; and Mr. C. Dalby, of Steyning, erected the buildings. The whole of the works were designed by Mr. Shepherd, of Horsham, under whose superintendence they have been erected. The terms proposed by the company are 10*s.* per 1,000 feet, with a promise of a reduction as soon as the profits realize 5*l.* per cent. to the shareholders. The company, we think, had better begin at a lower figure if they desire to realize even 5*l.* per cent.—"In Forbes," says the *Forbes Gazette*, "the price of gas is 12*s.* per 1,000 feet—a rate which was considered by a majority of the directors necessary to meet the expenses of a great outlay last year on the remodelling of the works, but a rate which is felt as an intolerable burden by many of the consumers. In self-defence several of them are obliged to abridge their consumption; and this heavy rate operates prejudicially towards the company, not only in this way, but by preventing an extension of the gas to new premises or to new consumers. We took the liberty of recommending at the time no departure from the old rate of 9*s.* per 1,000 feet; and stated that if the gas company were contented with a low percentage for their capital for a few years, the greatly extended consumption of gas at a cheap rate would soon bring up the dividends. We regret that, in their lack of faith, they chose the old and exploded policy of repression, instead of the liberal and enlightened one of expansion." The same paper makes a comparison of the charge per 1,000 feet of gas in Inverness and a number of towns enumerated. "In the Highland capital the charge is 8*s.* 4*d.*; in Liverpool, 3*s.* 9*d.*; Bristol, 3*s.* 9*d.*; Derby, 3*s.* 2*d.* to 4*s.*; Birmingham, 4*s.*; Bradford, 3*s.* to 4*s.*; Edinburgh, 5*s.* 10*d.*; Aberdeen, 5*s.* In several other towns, 5*s.* to 6*s.* for private consumers, and a reduction of nearly one-half for gas used in the public lamps, is stated as the average. The complaint is that the people of Inverness are made to pay extravagantly high for gas in consequence of the blunders of the company in the construction of their works and the dividends they exact on unskillful and lavish outlay on useless works and pipes."—The necessary works for lighting Mullingar with gas, according to the *Westmeath Guardian*, approach completion, under the superintendence of Mr. R. L. Johnson, *peat gas* patentee, and Mr. M. Dooner, contractors for the iron works and masonry, respectively. The chimney or funnel stands 65 feet high. All the main pipes are laid, many of the lamp-posts are erected, and the gasometer is being constructed.

WELL-BORING.—An artesian well, nearly 2,600 feet deep, has been sunk at a sugar refinery in St. Louis, Missouri, U.S.



LONDON STREET ARCHITECTURE: FRONT IN LITTLE BRITAIN.

MESSRS. JOHN YOUNG & SON, ARCHITECTS.

LONDON STREET ARCHITECTURE.

FRONT IN LITTLE BRITAIN.

THE accompanying engraving exhibits the elevation of a new warehouse and premises in Little Britain, which have been recently erected for Mr. Wellington Williams, merchant, of Gutter-lane, London. The front is faced with red bricks, excepting the lower story and ground-floor, where it is of Portland stone.

The arches of the several openings are supported with iron pillars, having carved and decorated capitals, and bases painted and bronzed; and the archivolt is formed with red and white bricks in alternate courses.

The building is seven stories in height, including basement and attic; and each story is denoted by a stone string course, projecting sufficiently to receive the bases of the iron pillars.

The pilasters forming the termini at each end have carved capitals with foliage, and the parapet is finished with a block cornice, terminating at each extremity with a large carved console and pineapple. The stone carving has been executed by Mr. J. W. Seale, of Lambeth, and exhibits a tasteful arrangement of foliage.

The building has been erected in a substantial manner by Messrs. Mansfield and Son, under the superintendence of Messrs. John Young and Son, architects.

ASSOCIATION OF FOREMEN ENGINEERS.

ON Saturday night last the seventh anniversary dinner of the above-named Society took place at their rooms in St. Swithin's-lane. About ninety members and friends sat down at seven o'clock to an ample repast. Mr. Joseph Newton and Mr. John Jones, president and secretary of the institution, occupied the chair and vice-chair on the occasion. The general loyal toasts followed; and some particular ones, such as "Our Employers," "Prosperity to the Association," "The Scientific Press," and others, were especially done honour to. The whole proceedings were conducted with perfect accord, and ended at twelve with the "National Anthem."

THE ARCHÆOLOGICAL EXHIBITION AT ABERDEEN.

AN archaeological exhibition has been held during the meeting of the British Association at Aberdeen. The collection commences with the early Pictish period, and comes thence down. It embraces specimens of implements of war and articles of domestic economy; of metallurgic manufacture; of bronzes; of iron ornaments. The show of Jacobite relics is extremely interesting. There are three or four portraits of Prince Charles Edward, and two of his father; three pictures of Flora Macdonald; one of the Prince's mother; one of the celebrated Jacobite, Mrs. Mackintosh, of Moy; and portraits of Lochiel, Lovat, and Kil-marnock. Among the manuscripts are several of the Pretender's letters, with letters of Lord George Murray, Lord Lovat, and others of the Prince's adherents.

The portrait department is well worthy of notice. It includes some portraits of Mary Queen of Scots, taken at different periods of her life. Near the Queen is a portrait of Lord Darnley, and the portrait of Mary Beaton, one of her "four Marys." Her son, King James, appears in several aspects; as does also Rizzio. There is a fine picture of Queen Mary's mother, Mary of Guise, the property of Sir M. Bruce, in which may be traced the family, or the French lineaments in a bolder form. Of the date of the Reformation are portraits of Knox, the Regent Murray, Wishart, and Cardinal Beaton. In one group is to be seen a series of fine Vandycks,—Charles I. his Queens Henrietta Maria, and their daughter, and one of the Dukes of Hamilton. The portrait of the Queen of Bohemia (by Honthorst) will be regarded with interest. There is, likewise, her son, the chivalrous Prince Rupert.* Near these is one of the most exquisite paintings in the rooms, viz. that of the Marquis of Montrose, by Honthorst. There is a portrait of Charles II. painted in Holland during his exile, and there are several pictures of his grandson, the Chevalier St. George. There are also some pictures of the time of Charles II., almost all the work of Sir Peter Lely. One of the finest of these is a portrait of the Countess of Southesk, famous in her time.

* How is it these same portraits, apparently, were in Newbury at the same time?—Ed.



FOUNTAIN ON THE PLACE DES QUINCONCES, BORDEAUX. --- M. AUGUST BARTHOLI, ARCHITECT AND SCULPTOR.

FOUNTAIN IN BORDEAUX, FRANCE.

IN 1858, our readers will remember, a competition was invited for the erection of a monumental fountain on the Place des Quinconces, in Bordeaux, a position which gave to artists many serious difficulties to be surmounted. Towards the end of the same year, a jury, composed of the mayor of the town; MM. Duban, architect; Lemaire, sculptor; C. Laboulay; Labrousse, architect; Lequesne, sculptor; Dreling, engineer; Thias, architect; and Oscar Gué, painter, awarded the prize of 2400*l.* to M. August Bartholi, sculptor, who was commissioned to carry out his design under the supervision of the architect of the town. The fountain is on three steps, on which rests a rectangular basin, each face of which presents, in its axis, a circular projection. On the front of each of these is applied the coat of arms of the town. In the centre a concave

pedestal encloses four basins, supported by small columns. Four tritons in bronze, upon marine horses, occupy the angles of this pedestal, which is surmounted by a group, also in bronze, representing the Ocean receiving tribute from the rivers of the Garonne and the Gironde.

NEWS FROM IRELAND.

Two schemes for connecting Derry with Letterkenny, by railway, are on foot, one proposing a line from the latter place to Johnston, there to join the Derry and Enniskillen Railway, at a cost of 100,000*l.* for 14½ miles in length; another to extend the Derry and Lough Swilly line to Letterkenny.

A large conventual building has been erected at Enniskillen. It is three stories high, and immediately adjoining are two-story school-houses, con-

taining apartments 84 feet by 24 feet, in which female children are instructed.

The interior of the new parochial (R.C.) church of St. James, at Dublin, is nearly completed, and a grand stained glass oriel window, by Messrs. O'Connor, of London, has been erected. The design illustrates the birth, death, and majesty of the Saviour; and forty-three figures are introduced. The window is 30 feet in height and 14 in width, divided into five lights with Geometrical tracery.

A new church has just been erected at Clow-roche, Wexford. The protracted disputes between the two principal railway companies in Ireland, the Great Southern and Western, and Midland Great Western, are in course of amicable adjustment, preliminaries having been agreed on, and the details of a permanent arrangement referred to arbitration.

NATIONAL EXCHANGES. THE SPREAD OF COMFORTS.

THE intermingling of various nations, occasioned in a great measure by the facility of transit, is causing wonderful changes in the conditions of the nations of the earth. By this means large numbers of the British people have been exported, taking with them our language, manners, and customs to distant parts: it has at the same time been the means of importing other languages and ideas. The fine and industrial arts, the literature, the natural productions, &c. are in like manner exchanged, and the nations are becoming rich in the elegancies, luxuries, comforts, and necessities of life.

The English and the Scotch primrose and the daisy have been carried, with that care which only feelings of nationality can induce, over the wide ocean, and hailed with delight by those dwelling 10,000 miles away. Other flowers, fruits, vegetables, and animals of various kinds, have been also, during the last half century, sent from England to foreign parts; and it is remarkable, in several instances, that roots, &c. which have in the first instance been brought from abroad, have, after years of careful and successful cultivation, been again exported to the same locality from which they were brought. The Flanders horse—the war-horse, used in the days of chivalry in England,—has in this fertile land grown to increased size and strength, and is now sent to Flanders for the improvement of the breed. The English racehorse and hunter can rival the speed and bottom of the swiftest Arabian. In France, Germany, Turkey, and other countries, and the colonies, these valuable animals are eagerly sought after.

The skylark and other English song birds have been taken to climes where their notes had not been before heard. Game, or animals hunted for sport at home, have been made to emigrate, and very lately the Royal Society of Tasmania has unanimously agreed to give 500*l.* to any person who will introduce five pairs of live full-grown salmon into the colony. They are also prepared to give at the rate of 2*l.* per pair for salmon smelts, and 1*l.* per pair for salmon fry. Beyond this, the Government of Tasmania is prepared to expend several hundreds of pounds in forming ponds and channels for the reception of this famous fish.

BRITISH ASSOCIATION.

THE peripatetic philosophers have just held a very successful meeting at Aberdeen, under the presidency of the Prince Consort, who delivered an able address, which lasted nearly an hour in the delivery. After a general prelude, the prince remarked on the special mental facilities brought into play by such pursuits as those of men of science.

To know, he continued, is the object of all science; and all special knowledge, if brought to our consciousness in its separate distinctiveness from, and yet in its recognized relation to, the totality of our knowledge, is scientific knowledge. We require, then, for science—that is to say, for the acquisition of scientific knowledge—those two activities of our mind which are necessary for the acquisition of any knowledge—analysis and synthesis; the first, to dissect and reduce into its component parts the object to be investigated, and to render an accurate account to ourselves of the nature and qualities of these parts by observation; the second, to recombine the observed and understood parts into a unity in our consciousness, exactly answering to the object of our investigation. The labours of the man of science are therefore at once the most humble and loftiest which man can undertake. He only does what every little child does upon its first awakening into life, and must do every moment of its existence; and yet he aims at the gradual approximation to divine truth itself. If, then, there exists no difference between the work of the man of science and that of the merest child, what constitutes the distinction? Merely the conscious self-determination. The child observes what accident brings before it, and unconsciously forms its notion of it: the so-called practical man observes what his special work forces upon him, and he forms his notions upon it with reference to this particular work. The man of science observes what he intends to observe, and knows why he intends it.

In remarking on the objects and purposes which the Association had more especially in view, the speaker said:—

The Association brings to bear the combined knowledge and experience of the scientific men,

not only of this but other countries, on the discovery of that method which, while it economizes time and labour, promises the most accurate results. The method to which, after careful examination, the palm has been awarded, is then placed at the free disposal and use of all scientific investigators. The Association also issues, where practicable, printed forms, merely requiring the different heads to be filled up, which, by their uniformity, become an important means for assisting the subsequent reduction of the observations for the abstraction of the laws which they may indicate. At the same time most searching tests and inquiries are constantly carried on in the Observatory at Kew, given to the Association by her Majesty, the object of which is practically to test the relative value of different methods and instruments, and to guide the constantly progressive improvements in the construction of the latter. The establishment at Kew has undertaken the further important service of verifying and correcting to a fixed standard the instruments of any maker, to enable observations made with them to be reduced to the same numerical expression.

To some of the papers read we may return on a future occasion.

ENGINEERING WORKS ABROAD.

THE important works of the reconstruction of the Terminus of the Northern Railway of France, in Paris, are to be forthwith commenced. Already some preliminary works have been constructed, others being in course of completion. The new Vincennes Railway Station is also nearly finished: it is in the Henry IV. style of architecture, built of brick, with stone dressings. The courtyard is being paved, the various offices and staircases placed, and the main building roofed in.

The construction of the piers of the railway and passenger bridge over the Rhine between Strasbourg and Kehl progresses wonderfully. For some time past the "caissons" forming the great pier on the French side have been filled with concrete; the tubes have been removed, and the cavities also filled with the same material; the foundations are thus a completely compact mass, upon which the masonry has been carried up above water-mark, and is now receiving the first string course of cut granite. The upper part of the pier will be carried on as in ordinary cases of masonry, and so will present nothing remarkable as to novelty of construction. The work-sheds and steam-engines have been removed to other portions of the works where they may be required, and there only remain the necessary hoisting cranes for the stone blocks for the piers.

The excavation for the pier on the Baden side is carried on more rapidly than it was for the grand pier on the French side. The experience acquired during the operations of the latter was brought to bear upon the Baden pier, which is being sunk in more favourable ground. There being only 5 metres remaining to be excavated, unless some unforeseen accident occur, the full depth will be acquired by the 15th of this month.

The masonry raised upon the "caissons" of the French pier was surrounded by an immensely strong mass of timber framework, and the interior only consisted of concrete. On the new principal pier on the Baden side, the timber has been replaced by the use of roughly-hewn sandstone blocks piled around the concrete. The two intermediate piers are also in course of execution. That nearest to the French side has had its works of defence, against the action of the river, for some time finished, and at present the iron "caisson" is being put together, in which the men will work for the excavation, and which will form the base of the pier. They expect to commence the sinking about the 1st October next, and to finish in a month. For the second and last intermediate pier, all the piles are being driven by a considerable force of men and machinery, and so rapid is the progress, that the sinking of the pier may be expected to commence at the beginning of December next, to be completed also in a month. Then will have been completed the most difficult portion, in every respect, of an undertaking like that of throwing a railway bridge over a river as treacherous and capricious as the Rhine. The Government of Baden, in the meanwhile, has not been idle. It is well known that they are to place the superstructure of the ironwork of the two swing bridges (one on each bank of the Rhine), and other accessories. All the parts which enter into the Baden portion of the construction consist of every possible species of ironwork. Orders have been given to the several works, and

they will be ready to put in place when required. The iron works of Graffenstaden, which furnished the caissons of the piers and the tubes, are also to supply the swing bridges.

According to the *Corriere Mercantile*, of Genoa, that portion of the Sardinian lines which joins Stradella with Castel-San-Giovanni will be finished in a few days. In consequence, the junction with the line from Plaisance to Bologna will not require much more time to finish it, especially as the bridge over the Trebbia can serve for the passage of a railway.

THE NEW MUSIC HALL, ABERDEEN.

ACCORDING to the *Aberdeen Journal*, the new Music Hall, in which the meetings of the British Association have been held, may now be said to be completed. Its erection was begun in the month of May, 1858, after a design by Mr. James Matthews, architect.

The extreme length of the hall is 150 feet, and it is 68 feet wide, and 50 feet high. The orchestra is about 50 feet deep, and will accommodate about 300 vocal and instrumental performers. Galleries run along the two sides and the east end of the hall over the entrance lobby from Silver-street. This lobby is 26½ feet by 14½ feet, and a granite stair leads from each side of it to the lobbies.

The walls above the galleries are divided into compartments by coupled pilasters, having architrave, frieze, and cornice, with rich medallions, &c. at the height of 40 feet from the floor. A part of the ceiling is flat, but divided into thin compartments, formed into elliptical panels. The sides and ends of the ceiling are covered down to the top of the principal cornice, and are divided by ribs rising from the pilasters.

The main entrances are from Union-street, by the handsome corridor of the original building; and from Silver-street, by the lobby already mentioned. There is a separate entrance from Golden-square for the performers, leading to five retiring-rooms for them, three of which, small, will be appropriated to soloists, and two, large, to choristers.

The hall is lighted by three sun-lights in the ceiling, the centre one having 288 burners, and the others 144 each. By means of these the whole hall is said to be lighted, and there is a total absence of glare, as well as of excessive heat, which generally accompanies the distribution of a number of gaseliers through a building. The sun-lights are placed in triple cones, which serve the purpose at once of preventing the heat of the gas from injuring the ceiling, and of promoting the ventilation of the building, the rarification by the heat of the gas causing a rapid current of air to pass through the cones. The heated air further finds egress through perforations in the plaster of the roof, which are so contrived as to add to the decoration of the ceiling. The fresh air is supplied at the floor of the hall by means of gratings, which communicate by flues with the outside; and this air can, when required, be heated by being made to pass over a series of hot-water pipes running round the hall below the floor.

THE "BUILDER'S" LAW NOTES.

Shares in a Company.—A shareholder of a company, the shares of which passed by delivery, desiring to get rid of his responsibility, sold his shares at a nominal price to his clerk a few days before an order was made for the winding up of the company. It was held that as the sale was absolute and unconditional, the transfer was valid, and the vendor's name was removed from the list of contributors.—*The Mexican Company v. De Pass.*

Charity Funds.—When a testator created four different charities, and vested the charity property in the same trustees, those charities were held to be entirely distinct, and costs incurred in proceedings relating to one charity were declared not payable out of the property of the others. Where part of charity property is held to be forfeited by reason of a breach of condition by the trustees, and they afterwards appear upon an appeal from that decision, they are not entitled to their costs; the only fund out of which such costs would be payable being no longer in their possession.—*The Attorney-General v. Granger.*

Company.—Liability of Shareholder.—The secretary of a joint-stock company told a medical man that he might be appointed medical officer of the company if he took a certain number of shares, and that only two medical officers would be appointed. He took the shares and signed the deed, but he afterwards discovered that four medical men were appointed, and that it was not

necessary for the office (though he had been told it was) that he should hold so many shares. He resigned office, and claimed not to be a shareholder. The shares were declared forfeited for non-payment of calls, but two years afterwards, when the company was being wound up, he was held liable, and the forfeiture was declared invalid.—*Re Home Counties v. General Life Assurance Company.*

Wording of an Order.—An order was given to send 2,300 stones of wool—"100 stones more or less." 2,505 stones were sent, and refused for excess. The Court of Queen's bench decided that it was quite a question for a jury to say if the excess was so great as to entitle the defendant to reject the wool altogether.—*Macdonald v. Longbottom.*

SCHOOL-BUILDING NEWS.

Leicester.—The congregation in connection with a Unitarian place of worship here has just made a considerable addition to its schools, at an expense of 1,000*l*. The new two-story building, 90 feet by 30 feet, affords accommodation in each story for 500 scholars, exclusive of teachers. The portion of the old school retained is converted into class-rooms. The plan is in the form of a T, and the elevation, the old portion being altered and improved, is very pleasing. The style, though not pure, from the necessary restrictions consequent upon using up old windows and materials, is Early English, with brick and timber porches, and the skyline of the roof is diversified with a turret, answering the purpose of a ventilator. The new buildings and alterations have been erected by Messrs. T. Coltman & Son, builders, of Leicester, from the designs and under the supervision of Mr. Coltman, jun.

Harley.—A new school has been erected at the village of Harley, about ten miles from Shrewsbury, and near Wenlock. The erection of the school and teacher's residence was entrusted to Messrs. Nevett, of Ironbridge, and the designs were furnished by Mr. Samuel Nevett. It is Early English in its style, without ornament, the dressings being of Broseley brick. The school-room is 34 feet long by 17 feet 6 inches wide, with an open-timbered roof of stained deal—the forms and desks being of the same kind of wood. It is intended as a mixed school for about 80 boys and girls. The whole of the roofs are covered with Broseley tile, the manufacture of Messrs. Burton. The playground is enclosed by a boundary wall, built of stone. The entire cost is upwards of 500*l*.

Nottingham.—A new school, the foundation-stone of which was laid last November, by the Right Hon. J. E. Denison, was opened here last Monday. It comprises boys', girls', and infants' school-rooms, two class-rooms, and a library, and is built from the designs of Mr. Arthur Wilson, of Nottingham; the contractors being Mr. Thos. Garland, of Nottingham, and Mr. William Lee, of Retford. The schools are built of red brick, with Bath stone dressings, and are in the Decorated style of Gothic architecture. The rooms are in the shape of the letter L, and are 66 feet long one way, and 44 feet the other, by 20 feet wide. The height of the walls is 30 feet to the bottom of the eaves-course; the lower room is 13 feet high, and the upper one 28 feet from the floor to the ridge of the roof, the timbers of which are left exposed, and ceiled between. The upper story is broken up into three gables on the front, one of which is filled by a large five-light window, above which is a circular ventilator, the whole being surmounted by a copper-gilt ornament. The centre gable is filled by a flat-headed five-light window, over which is a circular window, with two richly-carved spandrels underneath. The space between the gables is lighted by flat-headed three-light windows, with ogee tracery, and the eaves-course is enriched with ball-flowers. The lower story is lighted on the front by two complets of two-lights each, and two three-light windows, all under flat arches, and filled with tracery. There is a square tower at one end, in the angle of which is a richly-carved canopied niche for a public drinking-fountain, the water flowing through a dolphin's head. An ornamental scroll runs round outside the canopy, bearing the inscription,—"Whosoever will, let him take of the water of life freely." The top story of the tower contains a steel bell, and is surmounted by a deeply-moulded cornice enriched with flowers, and a gurgyle at each angle; and above this rises a tall wooden spire, covered with bands of blue and green slates alternately. There is no clock at present, but subscriptions are being raised for one. The cost of the whole building is about 1,600*l*.

Sellyoak.—The new schools in connection with the church about to be erected here have already been commenced. Mr. Edward Holmes is the architect. The estimate of Mr. Briggs, 1,650*l*, has been accepted.

PROVINCIAL NEWS.

Shepton Mallet.—The water-works in this town, according to the *Sherborne Journal*, are progressing. The whole of the pipes are laid down from the spring to the tank, and from thence nearly through the town, leading to the railway station. Nearly the whole of the better class of houses have had, or are having, the pipes laid to them—many in the bed-rooms.

Leicester.—The new Freemasons' Hall, in Halford-street, has been inaugurated with the usual ceremonies.

Loughborough.—The new Police Station works are progressing. The foundations are now completed, and the structures are beginning to appear above ground. One part of the building is now being roofed in. There are between thirty and forty men at work, and the whole is to be finished by March 1891.

York.—The inhabitants of the north-eastern and south-western districts of the city, are congratulated by the local *Herald* on the probability that ere long a second bridge will be thrown over the river Ouse to unite these districts. The bridge will be at Lendal, and will cost 18,800*l*. The committee of the council appointed to consider the subject, recommended a lattice girder bridge of 175 feet 6 inches span, and 40 feet in width, as the strongest and best adapted for the purpose. The estimated cost of the iron work is 6,950*l*; masonry and scaffolding, 7,500*l*; roadway, 350*l*; and approaches, 4,000*l*. The money is recommended to be provided by borrowing 20,000*l*, on the city rates, repayable in thirty-two years, with interest, so that the citizens will not be taxed, the receipts on traffic being designed to meet the cost.

Glasgow.—Her Majesty has consented to open the new water-works at Loch Katrine, on the 14th of next month.

Grangemouth.—The new Canal Basin, which was contracted for about Midsummer, 1858, has just been brought to a conclusion. The canal company have been at the expense of making it. The alterations now being made on the locks at the basin, by widening them so as to admit the largest ships into the timber basin, are also begun, and will shortly be finished.

CHURCH-BUILDING NEWS.

Framlingham Pigot.—The church here has been rebuilt, at a cost of about 5,000*l*, and reopened. The style is Early Decorated. The church which is faced with flint, with Ancaster stone dressings, consists of a nave and chancel, with projecting buttresses, and a steeple at the north-west end. It is lighted at the west end by a stained-glass window (made by Messrs. J. and J. King, of Norwich), and by three windows on each side, with a small gablet at the end of the nave over the chancel, and a large window in the chancel at the west end. There are three entrances, the principal one being at the west-end door. The pillars of the western door are composed of serpentine marble from Cornwall, and over the centre of the archway is carved a figure of St. Andrew, the patron saint of the church, with two angels holding the crown of glory over his head, and another above bearing the St. Andrew's cross, the emblem of his martyrdom, while at each side an angel is bending in adoration. The figures of this porch were carved by Mr. Samuel Ruddock, of London. At the south-west, there is another porch, which projects some distance, and is arcaded, and contains an elaborate doorway. There is also a small porch on the same side of the building leading into the chancel, on the other side of which is a small vestry. The doors, like all the wood fittings of the church, are made of solid oak, with large iron hinges. The tower, which is 112 feet high, and surmounted by a foliated cross of gilt copper, is built of Ketton rag and Ancaster stone. It is square to the height of 58 feet, with angle buttresses, and a staircase turret leading to the clock chamber. Above this is a lantern 14 feet high, on which the spire ascends to a height of 36 feet. The seats are all carved, and there are some carved stalls, intended for the choristers, on each side of the west door. On the north side of the church near the west door is situated the organ gallery. The rain is carried off the roof by square iron gutters, with square stack pipes. The church will accommodate

300 persons, being twice the capacity of the old structure. A new organ is to be built for it by Holditch, under the superintendence of Dr. Buck. A school-room is also being erected near the church, at the expense of Mr. Christie, who re-edified the church. It will be a red brick building, with stone dressings in the same style of architecture as the church, and will accommodate 150 children.

North Walsham.—The south porch of the parish church of this town has been restored, according to the *Norfolk Chronicle*. As much of its original fabric has been retained as possible. The flint-work is arranged in window pattern, together with a battlemented or crenellated banding; and the intermixture of flint with freestone gives relief. The cost has been 217*l*. The work has been carried out under the superintendence of Mr. R. Kitten, of Norwich, architect; Mr. Robinson Cornish, of North Walsham, being the contractor, and Mr. John Freeman, of the same place, the stonemason.

Loddington (Northamptonshire).—Some few restorations have been recently effected at the parish church of Loddington. The funds at the disposal of the parish have only allowed of the restoration of the interior and of the roofs. The chancel roof is new: it was also necessary to take down the north wall, which was in a very bad state. The other roofs have been restored in their original form, and the nave, aisle and chapel were re-roofed in oak after the model of the old Perpendicular seating: the chancel stalls are also new. All the stonework has been cleared of whitewash and the walls re-stuccoed. The works have been executed by Messrs. J. & G. Lilley, builders, Measham, Atherstone, under the direction of Mr. J. H. Christian, London.

Blymhill (near Shifnal).—The Church of St. Mary, Blymhill, in the diocese of Lichfield, was re-opened, after restoration, on the 8th instant. The greater portion of the church has been rebuilt, and a new aisle and chancel aisle added on the north. The old church, of which little but the tower and a portion of the chancel had survived the alterations of the last century, is of the Early Decorated style, and the new work is in keeping with the old. The roof is new, and of oak, from the estate of the Earl of Bradford, the lord of the manor, and patron of the living. The seats and fittings are also of British oak, and the pulpit and font carved in yellow Mansfield Woodhouse stone, enriched with shafts of Cornish Serpentine, which are also introduced into other parts of the church. A screen of iron and brass, worked by Mr. Leaver, of Maidenhead, divides the choir from the chancel aisle. The church has been rebuilt by Mr. Gates, of Shifnal, after a design by Mr. G. E. Street. On the north side of the chancel, a window, by Hardman, has been placed, representing the Annunciation of the Virgin Mary, and the Presentation of Christ in the Temple. The remainder of the church is filled with stained glass windows, by Mr. Wailes; the subject of the windows in the new aisle being chiefly taken from scenes in the life of the Virgin Mary.

Stroud.—At a vestry meeting held to consider the question of rebuilding or repairing the parish church, an official report as to the state of the church, furnished by Mr. Phillips, of Swindon, was presented, stating that the building was very much out of repair, the floor damp, some of the galleries unsafe, and other portions dilapidated. The cost of putting it into proper repair was estimated at 1,300*l*; and it was stated that a new church might be built on the present foundations for a sum of 6,500*l*, or 7,000*l*. The Rev. T. H. Tarlton, who presided, said that an eminent architect who had looked over the church had told him that the cost of efficiently repairing would be nearly as much as rebuilding, and that a handsome new structure might be raised on the foundations for 4,000*l*. A series of resolutions were passed, affirming the expediency of rebuilding the church, and appointing a large committee to carry this into effect, by procuring plans and estimates.

Newcastle-upon-Tyne.—The chapel of the Virgin Mary Hospital, Ryehill, has been opened. The building, says a correspondent of the *Gateshead Observer*, is of the Decorated style of architecture, and consists of nave, 61 feet 6 inches, by 25 feet; with clerestory; side aisle, 57 feet by 8 feet; chancel, 31 feet 6 inches, by 20 feet; north and south transept, 20 feet by 18 feet; with a tower springing out of the centre, 25 feet square, 66 feet high; spire (with pinnacles), 103 feet 7 inches to top of stonework; and vane, 7 feet 11 inches. The organ chamber measures 13 feet by 9 feet; porch, 12 feet by 8 feet. The stalls in the chancel are fitted up with oak; also the

reading-desk and communion-table. The roof and sittings are stained. The pulpit is of Caen stone, with marble columns. The floors are laid with Maw & Co.'s tiles. The masons were Messrs. Iverson & Welton; carpenter, Mr. G. Bell; painter, Mr. Salmon; carver, Mr. Beall. Mr. Henry Leighton was clerk of the works. The great east window (five lights) is a fac-simile of the principal window of the old structure. Mr. John Green, of Newcastle, was the architect.

Hawick.—At a meeting of heritors the estimates for building Wilton parish church were examined. Mr. Tait, Hawick, is the successful contractor. His estimate was 2,959*l.* The highest estimate was a little above 3,100*l.* The church is to be built from a plan drawn by Mr. Thomson, architect, London. A considerable part of the stones required for the ornamental parts of the building are to be brought from France.

STAINED GLASS.

Gloucester.—The west window of the cathedral, which has been restored and filled with painted glass by the Rev. T. Murray Browne, one of the honorary canons and vicar of Standish, as a memorial of the late bishop of the diocese, has now been completed. The design, says the local *Chronicle*, describing it, has been suggested by its position and architectural character. Placed over the great door, there is appropriateness in an illustration of the "Doctrine of Baptism," through which our Lord has ordained our entrance into His church: and again, the general construction of the stonework to form tripartite divisions, transversely by the transoms, and lengthwise by the larger mullions, and again, these last into triplets by the smaller mullions, would be naturally directed to the arrangement of subjects; and this has been carried out by placing three types of baptism from the Old Testament, each in a triplet below the lower transom; then the representation of our Lord's Baptism between the transoms, and the three notable baptisms recorded in the Acts of the Apostles, above the upper transom. Hence the south triplet, below the lower transom, is devoted to the subject of Noah and the Ark, made significant by showing the Eight Souls saved by Water. In the adjoining triplet is placed a picture of the deliverance of the Israelites by the passage through the Red Sea. In the north triplet is depicted the washing of Naaman the Syrian, in Jordan, strikingly conspicuous by the figure of "the leper as white as snow." The space between the transoms, equalling that below or above, required double designs for each of its triplets, while those more particularly portraying the Baptism of our Lord, could only occupy the centre of the whole window. Thus, again passing from the south side, the first subject in the lower portion of the triplets is the Annunciation to the Shepherds; the adjoining subject the Birth of our Lord in the Stable; and next the Adoration of the Magi. In the upper portions of the triplets we have, on the south, the Presentation of Christ in the Temple. In the north is shown the Preaching of John the Baptist. In the centre of the window is placed conspicuously the Baptism of our Lord. Above the upper transom, again passing from the south, the first triplet contains the Baptism of St. Paul. Next to this is represented the Baptism of Cornelius. In the north triplet is a picture of the Baptism of the Jailor at Philippi. In the tracery forming the top of the window are angels holding harps, and in the smaller divisions the emblems of the Trinity. The whole design has been executed by Mr. Wailes, of Newcastle. It is stated that memorial windows of Bishop Hooper and the Rev. Robert Raikes, one of the chief founders of Sunday schools, are to be placed in the cathedral. It is to be hoped, also, that the dean and chapter may be induced to crown the restorations by replacing the glass of the 'great east window. Three or four glass-stainers, it is said, have been applied to for estimates and designs.

Chester.—A few weeks ago, says the *Chester Chronicle*, we stated that the window at the east end of the Lady Chapel would be removed, and traces of the period of the building inserted. The work has commenced, and in a few weeks we hope to see the window completed. The masonry is by Mr. Haswell; the stained glass by Mr. Wailes.

Easingwold.—Some time ago, a committee of the inhabitants of Easingwold was formed for the purpose of raising subscriptions towards the purchase of a stained-glass window, in memory of Eleanor Westernman, who, in the year 1784, founded a free school at Easingwold. A liberal sum was contributed, and the work was placed in the hands of Mr. J. W. Knowles, of York, glass-stainer. The window has been completed, and is

now being put into the east end of the south aisle of the church. The window consists of two lights, in which are representations of Christ disputing with the Doctors in the Temple, and Christ Blessing little Children. The tracery pieces are filled with angels bearing scrolls, on which are the inscriptions.

St. Sepulchre's Church, London.—A correspondent on this matter, mentioned in our last, asserts that the competition was decided upon the proper ground, viz. selection of design. He says:—"The three designs were first submitted to the judgment of a few gentlemen forming 'the Parish Estates Committee,' who recommended the adoption of the design by Messrs. O'Connor, to the vestry. This latter large body of seventy or eighty persons, very few of whom can know anything of the subject, and are quite incompetent to deal fairly with a question of this kind, were convened to decide upon the matter by a printed notice, worded according to the three tenders of price only. These judges (?) decided in so incredibly short a period, that even if they desired it, they could have had no possible time to make it an artistic question; but throwing aside the recommendation of the Parish Estates Committee, to adopt the design of Messrs. O'Connor at a cost of 400*l.* they voted and decided for that of Messrs. Lavers & Barrard, who sent the lowest estimate, 300*l.* Under these circumstances, it should be known that it is no matter of discredit to the artistic merits of the unsuccessful competitors."

THE DRINKING-FOUNTAIN MOVEMENT.

At Redhill the South-Eastern Railway Company have recently placed a fountain at each side of the station. A lion's head and an iron ladle are the leading features of each of them.

At Newark it has been resolved to erect a fountain at the corner of the cattle-market. It will have a trough attached for cattle and dogs. The local water company are to supply the water gratis.

The Liverpool "Dock Board" have sanctioned the erection of thirty-three drinking-fountains at a cost of 6*l.* 10*s.* each, to be placed at various sites along the range of docks. The cost of water, maintenance, &c. is estimated at 50*l.* It would be well were the London Dock Companies to follow such an example.

The first Sheffield fountain has had its foundation-stone laid by Mr. Horace Mayhew, of London. The fountain is being erected by Mr. H. Levy, of the firm of Levy and Son, clothiers, &c.; a central situation near the gates of the parish churchyard, at the top of High-street, having been selected for the site. The structure, says the *Independent*, will be 4 feet 6 inches square, both at the base and top, and about 8 feet 9 inches high, having base, pilasters, and capital in the Italian style, and will be surmounted by a figure of "Rebecca at the well," about 2 feet 3 inches high, making the entire height to the head of the figure 12 feet. In the front of the structure there will be a deep niche, on the ledge at the bottom of which will stand a basin, with marble top, and ornamented externally with wreaths of the water-lily. The water will fall into the basin from a shell 15 or 16 inches above it, and beside the basin will stand two goblets for use in drinking. Near the ground will be a second basin for the especial benefit of the canine race. The structure will be built of brick, and will be covered with cement! It appears to be not quite decided at present of what the figure and other ornamental parts are to be composed, and consequently no accurate estimate can be given of the cost, which, however, is not expected to exceed 20*l.* or 30*l.* The design is by Mr. T. F. Coshin. The local Waterworks Company have agreed to supply the proposed public fountains with water at a charge of 4*d.* per 1,000 gallons, and the town trustees, it is expected, will pay for the water. Mr. John Brown has offered to erect two fountains, and for the present supply them with water at his own expense, one near the Twelve o'Clock, and the other at the top of Furnival-street. Mr. Nadin has agreed to erect one in his neighbourhood. The committee has selected the following additional sites for drinking-fountains:—Silver-street head; opposite the Savings Bank; Norfolk-street; Paradise-square; and Furnace-hill.

The mayor of Altrincham is about to erect a fountain in that town, the local Board of Health paying for the water.

At Scarborough a drinking-fountain has just been erected near the Cliff-bridge, through the liberality of Mr. H. Walker. It is of three stages. The lower one has at the base water for the refreshment of dogs, &c.; and consists of two

plinths. The upper one is moulded and made into a large trough for water. Upon this plinth is a square pier chamfered at the right angles with ornamental terminations, and on each face of the pier is attached a shaft of polished red granite, with enriched capitals, representing stalks and water-plants. On the abaci of these capitals, which are continued round the piers to which they are attached, are the basins for the water. The second has a niche on each face, formed by four small columns with enriched capitals, on the four recesses of which, corresponding to the face of the pier below, are carved four heads, representing water nymphs, encircled with the lily and leaves. The third is a column with a foliated capital, surmounted by a lamp. It has been designed and executed by Messrs. Dennis Lee and Welsh, of Leeds.

At Edinburgh, a subscription of 50*l.* has been offered for the erection of another fountain in Prince's-street Gardens (east end), provided an equal sum be subscribed by others.

The Hawick town council have sunk a pump in the Sandbed, for behoof of the inhabitants of that part of their town.

THE CARBON GAS FIRE.

SEVERAL patents have been taken out for gas fires in open grates, the patent being for the material used, such as "pumice," "asbestos," and other material, the use of which is very limited, in consequence of the expense. Finding this to be the case, and yet anxious to introduce gas fires, I have been trying experiments with material of various kinds, and have succeeded in producing a gas fire superior, I believe, to any yet introduced. I have taken out no patent for it, that all gas companies—whose interest it is to introduce gas fires to the public—may do so at the cheapest possible rate. The material I find best suited for use is the carbon—removed by the process called scurfing—from gas retorts. It should be broken up in lumps of about 2½ or 3 inches, and piled in the grate by hand, not thrown on in a mass. I find this material absorbs the gas, and causes a perfect combustion, making an excellent fire, and throwing out a great heat with a less consumption of gas than any other material. Gas companies can sell the carbon at 2*s.* 6*d.* per bushel, ready broken, so that the cost of material will be trifling, one bushel lasting from three to six months, according to the heat required.

MAGNUS OHREN, A.I.C.E.

CORRESPONDENCE AS TO THE PROPOSED FOREIGN OFFICE.

SIR,—It seems to me that the position taken by our profession on the question of the new Foreign Office is scarcely so dignified as it should be. I believe that no other artists, no other professional men, would ever think of such a thing as going in bodies to secure the employment or the rejection of any one of their brethren. Surely, it would be more seemly to allow each other the same immunity which is enjoyed by other arts and professions. When a commission has been given to Mr. Dyce or Mr. Herbert to paint a fresco, we do not hear anything of another body of painters, representing the landscape painters, or the portrait painters, going to represent their own claims, or the claims of any one of them, to oust their brother from his commission. Nor do we hear of anything of the same kind among professional men. If a man has won his position, the fair thing to do is to leave him to reap the advantages to which he is entitled; and what I believe every one of us would scorn to do individually against any one of our brother artists, it is most undesirable that we should allow ourselves to do collectively.

I have taken no part in the memorials or deputations on this subject, and I do think I may express what many of us feel in this matter. Just look back to the whole history of the case. We had a competition, and an award of prizes. For some reason (or without any reason) the first prizeman is not selected to carry on the works, and the deputation which objects to Mr. Scott does not object to this proceeding. Yet this is the one blot on the whole business. And if the officer of the Government was right in ignoring the claims of the first prizemaker, clearly he had a right to go to any artist he preferred. Lord Palmerston sent for Mr. Pennington, and the House of Commons objecting to his employment, appointed a committee on the subject; and having decided emphatically, that the public convenience might be met just as well whether the building were Gothic or Classic, the committee and the

Honse left the matter in the hands of the Ministers. Surely after such a report, there was no injustice in the selection of Mr. Scott as the architect of the proposed work. Surely, after Mr. Scott has spent his time in working out carefully, and in detail, his design for the building (which, owing to the complete change in the instructions, is no longer the same thing that we competed for), after tenders for the works have been sent in by builders, and after Parliament has absolutely voted money for the execution of the foundations, it is harsh and unfair, and indeed very sharp practice, to agitate against his continued employment as architect.

I do not believe that there is a single architect of any reputation whatever who really believes the statement, so often made, that it is impossible to secure comfort or modern conveniences in a Gothic building. The assertion has never been made save by men whose entire ignorance of the subject is their only excuse for making such a statement; and if the alleged inconveniences exist in the plan which Mr. Scott has prepared let them be pointed out. I know nothing about his plans, have not seen them, and possibly should not like them; but as the plans are visible, those who object to the employment of Mr. Scott are bound to give reasons for their objections drawn from the plans themselves. It is neither just nor gentlemanlike to appeal to vulgar prejudices in order to damage one of their own profession; and most surely it is a course which will neither redound to the credit or ultimate advantage of those who indulge in it.

Those who are entirely dissatisfied with the whole result of the competition can, as it seems to me, only ask for one of two courses, either to have a fresh competition (as your correspondent "W." suggests, with the amiable addition that no Goth is to compete), just as at first, and open to all the world, or to have a competition among those only who were successful in the last competition. If the former plan were adopted, we might, after all, arrive at the same point as at present, but after two or three years' delay and much waste of time. The other plan would be fairer, but still the result would possibly be again a Gothic design, and probably from the same hand; for, if we cut out the first prizeholder, it appears that of the remaining six who received premiums for the Foreign Office four of us were Gothic against two who were not!

What, then, is to be gained by any alteration of the *status quo*? Is it supposed that Messrs. Banks & Barry will give us something better of its kind than Mr. Scott will? Or is it supposed that, builders' tenders to the contrary notwithstanding, the country will save money by the change? If this is the reason, it is not one for architects to urge against each other. Still less can the opponents of Gothic building on this score make an outcry if there are to be many buildings erected by their school at all like that which adorns the last number of the *Builder*. From the description which accompanies the view, I see that a sum of 10,000*l.* has been expended in obtaining a church to hold about 400 persons. Of the result, viewed from an artistic point of sight, I suppose there can hardly be two opinions; but of the result, in a financial point of view, I must say that we poor Goths are expected for about a third of the amount to erect churches with twice as much ornament, the same accommodation, real marbles in place of imitations, and walls and towers a little more solid in their dimensions. As Mr. Tite has done his best to oppose Mr. Scott's Gothic on the score of its excessive cost, one is just a little curious to know what he has to say about the cost of this specimen of his own style; which, by the way, it is only fair to him to say, was certainly not derived directly or indirectly from anything still existing at Pisa, as you lead your readers to suppose.*

This is a digression; and with an apology to you for taking up so much of your valuable space I will conclude, merely repeating the expression of my firm conviction that, if we wish to raise the credit of our profession and art, we shall best do so by not condescending to any course of which, individually and as gentlemen, we should be ashamed. Enough has been elicited to show that there is an equally strong feeling on both sides; and nothing but angry feeling seems to be the probable result of an agitation as unusual as it is unfair and uncalculated for.

I venture to speak, as I believe, in the interest of our art. I do not pretend to sympathize with Mr. Scott's general system of design; and I know nothing about the new design for the Foreign

Office. But it is not the way to get a good building, first of all to worry the heart out of our architect. Mr. Scott has secured all that he wants in this generation: he has fame enough and work enough; but there is a posterity to whom he ought to look, and the best hope for this new building is, now, to leave it to him, trusting that in so important a work he will strive his very utmost to leave something behind him which will deserve rather more tender treatment than the public buildings to which Lord Palmerston alluded have ever met with, either from friends or foes.

I wish your correspondents, "A" and "W." would imitate my example, and append their names to their suggestions. We should then understand them rather better!

GEORGE EDMUND STREET.

WESTMINSTER BELL.—CITY CHIMES.

THE sound of the Westminster Palace bell can now be very clearly heard in the night time, when the wind is favourable, in Islington and the other suburbs of the metropolis. In the north part of Islington it booms with a dull flat sound, distinctly above the sound of the bells which strike the hours in the neighbourhood and the clanging of those in the numerous churches which lie between. Although the distance from North Islington to the Houses of Parliament is about one-fourth more than that to St. Paul's Cathedral, the Westminster clock (and I have listened to both at separate times when the wind has blown from Westminster and St. Paul's) can be quite as distinctly heard and counted as that of St. Paul's, but the latter is of a much more full clear and solemn tone: the new bell has in comparison a flat tinny sound, which is not so agreeable.

It would be worth while to make note how far off each of these famous bells can be distinctly heard: this might be both useful and suggestive. In the tower in which the great bell of St. Paul's is placed, the semi-circular openings are left clearly open, and although this may admit the weather to a certain extent, it is, no doubt, a benefit as regards the distribution of the sound.

When listening to the church bells of this great city, I have noticed a fault in many instances of the notes of the chimes, not being sufficiently different from those of the hour. This, at a little distance, makes confusion. The clock in the tower of the new cattle-market is very well managed in this respect; so is that at the Great Northern Railway Station, at King's Cross. Many persons wonder when passing here while this clock is striking, where they have before heard the familiar sound, forgetting that the same bells struck the hours at the Crystal Palace during the Great Exhibition.

There is another matter worth consideration in connection with the clocks of many modern buildings, which are placed not far from each other; the notes of the hour bells being so nearly alike, that if there be a second or two difference in the keeping of the time, it is impossible to count the hours in consequence of not being able to distinguish between each bell. This is worthy of the attention of those who have to supply clock bells to public buildings. I have noticed that in several of the English cathedral cities this defect has been carefully avoided.

LISTENER.

RAFFAELLE'S CARTOONS.

AT length we are in possession of truthful copies of the Cartoons of Raffaele at Hampton Court,—reflections from the drawings themselves, thrown through a lens, and firmly fixed in the sensitive paper—the retina of this wonderful eye of art. The magnitude of these faithful photographs is as surprising as the perfection of their manipulation: they are as perfect as can be desired, and give altogether a new character to these familiar masterpieces: it is like seeing old friends in a better light, under new and happier circumstances. They are accurate transcripts, and in every way far superior to copies made by hand, even by the most zealous and careful copyists, who are not always equal to the task, or to themselves. Harsh lines will creep in where they have no existence in the original: what is soft and subdued often becomes painfully predominant: the veritable likeness is not always preserved; the character is lost, and the feeling of the whole piece entirely absent. The touch of the master-hand is destroyed: the skeleton is clothed, but the Promethean fire is absent: they are copies as true perhaps as line and square can make them, but they are not reflections fixed in paper like these noble photographs. It is an excellent idea of Mr.

Thompson, to make separate studies of the most striking figures in these cartoons: they are perfect pictures in themselves, and of high value. Never was the woman and child, in the "Beautiful Gate," so presented to the world before. Here we have the boy and dove,—the children at the altar, from the sacrifice at Lystra, on a very large scale,—with others of equal merit. These studies are executed with great power and beauty: they are every way worthy of the subject, and form a very valuable and characteristic feature in the exhibition. These photographs will draw renewed attention to the originals at Hampton Court; and that dark gallery will be more visited than ever it has been, for those who have seen these fine copies will feel an interest in examining the great originals from whence they have been taken, at so much cost of time, skill, and zealous labour.

It would be a pleasant task to enter more minutely into a lengthened detail of these photographs, but time and space are alike denied: it will therefore be sufficient to observe in general that the series of cartoons have been copied in several different sizes, to suit every class of purchasers. There are, altogether, already executed and exhibited, about seventy-eight separate examples. They are remarkable for their cheapness, as well as for their excellence, and in many cases of the lesser examples are positively priced *in pence*, while the very finest of the larger specimens only reach a few shillings. The poorest school of art, or the most struggling institution, must be in very poor circumstances indeed if they cannot purchase a set of these in every way marvellously cheap and excellent productions.

J. LOCKWOOD.

COVENANTS TO INSURE.

LORD ST. LEONARDS, in his admirable work, "A Handy Book of Property Law," calls attention to the fact that no relief could be obtained in case of neglect to insure according to a covenant in a lease. Every one who has to do with leasehold property knows what a cause of anxiety the question of insurance has been. The Court of Chancery has granted relief in almost every other case of breach of covenant, but it has been inflexible as to the case of neglect of insurance. An omission for a day has been such a breach as nothing but the landlord's waiving his right of entry for the forfeiture could remedy, or prevent the loss of a valuable estate. It will gladden the hearts of many of your readers to be made aware that an Act of Parliament, the 22nd and 23rd Victoria, c. 35, "An Act to further amend the Law of Property and to relieve Trustees," was passed on the 13th of August last, and for which society owes a deep debt of gratitude to Lord St. Leonards as its author. This Act opens the Court of Equity to applications for relief in cases of breaches of covenant to insure.

By section 4 of this Act it is declared that,—

"A Court of Equity shall have power to relieve against a forfeiture for breach of a covenant or condition to insure against loss or damage by fire, where no loss or damage by fire has happened, and the breach has, in the opinion of the Court, been committed through accident or mistake, or otherwise without fraud or gross negligence, and there is an insurance on foot at the time of the application to the Court in conformity with the covenant to insure, upon such terms as to the Court may seem fit."

By subsequent sections, when relief is granted the same is to be recorded by endorsement on the lease or otherwise, but the Court is not to have the power of relieving any person more than once in respect of the same covenant. There are also clauses giving lessors the benefit of an informal insurance, and for the protection of a purchaser against forfeiture under covenants for insurance against fire in certain cases.

The Act will be found of great benefit in many other particulars, such as regards licenses to assign, or carry on particular trades, &c. which previously could only be properly granted in manner which occasioned great expense. A deed was necessary to revive the covenant, which otherwise became void by a license being once granted. The relief also afforded by this Act to trustees and executors in various cases will be large, and will in a great measure remove the objections now so general to undertake the office of executor or trustee, on account of liabilities in respect of rents and covenants. By pursuing a course pointed out by this Act, trustees and executors will avoid responsibilities, and will be able to sell leasehold estates, and to distribute the assets thereby produced, without the fear of future liabilities in respect of unsatisfied covenants. As I have before observed, Lord St. Leonards deserves large thanks for this most beneficial measure; and it is to be hoped that

* The architect must be allowed to know best.—ED.

will in the next session of Parliament continue his attention to remedy points in which the law now presses severely and inequitably upon individuals in the performance of various duties which devolve upon them in the characters of trustees or executors, or as innocent purchasers.

If this be done, the office of trustee or executor may become one which will be cheerfully accepted for friends and relatives, instead of being, as now, avoided through fear of the responsibilities thereby incurred.

W. L. D.

GOVERNMENT HOSPITALS.—THE MILITARY HOSPITAL AT YARMOUTH.

It appears from your paper that the Government are about to build a hospital at Woolwich, to contain some 600 beds, and my object in addressing you is to say, that chancing to be at Yarmouth the other day, I went through the Royal Military Hospital there, and was much pleased with all I saw. At present there are only about 250 patients; but I was informed 500 may be admitted. The site is very good, being well elevated, and near to the sea. The building forms a square, which encloses about two acres of ground, nicely planted and laid out for the use of invalids. Each block or side is two stories in height, and every ward is lighted and ventilated by windows facing each other in the side walls. Moreover, the rooms are lofty, and the impression one receives in walking through is very cheering. There is a spacious reading-room, as well as a room for amusements, such as billiards, draughts, and the like; and all round the square projects an open arcade, under which the patients can take exercise in bad weather. Some of the wounded from the Crimea were brought hither, and recently disabled soldiers from India were received. On my asking an attendant if he had ever seen hospital gangrene in the wards, "Oh no," said he, "soldiers brought to us recover wonderfully." I can well believe him, for I have seen no Government hospital in Britain comparable to this for its salubrious site, sweetness, and wise arrangements for the benefit of convalescents. I said to my attendant, "How is it that the authorities are making such blunders at Netley, when they have so excellent a model as this to copy?" He replied, smiling, "I don't think the Government know that they have an hospital here."

What enhances the interest one feels in this establishment, for the cure as well as the reception of patients (an attribute few of our hospitals are entitled to claim), is the fact that it is not recent, being nearly half a century old.

VIGILANS.

INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.

SIR,—Will you be good enough to state in your next impression that the meetings lately held in the Hall, Lyon's-inn, Newcastle-street, Strand, on behalf of the Non-Society Men's Relief Fund, have no connection with the Provident Institution of Builders' Foremen and Clerks of Works.

Lyon's-inn.

JOHN LUCAS, Secretary.

THE STRIKE AT THE POLICE-OFFICES.

MARLBOROUGH-STREET.

Two master builders waited upon the magistrates (Mr. Bingham and Mr. Beadon) for advice under the following circumstances:—They produced a letter without a signature, but purporting to come from the Trades' Conference, at the Pavlovs' Arms, intimating that no lock-outs should resume work without the sanction of the Conference. They stated that a large number of workmen who had entered into engagements for employment had received each a letter to the same effect, and had been threatened with violence and loss if they ventured to disregard it. These men, therefore, had asked their employers what course they could take with safety to themselves, and the applicants desired to know what answer they should give their employers.

The magistrates recommended that the men should immediately go to work, and in case of any act of intimidation or violence, make application to the court. They might rest assured that the law was strong enough to protect every man in the free exercise of his own industry.

The magistrates further said that upon production of proper proofs the conspirators would be severely punished.

Miscellaneous.

NEW REVOLVER.—A revolver pistol, which admits of an instant separation of parts, including tool, barrel, and chambers, by easing out a pin placed over the cylinders, by which means the cleansing and re-adjustment of the weapon is facilitated, has lately been patented by Denne & Co., of London-bridge. The action being deduced of the usual sears and their springs, is less liable therefrom to injury, whilst a lever ram-rod may be considered another feature in the weapon.

VENTILATION OF PARIS THEATRES.—With reference to observations on this subject in our last, a correspondent says,—The Préfet de la Seine has requested Dr. Van Hecke, of whose system we have lately spoken, to make a study of two theatres in Paris, in order to introduce his system into buildings devoted to pleasure and recreation, as well as into those destined to the reception of sufferers from pain and infirmities.

THE IRON TRADE.—The condition of the iron trade in South Staffordshire and East Worcestershire has improved since the quarterly meetings. Foreign orders to a considerable amount continue to flow in, and prices have assumed an aspect of increased firmness. The effect of this has been to bring about considerable activity in the district. Good hot-blast mine iron is in fair request, and prices range from 3*l*. 12*s*. 6*d*. to 3*l*. 15*s*. per ton; cold blast being 4*l*. 5*s*. per ton. There seems to be an entire absence of speculative action, and the *bona fide* character of the trade now being done seems likely to save many of those engaged in it from disasters which have been witnessed in former seasons; and, if the trade exercises moderate prudence as to prices, it does not seem likely at present that anything will occur to check the buoyancy which now exists.

THE ACCIDENT IN THE "GREAT EASTERN."—The jury, after hearing evidence as to this unfortunate occurrence, brought in the following verdict:—"We find the deceased came to their deaths from injuries received from steam, hot air, and water, in consequence of the bursting of the jacket attached to the foremost funnel of the *Great Eastern* steamer, and that the said bursting was caused by the closing of a tap connected with the syphon attached to the said jacket, in conjunction with the shutting off the feed from the water causing to the boiler; but there is no evidence to show by what person or persons the said tap was shut off; and the jury further express their opinion that taps are highly dangerous when placed in such positions, and that sufficient caution was not used by the engineers." In substance, the above verdict amounts to one of accidental death. It will not be regarded as satisfactory out of doors.

WORCESTER DIOCESEAN ARCHITECTURAL SOCIETY.—The annual public meeting will be held in Worcester, on the 29th, Lord Lyttelton in the chair. A paper will then be read by Mr. J. M. Gutch—"A Biographical Sketch of a Dean and a Prebendary of Worcester." There will be a dinner at the Star and Garter Hotel. In the evening a conversation will take place at the Natural History Society's Rooms, when a paper on "Half-timber Houses and the Method of their Construction," will be read by Mr. J. H. Chamberlain, of Queen's College, Birmingham. There will be a discussion upon the relative merits of Gothic and Classic architecture for secular purposes, with special reference to the proposed New Government Offices. On Friday, the 30th, the members and their friends will examine Ballbroughton and the ancient Norman Chapel in the grounds of Bell Hall; they will proceed to Clent Church, and the chapel of St. Kenelm, on the Clent Hills; thence to Pedmore Church, and, after luncheon, to the restored church of Hagley.

MONUMENTAL.—A monument has just been erected in the north transept of Salisbury Cathedral, by the members of the Royal Wiltshire Yeomanry Cavalry, to the memory of their late Sergeant-Major, Mr. J. M. Peniston. The design is of Gothic character, according to the *Sherborne Journal*, and was intrusted by the committee to Mr. T. H. Wyatt, the diocesan architect. It was carried out by Messrs. Osmond & Son, sculptors, in Caen stone, enriched by various marbles, with a brass tablet at the base, bearing the inscription.—A statue of the late Mr. Feargus O'Connor, the Chartist, having been erected, with the Town Council's consent, in the Nottingham "Arboretum," some one lately disfigured it by painting the face and lower extremities black. Rewards of 50*l*. and 5*l*. were offered for the discovery of the delinquents, but hitherto without avail. With some trouble the statue has been restored to its former condition.—The pedestal of the statue of the late Joseph Hume, designed by the sculptor, is in course of erection in the High-street of Montrose.—The statue erected at Portrush (Ireland) in memory of the late Rev. Dr. Adam Clarke, has been inaugurated. It is said to be a truthful historic likeness, and is in the usual attire of the celebrated divine. The statue, when raised on the plinth in front of the obelisk, will stand 8 feet high, and will be visible from the different approaches to Portrush. The obelisk is 45 feet high. The laying the foundation-stone of the Memorial Chapel, at Portstewart, took place at the same time.

THE LATE MR. I. K. BRUNEL.—Our readers will have heard with great regret of the death of this eminent engineer, at the comparatively early age of fifty-three. He was a man of wonderful energy and great fertility of resources. His death appears to have been hastened by over exertion and anxiety, to which, doubtless, the *Great Eastern* contributed. His remains have been interred in Kensal Green Cemetery, Mr. Stephenson, Mr. Field, Mr. Hawkshaw, Mr. Walker, Mr. Kendall, and numerous others following.

FATAL ACCIDENT.—At Manchester an inquest has just been held on the body of a bricklayer's labourer, who, in carrying a hod of bricks, went up a ladder, in Stewart-street, Deansgate, to a scaffold around some buildings, and after getting off the ladder, had not walked more than three yards along the scaffold, when he stumbled and fell down a distance of 28 feet. He died almost immediately. Deceased was a sober man. Verdict, "Accidental death."

IRON AND WOODEN SCHOOL CHURCHES.—At Luton, in Bedfordshire, a wooden church has been erected, which is removable, and contains 450 sittings, for the trivial sum of 250*l*. In the *Coventry Herald* is given an account of an iron school church that is on the eve of being erected at Hawkesbury, a distant hamlet of Stoke, in the neighbourhood of Coventry. The structure, which is said to be of a strictly ecclesiastical character, will be erected by Mr. Skidmore, of Coventry, and will serve as a school during the week, and contain 202 scholars, and as a church on the Sunday, and will accommodate 250 worshippers. In these iron churches the building is erected on a brick foundation, 2 feet 6 inches below the surface. The walls are lined with plaster to prevent the alternation of heat and cold, and for a similar purpose the roof is also covered with inch boarding. The whole of the iron and woodwork is covered with a chemical preparation, by means of which durability is given.

THE NEW VICTORIA BELL AT THE LEEDS TOWN HALL.—The size of this bell, which has recently been cast, is 6 ft. 2 in. and 6 in. thick; and the weight is 4 tons 1 cwt. It is made on the pattern of the latest in date of the Westminster bells. The Leeds and Westminster bells are thicker in proportion to their size than probably any other large bells, except the Russian ones. Bells are now sometimes made as thin as 1-16th of their diameter. The Leeds bell was cast by Messrs. Warner by a new process, never before used; and the failure of most of the very large bells cast within the last two centuries proves that success is by no means of easy achievement. Mr. Dent is making the clock, on the Westminster construction, which was approved by the Astronomer Royal, and from a new design made expressly for it by Mr. Denison, so as to be capable of raising a hammer of 2 cwt. a foot high. The bell is intended to be hung for ringing in full swing, and is made like the Westminster bells and the Queen's clock bell at Balmoral, with a kind of mushroom top, to enable it to be turned in the stock when worn in one place.—*Leeds Mercury*.

OPENING OF THE BUTE EAST DOCK EXTENSION, AT CARDIFF.—The extension of the East Dock at Cardiff has been completed and opened. The water area of this dock alone is 45 acres, and the basin 2½ acres; height of sill of sea-gates, at springs, 31 feet 8½ inches; height at neaps, 21 feet 7½ inches; sea-gates, width, 55 feet; sea-lock, length between gates, 220 feet—width, 55 feet; inner lock, length between gates, 220 feet—width, 50 feet. The depth of water throughout the dock is 25 feet. The Bute East Dock is thus capable of accommodating the largest ships in the merchant service. Fifteen coal staiths are already erected, and it is intended to put up seven more, which will give, when complete, a shipping power in this dock alone of a million and a half tons of coal per year. The Bute East Dock was commenced early in 1852, the engineers being Sir John Rennie and Mr. John Pilews. The first portion, in length 1,000 feet, and width 300 feet, was opened in July, 1855. The first extension, 2,000 feet in length, and 500 wide, was commenced early in 1855 (Messrs. Walker, Burgess, and Cooper, being the engineers), and was opened in 1857. The second and last extension, of 1,300 feet by 500, was begun by the same engineers in 1857, and completed on the 1st of September instant, including a junction canal communicating with the Bute West Dock and the Glamorgan Canal. The whole of the works have been executed by Messrs. Hemingway & Co. The trustees, at a cost of 600,000*l*. have thus completed a second gigantic dock, making a total expended on the works of upwards of a million of money.

A PRIVATE SPECULATION IN BARRACKS.—Extensive barracks have just been completed by a gentleman in Gardner's-lane, Westminster, calculated to accommodate several hundred men. They are intended for the numerous recruits continually enlisted in the metropolis, as well as those arriving from the provinces en route to join headquarters, the speculator undertaking to supply a bed and necessary requirements for ablution, &c. for fourpence each man, as allowed by Government. The establishment of this rendezvous is said to have received the approval of the authorities, as it will reduce the billets on innkeepers, &c.

NEW MODE OF STAINING AND FIGURING WOOD.—At the Liverpool Polytechnic Society's first meeting for the season, some samples of ornamented wood were submitted for inspection. The process was described as follows:—The deals, veneers, or planks, as they come from the saw, are placed on a solid frame, and fastened down, after which an engraved roller, heated to a temperature suited to the quality of the wood, is passed over them, the pattern being thus burnt in. The surface is then planed smooth and French-polished, leaving an effect, it was said, equal to that of the finest painting or staining. Several members wished to know the cost at which the work could be done, but no one present was in a position to answer the question. The chairman stated that the maker (a Mr. King, of Clayton-square) was busily at work with the invention.

THE CONGREGATIONAL UNION OF ENGLAND AND WALES.—At the sitting on Tuesday, at which Dr. Legge presided, the proceedings of the day turned principally on a motion, propounded by Mr. John Crossley, in reference to the Chapel Building Society, established six years ago, and which in that time had dispensed aid to the extent of about 25,000*l.* to no fewer than ninety-five new chapels, built at an aggregate cost of not less than 160,000*l.* Mr. Crossley's resolution referred to Ireland, which was not included in the original scheme of the society, and he stated that about 600*l.* a year for the next three years would be devoted to the building of chapels in Ireland. The resolution, which was seconded by the Rev. T. G. Horton, of Reading, gave rise to an animated discussion on the style of architecture in Dissenting places of worship, in which Mr. S. Morley, Mr. C. Jupp, Mr. Rooker, the Rev. J. E. Gallaway, and Mr. A. Morley took part, but was eventually adopted.

WEST HACKNEY CHURCH.—This church, erected some thirty years ago, in a classic style, has, through the exertions of a committee, generally supported by the parishioners, undergone considerable improvement and decoration, under the direction of Mr. William White. The walls and ceiling have been tinted, the columns, cornices, panelling, and other architectural features, successfully treated, in polychrome, harmoniously according with the character of the building; the east end re-decorated, and the altar-piece beautified, so far as its design permitted. The unsightly pews and galleries, heretofore awkwardly crowding the interior, have been lowered, and partly re-arranged with marked advantage both to the apparent proportion and size of the interior as well as the accommodation and convenience of the congregation. A marble pulpit and oak reading-desk, the gift of one of the parishioners, have taken the place of those formerly helped to disfigure the church. The works have been executed by Mr. J. W. Smith, of Islington.

CANAL AND RIVER NAVIGATION.—A foreign steam shipping company have recently commissioned, from a firm at Low Walker, some iron steamers for river towing, of peculiar construction and mode of action. Instead of towing by the usual mode of paddle-wheels or screw-propeller, the vessels now being built act on a chain laid along the bottom of the water the entire distance over which it is intended the traffic shall extend. The towing-steamer lays hold of this chain by means of two drums placed on deck, and suitably constructed to receive such number of turns of the chain as may be sufficient to prevent slips when towing three to four thousand tons of cargo carried in a train of barges. These drums are set in motion by a steam-engine and wheel-work, and the chain is guided along the vessel's deck by a number of rollers until it falls into the water at each end. This system of river traction has been in successful operation for several years past on the river Seine, and a proposition is now afloat for its application on the canals of Belgium, as the system obviates the objections hitherto raised against the use of paddle-wheels, and even screws, for canal navigation.

EFFECT OF DRAINING OPERATIONS ON A BOG.—On the 22nd ult. according to the *Midland Counties Gazette*, six men, who were fishing at the bog side of the lake of Derryrough, suddenly heard a rumbling noise, such as precedes a storm. The noise coming from the bog, one of the men left the bank to ascertain its cause, and the men rifled at seeing about 400 acres of the bog steadily advancing towards the lake. He gave the alarm, and they effected their escape, across the bog, in motion under their feet. The lake of Derryrough was being drained, and the water had been lowered some 3 feet, when the bog moved into it. The lake covered about ninety-nine acres, of which about eighty are now covered by the bog, which advanced at the rate of 4 perches in twenty-four hours.

STRIKE BY THE MASONS ON THE WORKS AT TRINITY HOSTEL, CAMBRIDGE.—We last week stated that in consequence of some dissatisfaction amongst the masons employed in the erection of the hostel opposite Trinity College, a strike had taken place, and the works were at a standstill. The cause of disagreement, it will be remembered, was first, that one of the men received 4*d.* a day more than his fellows; and, secondly (and this was the most ostensible reason for the proceeding), that a man, not considered a mason in the strict sense of the term, was employed by the contractors to do walling or nobbling. In consequence of some difference of opinion among themselves, the masons referred the matter to the central committee of the society of masons, and received an answer to the effect that the strike was "illegal," the workman whose employment the masons considered an infringement of their rights, being in reality a "waller," and having every right to take part in that portion of the work. The strike, therefore, came to an end, and the building has, since Monday last, gone on without interruption.

TATVERNS IN CHEAPSIDE.—At the corner of Friday-street stood the "Nag's Head," said to be the scene of the consecration of Matthew Parker, Archbishop of Canterbury, *temp.* Elizabeth. The consecration really took place in the Church of St. Mary-le-Bow, but Parker's enemies said he was ordained at a vintry. Over the house, No. 39, Cheapside, is a nag's head in stone, to mark the site of the celebrated tavern. The "White Horse," in Friday-street, was the resort of several members of the Wednesday Clubs, at which were held the conferences, under the direction of William Paterson, which led to the establishment of the Bank of England. The "Dagger," in Cheapside, was another noted house, which, with the "Rose and Crown," in the Poultry, are mentioned in the plays of Hobson, 1608. The "Mermaid," in Bread-street, was, perhaps, more favoured than any. Ben Jonson invites a friend to supper, to take "canary at the Mermaid," and Beaumont rejoices at the wit that used to sparkle over the Mermaid board. In 1603, Raleigh established a club at the Mermaid, of which Shakespeare, Johnson, Beaumont, Fletcher, Donne, and Selden, were members.—*City Press.*

DANGER FROM LUCIFER MATCHES.—The progress of invention has passed over many matters of a minor kind, some of them being of an important nature as affecting safety of life. Especially is this the case with lucifer matches. A large proportion of buildings are set fire to, or burnt down even accidentally, by them. In the hands of careless adults, or of children, they are frequently thrown upon the ground and trampled on, ignited, and in this way originate many fires. They are also known to ignite spontaneously. Before the invention of friction matches, matches were made that ignited upon immersion in liquid phosphorus, or a preparation containing phosphorus, and until they were dipped in the fluid had no explosive property. Chemists, in the present advanced state of chemistry, could doubtless invent something similar, but less inconvenient, having the explosive substances half attached to the matches and half to the box-lid containing them, or other surface; so that, until a frictional junction was effected, no danger could result. Another improvement, of secondary importance, would be to combine with the chemicals so used materials that should impart an odorous and pleasant scent, in place of the noxious fumes they now give off. The dangerous nature of the matches now in use is a matter deserving the serious attention of fire insurance companies; and it would seem worth their while, either jointly or separately, to offer a premium or prize for the competition of chemists or others, to produce safety matches on the plan now indicated.

LLOEGRIAN.

A PREDECESSOR OF THE "GREAT EASTERN."—The ship nearest in size to the *Great Eastern* arrived in England from America about thirty years ago. She was called the *Baron of Renfrew*, was 600 feet long, and was composed of large logs of timber clamped together in the roughest manner. It was predicted that she never would steer, never could cross the Atlantic; but she did, and immediately on her arrival was broken up. Indeed, she was nothing more than imported timber, having been patched together to avoid the timber duty, which was then exceedingly heavy. She fulfilled her mission in every way, but the Government was down upon the new dodge, and prevented any repetition of the experiment.

TENDERS.

For new Wesleyan schools, Great Bridge. Mr. Edward Holmes, architect:—

Beddoe	£1,775 18 0
Lees	1,619 13 7
Harley	1,588 10 0
Holland & Son	1,470 0 0
Cox & Son (accepted)	1,418 9 0

For tavern at Poplar, for Mr. James Davenport. Messrs. John Morris & Son, architects. Quantities supplied:—

Piper & Son	£1,508 0 0
King	1,399 0 0
Pittford	1,396 0 0
Atherton	1,379 14 0
Hedges	1,355 0 0
Jeffrey	1,350 0 0
Sheffield	1,320 0 0
Ring and Stanger	1,310 0 0
Blackburn	1,245 0 0
Lawrence	1,230 0 0
Salt	1,208 0 0
Watts (accepted)	1,147 0 0

For alterations and repairs to 14 and 15, Cannon-street, City, for Mr. W. H. Dawson. Mr. H. Dawson, architect:—

Axford & Co.	£815 0 0
Turner & Sons	807 0 0
Brown & Robson	749 0 0
Westacott	729 0 0
Ashby & Horner	698 0 0

For works at One Swan-yard, Bishopsgate, for Messrs. Johnson & Son. Mr. J. E. Saunders, architect. Quantities by Mr. Broomfield:—

Axford	£813 0 0
Gammson	807 0 0
Little	471 0 0
Browne	457 0 0
Collis & Co. (accepted)	437 0 0

For a cottage at Buckhurst-hill, for Mr. Kenneth Mackenzie. Mr. William D'Oyley, surveyor:—

Cushing	£445 0 0
Carter	440 0 0
Andrewartha	411 15 8
Bull & Son	340 0 0
Melson	308 0 0
Estall	305 10 0

For the erection of four shop fronts, in Carlton-street, Nottingham. Mr. C. H. Edwards, architect:—

Dennett	£368 5 0
Willmott	348 5 0
Carrington	301 12 0
Evans, Brothers (accepted)	297 0 0

For works to be done to premises, Horney-row, for Messrs. Rickett, Smith, & Co. Tillott and Chamberlain, architects:—

Cannon	£290 0 0
Collis & Co.	279 0 0
Hammond	249 0 0
Wills	229 0 0
Jennings (accepted)	222 0 0

For alterations and additions to the Russell Hotel, Brixton-road, for Mr. Richard Burgess:—

Longmore & Burge	£315 0 0
Turner & Sons	285 0 0

For a house on the grounds of the old Beulah Spa, for Mr. F. Horn. Messrs. Richard Tress & Chambers, architects:—

Rider	£2,257 0 0	Extra if in Stone.
Coleman	2,230 0 0	£109 0 0
Evans	2,100 0 0	150 0 0
Miller	2,097 0 0	243 0 0
Brown	2,084 0 0	120 0 0
Macey	2,036 0 0	148 0 0
Jeff	1,997 0 0	108 10 0
Deard	1,997 0 0	94 0 0

TO CORRESPONDENTS.

J. O. B. (the notice has appeared elsewhere).—L. de V.-J. C. (a rule cannot be laid down as to the number of times an architect should attend at a building during progress. (Circumstances would regulate).—R. T. S.-E. R.-G. H.-A. B. le V.-G. and D.-D. G. F.-H. W. D.-E. K. (thanks).—H. de M.-J. B.-J. W. R.-F. A.-G. T. G. T. (our correspondent appears to have been ill treated, and should ask for explanation. He has no chance of recovering at law).—C. R.-J. F.-J. J. N. (declined with thanks).—G. E. G. (the offer of a premium was only suggested).

Post-office Orders and Remittances should be made payable to Mr. Morris K. Coleman.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

The Builder.

Vol. XVII.—No. 869.

The Strike.



URING the past week, the incidents in the dispute between master-builders and their workmen have been important, inasmuch as the masons have seceded from the nine-hours movement, and the masters have received a considerable accession to the number of men under the "declaration." At the same time the body of men still holding to the Conference of Trades, and the masons likewise, express the same repugnance to the "declaration;" and, whilst we have the best reason to expect that, within two or three weeks, the principal firms will be provided with their complement of hands, we still apprehend that many men who were recently in receipt of wages will be deprived of means of subsistence through the winter; and thus there will be a continuance of embittered feelings, besides those results on all sides which may be felt for years. The masters in the smaller way of business will find the chief difficulty: there is not the same attachment from length of service, and other reasons, which is felt in the other case, and stands in the condition of an inducement to the men to withdraw from the Conference and the Union, and to accept the "declaration." It is true that many of these masters, such as have not joined the Central Association or required the "declaration," have benefited during the strike; but, the tendency has unquestionably been to bring ruin to small masters and workmen together. It is likely to be one of the results of an unsuccessful strike to give more power to the large capitalist or employer, and to break down the employer who has sprung from the class of the workmen. Whether this is of the nature of an advantage in any direction we will not now examine, but the result was certainly not such as could have been desired by those who struck.

It is evident to us that with the larger employers, matters will very soon fall into their old channel. But the public, looking at the opposite statements, will have some difficulty in understanding, without explanation, how this condition of things will be attained. There is still great discrepancy between reports on the two sides, of the number of men at work; the associated masters, however, have the best foundation for what they have put forth, namely, the positive figures which are filled in printed forms, and are sent to the committee weekly, and then added up. From these it appeared at the commencement of this week, that there were 7,620 men at work under the "declaration," or about 3,900 more than at the previous week; and this leads the committee to suppose that many men will begin to apprehend their places may be filled, and that there will be an addition of several thousands by next Tuesday, or before the week following. The Conference do not admit that any number of men such as that stated by the masters, are at work, whether drawn from their ranks or otherwise. They placed pickets last week at the shops, and works in progress, of some of the leading builders; and the differences between their numbers and those furnished by the masters themselves, are considerable. For instance, they reported Messrs. Wm. Cubitt & Co. as having had 203 men and boys at work, whilst the statement of the same firm appears to be that they had 852 men. Mr.

Moxon's men, at the High-level sewer works, reported by the Conference as 31, are otherwise stated as 868; Mr. Kelk's, 325, including navvies, as 674; Messrs. Patman and Fotheringham's, 3 boys, as 71 men; Messrs. Mansfield and Son's, 19 men and boys, as 87 men; Messrs. Browne & Robinson's, 14 men as 69; and large returns are made by other firms, which do not appear to have been taken account of by the Conference. The official return of the Conference, of the money paid on Monday, also shows that there were fewer recipients of the fund to the number of 501, as compared with the previous week, which had shown a diminution of only 21 recipients from the week before that. The dividend was at the rate of 4s. a man to the operatives, 6,454, exclusive of Trollope's men, who were paid each 12s. skilled, and 8s. unskilled. The aggregate sum distributed was 1,328l. 4s. or 2l. 8s. less than the amount paid away on the previous week. Whether the 500, or larger number of men, have accepted the "declaration," or have procured work in another way, and thus in either manner have ceased to be dependent on the funds, we have no means of knowing. But it will be observed that the number of men employed under the "declaration," added to the number relieved by the Conference, leaves a very large remainder, of whose present mode of existence there is no account whatever. The number of men talked of, about two months ago, by Lord Brougham and Mr. Tite as thrown out of employment, was 90,000, an exaggerated statement, for which the men at the same date substituted the figures 20,000,—whilst the number of the whole of the trade in London was put at 60,000. We have reason to think the real number thrown out by the strike and lock-out was about 26,000. There are, therefore, 11,000 or 12,000 men to be accounted for. Many of these would be found to belong to trades not recognized in the Conference, as the smiths; and some will be non-society men who have not procured work at the present time. There must, however, still be a very large remainder. Some of these already have emigrated,—if to Melbourne, we fear only to find the ignorance of the question of capital and labour as destructive in its tendency as it is in the mother country. The bulk of the remainder, however, would be met with perhaps in the provinces. At the commencement of the strike, some of the masters were able to export men to the country, where they could be preserved at work, without the "declaration," in readiness for the resumption of business in London; and this, combined with the preference by the workmen, affords the reason why certain firms have been able at once to present the figures which have been large enough to be received with discredit. Men have come from the country; but some of them are old hands, who have with satisfaction to themselves and their employers, been kept out of reach of the Conference. It will be seen that the circumstances of this employment of men in the country, offer a clue to the objects of the Conference in such proceedings as were spoken of by Messrs. Waller & Son.

The question further has advanced to solution, inasmuch as the actual state of the law as regards the efficacy for protection of men desirous to work, has been explained, and enforced in cases where the obstruction had reached to violence. A correspondent of the *Times*, Mr. G. D. Webb, referring to the letter of Messrs. Waller & Son, stated last week, that by the law of England, third parties had "no right to obstruct or intimidate workmen either hired or about to be hired, so as to induce such workmen to leave their employment or not to engage themselves;" and that such an offence amounted to a conspiracy, and would subject the convicted persons to very severe punishment. If this be correct, there can be no doubt of the illegality of some of the proceedings on the part of the Conference—those even which have not gone to the length of personal violence. In cases of assault, the 9th of George IV. c. 31, s. 25, "enacts among other things that if any assault be committed, in pursuance of any conspiracy to raise the rate of wages, the court may sen-

tence the offender to be imprisoned, with or without hard labour, in the common goal; for any term not exceeding two years, and may also fine the offender, and require him to find sureties for keeping the peace." A digest of the existing law has within the last few days been furnished by Lord St. Leonards, with an opinion. The digest has been published. It is very plain as showing the illegality of many recent proceedings, as well as of many of the printed rules of the societies. The 6th George IV. c. 129, which, we may add, was passed "to repeal the laws relating to combination of workmen, and to make other provisions in lieu thereof," Lord St. Leonards says, "states that combinations interfering with the free employment of capital and labour, are injurious to trade and commerce, dangerous to the tranquillity of the country, and especially to the interests of all who are concerned in them. The object of the Act is then declared to be to make provision as well for the security and personal freedom of individual workmen in the disposal of their skill and labour, as for the security of property and persons of masters and employers." The Act then makes punishable by imprisonment, not exceeding three months with or without hard labour, the following offences, viz:—

- "Where any person shall by violence to the person or property, or by threats or by intimidation, or by molesting, or in any way obstructing another,—
1. Force or endeavour to force any journeyman, manufacturer, or workman, or other person to depart from his hiring, employment, or work, or to return his work before it is finished;
2. Or prevent or endeavour to prevent any journeyman, manufacturer, workman, or other person not being hired or employed, from hiring himself to or from accepting work or employment from any person or persons;
3. Or for the purpose of forcing or inducing any other person to belong to any club or association, or to contribute to any common fund, or to pay any fine or penalty, or on account of his not belonging to any club or association, or not having contributed or having refused to contribute to any common fund; or to pay any fine or penalty; or on account of his not having complied, or his refusing to comply with any rules, orders, resolutions, or regulations made to obtain an advance or to reduce the rate of wages, or to lessen or alter the hours of working, or to decrease or alter the quantity of work, or to regulate the mode of carrying on any manufacture, trade, or business, or the management thereof;
4. Or shall force or endeavour to force any manufacturer or person carrying on any trade or business to make any alterations in his mode of regulating, managing, or carrying on such trade, manufacture, or business, or to limit his number of apprentices or the number or description of his journeymen, workmen, or servants."

The Act, however, provides for meetings and arrangements, whether of masters or men, relative to the wages or prices, or hours of work, which may be agreed upon between the persons present at the meeting, as to be required or demanded: that is to say, there is the same law applicable to either interest: whilst by an Act of the present year (22nd Victoria, c. 34) passed to amend and explain the former Act, it is provided, —

"That no one, whether in actual employment or not, shall by reason merely of his entering into any agreement with any workmen, or other person or persons, for the purpose of fixing or endeavouring to fix the rate of wages or remuneration at which they, or any of them, shall work, or by reason merely of his endeavouring peaceably and in a reasonable manner, and without threats or intimidation, direct or indirect, to persuade others to cease or abstain from work, in order to obtain the rate of wages or the altered hours of labour so fixed or agreed upon, shall be deemed or taken to be guilty of 'molestation or obstruction' within the meaning of the former Act, and shall not therefore be subject to prosecution or indictment for conspiracy. But it is provided that nothing contained in this latter Act shall authorize any workman to break or depart from any contract, or authorize any attempt to induce any workman to break or depart from any contract."

We understand this interpretation of the law to be that alone which is consistent with the public interests, and the respective rights. The law preserves the utmost liberty to each individual, or class, that is compatible with the liberties of others. It recognizes no right on the part of a society to coerce in any manner the actions of those who do not care to belong to a society: it simply goes to mete out equal justice and liberty to each of the three parties—the society man, the non-society man, and the employer, or buyer of labour. We have been told much of the excellent tendency of the rules of the societies, and we are not unacquainted with those which are printed, and others which are understood and acted upon. There is much in the printed rules to condemn them according to any code of justice or of morals; but there is

little which would lead to supposition of the practices which are most notorious on the occasion of strikes—did not such practices, and indeed every sort of intimidation and violence follow naturally from the effort to carry the rules into practice. So long as the societies pursue their objects by means which are of the nature of a despotism, and are inconsistent with true liberties of the people, so long will the title of the operative classes to representation in the legislature be withheld from them.

Looking at the rules of the Operative Masons' Society, which as a benefit society is well conducted, and is in many respects a model of organization, we find that after expressing that one of the chief objects of the society is "to regulate the price and lessen the hours of labour," and "to bring into practice among its members the truly valuable object of a self-protecting power against the selfish and unprincipled proceedings of the capitalist,"—fallacies of principle thus disclosing themselves at the outset,—they provide for publication, annually, of a "black list;" for the abolition of overtime, tending as they say to general injury of the members by keeping some out of employment, and for fines on members who persist in so working; for restricting employers in several matters, as "introducing individuals not of the trade," and for resisting "such infringements" as the refusal of non-members to contribute to the society. The Progressive Society of Operative Carpenters and Joiners seem to have their rules framed on similar principles; and the "General Laws of the Metropolitan Society of Operative Bricklayers," 1857, say—"That shall a bricklayer who has at any time gone to work on a job when a strike has taken place (sanctioned by this society) go to work with members of this society, the said members may resist the same (if they cannot come to any satisfactory arrangement with the said 'black'), by first making application to the foreman or master, as the case may be, for the immediate discharge of the said 'black'; and if he will not comply, the members shall be empowered to strike and picket the job at the time," &c. Another law imposes a fine for taking task-work, or for employing any other than a bricklayer to do bricklayer's work. Similar objects and rules are amongst those put forward by the General Society of Operative Plasterers, who seek to protect themselves from the "vast influx of boys and men, who are not plasterers," introduced into the trade "by selfish and unprincipled speculators in our labour." Many of such rules, and especially the means by which they are carried into operation, are now proved to be at variance with what is the liberty of the subject and the law of the land. This view of the case has been put before a deputation of intelligent men representing the society of masons, in an interview which lasted six or eight hours of one of the days in this week subsequent to that of the meeting of the masters, whereat the masons had submitted through Mr. Myers, a proposition to resume work on the hours of labour as previous to the dispute, the masters to dispense with the "declaration." This offer having been courteously declined by the committee, on the ground that the difficulties in the way of withdrawing the "declaration" which had been taken by nearly 8,000 men, were insuperable; it was proposed to the deputation at the subsequent interview which we have mentioned, that the Operative Society should assent to the revision of their rules by some high legal authority, and to the exclusion from them of all matter at variance with the law of the land, whereupon the necessity for the "declaration" would no longer exist. This not having met with the approval of the masons in the form in which it was put, it was resolved, at a meeting, held at the Freemasons' Tavern, just as we were going to press,—

"That the Masons' deputation be informed that the Central Association consider that the most practicable method of arriving at an adjustment of differences would be the revision of such rules and bye-laws, in so far as they affect the employers engaged, within the Metropolitan, Postal District, as shall be considered by some competent impartial authority to be contrary to the spirit of the law of the land; and that in particular all rules and practices should be removed which interfere with the freedom of workmen, or prevent members of Trades Unions from working with other workmen."

The masons were to meet the same evening, to receive the report of their deputation.

We believe the interviews were conducted in the most amicable spirit on both sides; and we are only led to ask, if the masters could find the way to relax such of their rules as may have prevented access of previous deputations to them, why some means of coming to the present favourable position could not have

been found earlier. The chief credit of the approximation must certainly be considered due to Mr. Harnott and the other representatives of the masons. Considerable difference prevailed within the last week amongst the London men with reference to abandonment of the nine hours; but this we are assured on the part of the masters has been now unreservedly made by the masons.

The particulars of the negotiation are instructive, as showing the advantage of these personal communications or agencies of conciliation, which we lately showed would so much lessen the probability of disputes. The view may be right that arbitration is not to be looked to in disputes between masters and workmen; that it would be equivalent to a sacrifice of just rights; and the reasons which induced Lord Cranworth to decline to arbitrate in the engineers' strike in 1852 are perfectly correct. We wish we could quote the whole letter,—but Lord Cranworth said, "I cannot wonder that the masters refuse to agree to any arbitration that is to impose on them any restriction whatever as to the terms on which they are to contract with their men. No one ought to presume to define such terms any more than to bind the men as to the terms which they ought to submit to in favour of the masters. The obvious duty and interest of the men is to treat the matter as a mere question of bargain." And he continues—"If once they do that—if once they allow that the master is at liberty to propose his own terms, and the workman to accept or reject them, I should think the masters would, I am sure they ought, to be quite ready to listen to any suggestions of the men as to any modifications of the system which should be more agreeable to them, without infringing on the free agency of their employers." But this non-acceptance of arbitration as in place in the matter of disputes between masters and workmen, says nothing to controvert the belief that effectual means might be adopted for conciliation, or for the prevention of disputes altogether. The best means were shown in Mr. Mackinnon's committee to be personal communication between the master and his men; and we have already stated our impression that in this respect, at the outset of the strike, there was something wanting that might have prevented what occurred, and those consequences which remain. The act of unfairness, by which one firm would have been placed at a disadvantage in competition, was, however, properly met.

In addition to the proposal of the masons on Tuesday last, one was made by the Conference—being brought to the notice of the masters' committee by Mr. Jay. It was to the effect that the men will resume work upon the withdrawal of the "declaration," leaving the question which was at issue on the 6th of August to be settled by a committee of six members of the Central Association, and six of the Conference. Upon this proposal, the committee resolved, as reported, that the Conference being an irresponsible body, and their proceedings having been entirely illegal, the committee could not recognize them as a proper medium of communication between the Association and their workmen. It was hardly to be expected that the masters would be satisfied that the matter in dispute should revert to the old position: they could then only look to the necessity of going over the old ground again.

Though the questions in dispute cannot be considered as settled, and may even remain open for weeks, the withdrawal of the masons from the Conference, and the conciliatory spirit which prevails as regards this one branch of the operatives, constitute a more hopeful position than has existed since the strike commenced.

A SKETCH OF THE FALCON GLASS WORKS.

In days gone by, when only one bridge crossed the Thames at London; when Shakespeare might have taken his sculler at the Temple, and been rowed over to the Globe Theatre; when the Bear-gardens were in their glory, and rank and fashion flocked to Bankside to witness brutal sports; then glass was an expensive luxury, only to be obtained by the most affluent; and the neighbourhood on the south side of the Thames, between London and Blackfriars bridges, presented a very different appearance to the busy scene to be noticed in our own time.

The old palace of the Bishop of Winchester, and nearly all traces of the buildings erected in Queen Elizabeth's days, have passed away, and busy manufactories of various kinds, wharfs and warehouses, skirt this portion of the Thames.

Amongst the most noticeable of these works is

the flint glass manufactory of Messrs. Pellatt & Co. to which we now wander, thinking of those days when even windows of horn were luxuries; when it was the custom of the nobility to remove the glazing of their residences from place to place with the same care as the plate and other valuables.

Glass now, thanks to the efforts of science and enterprise, is available for the use of both rich and poor. It is not only a comfort and thing of beauty in our dwellings, but is made available for a hundred other useful and domestic purposes. Common as this commodity now fortunately is, few think or even know of the care, skill, and study required to bring it to its present state of cheapness and perfection. Let us, then, with the kind permission of the proprietors, enter the "Falcon Glass Works," remembering, amongst other things, that glass is made not only greatly to conduce to the comfort and convenience of man, but by extending his views to other worlds, enables him to form some conception of their multitude, and to trace the laws by which their motions are governed, whilst his ideas are enlarged by viewing the mechanism of the most minute objects of creation. Glass is a non-conductor of electricity, and has also the property of resisting most acids and alkalis, and is therefore an object of great importance to the chemist and manufacturer. With the exception of the diamond, all the precious stones are similar in their composition to manufactured glass, being the combination of silica with alkaline earth, which substances can only combine under the influence of heat. Thus informed, we proceed to the chamber in which the raw material for making the flint glass is prepared, and mixed ready for melting.

Here, in a state ready for use, is a large quantity of mixture of bright scarlet colour, which consists of five ingredients, viz. sand, which forms the chief body; red lead, which gives the scarlet colour, that evaporates on exposure to the heat of melting; potash (prepared from seaweed); salt-petre; and a small quantity of the oxide of manganese. These ingredients, with one exception, are brought from various and distant parts of the world. The sand used at this manufactory is brought from the Forest of Fontainebleau, and is preferable to any other. In former times conglomerated silica (flint), was used for glassmaking; experience has, however, shown that this body granulated as sand is better adapted for the purpose. The grain of the sand is required to be even and regular, because if large it needs an excess of alkali and fuel, and if the division be too minute, it is apt to conglomerate in melting, in which state the alkali fails to attach the masses, which remain in the glass as white specks. Lynn river, Alum Bay, Isle of Wight, and Aylesbury, Buckinghamshire, were amongst the places famous for the supply of this article, but since the repeal of the French export duty, the neighbourhood of Fontainebleau has supplied the principal glass-works in Europe. This sand when washed and baked for the purpose of depriving it of carbonaceous matter, is of a beautiful colour, a little whiter than cream-colour, and remarkably fine in grain.

The red lead is carefully manufactured near Birmingham.

The potash-alkali for glassmaking is brought from Montreal, in America, but is refined in London, until it becomes "93" of purity. The oxide of manganese is also brought from America.

The usual formula for flint glass is one part by weight of alkali, two of lead, and three of sand. The quantity of the oxide of manganese used is very small, but no good flint glass can be made without it. If all the materials used for making this description of glass were pure, it would not be colourless without the manganese, for invariably a green tint would be produced by deoxidation; the greater the degree of heat, the greater the amount of deoxidation, and consequently the deeper the tint. To prevent this the oxide of manganese is used; it holds combined a large amount of oxygen, and has the property of parting with it very slowly, and supplies to the other materials, during the fusion, sufficient oxygen to maintain them in a certain state of oxygenation, in which state only a colourless glass can be obtained; if too much of this oxide is used, the glass is of a purple tint.

A very small quantity of the oxide of manganese changes the tint of a large body of melted glass; one quarter of an ounce making a visible difference in 16 cwt. of glass.

The materials, after having been carefully weighed, are then intimately mixed, and upon this the homogeneity of the melted mass depends; homogeneity is one of the great desiderata in glass.

Although the mixing of the materials for making the glass is a process requiring simply great care, the supply of the exact proportions demands the greatest judgment and experience; the condition of the weather, the quality of the fuel, and other matters have to be carefully considered. This delicate operation is performed by Mr. Pellatt himself, and upon the nicety of this preparation the quality of the glass in a great measure depends.

Near the mixing-room, where the various materials are stored, parties are at work washing, cleaning, and sorting broken and old glass, which is purchased at about 10*l*. a ton from the marine store dealers. The old glass is broken up, and mixed with a portion of the new materials: this is used for glass of an ordinary quality; for the very best glass virgin materials only are used. Before leaving this part of the manufactory it will be worth while to note the means by which the various colours of glass are produced.

Iron, cobalt, manganese, gold, and uranium, are the metals used for colouring glass; and these bases, in combination with various proportions of oxygen, produce all the coloured glass in general use.

The ordinary shades of green are the product of the oxides of iron and copper in different proportions; the yellow tint is due to the iron, and the blue tint to the copper. The carburet of iron gives a dull yellow colour; blue is produced by the oxide of cobalt; purple by the oxide of manganese; and the varieties of rose and ruby by the oxide of gold; topaz is given by the oxide of uranium; and emerald-green by the same metal, with the addition of a small quantity of copper. Glass is rendered opaque by the addition of arsenic; and the peculiar colour of the opal is produced by the phosphate of lime. The quality of all colour in glass is the result of a proper degree of heat during the fusion of the materials. A variety of colours upon the same article is produced by a thin coating of each being united in the manipulation, so that in the after process of cutting, one colour or more is made to appear as is desired.

In the furnace used for melting the glass nine or ten crucibles, or pots, are fixed; these are composed of the finest Stourbridge fire clay, which contains 6*l*. parts silica and 3*l*. parts alumina. Care is required to get rid of all impurities, for the smallest speck or air bubble, even a hair, is liable to make a fracture in the pot, and cause much loss and trouble. These melting crucibles, when tempered and ready for use, are worth 10*l*. and upwards, each. When required to be set in the furnace, they are gradually dried and heated to a great heat.

The time these pots last is uncertain. The setting of one of them is attended with great heat, and requires the assistance of all the workmen in this part of the establishment. Some of the pots contain from 15 cwt. to a ton of metal, which is worth about 50*l*.; this is liable to be wasted by fracture of one of the vessels. Carefully stored are a variety of those crucibles of different ages, waiting to be used in case of any emergency.*

Before visiting the furnace it is worth while to descend to a long dark chamber open to the air, that leads to the fire-grate, which by its glaring heat fuses the glass. This air tunnel admits the only current of air which is supplied. The fire, in which coke is now used instead of coal, is kept burning night and day, and from year to year, so long as the furnace lasts,—a period of from five to ten years. In old times, in England, there was a superstition that if a fire was kept burning for seven years, an animal, called a salamander, would be generated, which would be both terrible and dangerous! This creature, said to be of the dragon species, is evidently extinct in modern times; for those who have stoked these furnace fires for longer than the stated period have not seen a specimen!

Returning again to the glass-house floor, we are told that the glass-blowers discontinue their work on each Thursday night, when any metal remaining in the pots is taken out and poured into water. This causes the glass to break into pieces, and then the pure portions are taken out and sorted for remelting. Each pot or crucible is afterwards filled with the mixture which has been already described: this, by the heat, so much decreases in bulk that the pots require filling three times. During the melting, which occupies about sixty hours, the glass assumes various appearances. After the first ten or twelve hours it appears a honeycombed mass, very white and perfectly opaque.

* Portions of the old pots ground up and mixed with fresh clay are found to give a better product than what is altogether composed of the fresh materials.

These appearances yield to a transparent body filled with a thousand air bubbles; the white colour now gives place to a light purple tint, produced by the oxygen given off from the manganese. As the melting continues, the purple tint gradually vanishes, the air bubbles become fewer and larger, and at length quite disappear when the glass is fired ready for use.

In melting glass the heat required is intense. All the crevices around the furnace are luted up, and the draught is obtained in the manner just described. It is necessary that the heat should be evenly distributed throughout the whole furnace, and cause a reverberation of the flame from the centre or grate-room of the furnace, as much as possible to all points of the circumference. For this and other reasons, it has been found that the circular form is the most desirable for the manufacture of flint glass, and the most economical as regards the supply of fuel.

Around the furnace, which has been properly charged, is a busy scene. At each of the ten apertures, which, like so many blazing eyes, shine and throw out an intense light and heat, the glass-blowers are at work, fashioning, in the most wonderful manner, different objects, some of them of great beauty. In one part the workmen are forming wine-glasses; in another, tumblers, or decanters. The liquid flint glass seen through the orifice of the pot is of a bright yellow colour, and looks opaque. On touching the burning metal with one end of the pipe used for blowing the glass, it seems to be of a consistence equal to very thick paint; on turning round the pipe, the fused glass readily adheres to it, and with ease either large or small quantities can be taken from the pot. This part of the operation requires much skill and experience, and it seems wonderful with what exactness the proper quantity of hot glass is gathered for the particular work in hand.

The tools used for glass-blowing are very simple, and consist of a blowing iron; the workman's chair; a flat slab of metal, on which the glass is rolled into something like its intended shape; an iron rod, of about the same length as the blow-pipe; callipers, for gauging the diameter of various parts of the objects to be made; there are other measures marked for the height, &c.; also shears or scissors; the battledoor, a flat instrument used for squaring the bottoms, and the pincers, for taking hold of the work after it has been removed from the blow-pipe or rod. The proper quantity of glass having been taken upon the pipe, the workman proceeds to roll it on the slab just mentioned, and then, by a sort of instinct, to blow it into shape. While admiring the remarkable exactness with which the men perform this beautiful operation, and looking with surprise at the shapeless piece of glass assuming its intended form, we are reminded that glass-blowing is turning, with this exception, that besides an action upon the outer surface by compression, the reverse action may be used when required, viz. expansion from the interior by blowing. Every shape that can be turned by a simple lathe can be produced in glass by blowing.

As the glass cools the opaque appearance, which it has in the furnace, changes, and it appears as clear as crystal.

When in the hands of the glass-blowers the metal while hot can be severed either perpendicularly or horizontally, by drawing a cold iron point across it. The glass can also be cut with a pair of scissors almost as readily as cloth. It can be drawn to the fineness of the smallest thread, or blown to such a degree of thinness that the particles float lightly in air. In the manufacture of tumblers, when the glass has been blown to a certain size, and the bottom flattened with the battledoor, it is carefully gauged at the bottom and in the middle. A small quantity of glass is then gathered from the furnace on the point of the iron rod already referred to; and as it is a property of glass at a red heat, that one piece can be welded to another by mere contact, it is easy to fix the piece of hot glass off the rod to the bottom of the tumbler. The cold iron point is then applied near the end of the blow-pipe, and the yet unshapely tumbler is quickly separated from it. The glass has now something of the appearance of a round-bellied unfinished bottle; the required height is measured by the gauge, and the superfluous glass cut off with the scissors. The tumbler is put within the glowing heat of the furnace, is turned rather rapidly round, and the contracted part gradually expands, and becomes of the required shape. It is then taken out, straightened, and finished with a wooden instrument; compared with the pattern, and weighed in a balance provided for that purpose. It is singular to notice,

that thousands of glasses of this description are made which will contain as nearly as possible the same quantity of liquid, and scarcely vary in weight, by the same process. Glass vessels of all sizes, and of circular shapes, are thus produced. The drops and other portion of chandeliers and other solid substances, are cast in moulds; square bottles, with names upon them, are formed by being blown into moulds which have been deeply engraved. The moulds open in the middle to allow the hot glass attached to the blow-pipe to be admitted, and the bottle to be taken out when set.

If the various articles are of the proper form and without any flaws or other blemishes, they are carried while still hot to the annealing oven, which is so contrived that the glass is allowed gradually to cool. The reason of this is to prevent the glasses from cracking, as they would surely do if allowed to cool suddenly in the ordinary atmosphere. We are told that, in cooling, glass contracts in volume; but, being a very bad conductor, the surface chills and contracts, while the interior is still semifluid. The solidifying of the exterior confines the caloric, and it is in all probability the pressure upon the surface by the latent caloric which causes the fracture of the glass on suddenly cooling. The annealing oven is arched, and of considerable length. The heat when the glass is first placed is great, but it is so contrived that the glass is gradually allowed to cool as it reaches the further end. Two railways pass along the oven, on which square iron trays, on which the glasses are placed, can be drawn. These trays can be hooked together, and as soon as one has been filled and allowed to remain a sufficient time in the heat, it is passed on and gradually cooled. It takes several hours to reach the other end of the oven, but when it does so it is cold and ready to be taken to the glass-cutters, to be cleaned previously to its being placed in the warehouse. A curtain is drawn across the cool end of the oven, in order to prevent the breakage of the partly annealed glass by a sudden current of air.

Mr. Pellatt remarks that the process of annealing affects the colour of the glass, the amount of change depending upon the nature of the fuel and the period of time during which the glass is exposed to it. Glass of a purple tint during annealing becomes colourless: if the process be too long continued, it changes to green; and glass, apparently colourless previously to annealing, is afterwards tinged with green. The more carbonaceous the fuel the sooner are these results obtained. Glass, previous to annealing, is more brilliant than after; and, as the process reduces its brilliancy, the glass-maker should be careful of the degree to which he carries the process.

Having glanced at the men employed in examining and cleaning the manufactured glass, we pass on to the cutting-room, where a number of workmen are busily engaged at the lathes, which, with two exceptions, are moved by steam power. Some are cutting figures and patterns with iron wheels and sand; others smooth the result of this first operation with wheels of soft stone, and then wooden wheels are used for polishing the patterns first made by the iron wheel. Drinking-glasses of various kinds, desert dishes, jugs, vases, decanters, and many other objects were undergoing this process. As with the glass-blowing, so is it in this department, that the work of the men is in a great measure guided by the eye. A pattern is in the first instance cut, which is imitated with singular accuracy. Glass-cutting requires a peculiar description of design. The object to be attained is to present such a surface to the rays of light that instead of their passing directly through the glass, they may be broken or reflected, so that a play of light is always on the surface. Mr. Pellatt says, that in order to effect this, it is necessary that the lines forming the figure or pattern upon the exterior of the glass be the reverse of the line of the interior, and that the indentations upon the surface, or the projections left by them form angles. In the cutting called the diamond prism cutting this object is at once attained. The same effect is also produced by flattening, or flat cutting, because whenever two flat cuts meet, an angle is produced, forming with the line of the interior an imperfect prism.

The engraving of glass with crests, initials, and flower patterns is a nice art. This work is executed by wheels of a smaller size, and if tastefully done, has a beautiful appearance. We saw some examples of this work, chaste and elegant in design. The foliage and flowers were drawn with freedom and grace.

We found on inquiry that the glass-engravers, cutters, and blowers have seldom had much art-education, and doubtless great improvement

would be made if such workmen were in future trained in the schools of art. In America, we are told, glass cutters and engravers are nearly all able to draw and design. If this were generally the case in England, where the flint is so suitable for the purpose of glass-making that it insures, if proper means be used, a supply of flint-glass more pure than can be made in any other country in the world, we should hit upon such designs and new combinations of ornament and form as would prevent the fear of foreign competition in the British market. The artistic education of the eye would have the effect of causing the blowers to produce, with greater certainty, refined forms. On inquiring of some of the glass-cutters the effect which the introduction of steam power had on the wages of the workmen, we were told that, although they could produce three times the quantity—which of course enables the manufacturers to sell the article at a cheaper rate—the men can earn better wages than in the days when the old-fashioned lathes, turned by the foot, were in use. The labour is also less; and, in consequence of the men not being required to keep the foot and leg in action in moving the trestle, they are able to cut the glass with greater precision. The old lathes of the glass-cutter, as well as that of the potter, will before long be entirely out of use. It might be worth while to secure one of them for the purpose of placing it amongst the curiosities and machinery in the Brompton Museum. The grinding of the necks of air-tight bottles, and the stoppers and other operations are going forward. We must, however, pass them by, and glance at the show-rooms, where are stored many remarkable examples of the brilliancy of the glass made here. Models of the Koh-i-noor, and other celebrated diamonds, which look not less pure and sparkling than the originals. Large masses of flint-glass are exhibited, cut in such forms as to produce rainbow hues, most pleasing to the eye. It seems strange that from the opaque mass of sand, lead, and other material, a thing, in itself so colourless, pure, and lasting, can be produced. Various vessels of glass have been modelled on Etruscan and Greek forms, and cut in the proper patterns. When looking at these, and considering that the glass-blower must do his work at once—he cannot as an after-thought add a little or take away—the elegance of some of these forms seems surprising. There are other shapes which an artist might consider more choice, but manufacturers are obliged to suit various tastes.

While here we were enabled to solve a difficulty which has often arisen. Most persons have noticed that the surface of some kinds of looking-glasses becomes dull with a sort of mildew, and requires constant rubbing and cleaning. The same effect may be observed in windows: one square will require twice the trouble of the others, and yet not look so well. Wine glasses and decanters are affected with the same dullness; they seem to get coated over the surface with this impurity in the same manner as most metals do in damp places. Glass properly made, as has already been stated, is almost imperishable. The Portland vase, said to be about 1,600 years old, is still perfect in surface and details. The sweating of glass, which is an indication of decay, is caused by some manufacturers—considering the saving of cost—using soda in the composition of their glass instead of or with potash; and although at first no difference in quality can be detected, yet eventually it will be found that the glass is rendered useless thereby, from the minute but perceptible exudation of soda appearing like a vapour upon the surface. If water be used in this description of glass containing carbonate of lime, such glass is soon covered with an opaque coating which cannot be removed. This arises from the water having a greater affinity for the soda in the glass than for the lime which it holds in solution; the soda is therefore taken up by the water, and the lime deposited on the glass. Examples of this imperfect glass may be seen, covered thickly with a sort of crystalline substance: the glass, in time, cracks and falls to pieces. This should be a hint to housewives and others who use large quantities of glass, that owing to the extra breakage and labour of cleaning, the cheap glass formed of wrong materials is the most expensive in the end. In the Falcon Glass-works there appears to be every necessary arrangement for producing the best possible material.

BYZANTIUM AND ITS ARCHITECTURE.*

It was the eastern promontory, forming the first of the fourteen "regions," into which the city of Constantinople was formerly divided, and now occupied by the seraglio, that formed the site of ancient Byzantium; though, in all probability, the city extended over the three adjoining regions, which formed the western boundary of the triangle. The new wall of Constantine extended from the Golden Horn to the Propontis, at the distance of fifteen stadia from the ancient fortifications, and, with the city of Byzantium, enclosed five of the seven hills which reflected that time-honoured characteristic of old Rome. The rapid growth of the new city beyond the limits assigned to it by its founder, demanded a corresponding extension of its fortifications, and its increase along the harbour on the one side, and the Propontis on the other, suggested, during the minority of the younger Theodosius, about a century after its foundation, the necessity of protecting these suburbs, and the whole city, with a permanent enclosure of walls. The old fortifications were, therefore, razed, and the new wall constructed, in the year 413, by Anthemius, the Prefect of the city. In 447 it was thrown down by an earthquake, and rebuilt in three months by the diligence of the Prefect Cyrus. This double line of strong and lofty stone walls has, on the sea and harbour sides, in many places disappeared, but upon the land side, where it becomes tripled, it still exists in a dilapidated state, extending from the port to the Sea of Marmora, for about four English miles, presenting here and there magnificent and picturesque specimens of mural ruins. The Syce or fig-trees formed the thirteenth region, beyond the harbour, and the suburb of Blachinæ was not included in the city till the reign of Heraclius. The modern city includes Soutari, on the Asiatic shore, famed for its cemetery. Galata, the largest of the suburbs, and the principal seat of commerce, was not enclosed with walls until the fourteenth century. Pera, so named from the Greek *παρα*, beyond, as regards Galata, is the seat of diplomacy, but is almost devoid of Oriental character in its buildings.

The present appearance of Stamboul, Galata, and Pera, has been so recently and so well described in this journal by Mr. Burgess, in his "Architectural Reminiscences at Constantinople," that further remarks upon the matter are unnecessary. In spite of the efforts made by its founder to render his new city the focus of attraction for his subjects, its population never became considerable as compared with ancient Rome and modern capitals; and the Christian population was not estimated by Chrysostom at more than 100,000.

The fondly-cherished hopes of Constantine, that his new capital might prove a second Rome, were not destined to be realized. With the reign of Arcadius the virtual separation of the East and West was consummated; and though the lower empire still affected the name and attributes of the Roman nation, yet, in renouncing the language and the soil of Italy, each successive year but weakened the claims of the Greeks to a relationship which the Latins ultimately repudiated altogether. Up to the second capture of Constantinople by the Venetians and the French, in 1204, Constantinople remained the capital of the eastern, or lower Roman empire. It then became the seat of the Latin empire, until 1261, when it again fell into the undisputed possession of the Greeks, under whose rule it continued until the last of the Palæologi fell beneath the walls of his capital, exclaiming with his last breath, "Ὁ Θεὸς ὁ πᾶσι τοῖς Ἕλλησι."

"O thou last Cæsar! greater midst thy tears
Than all thy laurels' and renowned ceasars,
I see thee yet: I see thee kneeling where
The Patriarch lifts the cup and beates the prayer,
Now, in the tempest of the battle's strife,
Where trumpets drown the shrieks of parting life;
Now, with a thousand wounds upon thy breast,
I see thee pillow thy calm head in rest,
And, like a glory-circled martyr, claim
The wings of Death to speed thy soul from shame."

The military or civil policy of Constantine, after the lapse of ages, may have ceased to influence the present state of European civilization; but the removal of the seat of his government is as firmly linked with the vicissitudes that art and literature have experienced from that day to this, as his conversion is indissolubly connected with the existing religious opinions and interests of the most enlightened portion of mankind. Italy, the favoured nursery of arts and letters, was to be deserted by her children; long periods of desola-

tion and affliction were to prostrate her monuments, fetter for ages her genius, and quench her martial fire for ever; until the germ of beauty, lying lingering in the soil best suited to its development, should once again expand into the goodly tree that has covered with its luxuriant branches all who have sought their shelter. Constantinople had now become the seat of government and the centre of all that was illustrious or celebrated in the state. "e à Roma," says Tiraboschi, "altro quasi non rimaneva che la magnificenza delle sue fabbriche, e un'ombra apparente di pompa e di maestà. Quindi, per così dire, gli studi passarono da Roma a Constantinopoli, ed ivi fiorirono felicemente, ove sperar potevano ricompensa ed onore."

In the translation of the imperial throne from Rome to Byzantium, with all its circumstance of regal pomp, ministerial presence, military display, artistic skill, and ecclesiastical and secular learning, necessary for upholding the dignity of the court of so powerful a monarchy, one would imagine that a sensible effect must have been produced upon the Greek language itself by the infusion of so large a proportion of foreign elements into its constitution. Such, however, does not seem to have been the case. The preference for Greek letters and arts, which had so long prevailed at Rome, accompanied the royal emigrant and his courtiers to the land of their adoption, and that they were more ambitious to adopt the Greek than to diffuse the Latin language, the result can leave no reasonable room for doubt. Indeed, this removal of the seat of empire tended to engender a still further spread of the Greek root than before, as the presence of the imperial court—the fountain of honour and patronage—in the land where the language of its predilection was vernacular, rendered its cultivation and preservation more important than ever. In proof of the prevalent taste for the study of the Greek tongue, we may remember that in the best days of the empire no Greek seems to have written in Latin, though living in Rome and writing on Roman matters; while, on the other hand, the Romans, whilst taste remained, evinced their admiration of Greek by its general cultivation.

Great as were the intrinsic beauties of the language itself, it put forth a higher claim still in its writers; and during the most resplendent period of the Caliphate, the Mahomedans, whilst appropriating portion after portion of the Byzantine empire to their own use, paid willing homage to the superior learning of the Greeks, by enriching their own libraries with the choicest treasures from so capacious a storehouse.

Whilst supplied with ample means for criticising the sparing virtues, ample vices, and political actions of the emperors, the Greek chronicles afford us but little insight into the discordant nationalities and various classes that composed the general mass of Byzantine society. We know that the Greek, Armenian, Slavonian, and other heterogeneous races, with the prevailing distinctions of freemen, serfs, and slaves, were all blended in unity by the powerful arm of Constantine, though all retaining their own national peculiarities; but the exact share or influence of each separate mass is yet to be ascertained.

Three periods of strongly marked individuality present themselves in Byzantine history. The first embraces the duration of the iconoclast struggle, and includes the period from the commencement of the Isaurian dynasty in 717, to the end of the Amorion dynasty in 867. It exhibits the struggle of the emperors to consolidate the supremacy of the imperial authority, and confirm themselves as the heads of ecclesiastical as well as of civil legislation, the popular resistance to which found expression in a tenacious adherence to image-worship. The salvation of the empire, and indeed of Christianity, from the Saracens, by the skill and courage of Leo III. forms one of the most brilliant exploits of the time. By his unwearied efforts, the power of the Caliphate ceased to be formidable to the empire, until its energy was revived under the Abbassides. Amongst the immediate successors of Leo the Isaurian, the warlike but vicious Copronymus,—the beautiful but cruel Irene, the Athenian,—the battle-slain Nicephorus,—the martyred Leo, the Armenian,—and the accomplished but "unfortunate" Theophilus,—all present instances of a laudable struggle for the furtherance of the national prosperity.

The second period extends from 867 to 1057, and includes the rule of the Basilian dynasty. During this period the Byzantine empire attained its highest pitch of external power and internal prosperity. The Saracens were defeated in Syria, and Antioch and Edessa were remitted to the empire. The Bulgarian monarchy was conquered,

SWANSEA.—The new Jewish Synagogue is ready for use. The builder is Mr. Holtham, of Bath.

* See p. 404, ante.

and the Danube became again the Northern frontier. The Slavonians in Greece were almost exterminated. Byzantine commerce filled the whole Mediterranean, and established the claim of the emperor to the title of its autocrat, and the sanctity of the law was more fully recognized than it had ever been before.

The third period extends from the accession of Isaac I. (Comnenus) in 1057 to the conquest of the empire by the Crusaders in 1204. "This," says Finlay, "is the true period of the decline and fall of the Eastern empire. It commenced by a rebellion of the great nobles of Asia, who effected an internal revolution in the Byzantine empire by wrenching the administration out of the hands of well-trained officials, and destroying the responsibility created by systematic procedure. A despotism supported by personal influence soon ruined the scientific fabric which had previously upheld the imperial power. The people were ground to the earth by a fiscal rapacity, over which the splendour of the house of Comnenus throws a thin veil. The wealth of the empire was dissipated, its prosperity destroyed, the administration of justice corrupted, and the central authority lost all control over the population, when a band of 20,000 adventurers, masked as Crusaders, put an end to the Roman empire of the East."

The history of the city of Constantinople itself, as regards its architecture, may likewise be divided into three periods:—from its foundation to the reign of Justinian; from Justinian to the Turkish conquest; and from that event to the present day.

Few cities, however, have experienced so ample an allowance of "most disastrous chances." Of the architectural glories of the early city of Constantine, but inflated and unsatisfactory descriptions remain to us: haste in execution, bad construction, fires, earthquakes, revolutions, and the fury of the invader, have levelled to the earth those perishable records of a most interesting period, leaving but scant foundations or doubtful sites to perplex the antiquary or amuse the curious traveller. What Providence had spared up to the Latin invasion was sacrificed to that event; and in the conflagrations that accompanied it the measure of four of the largest French cities of the day was reduced to ashes. The number of churches and palaces consumed, of families ruined, and the amount of merchandise destroyed by this invasion, would be a difficult task to calculate. To the same ruthless followers of Baldwin and Dandolo the desolation of the Hippodrome is due, and of the numerous statues and works of art that adorned it not one survives, save in history. Of the buildings mentioned in the "Notitia," before alluded to, as existing in the reign of Arcadius, about a century after the foundation of the city by Constantine, not one exists; and we are fain to console ourselves for the departed glories of the first period of Constantinopolitan art by the scanty inheritance of the two obelisks in the Atmeidan, that of red granite being attributable, as the inscription testifies, to Theodosius; the brazen column of the three twisted, but now headless serpents, which, according to legend, bore the golden tripod of Delphi; the Burnt Column of porphyry in the fowl-market, near the Mosque of Omar, once crowned with the statue of Constantine, bearing the attributes of Christ and Apollo; the Historical Column of Arcadius, in the female-slave market, of which nothing but the pedestal carved with his exploits, and part of the base, now remain; the Column of Theodosius within the Seraglio Garden; the "Seven Towers," immortalized by Byron, and renowned for its "Golden Gate;" the reservoir called the "Cistern of Constantine," or the "Palace of the Thousand and One Pillars," and another vast reservoir, constructed by the Greek emperors at a later date, supported on 336 marble pillars, with an arched roof over, and known by the title of the "Subterranean Palace."

Apart from the 4,388 houses, distinguishable for size or beauty, which the "Notitia" mentions as existing at Constantinople in the time of Arcadius, the mass of plebeian habitations were poor and small, and the streets so narrow and crowded that a view of the sky was difficult to be obtained. As the same authority only assigns to Rome 1,750 large houses, *domus*, the word must in the latter case have had a more dignified signification, especially as *insule* are not mentioned at Constantinople.

The second period in the history of the city begins with the reign of Justinian, generally honoured with the title of its second founder, whose first task was to repair the damage caused by the destructive fires that attended the Blue and

Green factions of the Circus, and the memorable sedition of the *Nika*. The reign of Justinian constitutes the most brilliant epoch of Byzantine architecture, which thus early attained a development so independent of Gothic and Romanesque, that what was afterwards affected in the style, was but the working out of those essential forms, in favour of which the Turks abandoned the light and airy style which had characterized them in Asia Minor, and at once adopted the solid masterpiece of Justinian as their model. The Church of the Divine Wisdom, founded by Constantine, enlarged by Constantius, burnt down in the reign of Arcadius, rebuilt by the younger Theodosius, and burnt down again in the reign of Justinian, in the disturbances of the Hippodrome, was, for the third and last time, reconstructed by that monarch, twenty years after, in a style of far greater splendour than before, and upon a greatly increased scale.

Of the plan adopted by Anthemius and Isidorus for giving the cupola an air of the greatest possible lightness by so disposing the piers of the transept arches as to conceal their apparent support, and diminish the real security of the fabric, we need not here recapitulate the well-known principles. The result soon demonstrated their error, as in 558 an earthquake destroyed the eastern half of the dome, overthrowing the holy table and tabernacle, and destroying the raised terrace, and necessitating its entire reconstruction, which was accordingly performed, with important variations from the original one, by Isidorus the younger. Among other additions, the outer porch, or exo-narthex, may possibly have been included at this time, as it did not form part of the original design. However, in the thirty-sixth year of his reign, Justinian celebrated the second dedication of a temple, which remains, after the lapse of thirteen centuries, allowing for minor additions during succeeding reigns, and a partial reconstruction of the dome in 987, an enduring monument of his fame.

The walls were of brick, the vaults of brick and stone, and external effect seems to have been sacrificed entirely to the necessities of construction, in the production of a building that should present an internal marvel of form and decoration. Ponderous counterforts and other mechanical contrivances; lean-to roofs and semi-domes clustering round the square central mass of the building, roofed by a flat segmental dome which almost disappears in perspective from a near point of sight; plain semicircular-headed windows without dressings, and an utter absence of all forms of Classical architecture or ornament of any kind, constitute the leading features of the exterior of this plain but impressive edifice, which at first sight conveys the notion of meaningless confusion until a knowledge of its plan and section clears up its mysterious complexity. Of its internal beauty there can scarcely be an adverse opinion; albeit, the flatness of the impression of a ceiling rather than a dome, is anything but an advantage; and in the previous dome, said to have been still flatter, the effect must have been still more unsatisfactory. Apart from this, however, its remarkable ovoidal plan presents combinations of great beauty from every point of view; and when surveyed from the centre of the Gynaecionis, just over the great central door, the effect of space conveyed by the disposition of dome and semi-domes, and the radiating absidal cupolas, gradually diminishing in height till they join the columns of the galleries, present altogether a spectacle of grandeur, which, resplendent as the building was, and is, with coloured marbles, gilding, and mosaics, might well excuse the pious boast of its founder. In mystic and poetic language does Paulus Silentiarius, in his *Ἐκφρασις τοῦ ναοῦ τῆς Ἁγίας Σοφίας*, describe these precious marbles, jaspers and porphyries, which encrust with a gorgeous lining the meaner materials of the walls and pavement. Porphyry columns from Baalbec, green marble ones from Ephesus, and others from Troas, Cyzicus, Athens, and the Cyclades, and stone from the quarries of Asia Minor, Greece, Egypt, Africa, and Gaul, contribute to the general effect of the church; and the temples of Isis and Osiris, of the Sun at Heliopolis and Delos, the Moon at Ephesus, Pallas at Athens, and Cybele at Cyzicus, have all assisted in the great Christian triumph of Justinian.

The method adopted by his architects of raising this dome upon the four piers of as many vast arches forming the sides of a square, and then bracketing out the angles till a circle had been obtained as a springing for it, was probably in use upon a small scale previous to so bold an application of it. It is not improbable, too,

that their original intention may have been to construct the building upon the plan of a complete Greek cross, by forming transepts to the north and south sides equal to the east and west apses, and that doubts of the stability of so large a fabric may have occasioned the idea of closing up the latter arches with masonry, and adding buttresses as a substitute for the resistance of another pair of semidomes. But this is but surmise, and at all events the plan, as carried out, presents features well worth attentive consideration at the present day. "It is certain," remarks Mr. Fergusson, "that no domical building of modern times can at all approach Sta. Sophia's, either for appropriateness or beauty. If we regard it with a view to the purposes of Protestant worship, it affords an infinitely better model for imitation than anything our own Mediaeval architects ever produced." Fossati, the architect entrusted with the late repairs and decorations of the mosque, considers that the exterior, now plastered and painted in stripes to imitate courses of brick and masonry, was formerly covered with thin slabs of marble like the interior; but this, though not improbable, cannot now be ascertained, all traces of such having disappeared. In 1453, Mahomet II. having converted it into a mosque, obliterated its Christian emblems in mosaic by covering them with paint and plaster. These mosaics, scattered over the vaults, domes, arches, and pendentives, and comprising single figures of doctors, prophets, and cherubim of various dates, but none, probably, so far back as Justinian, were uncovered, cleaned, and restored by Fossati, but are now again concealed from the eyes of the faithful by silver stars and other devices. The group over the great door of the Narthex, containing the prostration of Constantine Pogonatus before Christ, is now covered with a removable coat of paint. What mosaic ornaments are left exposed consist of minutely worked diapers of small tesserae. The only other work of importance since the addition of the heavy external counterforts by Mahomet II. and the minarets by Selim II. and Amurath III. is the late thorough restoration under the Sultan Abdul Medjid, to which the world of art is indebted for the beautiful work of Salzenberg, and in which the greatest constructive improvement to be noted is the disengagement of the cupola from the four buttresses, and the substitution for their support of a double girdle of iron round its base.

With Sta. Sophia, as we before observed, internal Byzantine architecture reached its climax; but the style externally had yet to be developed. Thus did the revolving cycles of time terminate the struggle between the rival forms of the circle and the rectangle, by a happy combination of both principles.

The numerous churches, in greater or less preservation, scattered over the countries of the East that were influenced by Greek Christianity, and which were built upon the same principles, and exhibit endless modifications of the peculiar features of those which adorned the capital, form a study of great interest, as proving how far the Byzantine element had extended at that period, and offering an abundance of examples for the study of its peculiarities. The influence which, directly or indirectly, the Byzantine style exerted, at a later day, upon the western architecture of Italy, Germany, France, and Britain, and the northern architecture of Russia, and the consideration of which we must defer to our concluding remarks upon this subject, is still more interesting and important. No church upon a scale at all approaching to that of Sta. Sophia ever afterwards appeared in the Byzantine empire, and few of even a secondary size (which is the more remarkable, considering that for several centuries it was the richest in the world, and the one most occupied with ecclesiastical matters and church ceremonies), and Charlemagne contrasts the magnificent endowments of the Frank churches with the meanness of the Greek. Of the numerous churches built by Justinian in Constantinople, that of the Holy Apostles, now replaced by the Mosque of Mahomet II. wherein Justinian and the rulers of the empire reposed in coffins of porphyry, granite, and serpentine, was the second in importance. The few other Byzantine churches now converted into mosques, but retaining their old features, besides the Romanesque Agios Joannes (said to be the only example of the Roman basilican type remaining in the East), and the Agios Sergios, are comprised in the Aya Theotokos, the Aya Irene (now used as an armory), the Agios Pantokrator, the mosques of Fatiche Djami, Gunl Djami, and the Imracho Djami, formerly the church of St. John Stadiis.

Amongst the few Christian churches at Constantinople which claim a Byzantine origin, that of Mount des Korais illustrates the method, immediately succeeding the completion of St. Sophia, of making the windows of the cupola an important feature in its composition, and which finally resulted in the fenestrated cylinders of the great domes of the Renaissance.

In the endeavour of Pierre Gilles (better known to scholars under the name of Petrus Gyllius), in the middle of the sixteenth century, to trace the ancient city amid the confusion of the modern one, we know not which feeling prevails, admiration of his zeal or pity for his sufferings.

Upon first reading the "Notitia," he was in hopes with comfort to have traced out the ancient city in the intricacies of the modern one; but he soon found that the destruction made by the barbarous Mahomedans, whose ignorance and superstitions were only exceeded by their love of mischief, and the terrible fires that had occurred since the Turkish occupation, had rendered the task of investigation one of almost insuperable difficulty. With the Greeks, too, he fared no better, scarcely meeting a man amongst them who either knew, or cared to know, where the antiquities of their capital were to be found.

"The difficulties I laboured under," says he, in the words of his translator, Ball, "in the search of antiquity here were very great. I was a stranger in the country, had very little assistance from any inscriptions; none from coins—none from the people of the place. They, as having a natural aversion to anything that is valuable in antiquity, did rather prevent me in my inquiries, so that I scarce dared to take the dimensions of anything, being menaced and cursed if I did by the Greeks themselves. Had I not seen, the time I lived at Constantinople, so many ruined churches and palaces, and their foundations, since filled with Mahomedan buildings, so that I could scarcely discover their former situation, I had not so easily conjectured what destruction the Turks had made since they took the city. And though they are always contriving to beautify it with public buildings, yet at present it looks more obscurely in the day than it did formerly in the night; when, as Marcellinus tells us, the brightness of their lights, resembling a meridian sunshine, reflected a lustre from their houses. The clearness of the day now only serves to show the meanness and poverty of their buildings; so that, were Constantinople itself alive, who rebuilt and beautified it, or others who enlarged it, they could not discover the situations of their ancient structures." One more lament does Gyllius make, even more touching than the preceding, and as it is a classical one, we will leave it in the language of its expression:—"Ad hoc incommoditate accedit, quod ex antiquis scriptoribus Græcis non adjuvari potest ad Constantinopolis cognitionem: non enim Dionysius Halycarnassus, non Livius, non Strabo, non Vitruvius, non Varro, non alii infiniti, ad cognoscendum novam Romam, sicut antiquam, mihi auxiliati sunt; non Blondus, non Fulgiosius, non alii plerique mihi digitos ad fontes intenderunt, non ignotus scriptor patrie Constantinopolitane quicquam me docere potuit: . . . adeo omnia immutata sunt, ut non modò quæ supra memoravi viventium antiqua dicere possumus, sed etiam quæ sunt supra singulos cursus ætatis, antiquæ dici possunt."

In spite, however, of all these terrible obstacles Gyllius did discover the situation of the fourteen regions; but he warns future antiquaries that as the inhabitants are daily denuding, effacing, and utterly destroying the small remnants of antiquity that exist, any future explorer will not be able to make further discoveries amongst their monuments. By such obliteration of the scanty landmarks of the old city, the short work of Gyllius becomes of paramount importance in Constantinopolitan topography.

During the reign of Justinian,—statesman, lawyer, and theologian, poet and philosopher, musician and architect,—except the laborious compilations of the Code, the Pandects, the Institutes, and the Novella, but few literary works of note appeared.

It was not alone the edict of silence upon the schools of Athens which crushed the spirit of philosophy and discouraged the votaries of science, but it was the rage of polemical controversy which, from the highest to the lowest of a nation irritable and litigious, but keen and penetrating, diverted the learned from the cause of literature and art, and turned their energies to the elucidating and furthering of one or another of those subtle points of difference which had split each leading heresy into minute subdivisions.

The Arian heresy, in the fourth century, was

the first great cause which kindled the fire of controversy, never afterwards to be extinguished, and the followers of Nestorius and Eutyches were divided upon these two points of doctrine alone into a series of ramifications that could not readily be numbered. The Greek language was the medium of discussion in all those various questions, and had its inexhaustible resources, elegant phrases, and silvery tones been employed in enlightened and liberal teaching, upon a broad basis, rather than in the narrow and sectarian spirit of mere proselytism, how great might have been the result in the spread of taste and erudition. But the school of philosophy had now supplanted the academic retreat, and there must we look for the state of literature of the day. Exulting in the copiousness and fine precision of its language, Greek Christianity was characteristically speculative and investigatory, and no sooner was one curious question exhausted than another arose to supply its place. Until the institution of the metropolitan, and afterwards of the patriarchal dignity, the Greek churches were a federation of republics, individually independent, but collectively united by sympathy, creed, rites, and habits; and though the apostolic foundations might be held in higher repute or respect than others, yet there was no supremacy. Paganism extinct, Eastern Christianity lost aggressive power, and achieved no further conquests of importance. Sassanian Magianism and triumphant Mahomedanism still further reduced its sphere of action, whilst contested patriarchates and metropolitan intrigues contributed to sink the ecclesiastical fabric into the shadow of its former self. One characteristic remained long after the great Greek writers had passed away—the love of theological disquisition. Finally, the Greek language gradually, but slowly, degenerated, until, after the fall of Constantinople, it broke up into barbarous dialects, but evoked no new language of beauty from the fusion.*

FRESCO-DECORATION: THE ROYAL EXCHANGE.

OF the various modes of mural painting in which expression can be given to artistic skill or feeling, the most important is undoubtedly that termed "fresco." In this method were executed the greatest works in painting that human genius ever contemplated. During what is called the *cinque-cento* period, in the hands of Leonardo da Vinci, Michelangelo, and Raffaele, fresco painting became the chief glory of that golden age of art. The present age has already witnessed, in some degree, the revival of the practice of adorning architectural structures with noble and permanent works of art, which had gradually declined in Italy since the end of the sixteenth century. The movement commenced with the decoration of the Chevalier Bartholdy's house at Rome, by Cornelius and other German artists. Many of these artists were afterwards invited to Munich by the ex-king Ludwig, of Bavaria, to embellish with frescoes the magnificent buildings then constructing under his auspices. To Cornelius and his pupils are also due many of the best modern frescoes in Berlin. In Paris, mural decoration has of late years been employed for the embellishment of the exterior as well as the interior walls of churches and public buildings. The Hémicycle of Paul Dela Roche, which is perhaps the best known wall-painting in Paris, though possessing all the breadth and freedom of fresco, is executed in oil; but mural decorations in fresco, and encaustic, by some of the most distinguished modern French artists, are to be admired in the churches of St. Eustache, St. Vincent de Paul, Notre Dame de Lorette, St. Germain l'Auxerrois, and the Madeleine.

In England, before the exhibitions of cartoons in Westminster Hall during the year 1843, and again in 1845, and the evidence taken, had confirmed the Commissioners of Fine Arts in their approval of fresco for the decoration of the Houses of Parliament, some attempts had been made to form an English school of fresco painting; and royalty had set the example of exercising the invention and skill of our native artists, by entrusting to them the adornment of the little pavilion in the gardens of Buckingham Palace, and some other works, as an experiment. The Houses of Parliament then presented a great opportunity for the revival of fresco-painting in this country; and our artists proved that they felt the importance of the occasion. The paintings now existing in the House of Lords, although not all successful, are a sufficient proof of the value of fresco-painting

for the highest purposes of the artist. Nevertheless, its broad sphere of applicability and its general advantages of permanency, as well as its beauty, have not yet been sufficiently recognized. It is an art that concerns not alone the artist who should employ it in his noblest efforts; but also the chemist, who should furnish the means for rendering them enduring, and the architect whose structures it should embellish—the builder to whose labours it should add grace and beauty. We have here to speak of fresco as a method or process of mural decoration, and as such we do not think it has yet been duly appreciated, at least in this country. Even in the highest branches of art applied to architectural adornment, other processes appear to have been generally adopted in preference to this—the most admirable because the most unchangeable. For *buon fresco*—real fresco—methods inferior in every respect save that of adaptability to mediocrity of talent have been substituted. *Fresco secco*, always heavy and opaque, *tempera* or distemper, which may conceal the want of skill in the artist, but which, in the words of Vasari, "brings on patchings, stains, retouchings, colours one upon another, and brush-marks, after the colour is set, which is the vilest thing in the world, being the evidence of shallow power," and also oil colour upon a non-absorbent surface, are employed instead of the legitimate but more difficult process; and the painting is simply renewed when its dim smoky surface attests the worthlessness of the expedient. This system of renewal is unworthy of England, where, we hesitate not to say, the love of what is beautiful is general among other sterling though more material qualities. In England, the idiosyncrasy of the artist, his contempt for what is stereotyped or measured by the two-foot rule, his distaste for "order" and punctuality, his erratic fire and meditative indolence, producing that which well-regulated but common-place industry alone could never achieve, are not understood, and are discouraged from youth upwards. So much the better, perhaps; but it must be remembered that where these qualities are rooted out—not simply sobered or guided, we lose the artist, and we gain a very ordinary man of business. The Anglo-Saxon sometimes mistakes genius with its abstraction, its shyness, and its reserve, for simple stupidity; but, nevertheless, under his rude energy, hardened and steeled for the world's material struggle, there is enough poetry to comprehend and respect the beautiful,—enough love for it to wish to render it immortal.

It is to this feeling for art among the old masters that we owe the process of fresco-painting, the result of their laborious and enthusiastic research into all the means and materials of the artist. As it now is, the modern chemist can but give his testimony to its excellence: he can scarcely hope to improve or surpass it. Him it regards in our days to guide the artist in the choice of substances to work with and to work upon, since the latter has no longer, as of old, a laboratory beneath his own roof, nor in most cases a practical knowledge of the chemical properties of the compounds he employs. The *intonaco* of the fresco-painter,—a mixture of finely-sifted sand and lime,—is in its fresh state admirably adapted for the absorption of the pigments used by the artist; and these, being in admixture with lime, become an integral portion of the resulting compound, one of the most durable and changeless with which the chemist is acquainted, namely, the silicate of lime. The peculiar characteristics of fresco, its brilliancy and permanency, are due to the fact of its not consisting merely in a *surface* of perishable material. The layer of brightly-coloured silicate of lime is subject to none of the changes produced by light, air, moisture, and alternations of heat and cold upon compounds of oil or gelatine. And its hard polished surface affords but little hold for the impurities existing in the atmosphere; and, moreover, can be readily cleaned.

We have been led to these remarks by observing the superiority of the new decorations of the Royal Exchange (already alluded to in these pages) over those which are at length being "renewed,"—albeit both are the works of the same artist. This superiority may now be appreciated by merely stepping across the quadrangle from one ambulatory to the other, and contrasting the old decorations with the new. Like all oil paintings in similar situations, the former appear cramped and gloomy; while the latter are bright, translucent, and cheerful, giving to the eye the effects of light, breadth, and space. It has sometimes been maintained that fresco, from its very brilliancy and lightness, is not adapted to the heavy atmosphere of our climate, more especially

* To be continued.

in an exposed situation. But this opinion appears now to be practically disproved, even in the metropolis:—

"Ubi caelum condidit umbrā
Jupiter, et rebus non abstulit alia colorem."

It is related of a Frenchman, who chanced to visit London during the period of a three days' fog, that he returned in all haste to his own country with the sincere conviction that the climate of England was wholly unadapted to any description of painting that could not conveniently be viewed by candle-light. Those who would forbid the introduction of fresco-painting into England, on the score of climate, appear to labour under the same misapprehension. Even in London the sky is by no means always overcast and gloomy; and there appears to be no reason that dulness and opaqueness of decorative painting should be adopted to harmonize with what may even be the general condition of the atmosphere. When this, thanks to the "Smoke Act" and to the natural conditions under which the sun becomes visible, happens to be clear and cheerful, it is a double pleasure, and one fully to be appreciated, to meet with clearness and cheerfulness in architectural decoration,—to find, even for an instant, the sky of Italy and the glories of her ancient art combined in the very heart of our great metropolis. And it would seem that fresco, which it has been sought to banish, is indeed the only painting that can withstand the action of our atmosphere. The proof was difficult; for prejudice, not reason, had been so encountered. If the lovers of "the manly and effective art" that shed so much lustre upon the masters of the cinque-cento period are now to have their hopes and wishes gratified on an extended scale in one of the most important structures of London, it is to a stratagem on the part of the artist that it is due. This gentleman, Mr. Sang, whose decorative works are well known, introduced a small specimen of real fresco into the hasty and temporary decorations executed by him some fifteen years ago in the Royal Exchange. It was this specimen which furnished the proof of the adaptability of fresco to a much-absurd London atmosphere, and which decided the Gresham Committee to choose at length this mode of permanent ornamentation for the building in question. And from the cunning device of an artist to verify his conviction, it may result that our own country may henceforth be included among those nations who have welcomed and retained fresco as a familiar and cultivated guest.

PROGRESS OF THE NEW WESTMINSTER BRIDGE.

THE last rib in the southern portion to be first opened for traffic, of the new Westminster-bridge, was completed last week, at the arch first on the Middlesex side; and the longitudinal and transverse girders have been fixed in this portion of the intended width of the structure. The buckled plates upon the girders are laid throughout the greater part of the distance; and upon them, the filling-in work of wood blocks and asphalt in the hollows formed by the buckling, is also very far advanced. The work yet to be done includes the paving of the roadway and footway, the southern parapet, and the masonry of the semi-octagonal piers, which will form the facing above the cut-waters. The parapets of the approaches are being proceeded with. The character of these, in the weatherings and mouldings, is made to resemble that of the parapets to the terrace of the Houses of Parliament. The sunk garden, or area, north of the Houses, is in course of completion, as well as the stairs from the water, which are close to the bridge. Boarding is being placed along the north side, as the temporary parapet there of the portion of the bridge to be opened. There is every appearance that the bridge will be completed before the requisite provision is made at the street approaches. There are no signs of the removal of the houses on the south side of Bridge-street, which are still occupied. A bill certainly was brought into Parliament this year, by the late Government, to give power to obtain possession of the houses; and 20,000l. were voted towards the formation of approaches, at the close of the last session; but there seems to have been some hitch about the matter, resulting from changes in the Government or Parliamentary interference. Should the half of the bridge be opened in November for carriage-traffic, before the houses are removed, there will be many accidents. The work completed towards the second or northern portion is considerable in quantity, and, besides, will much facilitate the removal of the old bridge. It includes the whole substructure in the case of three out of the six

piers of the new bridge, which were not interfered with by the position of those of the old bridge. One of these piers passes under one of the ruinous arches; so that there must have been some ingenuity required in getting the piles driven or fixed, with centreing in the way of the operations. Seven of the fifteen ribs in each arch of the whole bridge are now fixed, forming a continuous piece of construction, from shore to shore, of masses of cast and wrought-and-riveted iron bolted together; the superstructure of each pier being in fact formed of iron castings, and only faced above the cut-waters, in the manner above mentioned, with granite. To meet the objection made before the committee of 1856, regarding expansion and contraction, which Mr. Stephenson seemed to think might amount to such a dimension as 4 inches in the length of the bridge, it was then mentioned that vulcanized india-rubber was to be provided between the joints of the longitudinal girders, and that the arches needed slight provision, since they would rise and fall as in other iron bridges—the change of temperature in this case extending to half an inch each way; and that it was the practice with some engineers to fix the iron in such manner that the force from expansion would be "expended upon the iron itself, exerting a compressive force of one ton per square inch for every 15 degrees of increase of temperature." It was stated at a later date, that "supposing a difference of 60 degrees of temperature, the rise of the outer rib of the centre arch would not be more than half an inch above the mean line, and the fall half an inch below it, and this rise and fall would be very gradual," and it might be further reduced by coating with a non-conductor. The longitudinal girders were expected to be subject to an increase in length, equal to one-sixth of an inch at each joint. The vulcanized india-rubber will be used in one set of joints over piers. As regards the arches, Mr. Stephenson suggested that "part of the angle iron of the upper flange of the wrought-iron ribs" should be cut, and a wedge inserted. After the evidence touching Southwark-bridge, and the precarious state of Sunderland-bridge, some provision was necessary.

THE LATE MR. FREDERICK CRACE.

WE hear with regret of the death of Mr. Crace, the elder, whose talents as a decorator have long been acknowledged. He died at his residence in Hammersmith, on the 18th September, in the 81st year of his age. In early life he was employed to carry out the most important decorations that were at that time executed, more especially for the Prince Regent at Carlton House, and the Pavilion at Brighton; afterwards, he was engaged in the principal decorative work at Windsor Castle and the Fishing Temple at Virginia Water. Mr. Crace has always taken great interest in the history and topography of London, but for the last thirty years of his life he has devoted himself, with untiring energy and industry, in perfecting a very valuable and extensive collection of maps, plans, and views of every part of the metropolis from a very early period to the present time. He has left this collection to his son, Mr. J. G. Crace, whose taste and acquisitions are well known.

THE MONUMENT IN EAST SHEFFORD CHURCH.

THE observations made by Mr. Planché in this church on the occasion of the visit of the British Archaeological Association, seem to have been misunderstood by the reporters. He demonstrated clearly by the arms on the lady's seal in the British Museum, that she could not be a princess of Portugal, though she might have been a collateral descendant from an illegitimate branch of the royal house. He pointed out that Sir H. Nicolas and Sir Frederick Madden had, many years ago, shown that Beatrice, the daughter of John I. king of Portugal, who married first the Earl of Arundel, and afterwards the Earl of Huntingdon, was a distinct person from Beatrice Lady Talbot, who lies at East Shefford, and commented on the tenacity of error, as writers still continued to confound them; and went on to say, that he believed the latter would prove to be one of that branch of the great *Sousa* family, who were Lords of *Pinto*, thereby reconciling two contrary opinions expressed by former writers. The speaker also gave the precise date of the death of the lady,—*"Christmas-day, 1447."* In the church, Mr. Planché was fortunate enough to find a very fine visored bassinet of the time of Henry V., which he had no doubt belonged to Thomas Fitzplace, the second husband of Lady Talbot, whose effigy lies beside hers.

NOTABLES BURIED IN THE OLD CHURCH OF ST. MARTIN-IN-THE-FIELDS.

AMONGST the painters and sculptors who were buried in the old church of St. Martin-in-the-Fields may be mentioned Nicholas Stone, the sculptor. There was a marble monument at the west end of this church to this artist:—

"In his life-time esteemed for his knowledge in sculpture and architecture, which his works in many parts do testify; and though made for others will prove a monument of his fame. He departed this life on the 24th August, 1647, aged 61, and 14th buried near the pulpit of this church."

This monument was adorned with his bust, finely carved in profile, with several tools used in sculpture, a square, compasses, &c. His son, also a sculptor, was buried in the same grave, September 17th, and his wife the following November the 19th, 1647.

Nicholas Stone was born at Wandbury, near Exeter, in 1586, and, coming to London, lived for some time with Isaac James. He then went to Holland, and married the daughter of Peter de Keyser, for whom he worked at his profession as carver in stone. He returned to England, and was engaged in the building of the Banqueting-house, Whitehall. No doubt the sculpture, scrolls, and other ornaments in stone were of his work. In the reign of Charles I. he obtained the patent appointment of Master Mason and Architect of the King's Works at Windsor Castle, &c., for which, saith the document, "we do give him the wages and fee of twelve pence by the day." Nicholas Stone had three sons,—Henry, Nicholas, and John.

Henry, the eldest son, erected the monument for his father, mother, and brother, and carried on, in conjunction with John, the business of statuary after his father's death; though Henry addicted himself chiefly to painting, and was an excellent copyist of Vandeyck and the Italian masters. Henry wrote a book, *"The Third Part of the Art of Painting."* This artist continued to reside on the premises which had been his father's, viz a house, garden, and work-yard situate in Long Acre, which was rented from the crown at 107. per annum. Henry Stone died in 1653, and was buried near his father, where a monument was erected, and this epitaph written for him by his brother John:—

"To the Memory of Henry Stone, of Long Acre, Painter and Statuary, who, having passed the greater part of thirty-seven years in Holland, France, and Italy, achieved a fair renown for his excellence in arts and languages, and departed this life on the 24th of August, A.D. 1653, and 14th buried near the pulpit of this church."

[Here follow some complimentary verses]

"John Stone, to perfect his fraternal affection, erected this monument."

The last member of this family of artists was laid in the same church; and, to perpetuate their memory, their near kinsman added to the monumental inscription in the quaint style of the time—

"June 1699—

Four rare stones are gone,
The father and three sons.
In memory of whom their near kinsman, Charles Stoakey, repaired this monument."

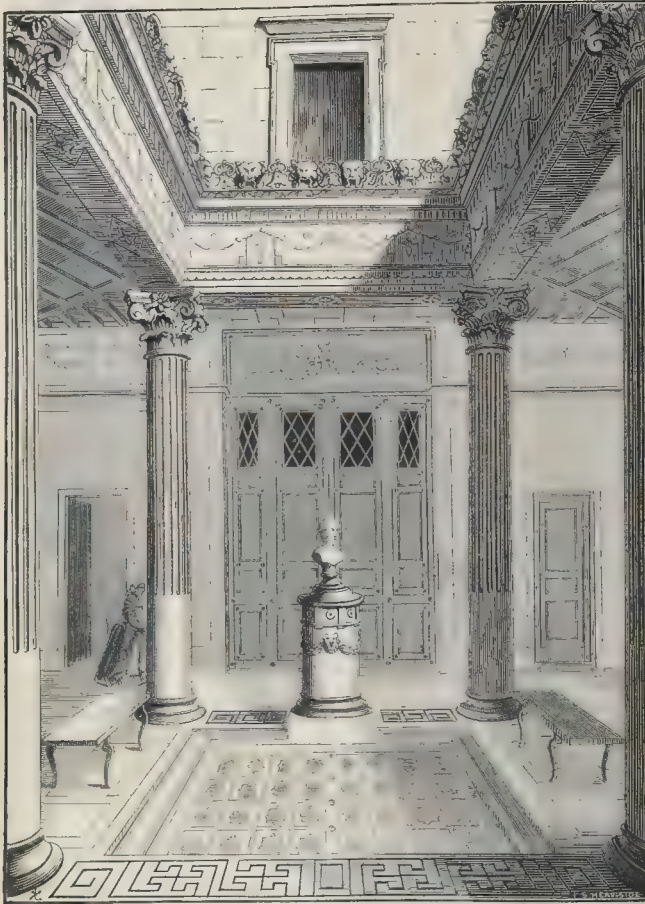
In this little church was interred Paul Vansomer, a portrait painter, some of whose works were scarcely inferior to Vandeyck's. He practised in England about fourteen years, during which period he painted King James I. and his queen, and many of the nobility, and other distinguished persons.

Nicholas Lanier, a man of considerable talent was also interred in the old church. He was a painter, musician, engraver, and a skilful connoisseur. He was much employed in purchasing pictures for the gallery of King Charles I.

Another ancient artist, Nicholas Izzard, who had been in the service of Henry VIII. and Edward VI. and who was sergeant painter to Queen Elizabeth was buried here.

Also Nicholas Hilliard, inner-jeweller, and goldsmith to Queen Elizabeth, and afterwards to King James I. He was, perhaps, the best miniature painter who had appeared, though greatly inferior to his pupil, Isaac Oliver, and his successors Samuel Cooper and others.

Hilliard was one of the sons of the high sheriff of Devonshire, and apprenticed to a goldsmith and jeweller. When young he painted the portrait of Mary Queen of Scots. Queen Elizabeth frequently sat to him. Mr. Walpole asks, "Was it not when sitting to this artist she desired to have her countenance represented without dark shadows, observing, 'there are no shadows in the human face?'"



RESIDENCE OF THE PRINCE NAPOLEON, PARIS.—View in the Atrium.

THE PRIVATE HOUSE OF PRINCE NAPOLEON, PARIS.

THE Avenue Montaigne, Paris, has recently witnessed the erection of an "ancient" house, as complete as that of Diomedes or of Pansa; the contemplation of which takes one back to Pompeii before the eruption of the volcano.

A light railing, interrupted by piers, forms the line of separation between the modern way and the ancient house. The facade presents to the eye unobtrusive and simple lines, enlivened by the richness of polychromatic architecture.

The joints of the ashlar are coloured red. A tetrastyle porch occupies the centre, and forms the exterior vestibule, composed of two pillars at the angles, and two Ionic columns, tinted yellow to the middle of the shaft, and having their frieze, rays, and bases also polychromatized.

The square niches to the right and left of the peristyle contain each a statue in bronze, the one of Minerva, the other of Achilles. Colour is used to bring out the reliefs, and enlarge the effect of the construction.

On arriving under the vestibule, two large black dogs in mosaic with bristling hair justify the Latin inscription, *Cave Canem*.

In this vestibule the blue coffers of the ceiling are adorned with large white stars, and the intercolumniations enlivened by baskets of flowers, alternating with lamps of antique form.

The atrium was anciently, as every one knows, the most important and striking feature. Into that kind of court of which the Spanish and Moorish houses have preserved the disposition, the doors of the apartments opened like monks' cells round a cloister. The atrium of the very ancient house of Prince Napoleon is also the most important and largest portion of the edifice. In

the centre of the atrium we find the impluvium; by means of which the hall is lighted. Four Corinthian columns, fluted down to the middle of the shaft, and coloured thence to the base with a purple tint, support a richly decorated entablature, crowned with lions' heads with red tongues; true sincereists, as M. Theophile Gautier says, having the function of vomiting water, which cannot fall upon the terrace, protected as it is by an immense skylight, supported by a first-floor recessed, which one cannot see from below.

A basin of some inches in depth, adorned with various marbles, corresponds exactly with the opening above. Upon the margin of the basin, between the two end columns, rises a kind of altar, with painted and gilt garlands, supporting a bust of Napoleon in white marble. Three benches of white marble with bronzed feet occupy the intercolumniations, and permit one to chat to the pattering of running water.

Round the atrium are ranged ancestral figures and marble busts, lightly gilt, and placed upon marble pedestals. We name them in the order in which they are found on entering:—Catherine Letitia Buonaparte, Josephine Marie Louise, Elise, Pauline, Caroline, Joseph, Lucien, Louis, Ch. Buonaparte, père; Jerome.

Upon the walls of the quadrangle are painted allegorical subjects, surrounded by those cabinets of fictitious architecture which decorate the walls of Pompeii and the baths of Titus, and of which Raffaele has made such happy imitations in the Vatican. All these paintings, and also those which decorate the *Salle à Manger* and the Library, are due to the pencil of M. Sebastian Cornu. The description, it will be seen, accords to some extent with the Pompeian House in the Crystal Palace.

The Library has the walls occupied with books. At the ends two red cabinets, with drawers, inclose medals, engravings, and plans. Two vases of porphyry are placed upon black marble columns, one on each side of the door which leads to the atrium. In front of it is a large window, divided by two mullions, beneath which is the fire-place.

The *Salon*, situate at the end of the atrium, is painted red, with a black plinth. The Pompeian ornamentation displays there its most charming caprices. Quite at the end of the house is the greenhouse, which serves likewise as a smoking room; and then come Turkish baths of great magnificence. This house is not simply a curiosity,—it is perfectly habitable. The architect, M. Normant, has, above all, tried to apply to the usages of modern life an antique house, and, if we are to believe our authority, he has perfectly succeeded.

DARKNESS IN THE PARKS.

IN these days, when throughout the metropolis so much care is taken for the lighting of the public streets, it seems strange that the main roads across the parks should be left, for say five hours, in the winter evenings, in a state of complete darkness. It is really preposterous. Take, for instance, the thoroughfare between the Marble Arch and Knightsbridge, which is a road most convenient to thousands of wayfarers, but which, in winter, is rendered impassable to many, in consequence of the want of light. No one can pass across here and note how the blazing lights on all sides serve to dazzle the eyes, increase the gloom, and bewilder the wayfarer, without wondering at the policy which has for so long left this park as much neglected as regards gas-light, as Wormwood Scrubbs. The light would only be required during the hours the thoroughfare is open in the winter nights. The subject demands the immediate consideration of the Chief Commissioner. Light in this place is absolutely called for.

THE PNEUMATIC FIRE DETECTOR AND VENTILATOR GOVERNOR.

THIS little machine, patented by Messrs. Taylor and Grimshaw, ought, as it seems to us, to come into general use. It consists of a small cylinder of thin metal to contain atmospheric air. Within it is a flexible diaphragm made perfectly air-tight to the interior of the cylinder by suitable packings. The expansion or contraction of the atmosphere contained in the cylinder causes the centre of the diaphragm to rise or fall in a vertical line, and so to give motion to a piston rod transmitting motion through screw-gearing to a pointer which marks the temperature on a dial plate. By a simple arrangement, when the pointer reaches any arranged position, an alarm bell is rung or explosive matter discharged. If placed in a ship's hold, for example, and the temperature should be raised by spontaneous combustion, or otherwise, the excess of heat is shown on a dial on deck or elsewhere, and proper measures may be resorted to, or it will regulate any form of ventilator, and the dampers of boilers, or serve as a steam-gauge, and perform many other useful offices.

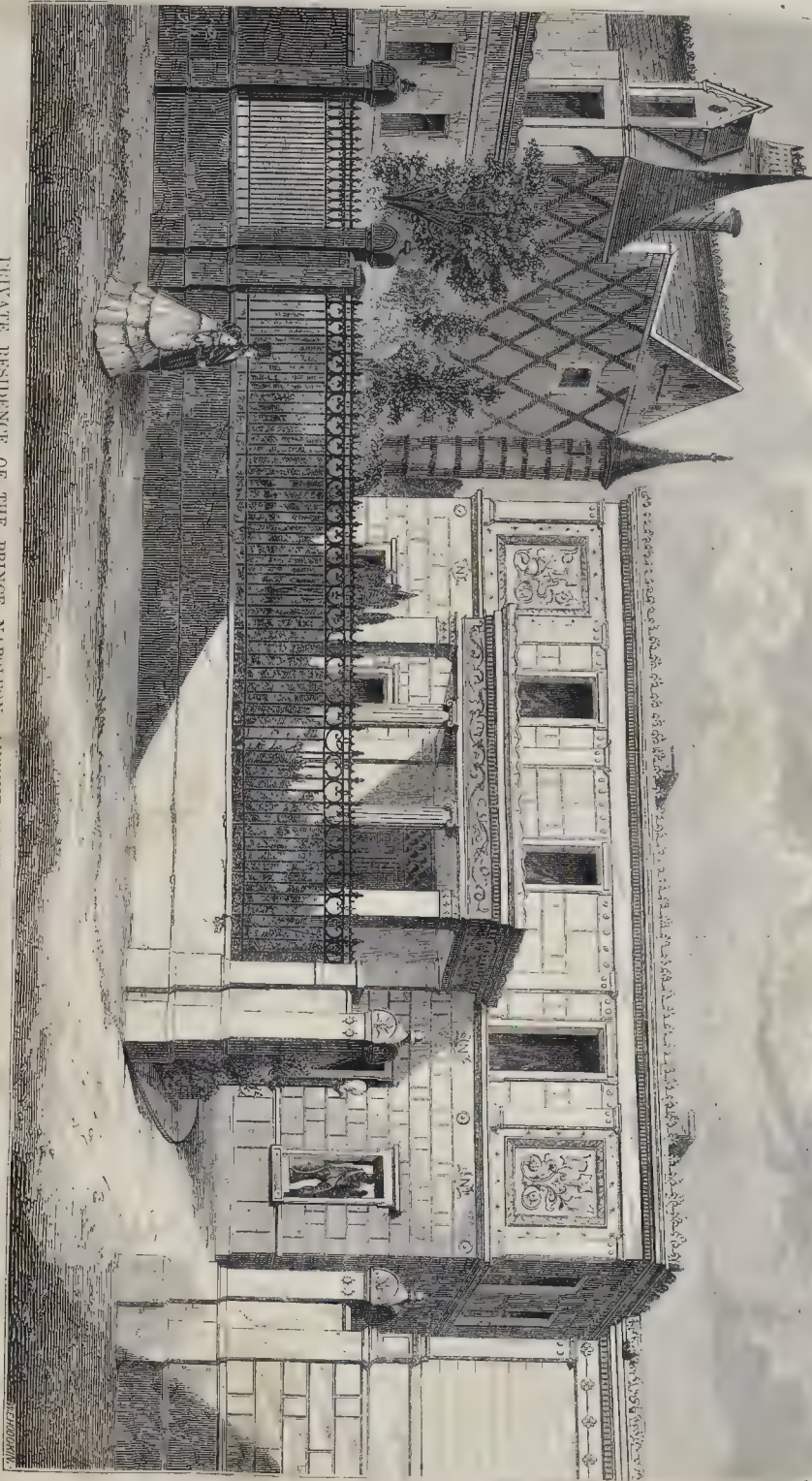
OUR ARMY OF BUILDERS.

THE Registrar-general reminds the public, that when the census was taken in 1851, there were in London 13,919 bricklayers, 23,453 carpenters, 15,360 painters, and 4,378 plasterers. Putting the number of masons at 10,000, this shows that nine years ago there were more than 57,000 persons connected directly with the building trade of the metropolis. There are, further, brickmakers, quarrymen, smiths, glassmakers, and others who depend on this trade, who would make the number not less than 100,000! This tremendous army, constantly engaged in rearing and keeping in order the buildings of London, has since the above date been very largely increased; so that the number connected with the trade, including labourers, must be little short of 130,000. Supposing the population of this vast city to be, say 3,000,000, and the working men are taken at one-fifth (600,000), we see the great preponderance of this branch of industry.

A penny a week paid by each of these workmen would amount to 541l. 13s. 4d.: if a penny a day were set aside, the sum would be 3,791l. 13s. 4d. a week, and this in the year would come to 197,166l. 13s. 4d.

What wonders could be worked even in one line of business if the pence were collected and wisely applied!

PRIVATE RESIDENCE OF THE PRINCE NAPOLEON : AVENUE MONTAIGNE, PARIS. M. NOMMANT, ARCHITECT.



THE FRANKLIN RELICS.

It has been suggested that the interesting relics which are evidences of the fate of a famous navigator and his brave companions should be exhibited at the Crystal Palace; others say that the British Museum would be the most fitting place. But the best idea is, that these relics, for which men have for years been looking, should be placed in some central situation, and exhibited to the public at a fixed sum, and the proceeds given to the wives and children of those who have perished in the ice-bound regions.

Although Captain McClintock's yacht, *For*, has reached the Thames, the relics have not yet been seen, owing to the absence of Lady Franklin, who is in the south of France. It will be remembered that the present expedition was undertaken at the cost of this lady: the Government cannot therefore dispose of these matters until Lady Franklin is communicated with. At the Admiralty there are two documents, of very great interest: one contains the record of Sir John Franklin's death twelve years ago, and other particulars written on the margin of a printed request, in English, French, Dutch, and other languages, that those who found it should forward the same to the English Government. In these papers, which were found under a cairn, built by the Franklin expedition on the spot on which it was supposed a pillar had been raised by Ross, the desertion of the ships *Erebus* and *Terror*, and the route of the party are mentioned. These documents cannot be examined without feelings which are difficult to describe. The hands which penned the information are all stilled.

We have erected many monuments to record the noble deeds of Englishmen. Now that the fate of Franklin and the men who accompanied him is known, we trust that a worthy memorial will be raised, which will keep in memory, not merely those who perished, but the persistence and devotion of those who sought to aid them and ascertained that aid was useless.

THE SCULPTURED STONES IN SCOTLAND.

AMONGST the papers read at the recent meeting of the British Association in Aberdeen was one by Mr. J. Stuart, secretary to the Society of Antiquaries of Scotland, "On the Sculptured Stones of Scotland." He said the occurrence of pillars in almost all parts of the world, to mark events of various kinds, is very remarkable. In Scotland we have instances of two classes of pillars—that is, of single pillars, and pillars collected in groups, of circular form; these latter having unfortunately, been connected with the Druids, without the slightest foundation on which to build such a theory. It was Stukeley who first introduced this opinion, which has but tended to obscure the whole subject; and the sooner we get rid of it the better. Mr. Charles Dalrymple was kind enough to make some investigations in this country, and the following is his account of the results of one of his diggings at Crichton, about sixteen miles from this town. The circle had originally consisted of six stones, of which only two are now standing. We find in almost every instance the discovery of sepulchral deposits in connection with these pillars. These circles may have had other meanings, though this is the only one we can discover. The present paper, however, deals with sculptured pillars, and these consist of two distinct classes. First, there is the rude, unpolished, unhewn stone, covered with figures which we call symbols. One of these pillars is found at Logie, in this country. It contains various symbols, including "the spectacle ornament," and oghams, in a position which Irish scholars say is peculiar to this stone. Mr. Stuart went on to allude to the symbols of a more elaborate character, including the elephant, fish, &c., on others of these pillars, remarking, as to the distribution of the pillars, that by far the larger portion of the stones between the Deo and Spey are of the ruder class of stones covered with symbols. In the centre of the district there is a stone with an inscription upon it which has hitherto baffled the efforts of scholars to state its character, until lately, when Lord Aberdeen got it submitted to the late Dr. Mill, of Cambridge, who prepared a disquisition before his death, and which is now in course of being printed. In it, it will be found that Dr. Mill had satisfied himself that the inscription was a Pictish one: at all events, there can be no doubt that the inscription is Eastern. This stone, as already stated, is in the centre of the district between the Don and the Spey.

There is one remarkable fact connected with these symbol stones,—viz., at Norries Law, in Fife,

near a circle of these stones, there was found what is believed to have been a complete set of armour. The symbols upon the stone were found repeated upon a silver ornament among the relics alluded to. Now, if we could suppose that this symbol—the spectacle ornament—indicated the rank of the individual, or had reference to sacred dignity, it would be a great step gained in the elucidation of the sculptures. It has to be observed that the symbols are never found twice repeated in the same order. Mr. Stuart then noticed the stone crosses, of which there are some very remarkable examples on the west coast; a beautiful one at Oronsay, and another at Kildalton, in Inlay. Sculptured crosses, which are of a more recent date than the symbols, occur less frequently on the east coast of Scotland, in the district between the Forth and Caithness; and what is to be remarked in regard to them is that, while in Aberdeenshire the symbol is common, the cross seems to be less prominent. When you go to Forfarshire there are some magnificent examples of the cross, and the symbol becomes less conspicuous, and its place seems to be occupied with subjects of quite a different description. The stones present many instances of priests in their robes, with books, and occasionally with remarkable ornaments. At times these have peaked beards and moustaches. Some of the stones had men shooting with the bow and arrow; bird-headed human figures; figures in armour on horseback, having the trapping and armour in detail; men devoured by animals; men seated as if in judgment; historical scenes relative to slaughter; processions, in one of which a man leads an ox, and is followed by other men in line; in another several men and oxen; which, in a third, appear about to be sacrificed, and here the men are tonsured, and carry candles. The centaurs occur, occasionally dragging branches of trees, and sometimes carrying battle-axes. A chariot and horseman are seen at Meikle. A single specimen of a boat appears on St. Orland's stone; and there are specimens of monkeys, apes, lions, leopards, deer, and beasts of the chase. The Temptation in Paradise occurs at Farnell. There are also inscriptions upon one at least of the sculptured crosses, which, however, appear to resemble the Irish character, although it has never been read to the satisfaction of scholars. In the earliest notice of these stones which we have, we find the ancient inhabitants of Scotland thus spoken of by Coe:—"They use the ritis and manners of Egyptians, fra quhome they tuk their first beginning. For all their social besines, they wait not to writ with common letteris ut among other pepil, but crur with sifers and figuris of beistis maid in manner of letteris, sic as their epithatis and superscriptions abone their sepulchris schawis, nocheless this crafty manir of writing, be quhat stenth I cannot say, is perist; and yet they have certane letteris propir amang thaimself, quhilks war sem time vulgar and common." Mr. Stuart observed that the sculptured crosses of Scotland were distinct from those in Ireland and Wales, &c. the sculptures in Scotland almost invariably representing hunting scenes, &c. while those in Ireland are drawn from the Bible—as the Temptation, the Expulsion from Eden, &c. The symbols of Scotland were mostly unknown elsewhere, nothing similar being found in Brittany, Ireland, or Northumberland, while the symbols of the Christian Church are not local, but general, and universally understood. And if the Scottish sculptures had been Christian, we should have found them diffused over a wider sphere. Then the Scots who came from Ireland in the sixth century did not use them in their own country, nor in Argyll, the country which they colonized, so that we must suppose the symbols to be the work of the Pictish people, in whose country, with two exceptions, they occur—one in Galloway, the other discovered by his friend Mr. Robertson, in Princes-street Gardens, Edinburgh. These Picts are spoken of in the third century by Roman authors, when the term Caledonii is given up, and we find them historically in possession of the country till they were overcome by the Scots in the ninth century. There were two nations, the north and south, the former converted by Ninian, the latter by Columba, in the latter part of the sixth century. Much as we hear of their mutual warfare and conflicts with their neighbours from the Irish chroniclers, we yet gather from the Venerable Bede some facts which show considerable progress in arts. Biscop, Abbott of Yarrow, about 673, founded a monastery at Wearmouth. He had been at Rome, in company with Wilfrid, about twenty years before, and they both imbibed a taste for Roman architecture, which they afterwards strove to diffuse in their own country. Biscop brought home

masons to make him a stone church, after the manner of the Romans, in place of the more perishable structure of wood. About the year 710, Nechtan, king of the Picts, sent messengers to Coedfrid, the successor of Biscop, to ask for information as to the correct time of celebrating Easter, then a mooted point between the Anglo-Saxon and Scottish Churches. The stones occur, then, in the land of the Picts, whoever they were. They are probably the work of their hands; and it is not a violent conjecture to suppose that they mark the period of transition from Heathenism to Christianity. If we regard these sculptures as the earliest works of art, and the expression of the ideas of the early inhabitants of Scotland, they must be regarded with great interest. But increased research and more rigid classification may yet draw new and unexpected deductions from them. One great desideratum would be to have systematic diggings about these pillars, and to preserve the skulls and other remains which may be found in doing so. The time for theorizing from the mere shape and appearance of these monuments, such as those at Carnac in Brittany, and our own Stonelenge and Avebury, is quite gone by; and, wherever the pick-axe has been used, as it is now in the course of being done in Brittany, the result presents us with some, and the first reliable, data for any conclusion on the subject. If this agent be judiciously applied to the various classes of our Scottish antiquities which yet remain to us, we may hope to obtain some sure footing for investigating the history of the early inhabitants of our country.

PUBLIC LIGHTING IN THE METROPOLIS.

THE managers of the Metropolis Gas Inquiry have published some fresh tables founded on returns obtained from thirty-seven out of the thirty-nine parishes and districts comprised in the metropolis, including the City, and they draw the following startling conclusions:—

"The gross amount of overcharge for these thirty-seven parishes and districts is.....	£48,041
Adding a proportionate amount for the two parishes which have not returned the number of lamps,—we have.....	2,597
	£50,638

Or, in round numbers, an overcharge of more than 50,000*l.* a year made in the metropolis at this time in respect of public lighting alone."

TO PREVENT STRIKES.

SIR.—Having both individually and as editor of an influential periodical aided us in our efforts to improve the condition of the industrial classes, you are well aware of the good effected in co-operation with Dr. Birkbeck and Mr. Basil Montague in one direction, and in every way by Lords Brougham, Dennam, and John Russell, and by the late Joseph Hume and Francis Place. Is it not lamentable to find all that was effected from the time when the old oppressive combination laws were repealed, rendered useless by the insane machinations of the lunatic Feargus O'Connor, or the flimsy pretensions of present leaders, who have placed themselves between the working men and their best interests, and ignorantly misrepresent the principles of political economy, of jurisprudence and common sense? The best time of the year has been lost in feverish idleness: the savings of years of industry are consumed; and a severe winter may bring to the deluded victims want and domestic squabbles.

This cannot be avoided; but is it not possible to devise a plan for preventing ruinous, sudden strikes for the future? Lord Brougham and Sir John Bowring would suggest a *Cour des Prudhommes*; but in its French form it is more applicable to individual differences than to an extensive strike: it is a permanent special jury performing the duties of our stipendiary magistrates and County Courts; but we require a general system of mutual rights and duties suited to the comprehension and habits of our country. I think the simple English plan would be the principle on which we hire our dwellings or servants;—a mutual right of yearly, quarterly, or weekly notice as in the first, or a month's notice or a month's wages; or, if so agreed, a week's notice or a week's wages.

As this mode is understood practically, I abstain from explaining its well-tested advantages, and, in conclusion, will cite an example of successful compromise of a trade strike many years ago.

The Thames coopers, a numerous body of men of importance to our commerce, were constantly quarrelling, and often on strike: at length they wisely referred their case to Francis Place, who, from the position of a journeyman tailor, had, by industry and talent, acquired a moderate competency, and the respect of our most distinguished promoters of reform. The plan which he proposed and they adopted was, that certain conditions, rules, and prices, be mutually determined for a fixed period; that, after a fair trial, those conditions should be law amongst the masters and the men for one year certain; that they should continue on during the next year unless a notice from either party should have been given three months previously to the expiration of the first year; and so on.

The plan worked well as long as my attention was directed to it, and the working coopers presented Mr. Place with a beautifully-made little cask, bound with silver hoops, on which was engraved their expression of grateful thanks for this important service. In the hope that the above suggestion, duly modified, may lead to better times and better feeling between the talented employers and the skilful operatives, I remain, AN HONORARY MEMBER OF THE

LONDON MECHANICS' INSTITUTE.

BUILDERS' PLANS.

In the Staffordshire County Court proceedings at Stone, on 19th September, the case of Benjamin Brough v. John Wetton, was tried. Plaintiff is a builder at Bilston, and defendant proprietor of newly-built premises in Stone, styled the Talbot Inn. According to the statement of plaintiff's attorney, in 1857 defendant was desirous of erecting premises at a cost of 500l. and directed plaintiff to prepare the plans. Finding, however, that he could not raise 500l. he had new plans prepared for a 400l. house; and by these second plans the Talbot Inn and premises were built. The second set of plans were not charged for because the work was done by them, but when the settlement for the building was made the plaintiff applied for 10l. for the first set of plans, which were not used. The defence was that the order given by defendant, in the first instance, was for a house at 300l. or 350l. When the plans and estimates were produced, showing a cost of 500l. defendant said they must be reduced. Defendant never had possession of the first set of plans. 3l. were tendered as a gift for the extra trouble the plaintiff had been put to. Mr. R. Chapman, architect, Cheadle, said that according to the custom in the building trade the plaintiff ought not, under the circumstances, to charge for the first plans; and if he did charge he ought not to charge more than 2½ per cent. The judge briefly said that he thought the first plans were not to be paid for, and he should therefore give judgment for defendant, with costs.

SHOP-FRONTS AND PUBLIC WAYS IN THE CITY.

In a recent report to the Commissioners of Sewers, Mr. Haywood, their surveyor, has pointed their attention to the circumstance that shop-fronts are not now constructed as they were when Acts of Parliament provided for their projection to a certain extent on public ways, and says, "There is not, in my opinion, any valid reason why such projections should be granted to new buildings in thoroughfares where every inch of ground is needed for the purpose of the traffic, and where, by reason of the mode of construction, it results in what must be regarded practically as an irremovable and permanent encroachment upon the public way. I consider that whenever a brick or stone building is to be erected, no permission should be given for it to project over the public way at the ground level, but that the whole face of the walls of such buildings should be built clear of the public way, from the ground to the first-floor level. Such a regulation would prevent the permanent occupation of the public ways up to such a height as would be clear of the traffic, and yet would not be needlessly restrictive upon cornices or architectural embellishments placed far above the street level. I beg to recommend, therefore, that among your standing orders relating to projections beneath, upon, and over the public ways should be one to the following effect:—

"With regard to the walls of the premises which may be hereafter constructed facing the public ways, that from the paving line upwards they be entirely constructed clear of the public way, but such limitation is not to apply to cornices or architectural embellishments at or above

the level of the ceiling of the ground floor; and that no shop-fronts be permitted to project over the public way from the face of such buildings, unless they be subsequently affixed thereto, and be capable of being removed without difficulty or injury to the part of such building."

The report was referred to the improvement committee.

BUILDINGS IN JAPAN.

In a paper on Japan, read by Mr. Laurence Oliphant at the meeting of the British Association, he said:—"The city [Nagasaki] contains a population of about 50,000, and consists of between eighty and ninety streets, running at right angles to each other—broad enough to admit of the passage of wheeled vehicles, were any to be seen in them—and kept scrupulously clean. A canal intersects the city, spanned by thirty-five bridges, of which fifteen are handsomely constructed of stone. The Dutch factory is placed upon a small fan-shaped island, about 200 yards in length, and connected with the mainland by a bridge. While Yedo [the capital] may be regarded as the London of Japan, Ohosaka [another city] seems to be its Paris. Here are the most celebrated theatres, the most sumptuous tea-houses, the most extensive pleasure-gardens. Miaco, or, as it is more properly called, Kioto, is situated at the head of a bay, or rather gulf, so extensive that the opposite shores are not visible to each other. Yedo spreads itself on a continuous line of houses along its partially undulating, partially level margin, for a distance of about ten miles. Including suburbs, at its greatest width it is probably about seven miles across, but for a portion of the distance it narrows to a mere strip of houses. The citadel, or residence of the temporal emperor, cannot be less than five or six miles in circumference. The streets are broad and admirably drained: some of them are lined with peach and plum trees, and when these are in blossom must present a gay and lively appearance.

The houses are only of two stories, sometimes built of freestone, sometimes sunburnt brick, and sometimes of wood: the roofs are either tiles or shingles. The shops are completely open to the street: some of these are very extensive, the show-rooms for the more expensive fabrics being upstairs, as with us. The eastern part of the city is built upon a level plain, watered by the Toda Gawa, which flows through this section of the town, and supplies with water the large moats which surround the citadel. It is spanned by the Nipon, and has a wooden bridge of enormous length, celebrated as the Hyde-park-corner of Japan, as from it all distances throughout the empire are measured.

WICKEN BONANT, NEAR SAFFRON WALDEN.

THE restoration of this church, which has almost amounted to rebuilding, has just been completed, from the designs, as we are told, and under the superintendence, of the rector, the Rev. J. H. Sperling, at the expense of John Sperling, esq. of Kensington Palace Gardens. The work has been executed by Mr. T. O. Crane, builder, of Newport; the stonework by Mr. Nicholls, of Bishop Stortford. Before the restoration, the church consisted of chancel and nave,—the former, Early English; the latter, from frequent alterations, of no recognizable style: on taking it down, however, it proved to be Early English. There was a tradition in the parish that the church had once possessed a tower, and, on excavating, in order to lengthen the nave, the foundations of a round tower, including the bases of a rude and narrow arch, were laid bare. The modern west wall of the nave was also found to be chiefly composed of the debris of the old tower, mostly fragments of Transition Norman work. The nave has been lengthened 25 feet, inclusive of a new square tower. The chancel being very perfect, retaining its eastern triplet, side lancets, priest's door, sedile, and piscina, needed but little restoration. A new roof, of high pitch, with metal cresting and cross, has here been the only addition. The nave has been entirely rebuilt, retaining two good Decorated windows, insertions in the old walls: these have been taken as a guide in the style of the new work. The tower is capped by a stone broach spire, reaching a total height of 90 feet. The belfry stage, with its double windows deeply recessed, is a very noticeable feature.

Two large bells, from the foundry of Messrs. Taylor, of Loughborough, have been provided, the tenor weighing 15 cwt. the other 11 cwt. An

ancient bell, the wreck of a peal of five, is now made into a priest's bell. Under the tower arch stands the old Norman font, plain and massive: it has been raised on two steps and furnished with a cover. The nave is benched with plain open seats: on the north side of the chancel arch is a stone pulpit, by Mr. Street, on the opposite side an oak lectern. The space over the chancel arch is relieved by Mr. Ferrey's stamped plaster on a red ground. Between the nave and chancel is a richly carved oak screen, by Rattee & Kett, of Cambridge: over the doors is an elaborate canopy terminating in a gilt cross. Two stone brackets, in the north wall of the chancel, are intended to carry an organ, the keys of which will be brought down into the stalls. All the windows in the church, except the east triplet, which is reserved for the Crucifixion, have been filled with painted glass by Lavers and Barrand. The chancel lancets contain the Evangelists and major Prophets, two in each window. The S.W. lancet has a group, "Christ blessing little Children,"—a memorial to a child of the rector. The nave window near the pulpit has the "Sermon on the Mount," another, "Our Lord in the Temple with the Doctors." The remaining windows have of grisaille and quarry glass. The altar rails are of metal, and there is a good tile pavement, by Minton, in the sanctuary. An altar cloth has been promised by the Church Needlework Society. There has been no public opening as yet, though the church is again used for divine service, in consequence of several decorative features having yet to be carried out.

ELECTRO-TELEGRAPHIC PROGRESS.

THE influence of the natural evolution of electricity during the past summer on telegraphic lines, in this and other countries, has been very remarkable, and, indeed, unprecedented, so far as we recollect, except in America. We have already recorded some singular proofs of this influence. From France and Algeria we have further instances to note. Thus M. Bergon has communicated to the Paris Academy of Sciences some remarkable effects produced by the equally remarkable aurora borealis of the 28th August. On the following day, all the bells of the lines which were not worked at the time began to ring: on the other lines transmission became impossible, and the galvanometers marked the passage of a permanent current. The effect was more apparent on the lines of Bordeaux, Marseilles, and the Northern, than on the Eastern and Western lines. The perturbations continued on the 1st and 2nd instant. Strong sparks were obtained from lightning conductors at Bordeaux and Toulouse. Long lines of telegraph were more easily influenced than short ones. In Algeria the atmospheric electricity seems to have taken to table-turning, and other freaks akin to those of the alleged "spirit-moving" powers. During a violent thunderstorm in the neighbourhood of Constantina, "the lightning struck one of the posts of the line of telegraph to Setif, and broke it to pieces; after which it ran along the wires to the office at Constantina, and there for the space of several minutes produced an extraordinary effect,—detonations following each other, and flashes of electricity going round the room, upsetting tables and chairs, and throwing the apparatus into great confusion. Five persons were in the office at the time, and it is thought wonderful that they were not killed or even injured. A fire was caused by the electric fluid, but promptly extinguished. It was not until half an hour after the commencement of this singular scene that the office could be entered with safety."

It is said that a contract has been made with the Gutta Percha Company, on behalf of the Government, for a cable to be laid from Falmouth to Gibraltar, 1,200 miles, which is to be ready in June next; and that this will be succeeded by one from Gibraltar to Malta and Alexandria, thus giving an independent line, free from Continental difficulties. Yet nothing, so far as we are aware, has been published in regard to the result of the important investigation undertaken jointly by Government and the Atlantic Telegraphic Company into the best mode of constructing submarine cables. It is to be hoped the Government have awaited the decision and acted upon it.

Mr. Newall has passed through Malta for Alexandria to lay a telegraphic cable from Egypt to Turkey, and another across the mouth of the Adriatic, thus connecting Turkey and Greece with Italy; and, when finished, this line will connect the Red Sea Telegraph with England.

The remaining portion of the telegraphic cable for the Red Sea, from Aden to Kurrachee, was to

be sent from Liverpool in the steamers *Imperator* and *Imperatrix* on the 30th.

The cable to connect Alexandria with this country is now to be laid through the islands of Rhodes and Scio to Constantinople, and not by way of Candia, as previously intended. It is expected to be laid in about a month by Messrs. Newall & Co. Captain Pullen, of the *Cyclops*, has fixed on Hallani, one of the Kooria Moorria islands, as a station for the Red Sea telegraph.

The bark *Wyman* is said to have left Boston on an expedition to Labrador, Greenland, Iceland, the Faroe Isles, and Glasgow, to trace the route of a new telegraph between America and Europe. How do they intend to obviate the risks of icebergs near coasts which the route of such a telegraph must inevitably cause?

Mr. Lindsay, the Dundee electrician, explained his system of marine telegraphy without any transverse wire, to a section of the British Association, at Aberdeen, and afterwards illustrated the system by experiments, which are said to have been quite successful. A trial of this system for an Atlantic telegraph is still urged; but surely an experimental line on a much smaller scale ought first to be in successful and practical operation.

CHURCH-BUILDING NEWS.

Downham.—The new church recently erected at Southery, near Downham, has been consecrated by the Bishop of Norwich. The church, which is built of Car stone, with Ancaster stone dressings, is in the Gothic style, and was built from designs by Mr. Robinson, of London, a native of Southery, by Mr. C. Bennett, of Lynn.

Scarning (Norfolk).—The parish church of Scarning has been re-opened for public worship. It has been new-roofed and re-pewed, with new pulpit and reading-desk. The old screen has been restored. The alterations cost 800*l*.

Cambridge.—The restorations in St. Edward's Church are now approaching to completion. The improvements have been effected by removing all the old pews, scraping the paint off the pillars—entirely discarding the gallery, and so throwing open the tower arch—abolishing the garret windows, levelling the floor, and fitting the church throughout with uniform wainscot sittings. The walls of the nave have likewise been rebuilt, and four square unsightly windows have made way for others of a more ecclesiastical, though, perhaps, not very satisfactory character: the wooden roof of the chancel, which was plastered over, has been exposed to view, and a blocked-up window at the end of the south aisle replaced. With regard to the tower, an improvement has been made at the west end by discarding the portico, and substituting for the old doorway one of Gothic design. Above is a new stained-glass window. The roof has been lined out, strengthened, re-tiled, and new lead laid on. It is not yet decided where the organ shall be placed. The improvements have cost about 1,500*l*. The east end is to be restored at the expense of members of the University, as a mark of respect to the Dean of Ely: for this purpose, plans of a new east window, and an arcade beneath, prepared by Mr. Scott, are in the hands of Messrs. Rattee and Kett, who have contracted to finish them by the end of October.

Banbury.—The Cemetery Chapels are in progress. They are detached, and will be built of rubble, with stone dressings to the windows, &c. They are precisely similar in detail, comprising a *porte cochere* of dimensions sufficient to admit the hearse and mourning-coaches. From the *porte cochere* you enter the nave, with pews on either side, for bearers and mourners. From the nave, under a moulded arch, is the chancel. The exterior has the sides of the nave gabled. The style adopted is Early English. The western gables support an arched and moulded bell turret. The roofs are to be covered with ornamental tiles, laid in colours; and the woodwork to both interior and exterior to be stained and varnished. The lodge, which will stand upon a raised terrace, is in keeping with the chapels, and built of brick, with coloured arches to all external openings, and has the usual accommodation for sexton. The contract is being executed by Messrs. Orchard, of Banbury, builders. The architect is Mr. H. Edwards, of London.

Edenbridge (Kent).—It is proposed to make some improvements in the interior of the parish church. The principal is to remove the old unsightly pews, and substitute open seats or benches. The removal of the pulpit and reading-desk will do away with objections. The chancel itself is in a very indifferent state of repair, and it forms part of the contemplated alterations to restore this portion of the building, and free it from the

great accumulation of earth and rubbish by which it is encumbered on the outside. Some of the windows also require repairing. An appeal for contributions has been responded to, between 600*l*. and 700*l*, having already been subscribed.

Sheppy.—A slip of land has recently taken place at Warden Point, on the north-east end of the Isle of Sheppy, which has placed the ancient church of that parish in great danger, as the east end of the church is only 41 feet from the edge of the cliff.

Cheltenham.—Preparations are being made for laying the foundation of a temporary church at Cheltenham, which is intended to accommodate 1,500 persons. It is said that the money about to be expended in this church would be amply sufficient for the enlargement and restoration of the parish church.

Burleigh (near Buxton).—The foundation stone of a new Wesleyan Chapel has been laid here. The architect is Mr. R. R. Duke, of Buxton.

FARNHAM CHURCH, ESSEX.

THIS church, which has been rebuilt at a cost of between 5,000*l*. and 6,000*l*. was opened on Tuesday.

It deserves some description from the liberality bestowed in the carrying out of the work, 4,000*l*. having been subscribed by Robert Gosling, esq. of Hassobury, and the remainder of the expenses is undertaken by the Rev. W. J. Copeland, the rector. The works have been carried out from the plans and under the direction of Mr. Joseph Clarke, the Diocesan architect; Mr. Chas. Foster, of Whitefriars, being the builder; and Mr. Thos. Lansdowne the clerk of works. The church holds 300 persons, and consists of a chancel 30 feet long and 17 feet 6 inches wide; a chapel on the north side with the nave 50 feet long and 20 feet wide; and a north aisle the same length and 14 feet wide. On the south side is a porch; and a large massive tower stands at the west end, capped with a pointed roof: the walls are built very thick of solid brickwork, faced with flint, and the stone is from the newly opened quarries of Mr. Thompson, of Ancaster, which bid fair to supersede some of the inferior stone which of late years has been introduced; the nature and quality of this stone (of which we gave particulars some years ago), being borne out by the way in which it has stood for centuries in most of the churches of the eastern counties. The chancel is covered with an oak roof, all the rafters being ribbed. The reredos and carving throughout are by Farmer, and have been ably executed. The tiles are Minton's. There are single rows of oak seats in the chancel, with the prayer desk on the north side, and a lectern supported by serpentine shafts springing from the low cancelli under the chancel arch. This, and other parts, are supported by red marble from Darlington, and some very beautiful specimens of red and green serpentine, with red granite and Cornish polyphant, have been used in other parts: the chancel and aisle roofs are of deal; the pulpit is of stone, with marble shafts. The nave and aisle are benched with solid low oak seats. The tower opens to the church, and is parted off by an oak parlous; as is also a chapel on the north side of the chancel, which will be used for a vestry and for an organ chamber. All the oak has been carefully rubbed and beeswaxed, and in no part varnished. The font springs from foliage rising from out of six small Devon marble shafts. The porch roof is oak, with an open lattice-gate and shutters to close in bad weather. It should be said that all the external iron-work is galvanized, and that Messrs. Mears have put up a peal of six bells. The opening was a day of great rejoicing in this quiet village.

THE DRINKING-FOUNTAIN MOVEMENT.

THE Coalbrookdale Foundry Company have prepared a fountain for the Regent Circus, which is about to be put up under the superintendence of the Drinking-Fountains Association. Some delay has occurred, in consequence, it is said, of the Foundry Company desiring "to finish in the first style of workmanship what is considered a work of art." It is to be hoped that it may prove so. The association has done nothing in that way at present.—The fountain in Marylebone-road is about to have gratings fixed for the overflow of water, which had been complained of.—A clock-tower, with three fountains attached, is about to be erected, at the expense of some of the residents of South Hackney, on the hitherto unsightly piece of ground known as "The Triangle." The building will be of Bradford-on-Avon stone, in

the style of the florid Gothic period. It will be 45 feet high, with three drinking fountains, at alternate angles, and troughs at a short distance. The clock (presented by Mr. Fairer, a tradesman) will have three illuminated dials, 4 feet in diameter. The water will be supplied from a well sunk under the centre, and raised by the machinery of the clock.—At Sandgate, a fountain in the road adjoining Encombe House has been completed, by Mr. Temple, of Folkestone, builder, at the sole expense of Mr. James Morris. Mr. F. S. Tyssen, of Horn-street, has built up steps to prevent the waste of water, and supplied ladies to one, it is said, of the finest springs in Kent, situated in Horn-street, and which is now open to the public.—Three fountains have been erected in various parts of the town of Scarborough, including one presented by Mr. Henry Walker.

THE CHAMPIONS OF ANGLO-CLASSICISM.

SIR,—Before the question as to the style to be adopted for the new Foreign Office buildings is disposed of definitively, I hope a little of that space which you have accorded to architects and others may, for once, be granted to an artist.

Mr. Street, by his letter in the *Builder* of last week, has fairly expressed the astonishment which the votaries of painting and sculpture have felt on the subject of the late demonstration before Lord Palmerston; but, loving our sister art of architecture (as most artists now do), I would protest against the assumption of her championship at the hands of those who have done so much to involve her in dishonour.

Our Premier, apparently bent upon playing the part of a sort of art bottle-holder in the exotic interest, shuts his eyes, and dashing jumps to a conclusion in favour of the style which he describes as "the Horizontal, or Classic, or Italian, or whatever name its branches may have gained."

This system of design, we are informed, "allows a reasonable economy to be observed internally," and further, that his "mind is made up in favour of that style." Therefore the advocates of the "Horizontal," or "Classic," or "Italian," naturally enough hail their protector with warm applause, and in solemn deputation tender him their congratulations on his quick perception in art matters.

Mr. Street's letter renders it unnecessary further to comment upon this procedure of those who still cling to the hope that a living Classic art in England is a tenable theory; but as these gentlemen seek, in the face of the common history of art, to adorn their tale by complacent references to the works of Michelangelo, Bramante, Sansovino, Palladio, Jones, and Wren, may not the moral of their pleading be pointed fairly by some illustration of their condition, as declared disciples of the great men whose names they so readily adopt as watchwords against the Goths?

If ancient art, whether Christian or Pagan, civilized or barbarous, teaches anything of vital import to that of modern time, the lesson, while displaying the kindred harmony which ever links together all true architecture, sculpture, painting, jewellery, pottery, metal, or loom-work, whether for the service of prince, prelate, or peasant, will be evinced most emphatically in its never-failing signs of devoted earnestness of purpose.

Without this first principle of art-life, no Parntheon would have been possible; nor would Egypt, India, or Assyria furnish, as they now do, in their remnants of architectural glory, a theme to the traveller, or a light to the student or historian.

Permit me, then, as our Barrys, Tingles, and Donaldsons urge the claims for Anglo-Classicism on the high ground of ancient precedent, to try the value of such well-sounding testimony by inquiring in what manner it is supported by their works, or, which is more to the point, justified by their sincerity.

Foremost amongst those whose precepts and practice should be as guiding beacons in the student's path is Sir Charles Barry. By his academic honours and exalted position, surely the exalted state of our architectural art is fairly represented at his hands, and the well-being of its future in a serious degree incurred to his charge. But, at the very outset, the student is reduced to an extraordinary dilemma. He finds that at Brighton Sir Charles led the way to his reputation by the erection of a church in Gothic. At Islington he again builds a church in Gothic. At Birmingham, he confirms his promise by the erection of a domestic building of importance in Gothic. In Pall-Mall, he suddenly casts aside his principles of design, and displays his art in the *Classic* "Reform," and "Travellers' Clubs.

Then, every thought and feeling just noted is contradicted and opposed in his gigantic work in Gothic at Westminster; when, presto! he is again found in *Classic* robes in Bridgewater House and the Treasury buildings. But the student is yet doomed to further bewilderment by Sir Charles's declaration, before the House of Commons Committee, that the great representative of his art—"the Houses of Parliament"—would not only be not injured, but positively improved! by the erection of a *Classic* building contiguously to it."

Mr. Tite, too, another bitter opponent of Gothicism, opens his professional career by a very Gothic church in Regent-square, and afterwards belies his art in the erection of the *Classic* Royal Exchange. "But," says your Classicist, "we admit the superiority of Gothic for churches—but for churches only." Turn we then to Professor Donaldson, and what words will indicate our mystification upon finding him represented in Gordon-square by a *Classic* church and a Gothic domestic building. So, throughout the chapter, is exhibited this extraordinary parody, which would make the hair of the great masters stand on end; and yet forsooth we are reminded of the noble art that flourished in their days.

If Lord Palmerston cannot comprehend that all true architectural systems testify—in the labourer's cottage equally with the palace or temple—that in construction and the humblest internal fittings, equally with the grandeur of external façades, the stamp of art must be alike fully manifested, and in a degree which has never been set forth by Anglo-classicism;—let him, at least, seek *Classic* or other counsel that does not strain at catholicity of taste, and swallow a pantomime of practice which our painters and sculptors would scout, and which would be fatal to the well-being of any religion, art, or literature, to which a man may worthily become devoted.

AN ARTIST.

FOLLIES IN BUILDINGS.

WHAT ought to be presented to public eyes which are ever on the watch for those objects of attraction which raise that first motive of the human soul—curiosity,—and what, besides, the public expect to find, though they are often disappointed, are useful and successful results in the arts. With that portion of those peripatetic observers who, by the habitual use of the senses and the habit of examining the effects of different styles in buildings, have some discernment of their respective merits, the houses and the shops which line the streets of a great city are the frequent resource of their perambulations. They will give all the glory deserved by those who have excelled in some talent which one or a few more than the rest will display: they may even exalt and magnify what they see to be excellent, but will easily distinguish them from works that carry some mark of the want of taste, conventional considerations, and common sense. They will remark some of these city structures as *outré* and outlandish, that there will be some difficulty in understanding the meaning of the eccentricity of the builder of them, even if they engage an interpreter. But buildings closed in a neighbourhood where tradesmen are glad, in a busy thoroughfare, to tenant a shop for the sale of their merchandise; others going to decay, and looking as if they were "in Chancery," one the production of the meanness and mercenary views of men, deserted and spoiled of its accessories, and deprived of everything which contributes to its convenience, its fitness, and agreeableness; another with a crack caused by a weak foundation; another dilapidated, and so strongly shored up on one side, as to threaten the fall of the other; things done without principle, without system; caprices of every kind; empiricism of every sort; shams disguised under coverings, arranged with art,—mock ornaments; the *cassiolette* or false chimneys, once in fashion in old French buildings; carcasses of houses rotting, and making one turn away from them; a bridge over a stream that is never traversed, and which has no outlet;—such objects not being useful, but only eyesores, are disclaimed: time is too precious and business too pressing to be employed upon them: they exist only to be disliked, and they are justly called "follies." Their origin dates as far back as the confusion of languages which took place at the building of the Tower of Babel, the first monument of the pride and weakness of men. The worst of them is they are not like the "follies of a day," but exist very often for many years. They are imitated by the interested, the ignorant, or careless. It is only minds tutored in the rigour

of correct study, sound and well trained by discipline, who will escape their contagion. If any advantage is to be derived from such derelictions in art, it is learning from these enemies of taste what to avoid. It is a great pity that these vices and follies in the construction and decoration of street houses and public edifices should frequently occur, and create on foreigners unfavourable impressions of our capabilities, or of our negligences in architecture. But our allies, the French, know that they themselves are not without their faults. The greater number of the "barriers" outside Paris are monstrous deformities in architecture: they are specimens of order and proportion in their art, reversed. The attempt in these is by heavy, cumbrous parts, most badly disposed, and by banding and rusticated the columns, as if their natural expression of support or of strength was not sufficient; but the means are altogether heterodox, as what does not strengthen, weakens: the effect is very unpleasing. One would suppose that, at the period that such works were constructed in such taste, the moral system must have been very corrupt. The project put forward and published in the *Constitutionnel*, in December, 1858, to enlarge Paris, by extending the limits of the *octroi* to the line of the fortifications, may, it is hoped, direct fresh and more scrupulous attention to the design of these "barriers," proverbially more formidable and frowning in their aspect, than any things of the kind that were ever invented. Every Londoner remembers the ridicule which was cast upon the royal statue, which so much offended the sight of every one, at King's Cross. Happily it did not remain long on its conspicuous site, to irritate the feelings and shock the sentiments of the people. It amused one to think that superior talent had not been employed on such a spot of traffic, and for a monument erected to one of our monarchs. It spoke very unfavourably of him who had given to the sculptor the commission of the work. A foreigner seeing it would at once say that the art of sculpture employed to such important purposes was in decline, or the talent for it was very deficient. Indeed, some of England's failures and abortions in public buildings, in statues raised to eminent men, as well as their bad position, have led many foreigners to think that the spirit of commerce among us checked the genius of the arts and prevented the happy enthusiasm which ought to preside at their production. But this is not a right judgment; for though the two things are from entirely different sources, it must not be forgotten that, in such a vast and powerful country as England, it is capable by its government and by its artistic resources of excelling,—and it does excel!—in both. It is true that England and many nations have been enriched and become great by commerce, and by it the arts have been encouraged and developed. It is admitted that

"—Art thrives most
Where commerce has enriched the busy coast." *Shakespeare.*

But no one who has seen the *Place de la Concorde*, or the *Piazza*, with their palaces and beautiful bronze and sculptured fountains, in the great cities of Italy, can with any degree of satisfaction look at Trafalgar-square. Although there are some redeeming features, yet this spot might have been made, if talent had been well chosen, and labour well directed, one of the grandest squares in the world. If it be possible now, which it is, we hope one day its aspect will be very different; when a superior change will influence the physiognomy of the whole capital, and when it will be the theatre for the manifestation of the finest works that the most brilliant talents and most perfect arts of the country can produce. Greater things could be done: these vices and follies could be remedied; for British art now holds a higher position than it ever did at any former period. It is the merit of Government to find the proper men, and to furnish to genius the occasion of developing itself.

F. L. S. R.

THE GREY-FRIARS, READING.

The following has appeared in the *Reading Mercury*—

Sir,—I am sure that every member of the corporation must have smarted under the remarks made by Mr. Godwin at the Grey-friars, with reference to their intention of not only continuing, but trying out money to restore the place to its old building.

There is no doubt that it is a disgrace to the town of Reading that this house of God should have been made a den of thieves. But paradoxical as it may appear, there would seem to be no other way of ultimately restoring that building to its original sacred purpose, and in this short of this would satisfy the exigencies of the case, than by temporarily renting it as a Bridewell. In short, I can see no other plan which could eventuate in its be-

coming again a church of God. Suppose the corporation decided on removing the cells and building them elsewhere, they would then probably sell the Grey-friars as a public auction. Its value may be put at 1,000*l.* Is any one prepared to give 1,000*l.* for the sake of restoring it to pious uses? If not, who can secure its not being turned to profane purposes? Who can engage it would not be destroyed? On the contrary, the present intention of the corporation gives a guarantee for the security of the building without injury. It allows time for the raising a sum of money sufficient to purchase the site, as soon as the corporation fulfil their purpose of erecting a new police-station, with magistrates' offices. And it gives those who are interested in the complete restoration of the Priory, not only in its structure, but in its holy services, time to stir up the public mind to advance those sums which shall be required to accomplish this desirable object. Those sums must be large, and will require a long period and earnest efforts to obtain: 5,000*l.* I am informed, would be little enough, viz. 1,000*l.* for the purchase of site, 1,500*l.* for endowment, 2,500*l.* for restoration. This vision would vanish at once, were the locks-up removed at present.

The visit of the Archaeological Society will, I trust, facilitate the scheme now suggested. If the utilitarianism of the corporation should for the present expose them to the sneers of savans, and the rebukes of ecclesiologists, they must console themselves with the hope that they are contributing to a final accomplishment of the very object which both savans and ecclesiologists so justly desire. I, for one, shall be happy to help to form a committee for the purpose of securing money for the purchase of the site, that it may be secured hereafter for religious uses.

EDWARD WELLS, M.D.

ST. SEPULCHRE'S CHURCH, SNOW HILL.

We have received two or three letters on the subject of the recent competition for a stained-glass window, but do not find ourselves in a position to go further into the discussion. The paragraph in our last should have begun,—“A correspondent asserts that the competition was not decided upon the proper ground.” The context, however, made the writer's meaning clear. We give part of one letter received, as it touches another point:—

It may be true, as your correspondent observes, that public vestries, from having no responsibility, are not the most competent to form a just opinion of art, or even propriety, as you may learn from the following fact, and to which I call your attention. The church in question suffers much from the disfigurement produced by the book-stall immediately adjoining it, and the Parish Estates Committee have had under their consideration at different times its removal, with the intention of throwing open and obtaining a public view of the west side of the church and tower; thereby affording a free current of air, and more perfect drainage from that part of the edifice, which is encumbered all along to the back church-yard by its small and objectionable buildings.

In taking a first step towards that end, it was thought desirable to remove what is called the sexton's residence, situate in a small yard at the back of the book-shop, surrounded by high walls, and having a space of about eight feet by a feet as the only means of getting light and air. It had been thought so objectionable for years past, that each churchwarden in his turn has attempted to get rid of it, and now that the church is under repairs, another attempt has been made, and resisted by the vestry for the present.

Although the attention of the Medical Officer of Health for the City of London had been drawn to the subject, and his opinion obtained, which states "that it is unfit for habitation, and incapable of being made so, from insufficiency of space, light, and ventilation," yet this opinion is entirely disregarded. The claims of the public are ignored the opinion of one so eminent as Dr. Letheby; declare sanitary laws "mere humbug;" and pass a resolution instructing the parish surveyor "to report what can be made in the case of the sexton's residence in the church porch to improve the same, and the cost thereof."

Such is the *vox populi* of St. Sepulchre's parish; and it behoves the public, the press, and the intelligence of the day, to be themselves heard in such a manner as to impress the minds of those composing the vestry, that public opinion is directed towards them, and should be respected.

A MEMBER OF THE PARISH ESTATES COMMITTEE.

THE STRIKE, AT THE POLICE OFFICES.

At *Westminster*, Mr. Cummings, formerly an inspector of the B division, and now assistant-superintendent of Messrs. Kell and Co.'s contractors, Pimlico, attended with one of their men, a sawyer, to seek the protection of the law, under the following circumstances:—

The sawyer said that, after making some little purchases on Saturday night, he went into a public-house at Pimlico, where a man called him a blackleg and other very offensive names, telling him he had no business to take the man's (his predecessor's) work at the saw-mills. There were ten men on complaint, all at the same time using this description of language, and the man spoken of struck him a violent blow in the eye, and applicant then returned the blow. Applicant knew nothing whatever about the man who preceded him at the mills, nor of his name.

Mr. Abbott said that in this case he should issue a warrant against the man, under the statute for intimidating workmen, and, if the case were proved, an absolute liability, he should send it to the sessions for trial.

At *Marlborough-street*, John Canavan, a bricklayer's labourer, was charged with annoying a woman in the service of Mr. James Abbott, builder, Great Putney-street.

Mr. Abbott said the defendant was in the continual habit of annoying his men. At the present time he had a building contract for the alteration and enlargement of the National School in Marshall-street, where he had in consequence his men at work. They had repeatedly complained to him of the proceedings of the defendant; twice that day, Tuesday, he had repeated the annoyance from information given him he went to Cross-street and saw defendant with several persons round him. On asking him what right he had to interfere with and annoy his men he ran away. A policeman brought him back, and he gave him in charge.

William James, a labourer in the employ of Mr. Abbott, said.—A few minutes before six that morning he was sitting on a door-step waiting for the signal-bell to go to work, when the defendant came up and said, "Well, mate, have you got your ticket? Come, what's your number?" Continuing by his remarks to annoy him, he told him if he interfered much more he would take him to Marlborough-street. When the bell rang he was able to get away by going on to the premises; but at dinner-time he way-laid him again, and asked him about the "Document," telling him he would punch his head, and calling him "a thief." He himself was a non-society man, and took his coat off, being challenged by the defendant to fight it out; but he thought better of it, and told him master. A day or two ago he met me in Silver-street, and followed me with similar annoyance, calling me "Ducky" (from document), but I managed to get away from him, and took no notice.

The defendant said there were witnesses to prove that he was the person annoyed by Mr. Abbott's men.

Mr. Benson said, the magistrates of this court were determined to protect with the full powers of the law the quiet and industrious workmen from molestation. It was perfectly clear in this case that defendant had annoyed the men in Mr. Abbott's employ, and as clear that a challenge had been given to fight. If the witness James had not pulled off his coat, ready to accept the challenge offered, and by his words and manner irritated the defendant, he should undoubtedly have dealt with the case more severely. As it was, he should call upon the defendant to enter into his own recognisance to keep the peace for two months, and he would strongly advise him to be cautious how he interfered with well-disposed workmen in future.

Books Received.

Memories of Rome. By DENIS O'DONOVAN, Esq. London: Catholic Publishing Company, 1859. Mr. O'DONOVAN's book consists of some gracefully written recollections of the various "sights" in Rome, more particularly religious celebrations, viewed from a Roman Catholic point of view. Apart from the desire to afford pleasant reading, the ruling purpose of the book appears to be to show, with Lalande, that, "the pomp which surrounds the Pope, and the ceremonies of the Roman Church, are the most majestic, the most august, and the most imposing that it is possible to see." The condition of the people committed to the care of this church, the result of the practice of these "most imposing" ceremonies, appears altogether to escape consideration, and it is not within our province to discuss it.

The Climate of Brighton. By WILLIAM KEBBELL, London: Longman & Co. 1859.

THE author of this intelligent work is physician to the Sussex County Hospital. Though extolling the natural advantages of Brighton, he does not spare its sanitary defects; for, unfortunately, Brighton, like too many others of the most notable towns in the country, is sadly wanting in the most ordinary sanitary requirements, and, like them, suffers from all the evils consequent upon an impure state of the atmosphere and a high rate of mortality. It is a charming place, nevertheless, and might be made the healthiest.

Statistical Notices of Publications on the Constructive Arts, whether of Architecture or Engineering; and of Works on the Military and Naval Science. By JOHN WEALE, London (1822-1859). London: printed for private circulation. 1859.

THE purpose of this pamphlet is "to give individually an answer to statements which have been put forth by Englishmen as well as foreigners, that we in England look enterprise in issuing and incurring the expense of those works essentially useful to an industrial and wealthy community." Mr. Weale has simply given a list of those publications which bear his name as publisher, together with the whole cost of publication, and he anticipates that others similarly engaged will do the same, and thus set forth what has been done in this country in respect to works of art.

This very interesting list shows a sum of no less than 228,431*l.* as the cost of publications issued by an individual publisher, in the course of thirty-seven years. Of this sum 27,034*l.* were expended by authors, and 201,397*l.* at Mr. Weale's own risk. The items are both interesting and useful. We may quote a few of the more important. The architectural works of the Adames, in three volumes, atlas folio, published at 7*l.* 17*s.* 6*d.* in 1822, cost the publisher 77*l.* The Supplement to Stuart and Rivett's Athens, imperial folio, by Cockerell, Donaldson, &c. published at 6*l.* 12*s.* in 1826, cost the publisher 1,250*l.* Cockerell's Temples of Jupiter Panhellenius, and of Apollo Epicurus at Bassae, published in 1859, folio,—price (of 150 copies only for sale) 5*l.*—cost the author 1,350*l.* for 200 copies. Weale's Series of Educational Works (1853 to 1859), cost the publisher 14,000*l.* Elmes's Life and Works of Wren (1823), 4to. 3*l.* 3*s.*, cost the publisher 1,575*l.* Gwilt's

edition of Sir William Chambers's Civil Architecture, two vols. imp. 8vo. 4*l.* 4*s.*, cost the publisher 1,310*l.* Mackenzie's Architecture and Restoration of St. Stephens's Chapel, Westminster, Colombar folio (1844), 4*l.* 4*s.*: cost the Government 3,250*l.* Pugin's Principles of Christian Architecture (1841), 4to. 15*s.*: cost the publisher 500*l.* Weale's Rudimentary Series of Works (1850 to 1859), cost the publisher 43,500*l.* Weale's Works of the Old Masters (1841), two vols. imp. folio, 10*l.* 10*s.*, cost the publisher 3,500*l.*: and so on.

It is to be hoped that Mr. Weale has received a proper reward for his enterprise.

VARIORUM.

IN a tract, titled "Mr. Goldsworthy Gurney's Account of the Invention of the Steam Jet or Blast, and its Application to Steamboats and Locomotive Engines, in reference to the mistaken Claim put forth by Mr. Smiles in his Life of the late Mr. George Stephenson" (Barclay, Castle-street, Leicester-square, printer), some curious and interesting particulars are given, not only as to the first application of the steam blast to high-pressure engines by Mr. Gurney and others after him, but as to the locomotives for common roads, which Mr. Gurney also did much to bring before the public in a practicable shape, and which the greed of turnpike trusts, in obtaining Acts of Parliament securing oppressive tolls upon such carriages, even before they were fairly realized or over ran upon the roads, did more, perhaps, to suppress than the railway locomotives did; inasmuch as they would have actually been in the field before the rail, had it not been for the check thus given to their adoption, and might have prevented the development of the railway system, at least at the time. The circumstance may thus not be one to be much regretted, certainly; but, at all events, the invention of the common road steam-carriage was a very interesting one, and it not only preceded the railway locomotive, but there seems some probability of a reversion to it in the shape of traction-engines such as those now used by Government at the arsenals, and proposed for use in the field of war.—"Natural History for Beginners, by James Owen" (Longman & Co.), forms two little volumes of the excellent School Series edited by the Rev. G. R. Gleig, M.A. Chaplain-general to her Majesty's Forces. They are attractive as well as instructive little books, well adapted to their purpose, and are illustrated with a good many engravings of animals.—"The Biblical Reason Why" (Houlston & Wright, Paternoster-row), is a family guide to Scripture readings and a handbook for Biblical students, by the author of a series of "Reasons Why,"—scientific, historical, &c. The present volume contains the results of much curious research, and sheds a popular light upon various obscure points in scriptural narrative, parable, figures of speech, &c.

—The last number of *The Bookseller* (21) is a very good one, containing much interesting matter. It includes a notice of Parker's third volume of "Domestic Architecture in England," which brings down the subject to the time of Henry VIII. and one of the "Facsimile of the Sketch-book of Wilars de Honecourt, an Architect of the XIII. Century," which we first introduced to the English public. The English editor, Professor Willis, says: "The present text differs in many respects from the French edition, although based upon it and the essay of Quecherat, whose labours were unhappily cut short and left imperfect. I have ventured to add to them my own observations. Each plate is furnished with its own explanation, and, when requisite, additional ones, to show the variations in existing buildings. Those which relate to geometry have either received large additions or are entirely new."

Miscellanea.

WATER RIGHTS.—The *Saturday Review* contains an elaborate résumé of the most important cases tried with respect to water rights, and briefly states the substance of two recent decisions of the House of Lords on this very ticklish question. The practical effect of these decisions is that all water which cannot claim the description of a definite stream shall be absolutely outlawed, and may be seized by every one who can reach it, in any way and for any purpose which he may choose. On the other hand, water flowing exclusively in a natural channel, whether subterranean or superficial, is declared to be entitled to the protection of the law.

LOSS OF TOOLS AT HACKNEY.—In consequence of the mention in our pages of the destruction by fire at Mr. White's, Hackney-wick, of the tools of his workmen, William Ellice, Esq. (5*l.*) and some other gentlemen sent us subscriptions in aid of the men. On applying to Mr. White, however, he informs us that, through the kindness of Mr. D'Eyncourt, the magistrate, Miss Burdett Coutts, and others, his men require no further assistance, having had all their tools restored. We have, therefore, returned the money to the kind donors.

ENGINEERING BRAVERY.—The London correspondent of a country paper says,—"Audacity was one leading feature of Brunel's engineering character. I heard an anecdote which illustrates this strikingly. Brunel held views in contradiction to those of his brethren as to the employment of a peculiar kind of cement in railway bridge building. Other engineers objected to its use, as it hardened too fast to allow the work to settle properly. Not so Brunel. Trusting to his own view, he used this cement in one of the first large bridges constructed by them for the Great Western line. It fell soon after its erection. Brunel entered the room where the directors were assembled, in discomfited conclave, to discuss the accident. 'I congratulate you, gentlemen, on the fall of the bridge,' was Brunel's entry on the subject. 'Congratulate us! on an accident involving disaster and the loss of—pounds?' was the angry and amazed rejoinder. 'Certainly,' said Brunel coolly. 'I was just about to put up 200 bridges in the same manner.'"

ARRESTING A WORKMAN.—A case of importance to working men was decided by the Wolverhampton magistrates on Thursday. Messrs. Farmer, of that town, had given notice to the men in their employ that they contemplated a reduction of the prices hitherto paid for a certain description of work. The new terms were accepted by some of the men, but rejected by others; among the latter being George Humphries, who at once quitted the premises, and proceeded to Birmingham, where he obtained employment. Messrs. Farmer, thinking that their men were bound to give fourteen days' notice before leaving, obtained a warrant against Humphries, who was arrested, and conveyed back to Wolverhampton, in charge of an officer. The magistrates, however, decided that the Messrs. Farmer had made an important mistake, and that their notice of the reduction was a virtual cancelling of the engagement under which Humphries had entered their service. The charge against the man was therefore dismissed, Messrs. Farmer being condemned in costs. It was announced at the same time that Humphries intended to bring an action against his late employers for false imprisonment; but the difficulty was arranged in court, Humphries compromising the matter by the acceptance of 5*l.*

THE ARCHITECTURAL SOCIETY OF NORTHAMPTON.—The members of the Architectural Society of the Archdeaconry of Northampton formed a party last week to visit Catesby House previously to the buildings being pulled down. The property has recently been purchased by Mr. Attenborough, of Braampton Ash, who is about to pull down the existing house and chapel, which is in a state of complete ruin, and to erect a new house and church for the use of a district which appears, of late years, from the want of a resident proprietor, to have been somewhat neglected. The history and character of the priory were given in a paper read by Mr. James, and published in the *Northampton Herald*, of last week. The present house stands upon the site of the former priory, of which, however, very little now remains. The principal portions being a window in the south wall, the arch of which is seen from the outside, and is supposed to have been the window of the refectory and the work of the thirteenth century. The other portions of the old priory consist of three sedilia, a priest's door, and a piscina. There are also the remains of a window in what would appear to have been the south wall of the chapel. The present chapel, which is almost in a state of ruin, is, Mr. James believes, of the late Tudor period, the high pews, the carving and workmanship of which is exceedingly beautiful, belonging to the Jacobean age. Over the chapel door are the arms of Charles II. in a state of excellent preservation, and a strong desire was expressed by Mr. James, Mr. Bloxham, and others, that the escutcheon might be removed to the chapel about to be built, a request which it is believed will be acceded to by Mr. Attenborough, who expressed his desire to preserve any object of interest, the preservation of which would not interfere with the convenience or utility of the new church.

The Builder.

Vol. XVII.—No. 870.

Guilds and Trade Associations.



GUILDS, or trade fraternities, of ancient times, have been so often alluded to lately, in connection with the present disastrous position of masters and men, that some few particulars of them may be found interesting. The derivation of the term is given to the Saxon *gildan*, to pay,—having reference to the payment made by a member of a guild on admission. During the later Roman empire, there were *Collegia Opificum*, which appear to have been bodies of artisans or traders of the same craft, united for mutual assistance, and possessing certain rights. Amongst the Anglo-Saxons, it was a law that every freeman of fourteen years of age should find security to keep the peace, or else be committed. In order to meet this arrangement, certain neighbours, consisting of ten families, entered into an association, and became

bound for one another, either to produce him who committed the offence, or to make satisfaction to the injured party; and that they might the better do this, they raised a sum of money amongst themselves, which they put into a common stock; and when one of their pledges had committed an offence and fled, then the other nine made satisfaction out of the stock, by the payment of money, according to the nature of the offence. The oldest English guild of which the history is ascertained, appears to be the *Knights Guild* of London; supposed by some, in consequence of its name, to have been a military fraternity, but this is doubtful. The merchant guilds or fraternities in parts of England were trading societies, into which all persons wishing to exercise trade within the district or borough were compelled to enter. In process of time the right of regulating the borough became dependent on admission to the guild. It is thought that these associations were introduced by the French and Normans, who most likely had them from the free cities of Italy, where trade and manufacture were early practised, and where such communities seem to have been first in existence. From the earliest accounts of guilds, where the name is associated with trade regulations, it is evident that they soon became a great political power, and established that principle of local government which, notwithstanding all the abuses of it, has been the means of aiding the progress and increasing the strength of the country. Then, as time passed on, the towns and cities of England, sometimes for services rendered to the state, sometimes for money and other considerations, received royal charters of incorporation. The *rights* of German cities have in like manner played an important part in the history of that country.

Some towns are thought to have had their actual origin in the guilds. The body at first in the state became the state. London itself may have had such a commencement. The houses or halls of the guilds were very numerous. The London Guildhall is a well-known late example.

In the royal boroughs of Scotland, the term guild is still used by a company of merchants who are freemen of the burgh. Every one of those royal burghs has a dean of guild, who is in rank the next magistrate after the provost.

In England, the municipal corporations were formed by deputations from the guilds, and with them rested the government of the locality, the provision of funds for the erection of bridges, and other public purposes. Since the Norman era, the associations of particular trades have been called in many instances "companies;" they have also been called "mysteries;" from the old French "*mestier*" (in modern French, "*métier*," a trade, and the old English *mistar*, a craft. As Chaucer puts it:—

"In yowthe he lerned hadde a good mistere.
He was a wel good wright, a carpentere."

The history of the associations in connection with the metropolis is more generally known than that of the guilds throughout the country. Let us then first gather some particulars of the guild of the ancient borough of Newcastle-upon-Tyne, which will give an idea of the nature of many other similar institutions. In this town there were in old times twelve companies called "mysteries." The first of these in antiquity and respect seems to have been the Merchants of Woollen Cloth, *alias* drapers. This company was confirmed as far back as the reign of Edward III. October 20th, 1343. In an ordinary of this society, the original of which has affixed to it many seals and marks, with names of the brethren, dated June 1st, 1512, it is enacted that two shall be chosen annually by the most voices of the society, for the election of the mayor and officers of the town at the "Spital"—that is, St. Mary's Hospital. It is ordered that no apprentice shall be taken for a less term than seven years.

By another ordinary, of more recent date, it was appointed that the members of the company should meet at their ancient meeting-house, called the *Maison de Dieu*, every Wednesday before Michaelmas, at nine in the forenoon, to choose new wardens and pass their accounts. They also met every year, on the Monday after St. Bartholomew's-day, at the same hour, in St. George's Porch, in St. Nicholas Church.

Touching Tailors: the oldest ordinary of this society is dated October 8th, 1536, and enjoins that every brother, at his setting up shop, shall pay a pot of oil to the fellowship, as also 1s. 1d. a-year to the stewards for "Our Lady light;" and that each apprentice, or person hired by the week, shall pay 4d. per annum, and each hiring 3d. a-year to their play when it should be performed; also that any person, born a subject of the king and free of Newcastle, might set up shop on payment of 40l. with a pound of wax and a pot of oil at his admittance, as also 1s. 1d. to "Our Lady light," and 8d. to the play; that no tailor should work on Saturdays after eight o'clock in the evening, and should keep holy the Sundays, vigils, and festival days on pain of six pounds of wax for every default; that the society should pass their accounts on St. John's-day in every May, and having chosen twelve electors, that the said twelve should choose the four stewards, the searchers, and auditors. It further ordered that every brother should be at the procession on Corpus Christi-day, before it passed the New-Gate, on pain of forfeiting a pound of wax, and that each brother should attend in his livery.

The tanners, anciently called barkers, were enjoined to come yearly in their best array and apparel at the feast of Corpus Christi, and go in the procession set forth in their pageants, on pain of forfeiting a pound of wax, and not to take any Scot by birth for apprentices under a penalty of 20s.; and, besides other regulations, that each brother should have but one butcher to buy slaughter of, on pain of 10l. and not to buy above a certain quantity of bark or more than forty trees, on pain of 6s. 8d. Under these circumstances there was not much chance of any tanner extending his trade.

Amongst cordwainers it was the rule that each apprentice was to serve ten years, and that foreigners might be admitted into the company on the payment of 5l.; one-half to go to the fellowship, and the other to the repair of the Tyne bridge.

Besides twelve companies, particularly men-

tioned, there were fifteen by-companies. The first of these is the master mariners', which has risen to great influence and prosperity. The second company was the weavers', who, besides other matters, were enjoined to meet very early on Corpus Christi-day, and play their play or pageant of the "Bearing of the Cross." It may be mentioned that each company played an appointed play, year after year, in the "play-field," or some other public place, where the performance might be seen by the greatest numbers.

The third company was the barber-chirurgeons, with whom were associated the chandlers. This society supported the light of St. John the Baptist in St. Nicholas' Church. It was directed that no barber, his apprentice, or servant, should shave or dress hair on the Sundays. Foreigners (Scotchmen were considered foreigners) were admitted to practice on the payment of a certain sum, and it was regulated that no chirurgeon should take in hand a cure which had been undertaken by another on pain of a fine of 20s. for the first offence, 30s. for the second offence, and 40s. for the third; so that if a patient unfortunately got into the hands of an unskilful practitioner, there was not much chance for him. Amongst the by-companies were the cutlers, the coopers, and the house-carpenters, anciently called wrights. An ordinary of the latter society, dated July 3rd, 1579, constituted the house-carpenters and joiners a body corporate of themselves, with perpetual succession, and power to sue and be sued. It was ordered that they should meet yearly, and elect three wardens—two of whom were to be house-carpenters and the third a joiner; and that whenever the general plays of the town, called Corpus Christi plays, should be played, they should play the "Burial of Christ," which anciently belonged to their fellowship; that no apprentice should serve for less than seven years; no Scotchman to be taken under a penalty of 40s. nor to be made free on any account. It was further enacted, that the joiners should work at the sealing of houses within—the making of "dormants and windows," "drawer tables of frame-work and tables with turn-posts, buffet-stools, forms, cupboard, almshouses, pressers, chairs, and sconces of frame-work, frame chests." That the two trades should occupy in common the making of butteries, or any other kind of work with sealing linck, *i.e.* one board grooved in another and nailed with iron nails, chests for corpses, and other chests not pinned with wood, removing of beds, cupboards, and draw-tables, together with the making of doors and windows.

The members of the brotherhood were ordered to attend at the marriages and burials of the brethren. The play of this company was "The Burial of our Lady, St. Mary the Virgin." The play of the Slaters' Company was "The Offering of Isaac by Abraham." It was directed that no slater should work with black mortar and clay on pain of 10s. for each default; that they should make ovens and chimney-pots, and such work of tile or brick as was claimed by the wallers, to whom they were to pay an annual acknowledgment of 3s. 4d.

There were also the Glaziers, whose play was "The Three Kings of Coleyene."

Besides the companies and the by-companies, there were other fraternities: amongst these was the Goldsmiths' brotherhood, and the Waits, or musicians; the admission to this craft was 10s.; but to those who came in by patrimony, 6s. No one was allowed to teach music without a license from the mayor; no stranger was permitted to play at weddings or feasts unless allowed by the mayor, under a penalty of 6s. 8d. It was further provided that no fiddler, piper, dancers on ropes, and others that perform or pretend to skill in music, or that went about with motions or shows, should perform without licenses; and that at marriages, where music should be chosen, the "regular waits" should be preferred.

Amongst the regulations which were considered necessary by the elders to keep the apprentices in proper subjection, is an Act in connection with the Merchants' Company, for "the apprell of the aprentices," made in November, 1554, at Newcastle-on-Tyne. After

ineighing against the vices and excesses of the times, it proceeds to forbid apprentices "to daunce, dyse, carle, or mum, or use any gyterns; to wear any cut hose, cut shoes, or pounced jerkens, or any berds; to wear none other hoses than sloppes of course clothe, whereof the yarde do not exceed 12; their cotes to be of coarse clothe and housewife's making; they are to wear no straight hose, but playn without cutts, pounsyng, or gards." The apprentices of the mayors, sheriffs, and aldermen, are excepted in these dress articles. This arrangement must have given rise to bitter heartburning when the apprentices of the mayor "braved" it over the others in the sight of the fair maidens of the time.

Of religious guilds we are not speaking. The number of these was very great, and in the time of Edward III. it became necessary to restrain them by law. Some of these, as for example the Trinity Guild of Coventry, included the sovereign amongst its brethren, and were very important bodies.

Looking now to the London guilds, it seems that at a very early date some of them had risen into great consequence, for it appears that as far back as the reign of Henry I. the Weavers' Company had a charter of incorporation. Many other companies existed which were not enrolled; and in the reign of Henry II. no less than eighteen guilds were fined for not being provided with the Royal charter.

In London, as in the country, the trading companies at the time of their formation had much of the character of ecclesiastical institutions. Many, if not all, had a patron saint, usually chosen for some fancied connection with the craft. The fishmongers selected St. Peter, the patron of Fishermen; the Drapers, the Virgin Mary; the Merchant Tailors, St. John the Baptist; the reason assigned being that the former was the mother, and the latter the harbinger of the Lamb. It is said that the patron saint of the Carpenters' Company was also the Virgin, with allusion to the trade of Joseph. In the churches dedicated to the patron saints, priests were employed to pray continually for the souls of the dead of each fraternity.

Great advantages undoubtedly resulted in these early times from the guilds. Discreet members were elected by the general body as "searchers," whose duty it was to discover adulterations and other tricks of trade. Thus we find that the power of search was bestowed upon the goldsmiths in consequence of the merchants from foreign lands counterfeiting "sterling;" and that persons in the trade at home made false work of gold and silver. It was also common for gold and silver smiths to set glass of divers colours in imitation of stones. Similar powers were granted to the skippers. Amongst the reasons given was that the great as well as the commonalty were often deceived by old furs, and others half worn. In some companies the duty of the searchers was to examine weights and measures, to report on the qualities of materials, and in all instances the searchers were required to see that the fines for default were properly levied and applied to the right purposes.

In London, as elsewhere, a prominent duty of the companies consisted in attending the funerals of deceased members, and providing the means of interment for such as died in poverty. The large number of the members of guilds in the metropolis, in comparison with the country, led sooner to the neglect there of the general body of the brotherhoods attending at funerals, fines being paid instead. The funerals of the wealthy, or those holding prominent positions, were celebrated with great pomp, and with enormous expenditure; and in all cases the burial of brothers was a solemn ceremonial.

Cells of rich workmanship were provided by each company for the brotherhood. Some of these, of considerable antiquity, are still in existence. The "Horse cloth" of the Saddlers' Company is of crimson velvet, the centre of yellow silk, on which is a sprig pattern. On one side, embroidered in raised gold, are texts in Old English letters. The Merchant

Tailors, too, have some very handsome ancient palls.

The grocers' and other ancient guilds, at the time of their commencement, were not unlike the ordinary benefit clubs of the present day. It is related that twenty-two persons carrying on business as pepperers, in Soper-lane, in Cheap-side, more than five centuries ago, agreed to meet together at the Abbot of Bury's, St. Mary-Axe, and they then committed the particulars of their formation into a trading society into writing. After dinner (nothing could be done in the old time, as is the case at present, without dining), they elected two persons as the first governors or wardens, appointing at the same time a churchman to attend to the religious duties of the society. The feasts were continued annually, and on some of these occasions every member paid the sum of 12d. and the wardens and higher officers, 23d.

The grocers' first ordinance, in 1346, required that each new member should be of good condition, and of the craft, and that he should pay 13s. 4d. entrance, or the value thereof. It was also ordered that the brotherhood should not only keep all the secrets of the trade, but also the secrets of each other. None were to be admitted into the fraternity except those who had served a regular apprenticeship. Those who applied directly after their term had expired, were admitted to the freedom of London, either in the meeting-place of the company, or in the Guildhall, on the payment of 3s. 4d.; those who delayed were charged 5s.; and it must be borne in mind that this sum was equivalent to a much larger amount at the present day. The character of apprentices was required to be good.

Masters were to pay 20s. to the common "box." It was enjoined by the brotherhood that none should take the business of, or enhance the rent against a fellow member. Perjury and some other offences were to be punished by expulsion. There were fines of a curious nature, which we are obliged in our limited space to pass over without notice. In the Grocers' Company, any one becoming poor from adversity, or by losses at sea, or by the advanced price of merchandize, or by borrowing, or pledging, or by other misfortune, might, by the ordination of the masters and wardens, be assisted out of the common money, when they were able to give it. To afford afterwards a settled asylum for the unfortunate, the chief companies early built them dwellings next their hall; hence the various alms-houses of the companies. These in course of time were removed, as the sites became more valuable, from the neighbourhood of the halls.

Another useful provision of the ancient guilds was for the settlement of disputes. Claims of debt and otherwise were arranged by the judgment of the officers, and it was seldom necessary, except in very extreme cases, to make application to the courts of law.

From the date of their origin up to the reign of Edward III. the metropolitan guilds continued to increase in influence and wealth. This king, who was a great patron and encourager of both the fine arts and commerce, saw the vast importance of those trading communities in promoting trade, and used means for their partial reconstruction and improvement. He became a member of the Linen Armourers—now the Merchant Tailors; for while he encouraged the importation of the woollen cloths of various countries, the king saw the possibility, and wished to make it a staple manufacture in this country: the example of royalty was followed, and numbers of the nobility became members of the various guilds. In this reign each craftsman was directed to choose his trade or mystery, and continue to practise that and no other.

Richard II. became a member of this company.

In the olden time there were numerous women artificers, who were not obliged to conform to the regulations of the crafts followed by the male sex. Amongst these were trimmers, bakers, braceresses, textoreesses, fleresses, and verveesses, as well in silk as other materials.

Many a rare picture must have been presented in the olden time in London, when the "bravery" of the court mingled freely with

the quaint rich costumes of the citizens; what pleasant gatherings at the annual feasts, when the city dames and the daughters and sisters of the citizens were not excluded. We can fancy the cheering and rejoicing in those ancient halls when, after the dinner, the master or warden was elected, crowned with a garland, and dressed in the robes of his important office. The loving cup was passed round, and with "jollite and merriment" the day passed by. At the foundation of the guilds these feasts were plain and modest; as time passed on, and the companies became rich, the noble baron of beef, venison, peacocks, and other rare viands, made the boards of the City companies groan with costly fare.

Amongst the religious plays which were so common in both the metropolis and the provinces, none seem to have been more popular than those performed by the parish clerks of London.* On the 18th, 19th, and 20th of July, 1390, this guild performed before Richard II. his queen, and court, at the Skinner's Well, near Clerkenwell Green. It recalls a state of things long since passed away, to stand on this spot at the present day, and read the memorial which has been placed by modern churchwardens to mark the place.

We cannot enter into particulars of the various struggles which took place in connection with the progress of the guilds,—the manner in which they came to have the great influence they obtained on the municipal government, the large sums advanced to the different kings, the public spirit of the members; but will pass on to note some peculiarities of the Carpenters' Company, which in many respects may be taken as an example of others.

Any member of the guild, who was aware that one who had not served a regular apprenticeship was working for any member and did not give information, was to be fined 13s. 4d. The "common viewers" must be free of the city,—two of them were free masons, and the other two free carpenters. Four times in the year all works within the city were to be inspected, in order to preserve the safety of the public: encroachments were to be reported upon, and transgressions fined. In an order of this company it is thus directed:

"Item.—Forasmuch as by daily experience it is found out that divers masons, brycklayers, and tylers, plasterers, and others not having any skyll or understanding in workmanship of ye arte, trade, or mysteryes of carpentry, nor of other craftes, artes, or mysteryes besides their owne, yet oftentimes they doe take vpon them in a bargaine by great not only to deale for such thinges as apperteyne to their owne arte, craft, or mystery, But also to finishe divers parties, and many tymes ye whole buildynges of sundrie of ye Kinges Maisties subiectes for many other parcells of worke besides their owne craft or mystery belonging to divers other artificers of other artes, craftes, or mysteryes (so that by any bargayne or devise for their owne private commodity they maye finish the same good cheape), whereby the Kinges Maisties said subiects being owners of the buildynges are very much and often deceaved of true and substantiall stuffe and workmanship: it ys, therefore, by this present ordinance ordered, established, and ordained that noe person or persons of the said arte, trade, or mystery, within ye freedom of the said city of London, &c. shall work in the said arte, trade, or mystery of carpentry, with any Mason, Brycklayer, Tyler, Playsterer, or any other takinge workmanship by great as aforesaid in the same carpenters worke soe taken by them by great, but only for wages by the daye, and not by bargaine in great to the end the workmanship maye be well donne, under a penalty of such reasonable sum as by the masters and wardens should be assessed, not exceeding £3."

By the charter of Edward IV. the jurisdiction of the company had been confined to the city of London, its precincts, and suburbs. This privilege was extended by another charter, that of James I. to two miles round the

* There was a famous religious guild or fraternity of Corpus Christi, who were obliged annually to perform a Corpus Christi play in the city of York. This play was acted up to the time of Queen Elizabeth.

The religious plays were performed on a scaffold upon wheels. The lower part was used as a dressing-room, and the upper story for the acting. There was no cover or background, so that a view was to be had from windows and on all sides.

City. By this charter was granted to the company, in addition to former powers, the oversight, search, correction, government, and reformation of all works, stuffs, things, and merchandise concerning the art and mystery of carpenters; and of their measures and scantlings to be put up to sale within the prescribed limits; and also of all edifices, reparations, and buildings. Power was given to certain members of the company to see if buildings and works were skilfully made, to seize and dispose of all improper stuffs, punish offenders, and do other things.

No person of the fellowship using the trade of a carpenter was to take upon himself to intronit or meddle himself with any bargain of the occupation "of plumary, masons, dawning, tiling, or any other occupation, except it be upon his own houses or upon his own dwelling-house, under a penalty of 20s. more or less, at the discretion of the master and wardens."

The precepts for the management of the companies were altered from time to time, in order to meet the change of circumstances; regulations respecting weights and measures were carefully recorded, as is thus set forth in the books of the Carpenters' company:—

"Every load of timber hewed or sawn to contain in measure of solid hewed, 60 feet of assize, and every tunne of such timber, 40 feet of assize, under a penalty of 2s. 6d. for every load or tunne put to sale contrary thereto. Every load of rafters to contain in number thirty rafters, each rafter 12 feet of assize in length at least; and at the greater end, in breadth, 4 inches, and in thickness, 4 inches; and at the lesser end, in breadth, 4 inches, and in thickness, 3 inches at least, under a penalty of 2d. for every rafter. Every load of joists to contain in number thirty joists; every joist to be in length, 8 feet 6 inches in assize; in breadth, 6 inches; and in thickness, 4 inches, from end to end, at the least, under a penalty of 2d. for every joist;" and so on.

We might add much more, but must content ourselves just now with pointing out Herbert's History of the Twelve Great Livery Companies of London, Jupp's Account of the Company of Carpenters, and Parker's Domestic Architecture of the Middle Ages, as containing further information on the subject.

Admitting the service which was rendered by the guilds and trading companies during a long period of English history, it became evident, as the population increased and circumstances changed throughout the country, that the guilds did not meet the wants and character of the times.

The evil effects resulting from the trammels they imposed (such as we saw in our notice of Reading recently) became obvious, and in consequence the powers formerly exercised by them in restricting the free exercise of the industry of individuals have very properly been repealed, or greatly modified.

THE RAILWAY STATIONS AT MANCHESTER.

In a recent notice of matters of architectural interest in Chester, we alluded to some of the railway stations in Lancashire as very different to the Chester station in the planning, and unsuitableness to the wants of the traffic, if not also as regards results of the official management. The case of the stations at Manchester has become so serious, the danger and the deprivation of time from the defective arrangements are so entirely without parallel in railway experience, that we are surprised an outcry is not raised amongst the inhabitants of the town,—men of business, and supposed with energetic in public and social improvements,—loud enough to procure amendment in a condition of things involving risk of life or limb, and loss of temper and money to every one unfortunate enough to have to make use of those stations. Our own knowledge refers chiefly to the London-road and the Victoria stations. The former of these is an ordinary terminus, serving for the trains of two important lines, besides much local traffic; the other is a through-traffic station, as well as terminus, for lines to all parts of Lancashire and Yorkshire, and to other parts of the country. In both stations the area of ground is utterly inadequate to arrangement of the traffic, and to the needed best provision in planning subservient to the object

required—of starting several different trains at or about the same time. There is but one arrival and one departure platform at the London-road station, and only one for every purpose at the Victoria station. In the former case, two companies are starting trains for London nearly at the same hour; and, during the period of the Manchester Exhibition, it was not unusual for persons provided with the return tickets of one company to get put into the carriages of the other company, and to be demanded of their fare a second time. At the Victoria station the circumstances are far worse, and the arrangements are characterized by a lack of the facilities for finding trains and diminishing confusion, and a general defectiveness as to direction of the few available porters, and by the incompetence of those to whom the station seems to be left on occasions when the greatest skill and tact are wanted on the part of a competent station-master. At the seasons of pressure there is an amount of inconvenience and danger resulting from the plan of the station and its management, which would be inconceivable to those acquainted only with stations in London; although, in justice to the companies, we ought to add that the demeanour of the people in the south at holiday times, is in some respects better than that which may be observed on similar occasions in the manufacturing districts. On such occasions it is lamentable to witness the extent to which drunkenness prevails. To a stranger, streets seem abandoned by the better class of the inhabitants to a dirty and dissolute mob, with every idea of their enjoyment allied to drink. Are not the educated classes and the employers of labour responsible for such a condition of things? Do they mix with, or do they rather keep aloof from those who are called the working classes: do they foster sufficiently the elevated sort of amusements which we have heard of, such as are afforded by the museums, public libraries, and parks of Manchester, or is there a mass of the surrounding population untouched by the influence of such things, except at a single holiday in a year. That there is greater mixture of the classes in public places in London than in Lancashire, we have many reasons for believing. This inquiry, however, is much beside the present question, which has reference only to the results of danger and inconvenience from bad planning and bad management, peculiarly observable at holiday times at the Manchester railway stations. On one such occasion, at the London-road Station, the representative of this journal was driven to wait considerably more than an hour beyond the published time for starting the train he was to go by, in the midst of a riotous crowd, and by mere chance got away then, in the right train,—porters being nearly all, from drink, incapable of performing their duties. On a more recent occasion—Saturday in Whit week—at the Victoria Station, Manchester, his carpet-bag was sent to a station wide of his destination; and he himself was left behind, solely through the bad arrangements of the single platform, want of punctuality in starting, and the absence of directions, and by the confusion and drunken uproar that prevailed. A similar loss was incurred the same night by numerous other persons. The Lancashire and Yorkshire Company, and the other companies having stations in Lancashire, have certainly great difficulties, and we are disposed to give them every indulgence; but the difficulties must be met, or the business portion of the community will become greatly exasperated, and some holiday-time there will be a hecatomb of slaughter, beyond any that has been heard of. The improvements at Manchester, to be provided, are,—better provision and contrivance in regard to the entrances and the booking-offices for the numerous trains, and to the directions for travellers; better regulations as to porters and superintendence at the Victoria Station, and punctuality; and lastly, greater area of ground at any cost, and a principle of distribution in the planning, the very opposite of that which was suited hardly to the railway-traffic of twenty years ago, and would be unfitted now to requirements of a second-rate town.

ASTON CHURCH, BIRMINGHAM: DISCOVERY OF AN EFFIGY.—A fund is being raised for cleaning and repairing the parish church of Aston, which is falling very much into decay. The vicar has been enabled to bring to light again another reclining figure, very similar to those already placed in the chancel of the church, with this peculiarity attached to it, that part of the iron helm was found on the face, and is now to be seen. The effigy is in the attitude of prayer, and is perfect to the knees, with the sword, though broken, attached.

PHOTOGRAPHY: THE COLLECTION AT THE BROMPTON MUSEUM.

In our last volume we printed some observations entitled "Photography, and the Study of Architecture," intended chiefly to show the available field for the Architectural Photographic Association in the advancement of architectural study and art,—a field which appeared to be entered upon but slightly by the arrangements of the Association, and the supply of a very moderate number of subjects each year to subscribers.* We are not aware what attention those observations excited; but we have continued to feel much impressed with the importance of a development of the resources offered by photography to the objects referred to. We endeavoured to show that the chief value to the architect, of photography at the stage of productiveness which it had reached, was the means which it offered as compared with drawings or engravings, for acquiring a complete collection of examples, and for forming different series of illustrations of architecture, arranged, that is to say, chronologically, under the heads of countries and towns, under the different classes of buildings, or under styles, and under the names of architects. We showed that for the guilds, there could be supplied forty or fifty subjects which, considering the object to the architect, would be probably of much greater value than the smaller number of subjects of the larger size, since, in very few years, each student or practitioner of our art might be in possession of material such as no library, and no ordinary visits to buildings themselves, could afford. The argument for the change of principle could be added to by the fact that the fading of photographs deprives a collection, of its value, speedily: therefore it is desirable that any collection got together should be formed so as to derive any benefit from it, as soon as possible, and formed in such a manner that subjects could be economically as well as readily replaced. During the last twelve months the field has increased; a much larger number of buildings have been photographed, and the representations are to be procured generally at a cheaper rate.

The chief labour required on the part of the committee, or at any other point of the distribution, would be that of the preparation of catalogues, or receptacles for the specimens of the stock, present and future. This machinery not only could be made useful in the distribution and completion of sets, but would itself form a whole library of reference. In place of it, the architect has now the shop-windows scattered over London; and he would find it hard to get, in most cases, a particular example wanted, and much less a full and instructive collection. The system of cataloguing would be that of a well-arranged and complete table of contents. We could offer suggestions for the details: the general principle, however, varying as required for the objects of the different sets of duplicates, must be already obvious to all readers. Photographs of the size of those prepared for the stereoscope would answer for most purposes, and would be more convenient than others for arrangement and reference. Negatives could be procured, probably, so as to allow of distribution or sale at a rate even lower than that we have supposed. The printing should be done by, or directly for, the committee or other central authority—in order that the best guarantee could be given for the impressions; and suggestions which we made in the former article, as to the exact title and date to be written (reversed) on the negative itself, with sufficient to tell at once whether or not the photograph had been taken from the building or from an engraving, should be attended to.

Viewing the matter of photography and the study of architecture in the important light in which we have sought to show it, we were much interested in looking into what was proposed to be effected by the Department of Science and Art. The Department has for some time fostered various agencies for the supply of casts from celebrated examples of sculpture and ornament, fac-similes by the electrolyte and other processes of certain works in metal, and representations in plaster or otherwise of ivory carvings and other objects of beauty and interest. Many of these, as the productions of Messrs. Elkington, and of Messrs. Franchi & Son, are due to the support or facilities given by the Department, and seem to be procurable at prices which are moderate.

With these there are now exhibited at Brompton, a choice collection of photographs, not, indeed, so immediately interesting to the professional architect, or architect proper, as to

* Vol. xvi. 1858, page 688.

the painter and the artist in the special branch of furniture; but still showing what it might be possible to do for our art, with the means and agencies which the Department, and possibly no private association, possesses. The photographs consist, first, of copies, of five different sizes, of the set of the cartoons, besides enlarged studies of portions of the subjects, as heads, or principal figures. The set of seven, of the larger size, or averaging 48 inches by 30 inches, may be had for 4*l*. 19*s*. 7*d*. and a small charge for packing; and for the smallest size, 8 inches by 5 inches, the price is 3*s*. 11*d*. The subjects can be had separately: those of the smaller size would cost 5*d*. or 7*d*. besides 6*d*. for carriage. The photographs are not mounted. The large studies are charged prices ranging from about 2*s*. upwards. The catalogue contains a concise historical notice of the cartoons by Mr. George Wallis, who has the management of the section of the Department's operations connected with sale of photographs and reproductions. The printing is executed by the men of the Royal Engineers. There are also photographs from original drawings in the Museum of the Louvre, and others from drawings, portraits by Holbein, of persons at the court of Henry VIII., the originals at Windsor Castle. To these are added photographs of the portraits of the Tudor family, which were painted for the Prince's Chamber in the New Palace at Westminster,—the authorities being given in the catalogue. Photographs by Mr. Roger Fenton, made for the British Museum, of busts, drawings, and other objects, there are to the number of 120, or upwards. Of these the negatives, it seems, are to be sold. The ornamental art division, includes photographs of Limoges enamel, ivory carvings, and other objects at the Louvre; and from specimens in the Museum, private property, some of them the property of the Queen. The whole of these are at prices as moderate as those we have named. A copy of a drawing of the Salutation of the Virgin Mary, interesting to us for its architecture and perspective, is to be had for 1*s*. 0*d*.; one of a fine drawing of the "Repulse of Attila," for the same sum, and one from a drawing for the fresco (afterwards painted by Giulio Romano) of the Battle of Constantine against Maxentius, for 10*d*. The originals of these are by Raffaele, by whom also are some beautiful drawings of the Virgin and Child, and others of children. The photographs of these last may be had for 7*d*. and 5*d*. Such photographs are greatly to be preferred to engravings, as regards the effect in a room. The Holbein series is one of great interest.

The negatives for the photographs, with the exception of those taken at the British Museum, were made by Mr. C. Thurston Thompson, who will also supply (but at prices slightly higher than those we have quoted) photographs from the Soulaiges collection, the decorative furniture exhibited at Gore House in 1853, arms and armour at Windsor Castle, the Paris Exhibition of 1855, studies of trees from nature, and others; albums, with the prices, being placed for inspection; and photographs can be ordered of special subjects in the Museum. The publications of the Arundel Society are also exhibited. It is further intended to procure and issue, as far as possible, photographs from all drawings by Raffaele and Michelangelo, in this country.

The object of the Department is to give the public the full advantage from negatives which have been or may be taken from works such as those in foreign museums and private collections, which could not be photographed by private agency. Something probably is put down for original cost of the negatives, notwithstanding the low prices: at least, it is desirable that the Government, whilst promoting an object which seems so important as the dissemination of knowledge and art, should not use public money to destroy by competition those previously concerned in the supply, who have no peculiar advantages—bookellers or photographers.

It will be seen that the Department do little directly as yet for the main objects which we have had in view. They are trying an experiment. They will sell, indeed, it appears, copies of negatives prepared for the War Office and other Government offices,—and amongst these are probably the subjects taken at the time of Lord Granville's embassy to Russia, and that of the acquisition of the marbles from Asia Minor at the British Museum, which are exhibited. But the Department can, with facilities not possessed elsewhere, extend the advantages of photography in the direction we have pointed out, with great prospect of benefit to architecture,—by allowing architects the chance of procuring and referring

to views of, we might say, all that there is of architecture throughout the world. We hope they will make the effort, and do the work completely, and therefore well; and we are sure the promoters of the Architectural Photographic Association would gladly hail such a movement, could they see in it better means of serving the interests of their art than those which they can command.

THE PHOTOGRAPHS OF THE DEPARTMENT OF ART.

I AM sure you can, and I believe you will, give your assistance in support of making the collection of articles photographed at the Kensington Museum of more benefit to the public than is shown by the printed catalogue. That list is, undoubtedly, of general interest; but if, in the taking of this step, the advantage and wishes of the majority of those who frequent that grand repository had been one primary object with its promoters, it is difficult to understand why more latitude should not have been allowed to architecture. Why should not copies be offered from Wren's original design for St. Paul's, the heathen temples, the fine collection of ancient details, models of roofs, bridges, and building materials, &c. &c.? Surely these would constitute a series for which a greater sale would be effected than will be in the case of those at present offered.

A word, also, with reference to the management of this sale. As you are aware, they were advertised to be offered to the public on the 3rd inst. On making application that evening, with a view to purchase, I was informed, on purchasing a catalogue, that sales were effected only during the day, and on renewing my application, according to directions, I was apprised that another fortnight would elapse before any were ready for distribution. There are those who would say this is not good management, particularly in the case of those who come long distances, or have waited in town with this object.

G. HARRISON.

THE STONES OF ETRURIA AND MARBLES OF ROME.*

THE pleasurable sensations occasioned by recognizing an old friend amongst a throng of new acquaintances or entire strangers, is something to which we can all testify. A chord is struck which awakens a crowd of recollections of things pertaining to former years, which had otherwise passed entirely from the memory. In a more extended sense and sphere are these feelings experienced, when any man, whose early labours have illustrated or advanced any branch of art or science or general knowledge, again presents himself before us after a lapse of years, and once more calls our attention to those subjects with which his name has been long associated.

Amid the din of contest betwixt Medævalists and Classicists, which in the prolonged struggle for style and precedence has well nigh threatened to shake down what few remains of old Rome are left standing, the names of Taylor and Cresy have not been lost sight of as a rallying point; and we confess to an honest pleasure in welcoming the only surviving representative of those esteemed authorities, and with him of visiting once again those scenes of early study which Goth and Classic alike concur in reverencing.

Great advances have been made in our knowledge of Roman topography since the year 1821, when their valuable work upon the "Antiquities of Rome" was published; and it is as an introduction to a new edition of that work that Mr. Taylor has now published a sketch of the existing monuments of the city, with allusions to such modern discoveries as to sites, shapes, and names, as are intended to be comprised in it.

The date of that valuable collection of faithful delineation and accurate measurement marks that peaceful period in Roman topography when the successors of Nardini had as yet met with no serious opposition in their rejection of the theories of the earlier topographers, from Biondo Flavio to Alessandro Donato. Soon, however, was the "Beschreibung" of Messrs. Bunsen, Platner, and Gerhard destined to mark a new and most important era in the study, and produce a revolution as great as that effected by Nardini above a century and a half before. Minor subdivisions of these Italian and German schools were to follow; and the heresy of M. Bekker, with the learning and acrimony it evoked, formed one of the leading divisions of the latter. In the former a sort of compromise was effected, and in Canina and his followers we may recognize the latest and the best examples of its recognized leaders.

To these may be added a third school, if such it can be called, wherein Italians and Germans have united in one opinion, and of which the late eminent archaeologists, Luigi Canina and Emile Braun may be regarded as chief exponents.

* The Stones of Etruria and Marbles of Ancient Rome; or, Remarks on Ancient Roman and Etruscan Architecture and Remains,—the result of recent studies on the spot. By George L. Taylor, Architect, author of the "Antiquities of Rome," &c. London Longman. 1859.

In England no line of argument or opinion has been put forth with sufficient unanimity to warrant the application of so dignified a term for its illustration. On the contrary, what few writers have given attention to the subject have adopted views opposed to each other; and in the learned essay of Mr. Dyer, his arguments in favour of Canina's opinion as to the position of the Capitol, were immediately met and combated by those of the reviewer of the *Quarterly*.

But arguments, more convincing than those afforded by mere classical research, have of late years effected more towards the solution of certain difficulties that before seemed hopeless than all the amount of erudition brought to bear upon them,—we mean excavation. Nor is the benefit conferred by this most natural process limited to the discovery, where all before was doubtful, of the name, or site, or form, of such and such relic of antiquity; but, on the contrary, by the possession of one point we are aided to the attainment of many. Thus did the knowledge of the site of the Temple of Concord enable us to recognize the adjoining columns as belonging to another temple (albeit the name of that temple is by no means clear, as Bunsen and Bekker assign it to Saturn, and Canina and Dyer to Vespasian; Mr. Taylor, we may add, still assigning to it the now exploded title of Jupiter Tonans), and at the same time furnish a point towards the solution of the great dispute upon the positions of the Arx and Capitol. Thus did the discovery of the steps of the Basilica Julia fix not only the site of that edifice, but also the western limit of the Forum itself.

Previously, however, to the period of Messrs. Taylor and Cresy's labours in Rome, much had been done during the French occupation; and in the graphic descriptions of the Comte de Tournon, *préfet* to Napoleon, we may at once see the state of miserable neglect in which they found the city, and the improvements effected by them in disengaging and exposing its ancient monuments, from the years 1810 to 1813. The Forum at that time was blocked up with houses, granaries, and filth, and the disengaging of the angular columns of Vespasian, and underpinning them, formed their first labour; and that of clearing those of Saturn from the paltry erections that surrounded them, their second. "The Three Columns" of so many dedications, ascribed by Canina to the Curia Julia, by Bunsen to Minerva Chalcidica, by Bekker, Dyer, and now by Mr. Taylor, to the Dioscuri, next claimed their attention, and were exposed to their bases. At the same time the Basilica of Maxentius was cleansed, the base of Venus and Rome disclosed, the Arch of Titus isolated, and the pavement of the Via Sacra brought to light in front of the portico of Antoninus and Faustina. The freeing of the Colosseum of its abominations, and laying bare the walls of the Baths of Titus to the light of day completed the restorations effected by the French in the Forum and its neighbourhood.

Among their other works, the finding the level of the Ulpian Basilica, with its remains of walls, columns, and pavement, and disengagement of the column of Trajan,—all choked up as it was with houses, churches, and convents,—must not be lost sight of.

Thus, to some extent, did our neighbours open a way for future explorers; and in their zealous task of measuring and delineating, Messrs. Taylor and Cresy must have enjoyed opportunities and advantages that Desgodetz and his predecessors were strangers to.

No field of inquiry was ever more prolific in labourers, more fruitful in results, than that of Rome. The authors from whom we derive its early history, such as Herodotus, Plato, Cicero, Varro, Livy, Pliny, Strabo, and numerous others; those dating from the Revival, as Alberti, Bramante, Peruzzi, San Gallo, Labacco, Serlio, Scamozzi, Vignola, Palladio, Pirro Ligorio, Milizia, Vasari, Desgodetz, Fontana, Cameron, and Du Perac; and those of a later date, architects, antiquaries, and scholars, including Winkelmann, Agincourt, Cicognara, Piranesi, Guattani, Nibbi, Gell, Lewis, Pinelli, Bunsen, Bekker, Muller, Niebuhr, Platner, Braun, Hobhouse, Burgess, &c. with a host of detached essays that would fill a library, may positively be numbered by hundreds.

In the first portion of Mr. Taylor's short essay (read at the Royal Institute of British Architects on January the 24th, of the present year), the principal points, really new, are certain details of construction, some valuable remarks upon the existing masonry, and his desire "to treat upon the interesting architectural relics left us, more upon their *own testimony* than that of verbose writers. '*Parlano anche i Sassi*.' Even stones

will speak! and sometimes more truthfully than writers." But, inasmuch as his observations upon Roman masonry are based upon his Etruscan experiences, forming the concluding portion of his remarks, it will be necessary to glance at the latter portion first.

The origin of the Etruscans, like that of the Romans, is wrapped in uncertainty; and the theories propounded by the learned, from Herodotus to the living writers of to-day, in respect of their origin, would alone fill a goodly volume. Suffice it then to say, that this people called by the Romans Etrusci or Tusci; by the Greeks, Tyrrheni or Tyrseni; and by themselves, Rasena, were a powerful nation when Rome was yet in its infancy, having extended their dominion over a great part of Italy. Through the attacks of the Gauls in the north, and the Sabines, Samnites, and Greeks in the south, they became confined at last to the limits of Etruria Proper, and long flourished there after they had disappeared from the rest of Italy. Of the twelve confederated cities no list is given by the ancients, but they probably comprised Cortona, Arretium, Clusium, Perugia, Volaterra, Vetulonia, Rusellæ, Volturni, Tarquinii, Falerii, Veii, and Cære, more anciently Agylla. The latter part of the history of Etruria is a struggle against the growing power of Rome, into which nation it in time became absorbed.

The language of the Etruscians is as perplexing a theme as their origin, and has been as much discussed. Race and language, however, having alike been swept away or absorbed into those of Rome, their history can now only be gathered from the "mighty walls and gates of her cities, composed of massive stones, put together with the finest joints, and without cement; from her tombs and their contents, many of which remain to this day. 'Parlan le tombe e mura, ove la storia è muta.'"

Nearly all these towns (many of which still retain their old names, Italianized), or their sites, present remains of walls or buildings of massive construction, either Etruscan, or Pelasgic, or Cyclopean; the latter name, by the way, being a somewhat indefinite title for those formed of the largest blocks. "Quicquid magnitudine sua nobile est, Cyclopi manu dicitur fabricatum."

Mr. Taylor's tour in search of "old stones" embraced many of the above cities, and several others, as Sutri, Nepi, Albano, and, in fact, almost all the towns mentioned in Dennis's "Etruria;" and, as we said before, it is the application of his knowledge, thus acquired, to an analysis of the buildings of Rome upon their "own testimony," that forms the staple of his essay.

Of the works of the Kingdom there still remain portions, in the Mamertine Prison, the Cloaca Maxima, the Pulcrum Littus, and the walls of Servius Tullius; in all of which the walls, of tufo, composed of equal blocks and uncemented, speak for themselves.

In the Republic we can trace but few dates; but the Tabularium is an exception. The basement wall of its east façade, 50 feet in height, in 26 courses, every stone being a double cube of 2 Roman feet, that is, 3 ft. 10, by 1 ft. 11, by 1 ft. 11, in alternate courses of header and stretcher, with the finest joints and true perpendiculars, may be cited as one of the best specimens of the Isodomon. Of the works of which we know not the date, but which present proofs of as early an erection, the Peribolus wall of Mars Ultor is the finest specimen. It is supposed to be of anterior date to the temple which was built by Augustus. There is also some masonry of tufo, lately discovered, at the foot of the Palatine, on the west side.

Following up his idea of judging of the dates of Roman buildings by their masonry, Mr. Taylor then quotes, "for the size of their stones, though not for such regularity: the Tomb of Scipio, 456 A.U.C.; the Tomb of Cecilia Metella, B.C. 67, one of the finest specimens of early construction; the circular surface being composed of the finest Travertine; the Island of Esquilippi, in the Tiber, constructed in the form of a vessel; the Theatre of Marcellus; the Colosseum; and the Temple of Fortuna Virilis." The fact of the Travertine stones of the latter being exactly to the above range, Mr. Taylor considers a strong argument in favour of its reputed erection in the time of Servius Tullius, and its restoration in the time of the republic. "Thus," says he, "the early date of all the above is clearly established."

Thus does the writer endeavour to show, that the fact of the above Roman walls being found to contain in their masonry precisely the same characteristics in size and construction as those of the Etruscan cities subdued by Rome, is conclusive proof that the former were evidently the forerunners of the latter.

One more observation reminds us of the larger proportion of primitive Etruscan usages which yet distinguish Florence and Vienna from the rest of Tuscany. "The Florentines continued in the Renaissance to adopt the grand and imposing style of building of their ancestors; Michelozzi, Maiano, Brunelleschi, Michelangelo, Pollajolo—Florentine architects who studied in Rome—followed up this peculiar style when they returned to their native city to practise. The Palazzo Strozzi, Pitti, and Riccardi, are all in the bold, massive, rough, though grand and regular style. The height of the Braccio is not preserved in the courses, but the massiveness, which appears to us heaviness, is so, with great regularity and closeness of joints. In the façade of the Pitti, I have traced stones 25 feet long, 2 feet 2 inches high, and probably 2 feet to 3 feet on the bed. The Palazzo Vecchio, of earlier date, is in the same style, but the stones are smaller. Among the moderns this style is quite peculiar to Florence and to Sienna."

The remaining portion of Mr. Taylor's book is a brief account of those temples and other structures that were included in the "Architectural Antiquities of Rome," together with notices of buildings and sites that have come to light in later years, such as the Temple of Concord, Basilica Julia, &c., and allusions to the change of dates and nomenclature in others; such as the temples of Jupiter Tonans, Saturn, the Dioscuri, &c.

Six lithographic views, in colours, by the author, illustrate the work, together with two ground-plans, and sundry woodcuts.

The panoramic drawing of the Forum, and that of the Clivus Capitolinus, are particularly clear and faithful. The view of the capture of Perugia by Octavianus Caesar, from a drawing in tempera, give an excellent idea of the fine old Etruscan gateway and walls as still existing.

THE STRIKE.

It is undeniable that the progress towards settlement of the unfortunate quarrel in the building trade, is not yet of the character which we should desire, or were justified in anticipating from the secession of the masons from the Conference, and the amicable manner in which the negotiations with the masters were conducted. So long as there are upwards of 6,000 men admitted to be out of work, and there are many others, disastrously affected by the strike and lock-out, who derive no support or compensation from either side, and so long as obstinacy predominates, instead of reason, with the disputants, we cannot feel satisfied with the actual position, or be free of melancholy forebodings as to the future. It is, however, always a point gained in progress, when the question at issue is divested of some encumbrances, and can be logically stated; and, as it is scarcely necessary now to show that the original movement of the Conference was a mistake, that their strike against Messrs. Trollope was an act of unfairness, that the lock-out by the masters was the consequence, and was a matter of self-preservation, though it wounded some who were non-combatants, and that the masters were justified in seeking to know, in future cases, with whom they would be treating for labour, and what influences might be made to affect their contracts and their returns, on the other hand the masters have placed themselves in a better position as regards the public, by their expression that they would be satisfied with the protection of the law.

Consistent as may have been the wording of the "declaration," with the necessary object of bringing the circumstances of every negotiation about labour, back to the normal and fair conditions of bargain and barter, and opposed, rather than otherwise, to the idea of slavery, as was the intention and true meaning of the "declaration," the act of putting it forward, and of involving with it the withdrawal of the men from any advantages which there may be connected with their unions, is now seen to have been not simply impolitic, but unwise, at least by comparison with the offer to the men of an alternative—the modification of the rules of the societies. Those who condemn the masters are mostly not aware of the extent of the interference to which employers in every trade have been unjustly subjected for a series of years, and the necessity for some stand against a movement for the interests of a mere class, however important a class, and a movement in every respect self-immolating and prejudicial. Knowledge, however, comes in great measure of experience, and the masters would have shown tact, had they first touched the matter of the rules, and shown

earlier the disposition to confer with the men upon them—holding to the "declaration" only in the last resort. Had they shown this disposition at the outset, by something beyond their words which have been half forgotten, recognizing advantages which there are in the societies, much of the present spirit of the men, and the colour of justice which their cause, as it now stands has, would not have come to disturb the judgment and perception in one case and the other. Both parties have been in the wrong,—the one side in their proceedings against masters and other workmen; the other side in their wording of certain requirements. We see that now disadvantage may ultimately ensue from either party being defeated. Either the men may succumb and nourish the feeling of an injustice and a grievance, groundlessly or not; or the masters may give way, in which case the same action of suicidal strife against capital may be repeated. We would find know in what way the matter might be settled to the advantage of the men, and in the resumption or formation of the best agency for the supply of buildings which the public may demand. If these objects could be forwarded by the men themselves, or with assistance which it has been reported they have had offered, we should say no more about the interests of the masters. It is because we do not see the way speedily to the success of co-operative associations (still, however, desiring that such associations should be formed), that we write in opposition to attempts of the workman to deprive himself of what he has,—in short, to the destructive warfare of labour and capital.

It would be inappropriate, however, to the position in this week, to pursue the general question which we have already dwelt upon. That is a question which we may have elucidated, but which is capable of being decided only in one way,—or recognizing equal rights, and observing the precept of doing unto others as we would be done by. The trades-unions, so far as some of their laws and practices are concerned, are opposed to these true democratic, social, and Christian principles; and therefore they are opposed to political economy.

We hope we may look to the probability, even under some disadvantages, that by the action of public opinion, the men will see the reasonableness of the conditions which are now, in fact, those alone which it is necessary to consider. If it be their humour to object to a particular form of words, the masters will be satisfied with the revision of the laws, and the cessation of the practices inconsistent with liberty and injurious to all. We have no doubt that a mutual agreement, such as we have before spoken of, stipulating for the rights on either side, could be easily drawn.

The facts of the present position of the dispute have still to be searched for in obscurity—except so far as we have already spoken of them, or of the number of men unemployed. There were 214 recipients of the fund at the Paviors' Arms less than those of the previous week, on Monday last. This number was less than that of the reduction in the week before that, when the number less was 501. The whole number of men amongst whom the money was distributed on Monday, was 6,240; to which, however, we should add the number, whatever it may be, of "Trollope's men." The masters' report on Tuesday was, that nearly 10,000 men, in various trades, were at work, under the terms of the "declaration," within the metropolitan postal district. Mr. Potter, by a letter in the daily papers of Wednesday, would seem to return a charge of "outrageous falsehoods" made against the Conference—referring to these reports as to other matters. He speaks of the previous week's report, "stating that 8,000 men had returned to their work under the 'document,'" as one of those statements, and supports his view by reference to the appearance of the works at Westminster Palace Hotel, the Gloucester Coffee House, the Cancer Hospital, the Duke of Buccleugh's mansion, the Houses of Parliament, "or, indeed, at any of the large jobs in the metropolis where the 'document' is enforced;" and he says, "not 7,000 were at the time locked out," and refers to the returns obtained by the Conference, of men seen when leaving work, as showing that hundreds, and not thousands, would have been near the mark. There is certainly an inactivity about many works which does not appear to harmonize with the addendum which we find in some reports, that the masters "considered that this number, with the new accessories on which they confidently calculate, would be quite sufficient to enable them to carry on all the works required during the winter. They regret that the men should have been so obstinate, and feel for the suffering which it must entail upon their families,

but have no intention to alter their original determination and policy."

The prospect disastrous would be certainly in accordance with our apprehensions; and we know that work has been greatly diminished by the strike. Contracts are in abeyance; tenders for large works are not advertised for, pending the present complication; and there is a general postponement of new works till next year. Take the illustrative example of the works of the Southern High-Level Sewer, of which the works at Deptford have but just commenced, in the excavation; and the more forcible case of the postponement, week by week, of the advertisements for tenders for the Southern Outfall Sewer. These instances, of course, tell both ways; but they show that whilst a public board can wait (to public disadvantage it may be allowed), and contractors may get time in consequence of their unexpected difficulties, workmen, a very large number of bricklayers in this case, are receiving about one-third less than they could earn.

Speaking of the discrepancy, we may add that we cannot make reported numbers of Mr. Moxon's men correspond with what we observed at the works, and with the general statements of progress, or delay, to the Metropolitan Board. We would advise the masters to make the truth of their reports unquestionable, as to spirit as well as figures: should there be any error of any kind, they will not find us to defend them. In justice to their case, however, we must say that we have more reason to doubt what appears to be stated for the Conference. If we understood Mr. Potter's "not 7,000 were at the time locked out," he should mean locked out at the lock-out when it took place: for, if he means the men last week who were remaining of those locked out, he has said nothing which will disprove the statement as to the 8,000. Any way, not following our own information, but taking the statements of *The Times* reporter, who is evidently well informed and careful—it appeared on the 22nd of August that there were 15,000 to 20,000 men then out of work and belonging to the Conference, of whom it was estimated that not more than 12,000 would present themselves for a share of the funds: in *The Times* of the following day, however, it was reported that 9,618 men, inclusive of 214 of Trollope's, were relieved. We find that the official return of the 19th September, or some time prior to the masters' statement, puts the number relieved by the Conference at 6,955,—not inclusive, as it appears, of Trollope's men,—the latest statement having been already given. Does this tend to show us that the masters were in error? What Mr. Potter says in other parts of his letter, should be compared with the statements of Mr. Sidney Smith, in the *Times* of 16th September: the complexion will be found to differ. If an error was made by Mr. Smith, and the trades have been ready to purge the rules of the objectionable clauses, as is stated by Mr. Potter, the masters will now, doubtless, assent to this; and new ground is opened for negotiation. Mistaken, we believe, Mr. Potter to be on several points, as he is certainly wrong in speaking of the masters as having "turned into the streets so many thousands of industrious men who had nothing whatever to do with the original quarrel." What they,—that is the Conference men consisting, we apprehend, of some non-society men, countenancers or sympathisers, as well as of those belonging to societies,—had to do, was supporting or intending to support the quarrel with funds, and funds derived from the employment afforded by the other masters who it is reasonable to suppose would have been soon afterwards proceeded against. We hope that Mr. Potter, or whoever else may be the advocate of the men, will lay aside this sort of pleading, and go straight to the settlement of the dispute; for, the masters will have no object in maintaining the "declaration," if Mr. Potter be ready to do now that which he says he agreed with Mr. Smith to do.

We should not add that it seems very questionable whether the employers will gain anything by refusing to treat with the Conference. We do not know how the Conference can be rightly spoken of as an "irresponsible" body, or its proceedings as having been even "entirely illegal;" and it is not surprising that the leaders of the men were able to show so strong a body of supporters as on Friday evening last week. The masters had previously held a meeting, their second in one day, to consider the resolution embodying the opinion of the masters, as given in our last. Though the resolution had been not discreetly worded, the effect of it was such as appeared at the time to reverse all calculations as to the adjustment of the

dispute. Mr. Harnott and others, who had come forth as conciliators, departed completely from that character; and it seemed, when this week commenced (and the chance is not removed), that the dispute would enter into a worse position than before, and that the London masons would be supported against the "declaration" by the entire body of the Society having its ramifications throughout the kingdom. Indeed, it is by no means certain that such an extension of the dispute to the provinces has not already commenced, through the action of the masons, or of the Conference with them. By the Conference, no doubt, many men employed in the country by London masters, have been "called off." This will embarrass the masters; but, as we have before observed, cannot promote the object of the men, as it makes the number of recipients of a fund too great for the support given by men in work. At the same time, an extraordinary amount of support is being given to the men of the building trades from those in other trades; and it remains to be seen what will be the result,—whether there will be a war of class against class, of all labour against all capital, or whether the working classes will become tired of supporting men in idleness. Meanwhile, however, it may have to be tested whether the country masters will support those of London in their stand against the obnoxious rules and practices. If the lamentable quarrel must go through all the stages until the State shall interfere to protect the freedom of labour and of capital, there will be much suffering yet to all classes; but the eventual adjustment has been hastened by the recent events. The magistrates continue to show a proper disposition to protect non-society men disposed to work, from acts of violence usually concomitant with strikes; and their exposition of the law and of the morality in each case, has been that which was consistent with even-handed justice and public good.

In an official communication sent to the masters during the week, with the result of the masons' meeting, the deputation seem to leave open the door for renewal of the negotiations; though they "repudiate the idea of submitting any rules to any authority for consideration, believing that employers and employed are the only parties best calculated to mutually agree upon such a subject." We had thought that such conference on the by-laws was the business on which Mr. Harnott and others were engaged with the masters for so many hours on several occasions. It was on one evening stated that the rules could not be altered by a section of the general Society of Masons; but the deputation did treat sufficiently to show their power to move the alteration of the rules—if desirous of the object. We hope they will consider what they refuse, and what complications and what trouble to those depending upon them, they may bring about by a refusal to make their laws accordant with the law of the land; and though it is impossible, in the present attitude of the men, to predict what disaster a week may bring forth, we submit to the Conference and the masters, that the masters have already in effect conceded the "declaration," and that after what they have themselves said or done, they can have no reasons for continuance of this season of disaster and ruin,—unless a reason such as they, the leaders of the men, have not had imputed to them by us, and which they have often repudiated.

PROCEEDINGS IN CONNECTION WITH THE STRIKE.

On Thursday evening, the 29th ult. the operative masons met, as we mentioned last week, "Brother" Turner, in the chair, to hear the result of the interview with the masters. Mr. Harnott read the resolution submitted by the representatives of the masons, and also the various written documents which had passed between them, together with some details as to the spirit in which they had been met by the sub-committee of the employers, the result being the resolution we gave last week, namely,—

"That the masons' deputation be informed that the Central Association consider that the most practicable method of arriving at an adjustment of differences would be the revision of such rules and by-laws, in so far as they affect the employers and employed, within the Metropolitan District, as shall be considered by some eminent impartial authority to be entitled to the spirit of the law of the land; and that in particular all rules and practices should be removed which interfere with the freedom of workmen, or prevent members of Trades Unions from working with other workmen."

The speaker said the lock-out had now continued for eight weeks, and if the masons within the metropolitan district were compelled to succumb to an arbitrary and unjust demand, it would not rest there—it must soon extend

to all other towns, and all masons would have to share alike in the degradation inflicted on their metropolitan brethren. That he felt confident they would not submit to; but, of the 8,000 men the metropolitan masters asserted they had got, very few were, according to their own returns, masons. It was by the masons after all, he believed, that this question was to be settled. They would fight, not for themselves alone, but the other trades, because if the declaration was withdrawn in their case it must be in others.

The following resolution, moved by Mr. W. Perham, was passed, as a distinct answer to the proposal of the masters:—

"That the proposition of the Master Builders' Association, that the rules and by-laws of the Operative Stonemasons' Society should be revised and altered, is one which the London masons, as a body, cannot entertain. The rules referred to have been established for the regulation of the entire body of the stonemasons in the United Kingdom, and cannot be altered by any section of that body."

An amendment, pledging the meeting to support the nine-hours agitation, was withdrawn.

It was afterwards resolved,—

"That we, the masons of London, now in work, levy ourselves 6d. per day, in order to support those at present out, and that the said levy shall continue until the odious document shall be unconditionally withdrawn by all the firms, and that such levy shall be binding upon all masons, either society or non-society men, as an act of justice to those who come for protection under our banner; and, further, that all shall share alike."

On Friday, the 30th, an aggregate meeting of the United Building Trades was held in St. Martin's Hall. The hall was fully occupied nearly an hour before the period fixed for the commencement of business, and hundreds of persons remained outside, unable to obtain admission. It was computed that not less than 5,000 persons were present.

Mr. Langley Banks, a non-society man, was called to the chair.

Mr. Potter said a very large employer had thought that the time had now arrived when these unhappy matters should be settled, and he intimated that some suggestion should come from the Conference which he should be able to put before the master builders. Accordingly the next morning the Conference met, and drew up a resolution stating that the building operatives would resume their work on the withdrawal of the "document," leaving the question which was pending on the 6th of August to be discussed by a committee. That resolution was put into the hands of Mr. Jay, and by that gentleman was presented to the masters, and it was now his duty to read their answer to it. It said,—"That as the Conference is an irresponsible body, and their proceedings altogether illegal, this meeting cannot recognize them as a medium of communication between them and their workmen." After such a message as that, the Conference had thought it right to summon them together to decide the matter, whether the master builders were to dictate to them whom they were to place at the head of their affairs, and to employ those whom they might think right or proper to represent. He said, in the course of an address of considerable length, that the Conference had agreed to five mediators, all of whom the master builders had rejected. On Tuesday last they had ignored their resolutions, and all the misery, suffering, and degradation they had endured rested on the shoulders of the master builders. The Conference did not come there that evening as culprits at the bar, but to make a faithful statement, and were prepared to look them in the face. He said it was the desire of the masters to crush trade societies everywhere. But he would say to yonder rider and say, "Tide, go back." So far from succeeding, that attempt would unite the carpenters, the bricklayers, the plasterers, and the other building trades, and bind them together as cement bound stone and bricks. Ere long he believed they would have a hall of their own which would throw shade in which they met into the shade. A hall under their own management, devoted to the discussion of all social questions, and used for all means by which the working classes could be elevated as moral, social, and intellectual beings, and which he trusted would show that the trade societies of London were a model not only for England, but for the whole world.

Mr. Frederick Watts proposed the following resolution:—

"The master builders' executive having refused to recognize the Conference as a proper medium of communication between the Association and their workmen, pronouncing their proceedings as entirely illegal, this meeting is of opinion that it is the prerogative of the trades to appoint whom they think fit to conduct their

affairs, and that all communication or negotiation with the employers shall be transacted by the Conference on behalf of the workmen until the settlement of the present dispute, and this meeting pledges itself to support the Conference, which so fairly and honestly conducts its affairs."

Mr. Bloomfield seconded the motion, which, after some further speeches in support, was carried unanimously.

On Monday the Conference declared another dividend for the week, of 4s. a man to the whole of the operatives still remaining on strike, and, as usual, 12s. skilled and 8s. unskilled to each of the men who struck work at Messrs. Trollope's. The aggregate sum divided was 1,291l. 4s. among 6,240 men. The amount was 37l. less than that paid away on the previous week, and the recipients were fewer in number by 214. The result shows that, though the recipients of the fund are becoming less week by week, 6,240 men still continue firm in their refusal to work under the masters' Declaration. Subjoined is the official return, showing the manner in which the money was distributed yesterday:—

		£.	s.	d.
Masons	410	..	52	0
Bricklayers	740	..	148	0
Carpenters	1,923	..	384	12
Painters	138	..	27	12
Plasterers	649	..	128	0
Woolwich men	176	..	30	0
Stone-sawyers	72	..	14	0
Labourers,—Lodge 1	320	..	64	0
" 2	197	..	39	8
" 3	168	..	33	12
" 4	265	..	53	0
" 5	81	..	16	4
" 6	419	..	83	16
" 7	150	..	30	0
" 8	32	..	6	8
" 9	319	..	63	16
" 10	150	..	30	0
" 11	118	..	—	—
" 12	22	..	4	8
" 13	9	..	1	16
Trollope's men	—	..	50	0
Total	6,240	..	£1,291	4 0

THE HEALTH QUESTION.

An epidemic, which has not yet been attended with fatal effects, has lately broken out in the New Bailey prison at Salford, near Manchester. The medical officer was promptly in attendance, and prevented death; but so general and sudden was this attack, that although, on Tuesday night, there were only four of the prisoners in the hospital, on Wednesday night no fewer than 196 were seized. In the middle of the next day, 236 persons—of both sexes—were affected by the same symptoms. The cause of this attack requires the most careful investigation: the prison should be measured, and the number of cubic feet allowed for each distinctly ascertained: the drainage should be carefully examined; water supplied to both the prison and the soldiers' barracks—not far off—analyzed with great care, and by persons who would not be likely to give a one-sided opinion. There has evidently been poison, in some shape or other, to cause this outbreak, which, in more dangerous conditions of the atmosphere, might have been fatal to those attacked.

Just at this time it is important that medical officers of health should not intrust the inspection of their neighbourhoods entirely to subordinate officers: they should, at any rate, make a house to house visitation once a year. They would by such means save many lives. In the south-west district of Islington scarlatina has for long been fatal. The numerous cow-sheds there, thickly inhabited houses, schools (both public and private), should be looked after; and no doubt, by proper sanitary means, this part of the metropolis might be made less dangerous to human life than it is.

Dr. Bachhoffner says that, in the rectory district of St. Marylebone parish alone, there were registered the births of 1,109 illegitimate children. Of these 821 were registered in Marylebone Workhouse; and out of the above number 516 died in the same period. In another part of the same district, which was not mentioned by Dr. Bachhoffner, matters were worse; for, out of 293 births, there were, within the same period, 209 deaths. Only 84 left alive of nearly 300 children! This large per-centage of loss of infant life is shocking, and it is, moreover, to be feared that much remains unknown.

The want of proper feeding, the absence of knowledge of the conditions of health, the little heed which is sometimes given to infants by strangers, all help to swell the death rate; but in a workhouse—the pauper-producing workhouse—

* Paid with Woolwich men.

it is not creditable to the present state of our civilization that more than half of a certain number of children born are reported to have died. The greater number of these deaths are, it is to be feared, to be attributed to the want of proper sanitary arrangements.

BUILDERS' BENEVOLENT INSTITUTION.

We desire, as of old, to draw attention to the circumstance that the annual dinner of this Institution is fixed to be held at the London Tavern on Thursday, the 27th of this month. Mr. George Smith, the President, will be in the chair. Although these are bad times for builders and all connected with them, it is to be hoped that this will not interfere with the cause of charity, and that there will be a good muster on the 27th to support the Builders' Benevolent Institution.

BUILDINGS AND IMPROVEMENTS IN IRELAND.

ONE of the most important domestic edifices at present in course of construction in Ireland is Lough Eske Castle, Donegal, the seat of Thomas Brooke, esq. It is most picturesquely situated near the celebrated "Gap of Barnesmore," and in the Elizabethan style of architecture, from the designs of Mr. Fitzgibbon Louch, of Londonderry, architect. Exteriously it presents an eastern front 130 feet in length, displaying five light oriel windows three stories in height; a *porte cochère* projecting 30 feet; embattled parapets and gables; and a north front harmonizing in character, with the addition of a tower 22 feet square and 80 feet high, having square turrets at three angles, and a circular turret at the fourth, springing from a corbel. Internally are to be found the usual arrangements of a gentleman's mansion, comprising drawing, dining, morning, and ante-rooms *en suite*; grand and lock staircases; bed, bath, cloak, &c. rooms; pantries, &c. &c. The walls, to level of first floor, are built with a batter, and the masonry throughout is of punched millstone grit, locally procured; the dressings of Mount Charles sandstone. Contractor, Mr. Albert Williams; clerk of works, Mr. Michael Stedman.

The Town Council of Derry have awarded the proffered premium for best designs for principal front to the new Cemetery in that town to the above-named architect. It will be in the Gothic style, and occupy a frontage of 120 feet, with an office on the right side of the entrance, which will be through a spacious portal 20 feet high to soffit of arch, and having moulded jambs, side buttresses, crockets, and finials, embattled parapets, &c. &c. and to be filled in with highly ornamental gates. A superintendent's house will be in a portion of the grounds. Mr. McClelland, contractor. Expenditure about 635l.

Additions are being made to premises in Carlow, lately taken for the National Bank. Mr. Calbeck, of Dublin, is the architect; Mr. Faircloth, builder.

In the tenders for roofing, &c. Armagh Cathedral, there was a difference of nearly *half* between the highest and lowest, but the proposal of the second lowest, viz. Mr. Byrne, Belfast, for 9,896l. was adopted, and a supplemental contract for 5,400l. to finish the interior, subsequently entered into.

The Magnetic Telegraph Company have extended their wires to the Curragh Camp, which is now in communication with the War Department, Dublin Castle, &c.

Twenty-five ordinary drinking-fountains are being erected in Belfast: several also have been put up in Dublin, but the movement has not become as general in Ireland as might be desired.

In a portion of the north side of Dublin,—which, by the way, is improving—there is a cry for *water and light*. Buildings of a domestic class have been in progress for some time, and a whole district of reclaimed land is being laid out in building lots, and semi-detached cottages commenced thereon, under the directions of Mr. J. J. Lyons, architect, and judging from those recently finished, they will find ready occupants. The Corporation and Ballast Board should look to growing necessities, and encourage progress likewise.

A new Wesleyan Methodist Chapel is to be built at Bray, county Wicklow, from designs by Mr. Tarterton. Building progress in this neighbourhood is rapid and extensive. The new Turkish Baths—perhaps the most important structure of its kind in the three kingdoms—approach completion; domestic residences in terrace, detached, semi-detached, &c. form, are being reared up; many more are in contemplation. Land has become very valuable; and the locality, from being a mere

village—poor and bare—some few years since has become a fashionable and populous place of resort.

A large conventual building, three stories high, has been built at Enniskillen. Adjoining same are two story school-houses for female children.

The cathedral of Derry is to be repaired. The Rev. Marquis of Waterford has subscribed 50l. towards that object.

The Remonstrant Presbyterian Congregation of Newtonlinnway, have erected a *manse* at Tullyho, in the Elizabethan style. Mr. F. Louch, of Derry, is the architect; Mr. Allison, of N-linawady, contractor.

CHIPS FROM AMERICA.

A LARGE amount of building, chiefly of a commercial and domestic class, and in blocks, is going forward at Milwaukee. There is a deficiency of permanent church structures generally; but a site for one to accommodate 2,000 persons has been decided on, and preliminaries arranged for the erection.

The recently-constructed aqueduct, about four miles above Port Byron, and spanning the Seneca river, is said to be second only to the suspension bridge at Niagara, and to have cost 200,000 dollars.

A new church has been erected at Montreal, at the expense of Mr. T. Molson, who also expended 50,000l. in founding a college.

A handsome church has likewise been erected by the Irish and Acadian French Catholics of Yarmouth, Nova Scotia, at Boston.

The corner stone of St. Peter's new church, at Brooklyn, has been laid. It will accommodate 1,000 persons on the ground floor, and 400 in the gallery. There will be a tower and spire 170 feet high. This building, together with a presbytery, will be finished in June, 1860, and a school then commenced in Hicks-street.

The new cathedral and church of St. Alphonsus, at Wheeling, are said to be amongst the first specimens of architectural grandeur in the States. There are now eighteen churches and three chapels in the town, all of recent date.

SPANISH RAILWAYS.

On the 31st August last, the first locomotive and carriages ran over the line from Seville to Jerez or Xeres, the land of Sherry. The engine was elegantly decorated: on its front were the arms of Cadiz, Seville, and Jerez, forming a triangle, the whole encircled by a garland of flowers, and flanked by lances with banners. At the foot of the shields were the words, "31 de Agosto de 1859—San Ramon." This was in compliment to Senor Don Ramon Lopez de Tejada, vice president of the council of administration of the company, to whom is due the realization of this railway.

In the province of Jaen a manifest has been issued by the railway council, calling upon all the towns to contribute towards the construction of the Jaen railway. The same has been done at Zafra, where a committee was formed for establishing a line to start from Merida, and traversing the rich territories of Barros, and others of extensive agricultural produce will terminate in Seville.

M. Helbert, civil engineer, has just examined the ground between the manufacturing town of Alcoy, in Valencia, and the Sax station of the Madrid and Alicante line, with a view of running a branch line to develop the resources of that town.

THE PORT OF BARCELONA.

A PLAN for the improvement of the port of Barcelona on a magnificent scale has been presented to the Spanish Government by a French engineer, M. Borde. As chief manager of a large firm, he is disposed to execute the works without any royal or municipal pecuniary aid. Not only is the port to be improved and land of much value reclaimed, but the city itself is proposed to be embellished by building on land reclaimed from the sea.

This port, by this scheme, will have a uniform depth of 10 metres for a surface of 893,578 square metres, which is four times the area of the port of La Joliet, at Marseilles—only 200,000 metres. Land to be reclaimed from the sea extends to 970,752-50 superficial metres, a work comparatively easy from the small depth of water on that portion which must be embanked.

The moles are to be run out to an extent of 893-578 metres, and their general direction is

from the port of Isabella II. to Monjaich, so that the portion remaining between them and the main sea wall can be filled up with stuff taken out of the port dredgings. On this immense tract of land it is proposed to build new streets, wide and straight, the public thoroughfares being estimated at 31,521 sup. metres, and the building ground at 440,170. Included in the project, there are docks, warehouses, graving docks, &c. for the extensive shipping commerce between Barcelona and the ports of Cadiz, Gibraltar, and Marseilles; also convenient and secure landing quays and wharfs for merchandise; also a quarantine depot or "Lazaretto," completely isolated from the port or city.

From the principal landing-place a railway is to be established with branches communicating with those of Granollers, Sarria, Martorell, and Arenys del Mar. All these dispositions will aid the Government in a strategic point of view: they will obtain the establishment of an outer port fortification much superior to the existing one, and more adapted to modern systems of defence. If this project be executed, Barcelona will possess a port four times as large as that of Marseilles, with a depth of water sufficient for the largest ships of war, every facility for landing, warehousing, loading, docking, and repairing; and we are of opinion that the city should carry it out if it wishes to maintain a first-class position among the Mediterranean ports.

SOLUBLE SILICATES, AND SOME OF THEIR APPLICATIONS.

At the meeting of the British Association, in the chemical section, Mr. F. Ransome gave a history of the discovery of the soluble silicates, and of the various researches and experiments of Dr. Fuchs, of Munich, and of Professor Kuhlmann, of Lille, and of the several applications of these silicates of Steriochony to the various branches of manufacture, and to the effects of their combinations with lime, whether carbonate, sulphate, phosphate, or caustic; but described more in detail the value of their applications in the manufacture of artificial stone, and in the preservation of natural stone, &c. from decay.

In the application of soluble silicates to the preservation of natural stones, &c. Mr. Ransome explained the details of his process, which consists not merely in the application of a soluble silicate, as described and adopted by Professor Kuhlmann and others on the Continent, and which Mr. Ransome stated he found to be utterly ineffective in this country, being liable to removal by rain, or even by the humidity of the atmosphere, but consisted, first, in treating the stone, &c. with a solution of silicate of potash or soda, and afterwards with a solution of chloride of calcium, or chloride of magnesium; by which means a double silicate, or silicate of lime, or silicate of magnesium, was immediately formed in the pores and structures of the stone, &c. which double silicate possessed the most indestructible and most strongly cohesive properties, enveloping every particle of the stone with which it came in contact, producing an extraordinary amount of hardness, and hermetically sealing all the pores with an indestructible mineral precipitate, without in the slightest degree destroying the natural characteristics of the stone.

DRAINAGE OF HULL.

THE plan upon which the western district of this important town shall be drained appears to be now definitively settled, the local board of health having decided, by a majority of 23 to 15, that the plan of their own surveyor, Mr. C. F. Butler, shall be forthwith carried out. It is proposed, instead of borrowing the money, that the amount be raised by rates as the work progresses. The adopted plan was opposed by Mr. Ranger, C.E. on the part of the General Board of Health, but it is said closely to agree with that proposed by Mr. Hawksley, C.E. A Hull correspondent writing us on the subject, says:—The reason Mr. Ranger gives for not approving of Mr. Butler's plan is, that "the mouth of the outfall will be tide-locked for a period varying from two to eight days respectively in January, and the five following months, during which time the sewage will be ponded back into the town, and will have no discharge whatever into the river; and for the remaining days in these months the sewage will be tide-locked from eight to eleven and a half hours out of every twelve." Mr. Hawksley, however, agrees with Mr. Butler's calculation, and states (at page 8 of his report), that "By means of the tide registers,

very liberally placed at my service by the Hull Dock Company, I have discovered that it is possible so to place the outfall as that the sewer shall discharge for rather more than seven hours during each tide, under average circumstances." The sewer Mr. Hawksley proposed was 6 feet diameter, and 4 inches lower at the outfall than Mr. Butler's sewer, which is of the egg-shaped form, 7 feet by 4 feet 8 inches, the crown of which he places nearly at half-tide level. The works will be commenced early in spring.

IN MEMORIAM. I. K. BRUNEL.

"He shall not welter to the parching wind
Without the meed of one melodious tear."
LUCIUS.

INEXORABLE Time! Sweeping away
The great and gifted, and the good and wise!
As falls thy noiseless foot from day to day,
Fast fade from sight the forms we mostly prize:
Into the shadows of the silent land
Swiftly they glide, nor can we count them o'er,
So thick they congregate upon the strand
Of that mysterious sea, from whose dark shore
Vainly we call them back: they will return no more.

Thus stand we round his grave, who yesternight,
In the completeness of his wide renown,
Had scaled on glory's track the topmost height,
To win from her a world-approved crown;
But genius has her martyrs, and oppress
In the stern conflict, in the strife of mind,
Now wearily he lays him down to rest,
And all of mortal man he leaves behind,
Is one poor heap of dust, this morn to dust consign'd.

Yet his the triumph,—with the Titan race
Of mighty spirits who for earth lath wrought
More glories than her kings, he takes his place,
Immortalized, amidst the sons of thought.
The fire that warm'd his breast thro' anxious days
Of patient toil still burns, a quenchless flame,
A beacon light to young ambition's gaze;
And one more constellation finds a name
Amongst the countless stars that throng the
heaven of fame.

No record needs he on cathedral walls
To chronicle his deeds, no gilded tomb,
Where tenderly the soften'd daylight falls
On shrines of saints and heroes wrapt in gloom;
Nor lay of bard, who thus, with unskill'd hand,
Would scatter o'er his urn the flowers of song:
Upon the mountains of his native land
Are his achievements writ: to her belong
The proud memorials that round his footprints
throng.

And England in her conquests yet to come,—
Her marvellous future, bidding discord cease,
Not at the beat of the alarming drum,
Leading the nations in the chains of peace;
When she has multiplied the links that bind,
From Himalaya to the setting sun,
In one vast brotherhood all human kind,
And sees exulting midst the victories won,
Her loftiest task fulfill'd, her noblest mission
done:—

Then, whoso'er by river, rock, or plain,
Subduing nature for the weal of man,
He taught her giant ships to plough the main,
Or rear'd the lofty arch of wondrous span;
There shall she claim for him a monument,
Greater than all the pyramids, nor less
Than classic fane, since there the arts have lent
Their mightiest powers the severed land to bless,
And speed the onward course of mortal happiness.

W. R. N.

WORCESTER ARCHITECTURAL SOCIETY.

THIS society's annual meeting was held on the 29th, and their excursion took place the following day.

Lord Lyttelton was in the chair, and Mr. J. S. Walker, one of the secretaries, read the report. Amongst other things, the report said,—

"Several restorations of consequence had taken place during the year, the most interesting of which was that of Bromsgrove Church, by Mr. Scott. Previous to that restoration, the church of Bromsgrove had presented combinations of almost every kind of disfigurement; and with regard to the new work, which was in general highly approved of in the report, it was stated that the erections were not effective, and that more stained glass and additional polychromatic decorations were much wanted to relieve the somewhat cold and cheerless aspect of the interior, notwithstanding the solidity and beauty of the fittings; also the seventeenth century monument, which still encumbered the south side of the sanctuary, should have been removed. Hanley Castle Church had been improved, under the direction of Mr. Street; but here there were several objectionable features: the substitution of an Early Middle-pointed east window in place of the original debased Gothic one, was not to be commended; for although the old one was very inferior in

itself, it harmonized externally with the rest of the chancel, which the present one did not; and internally the whole of the former window was visible from the nave, whilst the lower part only of the present one can be seen through the chancel arch. The pulpit and prayer-desk were also denounced. Hampton Lovett Church restoration, under the direction of Mr. Perkins, was generally satisfactory, but the removal of the old chancel screen—an interesting relic of Late Perpendicular carving—was noticed with regret."

The Hon. F. Lygon, speaking with regard to the new Government Offices, warmly denounced the adoption of "Pagan styles" in this country, and went at length into the circumstances attending the competition for the said offices, showing that Mr. Scott had been most properly selected for the work, and ought not now to be deprived of the honour done to him and the Gothic art.

After a collation, Mr. Gutch read "A biographical Sketch of a Dean and a Prebendary of Worcester." In the evening Mr. Chamberlain (Birmingham) read a paper "On half-timbered Houses and the Method of their Construction." With the humble materials used in the half-timbered houses, the builders of those days succeeded in producing structures which were at once safe, economical, scientifically constructed, and picturesque; and he pointed out a variety of particulars in which the builders of our own day might learn a lesson from their predecessors, instead of producing showy, fragile, and ugly dwellings, inconsistent, incongruous, and abounding in slams.

The comparative merits of the Gothic and the Classic styles, with special reference to the erection of the proposed new Government Offices, were then considered, Mr. Skidmore commencing this discussion.

THE SOUTH PORCH OF REDCLIFF CHURCH, BRISTOL.

At the recent meeting of the Canynge Society, founded to aid in the restoration of the Church of St. Mary Redcliff, and of which we gave a report, special reference was made to the restoration of the south porch of the church with funds provided by the Commercial Auxiliary Association. The accompanying engraving represents the restored porch as seen from the south-west. It was one of those works whereof no question could be raised as to the desirability of restoration. The exterior was a black and illegible mass of decayed stone, surmounted by some hideously ugly modern pinnacles. Sufficient indications, however, of the panelling and the mouldings remained to admit of accurate reproduction, and the pinnacles were deduced from study of other portions of the church. The stone used is from Dundry: the same was originally employed in the erection of the church.

The Association said in their last report, which was read by Mr. Powell at the meeting referred to,—

"The Commercial Auxiliary Association in aid of the restoration of St. Mary Redcliff has been in existence three and a half years, and the committee feel a pleasing duty in presenting the annual account of their progress."

As an association in aid it was commenced with the intention of selecting for completion some very marked and distinct portion of the fabric. To carry out this object the south porch appeared more suitable than any other part of the building, and, with the approval of the Restoration Committee, it was commenced in the Summer of 1857, and is now near completion.

As a work of ornamental taste and skill the south porch has been more costly than many other portions of the church would have been, and the committee regret to report they have been obliged temporarily to suspend the work for want of funds. It is estimated that about 136*l.* more will be required to complete it, and to pay off the balance of the last quarterly account due to the chairman of the Restoration Committee.

The number of donors and annual subscribers is 1052; the total sum received to present time is 753*l.* 16*s.* 11*d.* the expenses have been 191*l.* 12*s.* and 67*l.* 4*s.* 7*d.* have been paid towards the restoration of the south porch; 44*l.* 1*s.* a portion of the receipts have been given for special objects, namely, the restoration of some pillars in the church, and towards the stone work of a stained-glass window in the Lady Chapel, to receive the 'William Hall' memorial."

At the close of the report the committee, properly, expressed their warm thanks to the honorary secretary, Mr. George Hatherly, for his earnest zeal in the cause, the successful ability he had displayed, and his gratuitous services.

It is necessary to mention that originally the porch was in one story. Afterwards, and not very recently, a stone groined ceiling had been put in midway, and a room formed in the upper part, as a place of meeting for the vestry. The architect (Mr. Godwin) of course desired to return to the original condition; but the requirements of the vestry were absolute, and the room has been re-formed, necessitating the erection of a staircase turret on the east side.

The carving was executed by Mr. Rice, of whose careful skill, as shown in other parts of the church, we have before had occasion to speak.



SOUTH PORCH OF THE CHURCH OF ST. MARY REDCLIFF, BRISTOL, RESTORED.—MR. GODWIN ARCHTCT.

William Rice, Engr.

TAUNTON.

BAZAAR AND FINE ARTS EXHIBITION.

In August last, a fancy bazaar, under the patronage of several ladies, was held in the shire-halls, on behalf of the fund for rebuilding the tower of St. Mary Magdalen. It passed off successfully, and produced a considerably larger amount than was anticipated by its most sanguine promoters. At its close, a Fine Arts Exhibition, in connection with the School of Art, and in aid of the same fund, was opened. It comprised the travelling portion of the Brompton Museum, containing several extremely beautiful specimens of Sèvres china, &c. the property of her Majesty, together with a large collection of paintings and other works of art, from the galleries of the nobility and gentry of Somerset. In the evenings a series of *soirées* have been held under the presidency of Mr. A. Mills, M.P. and other gentlemen, when several addresses were delivered on art and other interesting topics, among which we may mention that of T. D. Acland, esq., who reviewed almost every description of art, and seemed thoroughly acquainted with all the subjects touched upon. The Rev. T. Hugo read a paper on the necessity of studying ancient art and architecture, the great advantages of acquiring a knowledge of art were also advocated by the Rev. W. A. Jones, the hon. secretary to the School of Art, who strongly urged all classes to embrace the opportunities now afforded them for this purpose by the Department of Science and Art. Mr. Worsnop, the officer in charge of the Government Exhibition, pointed out the peculiar attractions of the various objects under his care. Several evenings were specially set apart for the working classes, who possess but few opportunities for studying such works except at exhibitions similar to this, at a merely nominal charge, when Mr. W. A. Sanford, gave a disquisition on "Early Italian Art," Mr. W. F. Elliot, a "Half-hour with Ruskin," and Mr. A. Gunn, head master of the School of Art, also demonstrated the practical utility of being enabled to wield the pencil as easily as the pen, illustrating his remarks by a few simple diagrams.

THE METROPOLITAN GAS INQUIRY.

The delegates, from the several vestries and district boards, engaged in securing relief from the evils of the gas monopoly organized by the secret action of the combined gas companies in the metropolis, have issued several circulars to their constituents and others on the subject. From one of these we last week quoted some rather startling statistics, and we recur to them in order to make one or two further quotations.

A sum of nearly 2,000*l.* has been promised by the various vestries and district boards to meet the strenuous opposition anticipated on the part of the gas companies, and it is to be hoped that still further and more liberal contributions will not fail to be yet made, since it will require no small sum to cope with the power of such a monopoly as that with which the metropolis is threatened: the metropolitan districts, in fact, are already divided amongst these companies by a preconcerted understanding, and it only remains to be seen whether the vestries, &c. will allow themselves to be made a prey of in the manner intended.

Great benefits, it appears, have been already secured by this agitation. Many extortionate contracts have been modified or abandoned: the private consumers have received immense benefit: the advance in prices settled by the companies has been checked: the companies are upon their best behaviour, and have amicably settled very many disputes, the particulars of which have been handed to the delegates by the complainants. Many provincial towns have also derived considerable benefit from the gas agitation in the metropolis,—benefits which will be repaid by means of Parliamentary aid in the prosecution of the bill. The whole aspect of the question inspires the delegates with the best hopes of success, and we sincerely trust that their constituents will not stultify themselves and disappoint the public by withholding the ways and means which ought now and henceforth to be dealt out with a liberal hand; otherwise the 50,000*l.* a-year of downright overcharge, which at present goes into the pockets of the gas companies, will not only be secured for the future to these companies, but a much larger sum drained out of the people's pockets in extortionate prices, both for the gas actually given and also for that overcharged.

Were the district boards, on the other hand, to take the lighting under their own care, as Mr. Beal, on the part of their delegates (as hon. secretary), remarks, not only would the 50,000*l.* a-

year be saved, but this saving would be much further increased, probably to the extent of 50 per cent. more in addition.

The hon. engineer to the managers (Mr. Samuel Hughes), in another of the circulars, says,—“I have recently examined returns from no less than ninety-one cities and towns in America. In fifty-four of these the local authorities light and extinguish their own lamps. In thirty-three out of the whole number the gas consumed by public lamps is paid for at a price per 1,000 feet; and an accurate analysis has shown that in several cases the price paid for the gas in the public lamps is only half of that paid by the private consumer.

The average of the whole thirty-three towns gives the price of gas in the public lamps equal to 75 per cent. of that paid by the private consumer, showing a remarkable coincidence with the result obtained from a similar extensive examination in Great Britain.”

With this circular is published a table containing about seventy towns, this being the whole number from which complete returns have been obtained up to this time. It is in these that the average price paid for the gas alone supplied to public lamps amounts to 75 per cent. of the price paid by the private consumer.

In provincial towns experiments as to the public lighting are recommended, such as have revealed the tremendous and unconscionable overcharges of the metropolitan gas companies.

MEDIEVAL METAL WORK TRADE-BOOKS.

ONE of the best trade-books we have seen has been issued by Mr. Thomas Brawn, of Birmingham. It contains a whole host of free-sketches for gates, railing, hinges, standards, screens, belfrets, lamps, finials, and cresting, together with a list of prices. How the manufacturer may be able to carry out his work is of course a question to be separately settled; but the book shows the right feeling, and is very suggestive.

Messrs. Debaucher & Co. of Old Fish-street, London, have also issued Part I. of a book of the same sort, more precise in the drawing, and not without value.

COMPETITIONS.

Olley Burial Board.—The plans of Mr. R. Clarke, architect, Nottingham, have been chosen for the above cemetery, and are to be executed forthwith.

Abingdon Cemetery.—Twenty-three designs were submitted to the committee, who ultimately awarded to Messrs. Poulton and Woodman the first premium and appointment as architects; and to Mr. Dodd the second premium.

WATERWORKS.

THE Wirral waterworks are now in hand. The tower will be a conspicuous object on the apex of the hill at Oxtan, commanding views in Cheshire and the Mersey. The scheme will prove beneficial to the inhabitants of the neighbouring townships of Tranmere, Oxtan, and Bebington, where the absence of a proper supply of water has been long experienced.—The Aberdare waterworks are in operation. They consist of two large reservoirs,—a compensatory reservoir for the canal companies and mill-owners, situate at Hirwan-common, about four miles and a half from the town, and covering fourteen acres and a half,—the other at Bwlfa, covering five acres, and situated at the top of the Dare valley, two miles up. The latter is supplied from two streams called the Dare and Nautmelyn, the waters of which had been previously analysed. There is no steam machinery in connection with these works, the fall being sufficiently great to enable the water to find its level to the highest houses in the town. There are also two smaller reservoirs and two filter-beds, which may be used either separately or jointly, and these smaller reservoirs contain six days' supply of water. There are many towns in the principality that would do well to imitate the rising little town of Aberdare. The works were designed and carried out by Mr. William Williams, civil engineer, Cardiff.—The scarcity of water in many parts of the Newmarket neighbourhood is becoming more and more serious. The poor may be seen hunting out by-places and ponds, at a considerable distance, for water, which, when obtained, even in small quantities, is not fit for cattle, much less for domestic purposes. Nine out of ten wells and ponds are dry, and owners of wells are repeatedly deepening them, at consider-

able expense, for a new supply, which continues, in many instances, but for a short time. Some scheme for waterworks is much required here.

COUNCILS OF CONCILIATION, OR LOCAL BOARDS OF TRADE.

MEETING AT MACCLESFIELD.

A NUMEROUS meeting of work-people was held in the Town-hall of Macclesfield, on Monday last week, for the purpose of hearing an explanation of the bill recently introduced into Parliament by Mr. Mackinnon, M.P. and Mr. Slaney, M.P., to establish Equitable Councils of Conciliation and Arbitration to adjust differences between masters and operatives.

Mr. James Bancroft was called to the chair, and stated that, owing to indisposition, Mr. Winter, who had been announced to attend as a deputation from London, was unable to be present, but Mr. Humphreys would give them the requisite information.

Mr. Humphreys then proceeded to explain the objects of the bill in question. When disputes arose between employers and the employed, he said, they were the only proper individuals capable of arriving at a satisfactory agreement, and this could only be done by bringing them together. Such was the object of Mr. Mackinnon's bill. It sought to make it lawful for the masters and men, in any trade, to form Equitable Councils of Conciliation and Arbitration, consisting of an equal number of masters and workmen, who shall have power to appoint their own chairman, clerk, &c. and to hear and determine all disputes between masters and workmen as may be submitted to them, and to exercise all the powers and authority granted to arbitrators, referees, &c. as awarded to them by the Arbitration Act, 5 Geo. IV. c. 96, and any award which they may make shall be final, without being subject to review or challenge by any court or authority (except in the commitment of refractory witnesses, issuing warrants of distress, &c.). He had no hesitation in saying that not only would the Act, to a large extent, abolish even the cause of strikes, but it would reduce the recurrence of strikes 90 per cent. He had had many years' experience in trade disputes, and knew that 75 out of every 100 had been settled peaceably by bringing masters and workmen in connection with each other,—and when they had not succeeded it had been either through the obstinacy of the workmen themselves, or the refusal of masters to abide by the decision arrived at. Disputes perhaps of an apparently trifling character, but involving important points as regarded the welfare of the general trade, might be brought before the board: reduction of wages, disagreement about warps, hours of labour, advance of wages, &c. would all be legitimate points for the consideration of the board; and, if the trade and the masters were thoroughly organized, disputes might be settled with mutual satisfaction. If the bill was passed, he felt confident they would see a brighter day dawn upon Old England, and jealousy and enmity would give way to the glorious sunshine of peace, and unity, harmony, and concord would prevail.

After some discussion, Mr. John Molloy, in moving the first resolution, said he felt deeply impressed with the importance of the proposed measure. In looking over the weekly reports of the deadly conflicts now waging between employers and the employed, what food for sad reflection did they find! They had only to contemplate the calamities which followed strikes and turnouts, to be moved with a spirit of determination to establish any measure whereby such dreaded evils might be avoided. The principles of the proposed measure were not at all at variance with those of Free Trade: it simply asked that by the authority of the law a uniform price should be paid to the workman. Manufacturers had as much reason to support the measure as operatives had; therefore he should propose his resolution, “That, in order to facilitate the settlement of disputes between masters and operatives, it is essentially necessary that there should be established Equitable Councils of Conciliation and Arbitration, and this meeting, therefore, pledges itself to support Mr. Mackinnon to obtain the enactment of the Bill.”

Mr. John Conolly, in seconding the motion, said he believed the measure would be beneficial to workmen, and especially to that class among whom disputes were most frequent. It would have a great tendency to do away with strikes, and that was one of the chief reasons why he urged the meeting to support it. It was a measure which had been in operation for thirty years, having been established so long ago in Belgium,

The motion was then put to the meeting and carried.

Mr. George Bailey moved the second resolution to the effect "that, as trade combinations are now legal for the protection of labour, they appealed to their fellow tradesmen to form into trade unions, in order to obtain equitable remuneration for their labour, and to prevent any encroachment of employers or employed, whereby the interests of well-disposed masters and workmen may not be injured."

Mr. Howard seconded the motion, which was carried by the meeting unanimously.

After some further discussion, chiefly on local questions, Mr. McDonald proposed a vote of thanks to the deputation (Mr. Humphreys), which was seconded by Mr. West, and carried. A vote of thanks to the chairman terminated the meeting.

THE END OF WESTMINSTER BELL, No. 2.

ST. STEPHEN'S, *alias* Big Ben, has given up the ghostly E natural, whose loose, unequal, and occasionally muffled tones have for some time indicated any thing but a sanitary, tonic state of waist and belly, tongue and members. His sick-clock shivering booms are now accounted for by the fact, that he must have been incipiently cracked for a considerable time; and on Saturday last he struck his own last knell. One can now comprehend the meaning and purpose of a northern paper, of about a month since, enumerating, in tones not unlike those of D sharp, all the instances in which such bells have become cracked. The public were thus prepared for the catastrophe, and directed where to fix the blame, namely, upon the bell founders. It must not be forgotten, however, that Mr. Denison himself, the designer of the bell, has *à priori* exonerated them from blame, by "certifying to the completeness of the largest and finest bell ever cast in England," as the *Times* remarks,—and justly, doubtless, so remarks,—at least as regards the casting,—and whatever be the merits of the new and peculiar shape or design of the casting. I am of opinion, also, with the *Times*, that one actual cause of the disaster was the unprecedented and absurd nailing of the bell to the iron framework, so that it was perfectly rigid, and incapable of relieving itself in vibration, as bells hung in the usual way are known to do. If I mistake not, an attempt was made to lay the blame of this fixture upon the contracted dimensions of the tower; but whatever may be the merits of this question as regards the swinging and tolling of such a bell, how could a reason such as this justify the rigid fixture of it for the striking of the hours with a hammer? All that would have been requisite under such alleged circumstances would have been simply this,—that it should not be tolled or swung. It is full time, surely, that this most bungled business should be taken out of the hands that have messed it, and entirely given over to some responsible and experienced bell-founder. LISTENER.

SCENERY AND THE STAGE.

Royal English Opera, Covent Garden.—The production, on Monday last, by the Pyne and Harrison company, of Meyerbeer's last opera, "Dinorah; ou, Le Pardon de Ploërmel," done into English by Mr. H. F. Chorley, brought a crowded house, and achieved a decided success. The title, by the way, is Anglicised the "Pilgrimage to Ploërmel," but this gives a wrong notion of the fact (rightly conveyed in the French): it is the pilgrimage of Ploërmel, the pilgrimage made by the inhabitants of Ploërmel: "The Ploërmel Pilgrimage" would be better than either. The whole of the music was exceedingly well sung, much of it as well as it could be. Miss Pyne, it is scarcely necessary to say, was the *Dinorah*, and sang the Dancing Song, beginning in the English version,—

"Oh tender shadow that hovers near me,
Thou shalt not fear me,—"

better than it has yet been given; Mr. Harrison, the cowardly *Correntin*, with much vivacity and taste; and Mr. Santley, *Hoel*. A *débutante*, Miss Pilling, gave good promise, but needs a careful instructor. The scenery, executed by Messrs. Grieve and Telbin and Mr. Beverley, the same as was used for the Italian version, is charmingly painted, and the bursting of the dam by the waters of the torrent which closes the second act, and, very nearly, *Dinorah's* life, is most effectively managed. The scene is laid in Brittany, and the groups recall many of Mr. Jenkins's best drawings. The opera is full of beautiful music, but is wanting in that opportunity for display and

ingenious elaboration of plot which assist to make the "Huguenots," or the "Prophet," a safe "bill" at any time. Mr. Chorley has done his part of the work very well.

The Haymarket Theatre.—We have not had an opportunity lately to mention the doings at this house. Mr. Buckstone has confined himself to the production of comedy and farce, and, without any great scenic display, has been very successful. For "As you like it," in which Miss Amy Sedgewick is playing *Rosalind*, some very pretty pastoral scenery is given. The lessee has a part to fit him in a laughable farce called "The Rifle, and how to use it."

Princess's Theatre.—The Watteau-coloured dramatic tableau called "Love and Fortune," produced by the new lessee, Mr. Harris, is the most charming thing of the kind that we have ever seen. The way in which it has been mis-viewed by the press generally is very lamentable. It has been called a burlesque and an extravaganza, and some have complained of the fewness of the puns in it. The fact is, that it is neither extravaganza nor burlesque, and with the exception of a bad joke in the introduction, put in for a purpose, there is not a pun in the whole piece. Adopting the idea from the early French comedy, wherein *Arlequin* (a slimy, twisting, lazy rogue, not quite understood by Mr. Saker), *Pierrot* (a specialty by Mr. Petit), and *Colombine*, occupy menial positions, Mr. Planché has produced a novelty on the English stage as full of incident in its own way as "Monte Cristo,"—quaint, refined, elegant, and amusing. Miss Louisa Kealey, who has deservedly established herself as a public favourite, Miss Carlotta Leclercq, and Mr. F. Matthews have good parts, and make the most of them. There is some charming music, some very good dancing, and it is interspersed with grains of that wisdom always to be found in Mr. Planché's pieces. Take, for example, the song sung by *Crispin* (Mr. Shore, whose picturesque attitudes deserve a word), and which we are tempted to quote:—

"Three score and ten by common calculation,
The years of man amount to; but we'll say
He turns four-score, yet in my estimation
In all those years he has not lived a day.
Out of the eighty, you must first remember
The hours of night you pass asleep in bed;
And counting from December to December,
Just half your life you'll find you have been dead.
To forty years at once by this reduction,
We come, and sure the first five from your birth,
While cutting teeth and living upon suction
You're not alive to what this life is worth!
From thirty-five next take, for education,
Fifteen, at least at college and at school;
When, notwithstanding all your application,
The chances are you may turn out a fool.
Still twenty we have left us to dispose of,
But during them, your fortune you've to make,
And granting, with the luck of some one knows of
'Tis made in ten—that's ten from life to take.
Out of the ten yet left you must allow for
The time for shaving, tooth and other aches,
Say four, and that leaves six too short I vow, for
Regretting past and making fresh mistakes!
Meanwhile each hour dispels some fond illusion,
Until at length sans eyes, sans teeth, you may
Have scarcely sense to come to this conclusion:
You've reached fourscore—but haven't lived a day!"

Too true with many. The scene is not quite up to Mr. Beverley's own standard; the trees seem as if they had been all cast in the same mould, and the arbour is not made such a feature as it might have been: still the scene follows closely the background of some of Watteau's *Harlequin* pictures, and is very pretty. The scenery for the first piece, *Ivy Hall*, painted by Grieve and Telbin, is exceedingly good, especially the ruins of the Abbey.

The Adelphi.—"The Willow Copse," a powerful drama, has had a new life given to it by the assumption of the part of *Luke Fielding* by Mr. Webster, and should be seen by all who like good acting. The character, that of a bluff farmer powerfully wrought on by the dishonour of his name, affords opportunity for the display of a variety of emotions, and is admirably acted. Nor should Mr. Toole and Miss Woolgar be forgotten: in fact, the piece is altogether well played. Advantage has scarcely been taken as yet of the opportunity for the display of scenery afforded by the extensive and lofty stage area of the new Adelphi.

St. James's Theatre.—This theatre has been opened under the management of Mr. F. B. Chaterton. It was the worst contrived of all poor Beazley's badly-planned play-houses, and the new manager has made an endeavour to improve it.

* We have been asked to mention that the new primitive street lanterns opposite the door of the Princess's Theatre are the invention of Messrs. Defries and Sons, of Houndsditch. They require no frame or ring to fix them in; they are so strongly built and put together, that they depend on the bottom of their own frame.

The pit has been enlarged, the gallery made more commodious, the backs of the upper boxes are cut down, and the whole is cleaned and smartened. There are some excellent names in his company, and the prices are very moderate. The chief want appears to be good dramatic authors, and this want is not confined to St. James's.

CHURCH-BUILDING NEWS.

Lincoln.—The Dean and Chapter of Lincoln have resolved to devote 2,000*l.* to the repairs of their cathedral during the ensuing year. The north-east side of the edifice is to receive attention. Last year 1,300*l.* were expended on the cathedral.

Chelmsford.—The east end of Chelmsford Church, besides undergoing a restoration, has just been embellished by two additional stained-glass windows, on either side of that recently placed in the chancel to the memory of the late Lady Mildmay. One of these, at the end of the north aisle, the result of a liberal subscription among the ratepayers, is intended as a testimonial of regard for the rector, the Rev. C. A. St. John Mildmay. The other, at the end of the south aisle, is in memory of the elder members of the Gepp family, and of Thomas Sydney Gepp, who fell near Naince Tall, on the 10th of February, 1858, in the 23rd year of his age. On the left of this record is fixed a tablet of black marble, by which the officers of the 66th regiment record their respect for their late comrade. As regards the exterior restoration, the entire end has been stripped of its stucco and faced with flints, with Bath stone dressings and bands of Kentish rag, the aisles being embattled and the centre portion carried up as a gable, and surmounted with an ornamental cross. The works have been carried out from the designs of Mr. F. Chancellor, architect; and the stone-work has been executed by Mr. Hardy, of Chelmsford. It is now in contemplation to restore the whole of the south side of the chancel, and one gentleman of the town has given 100*l.* as the commencement of a fund for the purpose.

Maulden.—About eighteen months ago, the old church of Maulden having become much dilapidated, as well as being inadequate to the wants of the parish, the rector, the Rev. C. Ward, took the necessary steps with a view to its restoration and enlargement. The Duke of Bedford contributed 1,000*l.* which he afterwards increased to 1,350*l.*; the rector and his son-in-law, Mr. Melliar, 500*l.* each. The parishioners seconded these efforts, and plans and specifications were prepared by Mr. Ferrey, of London; and Mr. G. H. Miller, of Bedford, became the contractor. In the original plan it was not intended to disturb the north arcade of the old erection; but after the new portion had developed its proportions the disparity between the opposite aisles became so apparent as to lead to an extension of the contract. The old columns were removed, as well as the north wall, except a small fragment, and both aisles made to correspond. The entire edifice, except the ancient tower and the external north wall, has been re-built upon a larger scale, there being a new south aisle added. The new structure is designed in the Flowing Decorated style. The windows are large, and have floriated tracery heads. The arcades separating the nave from the aisles have clustered columns and foliated capitals. The chancel arch has triple columns, sunk mouldings, and carved capitals. The nave and aisles have open-timbered roofs of stained deal, the chancel being distinguished by a polygonal panelled ceiling, with moulded ribs tinted. The three-light east window is filled with painted glass, by Clayton and Bell, the offering of Mrs. Foster Melliar. It is divided each into two compartments, and contains, reading from the bottom upwards, and from left to right,—1, the Annunciation; 2, the Nativity, or rather the Visit of the Magi; 3, the Saviour found in the Temple by his Parents; 4, the Miracle in Cana; 5, the Crucifixion; 6, the Angel announcing the Resurrection to the three Women. In the tracery above, in the two lower openings, the Eleven gazing up into Heaven; and in the upper one, the figure of our Lord ascending. The window itself is a copy of the old one in the chancel, a geometrical or reticulated one of c. 1310. The little couplet, also, on the south side has a painted window by the same artists. The floor of the chancel and sanctuary is paved with encaustic tiles, and the floor of the entire church is of similar materials, but in plainer patterns. The church throughout is fitted up with oak benches, the reading-desk and pulpit being of the same material. The mural decoration consists of geometric patterns and foliated

borders incised on the plaster before setting. The arches and walls are also ornamented by a selection of texts impressed in a similar way. The work has been carried out by Mr. Miller, of Bedford.

Brighton.—The College Chapel has been opened. It is a Gothic building, assimilating in its general style and materials to the college, of which it forms the western wing, and is characterized by extreme simplicity. There is an open roof, with oak beams; and a simple chancel arch supported on ornamental stone wall-pieces. Messrs. Jackson & Shaw, of Westminster, were the builders.

Lyndhurst.—The parish church of Lyndhurst having been found inadequate, a movement was set on foot for taking down the old church and building a new one. Several designs were sent in, and those of Mr. W. White, London, adopted. The style of architecture is Gothic of the Decorated period, and the church is to be faced both externally and internally with ornamental brick-work and Bath stone dressings. The plan consists of a nave 71 feet 4 inches by 26 feet 5 inches and 50 feet high, separated from the aisles on each side by clustered columns of slate and Plymouth marble polished, with carved caps, bands, and bases; a chancel 33 feet by 23 feet and 45 feet 6 inches high, which is separated from the side aisles by four Plymouth marble columns polished, with carved caps and bases. The north and south aisles are respectively 60 feet and 68 feet by 12 feet and 25 feet high; the chancel aisles 22 feet by 10 feet and 19 feet high. There is a vestry at the north-east corner of the chancel. The tower at the north-west corner of the nave is 21 feet square, surmounted by an octagonal spire, making a total height of 130 feet. The roofs are all open timbered, of fir, and ornamentally boarded between the rafters. The church when complete will contain upwards of 620 sittings, including children. The contractors, Messrs. J. & H. Hillary, of Long-parish, have undertaken to complete the works for 5,830*l.* but the tower and spire, porches, north aisle, several of the ornamental windows, and the whole of the carving will remain unfinished until the committee have funds. The works are being carried on under the superintendence of Mr. Jesse Baker, of London.

St. Faith.—The foundation-stone has been laid of a new District Church for the parish of St. Faith, to be consecrated as "Christchurch." The design and plans for the building, which is to accommodate 800 persons, 400 free, are by Mr. Christian. The contractor is Mr. Bull. The style is Early English. The body of the church will consist of a nave and side aisles. The former will be lighted by a west window and side openings formed of quatrefoils within circles; the latter by a series of square-headed triple arches. The apse or chancel is octagonal, and is furnished with six lancet windows. It is raised considerably above the nave, access to which is gained by a few stone steps. The tower will consist of two stories above the entrance, the first pierced with four lancet-shaped openings, and the second, or belfry, with a corresponding number of arches, each formed into two lights by a central shaft. Buttresses are carried up at the outer angles of the tower to the stringcourse under the belfry, their surface being broken by a series of mouldings, gradually decreasing in boldness to the top. Over the belfry a broach spire will rise, the base being marked by a carved cornice or corbel table. The ground, given by the Conservative Land Society, will eventually be inclosed with a low iron railing and gates, which are intended to be of chaste design. The cost of endowment and erection, towards which Canon Carus, according to the *Hampshire Advertiser*, has contributed upwards of 3,000*l.* will be over 5,000*l.* the balance being made up by local subscriptions, and grants from the Diocesan Church Building Society and the Incorporated Society.

Isle Brewers.—The foundation-stone has been laid of a new church in this parish. According to the *Dorset Chronicle*, the edifice will be in the Decorated style of Gothic architecture, with chancel and nave: it will be built of lias stone, with Ham-hill stone dressings. It is proposed to finish it with an octagonal tower. 1,000*l.* out of the 1,400*l.* which the building is to cost, have been collected. The old church is to be immediately pulled down. The new edifice will seat about 150 persons. The architect is Mr. C. E. Giles, of Taunton, and the builder Mr. Spiller, of the same town.

Wooltaston.—St. Andrew's Church, Wooltaston, has been re-opened, after having undergone a restoration. An arcade of four arches separates the nave from the two chapels or south aisle, the shafts being of Devonshire marble, in double columns, of light proportions. The chancel arch is

supported on similar detached couplets of the same marble, the stone bases being high and all the capitals carved. A new porch has been erected, and the Norman arch doorway has been restored, the depressed form of the arch being reproduced. All the windows, with the exception of two, are new. The ancient font has been re-set upon a marble quatrefoil shaft. The seats are open and of uniform size and design, and of stained deal. The pulpit is of Caen stone, with marble panels. The floor within the rails is paved with tiles, and all the rest of the church with Painswick stone. The tower has been remodelled and crowned with a battlemented parapet. The style chosen by the architect, Mr. J. W. Hugall, of London, is Geometrical, in accordance with the character of the two nave windows already alluded to. The exterior of the church was covered with plaster, which has been removed, and all the joists of the masonry raked out and pointed. The south and north nave walls have been rebuilt. The roofs have been freed from the plaster ceilings, and all the timber exposed to view and stained.

PROVINCIAL NEWS.

Linton (near Maidstone).—The Parsonage-house here has been recently undergoing various alterations and additions. The works have been carried out under the direction of Messrs. Whitchord & Blandford, architects, by Mr. Thompson, builder, Linton.

Fareham.—The tenders for drainage and water-works in the town of Fareham, according to the *Hampshire Advertiser*, were as under:—G. Henley & Co. 8,820*l.* 15*s.* 9*d.*; Walker & Neave, 8,120*l.*; J. Edwards, 7,293*l.*; Ayres & Co. 7,317*l.*; J. Phillips, 7,212*l.*; W. Eades, 7,070*l.* 1*s.* 6*d.*; Bottomley & Hanson, 6,969*l.* 15*s.* 7*d.*; W. Bellingham (accepted), 6,781*l.*; C. Gilliam, 6,450*l.*; Rogers & Booth, 6,376*l.*; A. Harcourt, 6,222*l.*; G. Richardson, 5,442*l.* The tenders for a pair of pumping-engines, each capable of lifting 15,000 gallons of water per hour, to a height of 110 feet, were as follows:—The Butterley Company 1,700*l.*; Gray & Son, 1,650*l.*; T. Horn (accepted), 1,480*l.*; H. Burleigh, 1,350*l.*; Easton, Amos, & Co. 1,350*l.*; G. Voss, 1,126*l.*; Gilbert & Co. 978*l.* The tenders for building a board-room, offices, &c. for the Board of Health, at Fareham, were:—G. Gover, 850*l.*; Tuttle & Ings, 818*l.*; Fullford & Boys (accepted), 793*l.* 10*s.*

Swansea.—The new docks here have been opened amidst general rejoicing. The works comprise a trumpet-mouthed entrance, a half-tide basin, a lock, an iron bridge, and an inner dock of sufficient area for some hundreds of ships. The cost of the docks, when finally completed, will be 200,000*l.* The engineer-in-chief is Mr. James Abernethy, C.E.; the resident engineer, Mr. W. Neill. The contractors are Messrs. Tredwell, of London and Gloucester. The large dock will be supplied with the most approved modern appliances for loading and discharging ships of all sizes. The additional floating accommodation supplied by this dock alone will be thirteen acres in extent. It is 363 feet wide, and has 4,800 feet of quay wall. The depth of water will be 24 feet throughout, enough to float the largest class of ships that enter the channel. Facilities for the discharge of ores, ballast, &c. are afforded by hydraulic cranes discharging direct into railway trucks, and for the shipment of coal and iron by hydraulic lifts and tips. There are also five slips for discharging timber. The drops are connected with the branch railway by means of a timber viaduct which extends towards the quay at a height of 20 feet. The centre or combined drop is a very large one, being capable of shipping upwards of 150 tons an hour. At the western end of the dock there is built an accumulator tower. Between the lock and the drops, it is intended, as soon as possible, to erect a powerful hydraulic lift for lowering waggons from the high level line to the lower level line, and vice versa. This lift will be strong enough to raise a weight equal to 30 tons.—The tenders received for the erection of the new Union-house were very much above the amount authorized to be expended by the General Poor-law Board (8,000*l.*). The lowest was 10,183*l.* and the highest over 19,000*l.* The tenders were referred to a special committee, to report thereon to the local board. Some of the tenders, according to the *Cambrian*, were as high as 2,000*l.* for the erection of the school-room alone, and some 600*l.* or 800*l.* for the chapel.

Sutton Coldfield.—The new Town-hall, or Moot-hall, as it is termed, in the ancient and royal manor of Sutton Coldfield, was inaugurated on the 27th ult. Its principal frontage is towards Mill-street, and the other lies towards an open

space that has been cleared between it and the adjacent almshouses. It is two stories in height, except where the fall of the ground has been taken advantage of for a basement story, and the higher level is retained around the building by a terrace 5 feet wide, terminating by the tower on the south front. The principal entrance is in the latter, and is reached by a flight of eight stone steps; the tower forming the vestibule, from which, by folding-doors, the hall is entered. Immediately on the left from this hall is the library and reading-room, and beyond is a passage leading to a surveyor's office, waiting-room, and magistrates' court. This last is 35 feet by 20 feet, and has a distinct public entrance from the north front. In close proximity are two prisoners' cells, and these, together with retiring rooms, complete the accommodation afforded on the ground-floor. On the first-floor are the Corporation-room, 26 feet long by 18 feet wide; the Assembly-room, 50 feet by 36 feet; and 23 feet high, with the addition of an apsidal end arranged as an orchestra internally. The tower is about 64 feet high. The style of the building is Gothic, erected in red brick, with dressings of Box ground stone, from the quarries of Messrs. Randall & Saunders, and bands of stone with encaustic tile are introduced as strings and impostas. Internally the pavements are laid with encaustic tiles, and the woodwork is stained and varnished, the ceilings of the principal rooms being enriched with moulded ribs and cornices. The contractor was Mr. Burkitt, of Wolverhampton. Messrs. Smith & Hawkes constructed the heating apparatus. Mr. Thomas Brawn, of Birmingham, manufactured the ornamental wrought ironwork of the staircase, terrace enclosures, railings, gates, &c.; and Messrs. Maw, of Broseley, the encaustic tile pavements. The cost is about 4,400*l.* and the work has been carried out from the designs and under the superintendence of Mr. G. Bidlake, of Wolverhampton, aided by Mr. C. Cooper, the surveyor to the corporation.

Chesterfield.—The want of increased hospital accommodation has long been felt in Chesterfield. This want is now in a fair way of being supplied. On Wednesday last, the Marquis of Hartington, P.G.M. for Derbyshire, accompanied by most of the masonic office bearers of the district, laid the foundation stone of a new hospital, which is to supersede the old one in St. Mary's gate. The day was observed as a general holiday. The spot chosen is known as Durrant-green, near Holywell-street. Messrs. Davies & Tew are the architects; and Mr. G. Heath, of Chesterfield, is the builder. Owing to somewhat limited funds in hand, amounting to between 1,050*l.* and 2,000*l.* it has been judged expedient to erect only a part of the building, leaving the two side wings to be added. The hospital, the front of which faces Holywell-street, contains three floors, exclusive of the basement. The wards, two on the first floor, each exceeding 40 feet in length, are lighted and ventilated by windows in opposite sides of the wards, and facing each other; whilst the patients' beds are so placed that a current of air can in no case pass across any bed in such a manner as to do injury to its occupants. Between the wards is a nurses' room, provided with the means of overlooking each, so that the wants of any patient may be immediately attended to. On the first-floor are also a bath-room, and a room for operations. The upper floor contains two smaller wards, as other rooms. The wards give considerably more than 1,300 cubic feet of air space to each patient, and the whole building is said to be thoroughly drained.

Birmingham.—A new Roman Catholic convent for the "Sisters of Mercy" has just been commenced at Ravenhurst, on a freehold property of some extent. It will stand on about the highest point in Birmingham. It is a brick building of large dimensions, but extremely plain. Mr. Wilson, of Soho-hill, is the builder. The works are conducted under the direction of Mr. Welby Pugin.

Birkenhead.—A joint-stock company was recently formed for the purpose of building a Town-hall here. This company, through its architect, Mr. Hornblower, has submitted to the Birkenhead Improvement Commissioners a scheme for building a Town-hall, which, it was proposed, the commissioners should rent for twenty-one years, at 600*l.* per annum, with power to purchase. The finance committee, however, recommended that a large house in Hamilton-square, which could be altered at a cost of about 180*l.* should be rented for five years at 120*l.* per annum. After considerable discussion, it was agreed to defer the matter, a suggestion being made to convert the Monks' Ferry Hotel into public offices.

Liverpool.—An improvement is now being made to St. George's Hall. Four Tritons, that

once sat on the top of the short pillars in front of the building, are being set, each on a base, at the side of and between the doors at the north end. They will be surmounted by an ornamental lamp.

—Messrs. Walker & Ackerley, of Church-street, have constructed a new gallery in their house, for the exhibition and sale of paintings and other works of art. The entire length of the gallery is nearly 80 feet, and its height 20 feet. The gallery is lighted from the roof, and by means of sun-burners at night.

Leeds.—The directors of the Midland Railway Company invited five architects to submit designs in competition for the intended new hotel to be erected adjoining the Wellington Station; and they have selected for adoption the design by Messrs. Perkin & Backhouse, architects, who have received instructions to commence the undertaking forthwith. The building will be of an ornate character, in the Italian style of architecture.

Ulverston.—The Barrow tower has undergone a repair and decoration in the interior, at the sole expense of Mr. John Barrow, late of the Admiralty, and son of the deceased, to whose memory the tower was raised. On one of the tablets may be seen the names of the gallant men who suffered in the recent Arctic expedition, viz. Franklin, Bellot, Crozier, Kane, Fitzjames.

Carlisle.—Owing to a large increase of members of the Reading-room Institute, says the local *Journal*, the room became far too small, and the London Lead Company has rebuilt the same at their own expense for the use of their workmen. In addition to the new room they supply the members with coals, candles, and a few periodicals, all free of expense, and also a free circulating library of nearly 1,000 volumes for the use of their workmen. The members number 120, and take into the room two daily and six weekly newspapers, and twelve monthly periodicals. They have also a great number of standard works.

Ushaw (Hexham).—The Roman Catholic College of St. Aloysius, Ushaw, has just been opened for the admission of students. It is said to be the most complete ecclesiastical institution the English Roman Catholics possess. The arrangements are such that boys can be received at the age of ten years, and can continue through every class of study until they are prepared to pass their examination for taking degrees at the London University. The new college consists of a quadrangle to the north and a three-sided quadrangle to the south. The west wings are entirely devoted to study; the east, to the chapels, &c.; and the north, to the refectory, offices, and servants' apartments. The whole of the first floor of the college is occupied by dormitories, one of which is 190 feet long by a proportionate width and height. There are also rooms for a complete staff of resident masters. The style of the building is very severe Gothic, and it is entirely erected of stone. St. Aloysius's College is connected with St. Cuthbert's by means of a cloister, which also leads to the infirmary, situated in a separate court available for both colleges. In St. Cuthbert's the whole of the offices have been remodelled. Two chapels have been added in connection with the church cloister, one dedicated to St. Charles, the other a mortuary chapel (in memory of Dr. Gibson, the late vice-president), worked in marbles of different colours, alabasters, and stone: the roof is groined, and the bosses have groups illustrating the Sacrifice of the Mass, the Resurrection, with the soldiers at the tomb, &c. The whole of these works have been entrusted to the Rev. Mr. Gillow, one of the professors, and to Mr. Welby Pagin, the architect.

Edinburgh.—An arcade has been opened in the Parisian style, in St. Andrew's-street, a central locality.

SCHOOL-BUILDING NEWS.

Worleston.—The want of a parochial school having long been felt in this extensive parish, it has lately been resolved to erect one upon a plot of ground, containing three-fourths of an acre, given by the rector for that purpose, and situated in an eligible position near the rectory house. A fancy fair in aid of the funds has been held on the grounds of the residence of Mr. William Bovill, M.P. The proceeds of this with the subscriptions and a Government grant will, it is expected, be sufficient for the erection of a suitable building and teacher's residence. The committee have appointed Mr. Goodchild, of Guildford, to be their architect.

Nottingham.—St. Nicholas's New Schools, which have been in course of erection at the corner of Mortimer-street, near the Castle, during the last six months, are at length completed. Mr. Wilson

is the architect, and Mr. Garland the builder. The total cost is between 1,800l. and 1,900l.

Baynington.—The new National School-room in this village, recently completed, was formally opened on 20th September. The cost of the buildings, as at first erected, was about 300l. Of late years, however, the accommodation was found insufficient, and accordingly, about a year since, the present vicar determined to appeal to the landowners and residents in the parish to unite in erecting a room by the side of the former building, one wing of which could still be fitted up as a class-room, while the rest would serve for the mistress's residence. This design has been carried out, at a total expense (including the school-fittings and the formation of a playground), of about 480l.

Neston.—The traveller from Hooton Station to Parkgate, in passing through Willaston, will observe a new school-house on the village-green. It is of red sandstone, chiselled: in front is a Gothic entrance-porch, and a pinnacle surmounts the roof. The architect was Mr. Walter Scott, of Liverpool; and the builder, Mr. Hogarth, of Rock Ferry. It is intended as a school for boys and girls, and has been built by subscriptions chiefly from a few individuals, without Government aid. Parkgate has alone, lately got a school-house built: it is for an infant school, and stands in a retired spot, near the chapel. Mr. T. M. Penson, of Chester, is the architect, and Mr. Groot, of Neston, the builder. The site, which includes a play-ground, was given by Mr. H. M. Edwards, of Parkgate, and the cost of erection defrayed by subscription with the aid of a grant from Government.

WESLEYAN CHAPELS.

Kempston (Beds).—On the 19th ult. the corner stone of a new chapel was laid at Kempston. The chapel is to be Gothic. It is intended to accommodate 400 persons. Messrs. Thompson & Fryer, of Derby, are the contractors, and Mr. Charles Day, of Bedford, the architect. The design for the front of the chapel was gratuitously furnished by Mr. Robert Palgrave, of Pall-mall, the architect of Messrs. Howard's new iron works, at Bedford.

Notwithstanding the erection of two other chapels within the last two years, one at Parnham, and the other at Marston, Kempston chapel will also be erected without incurring any debt.

Droitwich.—The foundation-stone of a new Wesleyan chapel and school-room has been laid at Droitwich. The buildings are to be constructed by Messrs. Wood, builders, Droitwich, from the designs of Mr. John Smith, architect, and the estimated cost, including purchase of site, is about 1,600l. The site is on the east side of Queen-street, a short distance from the Worcester-road. The body of the chapel will be placed 10 feet back from the street. The interior of the edifice is to be 50 feet long by 30 feet wide, and it is calculated to seat 370 persons. The roof will be open, showing all the timbers. The seats are to be of deal, varnished. At the east end of the chapel will be the vestry and class-room; and the school (for 150 children), 40 feet by 20 feet, will extend still further east. The chapel will be constructed chiefly of red brick, with dressings of white and blue bricks. It will be of the Early English style, and the western front will be surmounted with a bell gable, beneath which there is to be a lancet window of five lights. The porch will be relieved with Bath stone dressings.

Dobwalls (Cornwall).—A new chapel and cemetery have been opened in the village of Dobwalls. The chapel stands near the centre of the village. The plans, according to the *Cornish Telegraph*, were furnished by Mr. Henry Rice, of Liskeard, who also superintended the erection of the building, which was contracted for and has been completed by Mr. J. H. Bate, of Liskeard. Messrs. Gourd & Pollard were employed in executing the masons' work; Mr. Wetter doing the plasterer's work. The style of the building is Anglo-Italian. It has a nave, south porch, and north and south transept. The north transept forms a vestry, over which is a gallery to be occupied by the Sunday scholars in the morning, and to be free in the evening. The walls are built of blue slate, from Doubleboise quarry, which forms a contrast with the alternate blocks of red brick and yellow stone used in the door and window dressings. The roof is partly timbered, and the whole of the woodwork stained and varnished. The nave is 41 feet by 26 feet; transept, 13 feet by 8 feet 6 inches; height from floor to ridge, 28 feet. Sittings, 220; 90 free.

Hargrave.—On the 19th ult. the new chapel at Hargrave was opened. The building is of Gothic

style, built of red brick with stone dressings. Mr. Richardson, of Chester, was the architect, and Mr. Hitchen, the builder. Sitting accommodation for 120 persons is provided, and the cost has been 170l. the land being given by Dr. Davies, of this city.

Manchester.—The foundation-stone of a Wesleyan Reform Chapel has been laid by Sir James Watts. The site of the proposed building is at the junction of Chapman-street with Boston-street, Hulme, Manchester. The chapel will be of white brick, ornamented with red brick and stone: it will occupy an area of 1,157 square yards, and will seat about 600 persons. The cost of the building will be 1,600l. of which 600l. according to the local *Advertiser*, have already been collected by subscription.

Morley.—The foundation-stone of a chapel about to be built by the Wesleyans has been laid on ground adjoining the present chapel. The new chapel is to be built of stone, and to cost 2,000l. upwards of one-half of which has been already promised.

STAINED GLASS.

Brimpton.—With the view of perpetuating the memory of the Rev. E. Golding, vicar, a stained-glass window has been placed in Brimpton Church, Berks, from a design by Mr. W. White, of London.

Redmill.—A stained glass window has been erected in the east end of the parish church of Redmill, near Belvoir Castle, Leicestershire, by the children of the late Rev. Thomas Powrys Outram, M.D. who was for many years rector of this parish. In the upper part of the window are three quatrefoils, each containing a figure holding a ribbon, with an inscription. The main portion of the window is divided into three compartments. The first contains a representation of the Nativity; the second pictures forth the Resurrection of the Saviour; the third compartment displays the Ascension. The glass was executed by Messrs. Lavers & Barrand, of London; and the stonework was contracted for by Mr. Green, of Denton. The total cost of the window has been about 100l.

Audlem (Cheshire).—A memorial stained-glass window has recently been erected in the north side of the parish church of Audlem, by Mr. Edward Barker, in memory of his late wife. It is of two lights, with lancet heads: in one compartment our Saviour is reproving Martha; and in the other, Mary Magdalene meets our Saviour in the garden after the resurrection. The window was designed and executed at the works of Mr. Wailes, Newcastle-upon-Tyne.

Halifax.—Within a very recent period six memorial stained-glass windows have been put up in Halifax parish church. The last oriel window finished is that in memory of the Waterhouse family, and the expense of it has been borne by Mr. Samuel Waterhouse. It is divided into five lights, and a subject appropriated to each light. The first is a representation of Christ being led from Pilate's judgment hall; the second, Christ bearing his cross; the third, the Descent from the Cross; the fourth, the Entombment; the fifth, Christ appearing to Mary. The window is from the studio of Mr. W. Warrington, of London.

Sandyford.—The *North British Mail* states that a large memorial window has just been erected by the family of the late Mr. M'Gregor, of Finnart, in Sandyford Church. The subjects selected for illustration are the various incidents in the sacred narrative regarding Bethany, more especially taken from the 11th chapter of St. John. These are treated in a series of thirteen medallions, beginning with our Lord's first recorded interview with Martha and Mary, and culminating in the upper tracery with the Ascension from Bethany, and the angels appearing to the eleven disciples as they were "gazing up into Heaven." The artist is Mr. Wailes.

Kildare.—Messrs. Edmundson & Son have just completed a memorial window for the chancel of the parish church of Fontstown, Kildare, Ireland. The style is Decorated, with three principal lights, and traceried head. The subjects, which stand under canopy work, are Faith, Hope, and Charity, one in each light. The centre opening in the tracery is filled up with the family arms, emblazoned; the remainder with ornamental foliage, &c. At the bottom of the window is the inscription to the memory of the Rev. John Bagot, M.A. rector of the parish.

St. Sepulchre's, Snow-hill.—We continue to receive letters on this subject, and find it necessary to say that our original correspondent's note simply claimed that the decision as come to did

not militate against the artistic reputation of the unsuccessful competitors; it did not depreciate the design selected. The features of this are three large groups in circles: the Crucifixion, at bottom; the Entombment; and the Ascension. All will depend on the way in which it is carried out.

THE NEW PRESBYTERIAN CHURCH, BRISTOL.

SIR,—The above structure was opened early last month, and I am greatly surprised that no mention has been made of it in your columns, as was intended. The architecture has been described in a local paper as of "the early decorated period of Gothic," which it may be intended for; but certainly one feature, at least, of the interior, the buildings of that era were never disfigured with. This disfigurement is principally in the roof, of which the describer alluded to above exultingly says, "The idea of a groined ceiling in stone has been wisely dissipated by staining the wood-work a dark colour." In other words, the roof describes a pointed arch of the fourteenth century, and is represented of stone, supported by ribs or groins of oak! betraying such poverty in church building as I hope will never be imitated. APEX.

THE HATCHAM APPEAL.

I AM happy to inform you that the appeal in behalf of the church and incumbent of Hatcham, which you kindly allowed to appear in your journal, has not been made in vain.

A committee, for the liquidation of the debt and completion of the sacred edifice, is now being formed, with the express approval of the Lord Bishop of London. Alderman Salomons, M.P. for the Borough of Greenwich, Alfred Rhodes Bristol, esq. M.P. for Kidderminster, a great number of the clergy and influential gentlemen, have already sent in their names to take part in this charitable work.

Hatcham was formerly a part of St. Paul's parish, Deptford, which at that time had but one church for a population of 27,000 souls.

Hatcham itself now contains a population of 10,000, and but one church, and that unfinished and in debt. The church at present contains nearly 1,000 sittings, and when finished will contain accommodation for 200 more.

If you will kindly allow me to add, that contributions, &c. towards this object will be thankfully received by the churchwardens of the aforesaid church, and promptly acknowledged by the committee, you will greatly oblige,

CHARLES F. REDMAN.

BUILD WELL AT THE BEGINNING.

"The cheapest is the best" may in some cases be correct, but in building affairs it is very different—the better you can make your houses, assuredly the greater gainers will you be at the end. Be assured that, if you expend a few pounds more in strengthening and perfecting your building, you will never have any cause to repent of it. Be convinced that the thicker the walls are,—the more perfect the roofing,—the more water-tight the whole establishment,—the more convenient the premises for families,—the better the ventilation,—the better the drainage of the house, the more will it, when years have rolled on, repay any such a builder. Be aware that if a "thing is done once well, it is twice done," and that the commencement of the building is the most convenient and best time for perfecting everything; for do not lose sight of the fact that when once all is finished, *soi disant*, it is a great deal harder and more laborious to improve it than to do the same when the house is being built. Let "do a thing well" be your view when building; and do not act like a Guernseyman who erected a house in V—Road in a very curious manner, and no doubt at the time believed that his new plan was the plan; but time and weather proved that his style was not a satisfactory one; and if facts will explain, I can just tell you that his house was found so inconvenient and uncomfortable, and that the rain had made such inroads into the dwelling, that it was no longer fit to be inhabited: so it had to be demolished, and re-erected, this time in the *Guernsey* style, and I can inform you that now age and weather will not do much towards hurting this dwelling—that this erection will not be taken down again, unless it is done by some earthquake or other extraordinary means. This will be sufficient to show that a thing well done once is twice done, and that if this house had been erected at the commencement in a proper and solid state, much

money would thus have been saved; and is not that something?—Builders, "Build well at the beginning."

WILLIAM MILLER.

IMPORTANT TO TENANTS.

At the Thames police court, last week, Thomas Collins, a broker, appraiser, house agent, rent and debt collector, valuer, agent for a fire and life office, with various other professions, and an "etc." of Alpha Cottage, Paradise-row, Rotherhithe, appeared before Mr. Selfe, to answer a charge for unlawfully taking divers goods, the property of Mary Caroline Brown, by an illegal distress. Mrs. Brown, a widow, and mother of four children, said she took a house in Albert-street, Rotherhithe, in August last. Mr. Brooker was her landlord. She was to pay quarterly if the house suited. The house did not suit her, and she left it on the 27th day of September, and removed to a house in Cross-street, St. George's-in-the-East. The defendant came there and seized a sofa worth ten guineas. There was no rent due when she left the house in Rotherhithe. The defence set up was, that rent was due by Brooker, of whom the complainant took the house, and that Mrs. Brown was removing her goods to avoid payment of the rent.—Mr. Selfe decided that no rent was due on the 27th of September, and that Mrs. Brown had a right to remove her goods. The defendant then urged that he received a warrant from the landlord, George Truman, to distrain upon the complainant's goods, and that he was justified in what he had done by that warrant. Mr. Selfe undeceived the defendant on that point, and said the warrant did not, and could not, justify him in performing an illegal act. He thought, however, that the complainant ought to pay the quarter's rent, *£1. 10s.* owing to Truman. George Truman, the landlord, was called by the defendant in the course of the proceedings, and said, "I don't know what I am here for." Mr. Selfe: "Nor I." The defendant: "Did you not apprise Mrs. Brown that rent was due by Brooker when she took the house?" Truman gave an evasive reply, and said, "No, not exactly that," but added, "I told you to tell her that." Mr. Selfe advised that every tenant entering into possession of a house, large or small, should ascertain that the out-going tenant had paid the rent, parochial rates, and parliamentary taxes. This was a matter of the highest importance to incoming tenants. In the case under consideration he ordered the sofa to be restored to Mrs. Brown, with *21s.* costs. Way Truman, however, should benefit by *£1. 10s.* The widow upon whom his beagle was "illegally" made to pounce for rent not due by her, one cannot well see. His suppression or evasion of the fact that Brooker owed the rent was clearly open to a strong objection, against whose goods he had no claim whatever.

THE STRIKE AT THE POLICE COURTS.

At Westminster Joseph Flockhart, a painter, was charged with using threatening and intimidating language to Charles Goldsby. Mr. James Walter, cashier to Mr. Freake, the builder, stated that on Wednesday he took the complainant into his employ as a painter after he had assented to the "document." At dinner time on Thursday he came to him and said he was afraid to work, as defendant had told him he was a marked man and he would have his life, in consequence of which complainant wished to go back to where he had just come from, St. Alban's. Charles Goldsby, complainant, stated that at breakfast time on Thursday defendant abused him, and that he (meaning complainant and others who had signed the "document") were "marked men" if they went to work. At dinner time defendant brought a gang of sixteen men. They crossed the road towards Mr. Freake's men, and one of them said he would kill complainant. Defendant was the ringleader. The accused, in general terms, denied the charge, admitting, however, that he had told complainant and another they would have to agree to the "document" if they went to Mr. Freake's, and that he had advised them to go to the Police Court at Bow-street, Westminster, where they would obtain the money to take them back to St. Alban's. Mr. Paynter observed that this was a very serious offence, and one much discussed of late, and that defendant struck any blows, he should have sent him to prison for three months. Defendant must not suppose this sort of thing would be allowed with impunity; for no man had a right, either by intimidation or force, to prevent another working for whomsoever he pleased. On defendant undertaking not to repeat the offence, and complainant to resume his work, he was ordered to enter into his own recognizances in *£01.* to keep the peace for six months, the worthy magistrate intimating that if any one was brought before him who had, by intimidation, caused another to leave his work, he should most certainly commit him for three months.

Books Received.

Illustrations of the Spires and Towers of the Medieval Churches of England. By Charles Wickes, Architect. London: Thompson & Co. 111, Strand. 1859.

We must restrict ourselves on the present occasion to mentioning the publication of a third or "Supplemental" volume of Mr. Wickes's fine work. It contains 20 plates, illustrating 43 spires and 36 towers. A smaller-sized volume would, in this case, have answered the purpose, inasmuch as there are on each page two, and in some cases, seven towers or spires, illustrated. It was necessary, however, to retain the original size, that it might range with the previous volumes. The fine perpendicular church of St. Mary, Saffron Walden, forms the frontispiece. This volume and its companions will save some of our church designers a deal of trouble, and they may really just as well take a whole tower, bodily, while they are at it, as proceed as some of them do.

The drawings are exceedingly well lithographed by Messrs. Day & Son, and the work, which does

credit to all concerned in it, demands a place, not alone in the library of the architect and artist, but of all who love—

"The steeple towers,
And spires whose 'silent finger points to heaven;'
with which our land is besprent from shore to shore. As Mr. Wickes says, with Wordsworth,—

"May we'er
That true accession fall of English hearts,
Who, with ancestral feeling, can perceive
What in those holy structures ye possess
Of ornamental interest, and the charm
Of pious sentiment diffused afar,
And human charity, and social love."

Popular Tables for ascertaining the Value of Lifehold, Leasehold, and Church Property, &c. By CHARLES M. WILlich. Fourth edition. London: Longman & Co. 1859.

We have before now mentioned the value of Mr. Willich's work, and this is made greater in the edition now before us. A number of new tables have been added; for example, three which show the prices that may be paid for property depending on the duration of life, so that the purchaser may receive a certain high rate of interest on the capital invested, while the re-investments to replace capital are calculated, on an average, to be made at 3 per cent.

We do not say too much when we assert that this book is indispensably necessary to all who are concerned in valuations and the management of property.

Miscellanea.

LECTURES ON SOCIAL SCIENCE.—A course of six lectures on this subject, embracing the relations between labour and capital, is about to be delivered by Mr. William Ellis, under the authority of the Committee of the Council on Education, at the "South Kensington" Museum. These lectures are particularly addressed to school teachers; but the general public will be admitted as far as there may be room in the theatre. The first will be given on Tuesday, the 11th of October, and they will be continued on each succeeding Tuesday.

RIFLE COMPANY OF ARTISTS.—Mr. Cave Thomas, whose proposition as to rifle companies we mentioned some time since, has obtained permission to form a Rifle Company of Artists to the Marylebone Corps. The committee will endeavour to render membership as inexpensive as possible, under the conviction that volunteer corps should be permanent institutions, not only for national defence in case of need, but as tending to promote the physical well-being of those who join them. Admitting this, and believing physical education to be of paramount importance, we gladly give publicity to the proposition, and wish it success. The sound mind, without the sound body, is of little use.

GLASGOW CHURCH-BUILDING.—Dr. Strang, of Glasgow, read a paper before the British Association at Aberdeen, from which it appears that, from 1839 to 1848, 35 additional places of worship were provided in that city, and 53 from 1849 to 1859, making a total of 88 in the last 20 years. Increased accommodation has thus been provided within the municipal limits of Glasgow for 73,625 persons, at a gross cost of 444,348*l.*; but the increase of the population in the 20 years is calculated at 145,000. The new religious buildings are thus apportioned among the various denominations: Established Church, 8; Free Church, 35; United Presbyterian, 17; Independents, 10; Roman Catholics, 7; other denominations, 11. The cost of each sitting provided is thus returned: Established Church, 4*l.* 5*s.*; Free Church, 5*l.* 12*s.* 1*d.*; United Presbyterian, 6*l.* 18*s.* 10*d.*; Independents, 8*l.* 7*s.* 10*d.*; Roman Catholics, 4*l.* 18*s.*; other denominations, 6*l.* 12*s.* 5*d.*

EXPERIMENTS AS TO THE STRENGTH OF WIRE ROPE.—Some experiments have been made at the Corporation Testing Works, King's Dock, on wire rope manufactured by Messrs. Garnock, Bibby, & Co. for the purpose of proving the strength of steel wire in comparison with the ordinary wire rope: they were conducted under the superintendence of Mr. Macdonald, superintendent of the testing machine, and witnessed by Capt. Cornforth and others. The first piece put to the test was a length of 3 fms. charcoal wire rope, 3 in. in circumference, which broke at 13 tons—a tension of 1 ton 6 cwt. above the manufacturers' tables. The next was a length of 3 fms. of 3 in. ordinary puddled steel wire rope, which gave way at a strain of 13 tons 15 cwt.; and the last was a similar length of steel wire, but differently prepared, which stood a strain of 16 tons 5 cwt.

THE PHONOTAGRAPH; SELF-REGISTRATION OF SOUNDS.—M. l'Abbé Moigno laid before section A of the British Association a collection of sheets of paper in which are self-registered the sounds of the human voice, organ-pipes, or tuning-forks, to the amount of 500 or 1,000 vibrations. We gave our readers some account of this new discovery long before the meeting at Aberdeen. The self-registration is said to be so accurate, that its success was greeted with enthusiastic admiration. This continued enregistrement forms an undulatory curve, so perfectly and distinctly traced, that the naked eye can easily reckon the innumerable vibrations, especially when it is divided in periods by the periodical intervention of a chronometer. When the sounds are very nearly in harmony, but not in perfect accord, their simultaneous resonance produces beats, and these beats are perfectly indicated or made known to the naked eye.

ANCIENT GLASS.—Sir David Brewster, at the Aberdeen meeting, read a paper "On the Decomposed Glass of Nineveh and other Places." He described the general appearance of glass in an extreme state of decomposition, when the decomposed part was so rotten as to break easily between the fingers, a piece of undecomposed glass being generally found in the middle of the plate. He then explained how, in other specimens, the decomposition took place around one, two, or more points, forming hemispherical cups, which exhibit the black cross and the limits of polarized light. In one specimen the film was of great and peculiar beauty, showing a complementary colour, by reflected and transmitted light. In another variety the films were filled with circular cavities, exhibiting beautiful colours, both in common and polarized light. Various other remarkable properties of other plates were described.

BLASTING OPERATIONS.—At the Rassa limestone quarries, Beaufort, about three miles north from Tredegar Iron Works, the blasting of an immense mass of rock, by the Tredegar Iron Company, recently took place. The quarry presents a perpendicular face of rock, about 100 feet high; and at about 60 feet from the bottom was a ledge or bench of rock varying from 18 to 30 feet wide, and about 160 feet long. At the back of this mass, and about the centre of its length, a hole, 3 inches in diameter, was bored to a depth of 21½ feet. It was intended to bore it to a depth of 30 feet, but "a twist" in the hole prevented this. The hole was charged with about 13 lbs. of powder, and fired by the ordinary mode of squib and match. This had the intended effect of creating considerable rents in the rock, radiating in various directions from the hole. The next operation was to charge the hole a second time, and about 305 lbs. of powder were poured in and fired as before; but the effect this time was somewhat more extensive; the discharge of smoke, rock, &c. from the whole representing a volcano in miniature. About 300 to 400 tons of rock were thrown down in huge masses to the bottom of the quarry; and the whole mass of rock forming the ledge moved throughout from top to bottom. There must, it is thought, have been no less than 10,000 tons of rock moved very considerably from its bed.

MONUMENTAL.—Speaking of the O'Connell monument, the *Clare Journal* says: "The native limestone of which it is building is elegantly adapted for the purpose, as it retains its freshness to after ages, and is superior to the Portland stone in that respect, while the moulding and chiselling on the work are really of the finest workmanship. The column, when finished, will establish Mr. Carroll's reputation as an architect, and one which he may be proud of. A few trees planted in the background of the column, so as to conceal the irregularity of the buildings in the rear, would be a great improvement."—A monument has been erected in the Sheffield Cemetery to the memory of the late Mr. John Fowler. It is in the style of the "Renaissance." On either side are fluted columns carrying an arch surmounted by a frieze and cornice: behind these columns are pilasters, ornamented with incised work. A veiled head, expressing grief, forms the keystone to the arch, and underneath the arch and recessed 12 or 18 inches is a circular bas-relief representing a freshly broken tree. Below this has relief, and is inserted in the stone upon which it is carved, is a white marble tablet, bearing a short but appropriate inscription. Still lower are the base steps. The work has been executed by Mr. Jasper Fidler, of Hightfield, and the sculpture is by his son, pupil in the Sheffield School of Art. Mr. Godfrey Sykes furnished the design and models gratuitously.

MR. SHERIFF GABRIEL.—The new sheriff, who is also an alderman of London (for Vintry Ward), is so far connected with the craft that we must offer him one word of congratulation on the attainment of his present position. Mr. Sheriff Gabriel is the younger partner in the well-known firm of Thos. Gabriel & Sons, timber merchants, in Commercial-road, Lambeth, and is well qualified to discharge with credit the duties of his office.

SIR W. G. ARMSTRONG'S HYDRAULIC MACHINERY AT SWANSEA.—The whole extent of the new docks at Swansea, as well as the river float, is furnished with Sir William Armstrong's hydraulic apparatus, which opens the gates, swings the bridges, works the sluices, lifts the boats, and goes through all manner of operations. The extent of pipes is a mile and a half, and the pressure upon them is 700lb. to the square inch. The hydraulic power is available for any purpose for which it may be required at any point throughout the entire length of the pipes. The ponderous dock-gates were opened by Miss Talbot, the daughter of the lord lieutenant, not figuratively, as is usually the case with ceremonial "openings" of this kind, but, thanks to the invention of Sir William Armstrong, literally opened by the delicately-gloved hand of a young lady of eighteen, grasping the capstan, boasting for the nonce a silver handle.

TO RECOVER DAMAGED LETTERS.—Mr. Alfred Smees, of the Bank of England, thus describes a process which he has successfully adopted for restoring the writing of letters damaged by sea water:—The letter should be lightly once brushed over with diluted muriatic acid, and then brushed over with a saturated solution of yellow ferruginate of potash, when immediately the writing appears in Prussian blue. A piece of clean paper, folded up, was found in one of the cairns of which Captain McClintock spoke, on his recent return from the Arctic regions. Is it not unlikely that a piece of paper, unwritten upon, should have been folded up and deposited in such a cairn, where no written record was found? May it not have really been written upon, but, owing to some peculiarity, either in the ink, or in the climate or locality, or in both, the writing has become invisible? It is to be hoped the relic was not thrown away, and that it will be submitted to some eminent chemist for his opinion or experiments for the restoration of the possible record.

THE DRINKING-FOUNTAIN MOVEMENT.—Two mural fountains of white marble are being fixed up under the portico of the British Museum—one on each side of the doorway. It is to be hoped that this is but a prelude to the erection of drinking-fountains at every place of public resort, such as the National Gallery, the Parks, &c. Some, we are glad to observe, are now to be erected in Kew Gardens, and several small ones, of porcelain, have been put up at the Crystal Palace.—At Wellington, a drinking-fountain has been opened. It is the gift of James Oliver, Esq. of Spring-bill. The fountain was cast in bronze, by the Coalbrookdale Company, and is placed in a wall near the railway-bridge, facing the market-place, and fixed in Grimsbill stone, being surmounted with stone coping and ornaments, executed by Mr. Mort, stonemason, and the whole carried out under the superintendence of Mr. John Barber, surveyor.—A new Gothic mural drinking-fountain has recently been erected in Trinity-street, Cardiff, and opened for public use. It is recessed into the wall of St. John's churchyard, and is constructed with forest stone moulded jambs, and arched, over which is placed a canopy of Bath stone, carved, bearing the arms of the donor, and surmounted by a finial in foliage at some ten feet above the level of the street. On the arch under the canopy is carved a verse from the book of Proverbs:—"Let thy fountains be dispersed abroad, and rivers of waters in the streets." The water is supplied from the Water Company's mains, and delivered in a continuous stream through a group of aquatic flowers, carved in white marble, the waste water basin and cup-stands being of the same description. The pipes are so arranged that an extra supply is laid on through a second delivery pipe when required, as on market days and holidays. The drinking-cups are by Messrs. Guest & Chimes, cast in gun metal, tinned inside, and in the shape of a gask. The fountain was designed and superintended by Mr. J. E. Palmer, clerk of the works at the new cemetery buildings. It is the second which has been erected with the sanction of the Local Board of Health, and is a personal gift to the town by their surveyor, Mr. Waring, who also provides the water during the first year of its use.

TURKISH BATHS.—Some time ago you gave particulars as to Turkish baths. I was in the Crimea and Turkey during the war, and was much interested in the matter of these Turkish baths as a physician; and, having had practical experience of their efficiency in my own case, as well as of others, I can confidently speak well of them, and am seeking to know how they are constructed in all their details. I went over lately into Ireland, where there are five baths erected at Dublin, Bray, Cork, Limerick, and Killybegs; but they do not resemble the Grecian style of Moorish architecture.—M.D.

THE CONSERVATIVE LAND SOCIETY.—The twenty-eighth quarterly general meeting was held at the offices, Norfolk-street, Strand, on Tuesday the 4th inst. Viscount Ranelagh in the chair. The chairman read the report of the Executive Committee, which stated that the number of shares for the quarter amounted to 296, and the receipts to 17,123/11s. 1d.; for the financial year just ended, shares 711, receipts 49,022/18s. 10d.; total since the formation of the society, shares 15,093, receipts 407,973/14s. 5d. The total sale of land amounted to 223,117/2s. 6d.

INAUGURATION OF THE HUME MONUMENT.—The inauguration of the monument to the memory of the late Joseph Hume, took place at Montrose, on Saturday before last. The widow and sons of the deceased, says the *Montrose Review*, "have expressed themselves as perfectly satisfied with the likeness which Mr. Calder Marshall has succeeded in producing, after a most careful study of all the existing portraits of Mr. Hume. The statue has been cut from a block of indurated Portland stone, and stands a height of 9 feet, mounted on a pedestal nearly 12 feet in height, unencumbered by ornament or unnecessary carving,—the right leg resting on a small pillar, bearing the town's arms and name of the sculptor, and on which lies a mantle and a book. Its position towards the south completely meets the artist's views, the rays of the sun being reflected on it during the greater part of the day."

ACCIDENTS TO PERSONS AND PROPERTY.—Mr. John Epps, engineer, Old Kent-road, was superintending the sinking of a well in Skinner-street, when by some chance he fell down the aperture, a depth of 70 feet, having an iron crowbar in his hand: he fell on the pointed end, which entered his stomach, and killed him.—At St. Mary Cray, a load of bricks was being conveyed across a viaduct on a chain, at a height of 42 feet, when suddenly the chain became detached, and the barrow fell upon a man employed, causing a severe fracture near the left temple.—At Accrington, another life has been sacrificed in the construction of the new reservoir to the Accrington Gas and Waterworks Company, a man having been crushed to death, embedded in about thirty tons of earth. A number of men were engaged in a puddle trench, 30 to 40 yards from the embankment of the new reservoir. A shaft about 50 feet deep was sunk, and after it was timbered to prevent the sides from falling in, Mr. McGuire, who superintends the construction of the works on behalf of the company, called the foreman and told him to commence filling the shaft up, but rather than run any risk, to let the props remain, and puddle with them in. A man descended in the cage to the depth of 50 feet to pull the props from the side. Several props had been withdrawn without any signs of the earth giving way, and about six feet of puddle had been placed in the shaft. The deceased again descended, but scarcely had the cage touched the bottom, when about 30 tons of earth slipped from the side and fell upon the deceased. The shaft was entirely filled up. A number of men were immediately set to work to remove the fallen earth.—A most disastrous and fatal explosion took place last week at a percussion cap manufactory in Whittall-street, Birmingham. Human beings,—chiefly women or girls,—their clothes rent from them, their bodies lacerated, their faces hideous with blackness and distortion, were thrown in all directions; some with their heads hidden and crushed in the ruins, others jammed between pieces of timber, all apparently in the agonies of death, and all filling the place with their groans and cries for help. After some time, eighteen dead and shattered bodies, very few of which admitted of identification, were brought out of the ruins. One poor woman left nine orphan children to suffer from her loss. Many of the wounded were conveyed to the hospital, and many more taken to their own houses. Twelve or fifteen persons still remained unaccounted for. The cause of the explosion is a mystery.

DRAINAGE OF CALCUTTA.—We learn from the *Calcutta Engineers' Journal*, that the brickwork for this important undertaking was commenced on Monday last, the 8th August. The commissioners, consisting of ten or eleven gentlemen, descended into the hole, which is 18 feet deep, and Mr. Wauchope duly spread the mortar, and placed the block with level and plumb, and truly into its position. The sewer is 5 feet 11 inches in height, 6 feet 3 inches wide, and the brickwork will be 1 foot 9 inches in thickness. Its inclination will be 4 feet per mile.

WATER IN LIGHTHOUSES.—Professor Faraday writes to the *Times* giving some useful information as to the purification of water contaminated with chloride of lead from salt spray resting on the leads of lighthouses, &c. whence rain-water is collected. The water thus contaminated is peculiar in this, that it does not lose the poisoning substance either by boiling or by exposure to air. The process of purification is exceedingly simple, for if some powdered chalk or whiting is put into the cistern in which such rain-water is collected, and stirred up occasionally after rain, the water may, with the greatest facility, be obtained in a perfectly fit state for all culinary and domestic purposes. The Trinity-house has supplied this information to all the cases needing it which have come to its knowledge.

PROPERTY WITHIN THE CITY WALLS.—The gross rental of the ninety-eight parishes cannot be fairly estimated, no less than nineteen of the parishes having blanks against them. But the rateable value of the poor of the ninety-eight parishes makes a total of 748,485*l.*; whereas, on the basis prepared by the justices for a rate to build a lunatic asylum, the rateable value is 951,646*l.*; whichever of these totals may be adopted as a basis of a rate to repair the breach caused by Paul and Manin, the amounts convey very forcibly the idea of the immense wealth of the City of London, as the parishes within the walls occupy a limited area, and are altogether exclusive of the other City unions, west and east.—*City Press.*

NEW JOINT IN JOINERY.—The usual process in making boxes has been to dovetail the sides and ends together. Mr. Hine, fancy cabinet-maker, of St. John-street-road, London, is said to have completely superseded that process by his patent "improved self-supporting joint." Mr. Hine obtains his joint by making, with circular saws, two tongues or fillets at right angles to each other; one of these tongues being on the edge, the other on the side of any given piece of wood, thick or thin. By the same process he forms two grooves in another and similar piece of wood, also at right angles to each other. The two tongues are then run into the two grooves, and a perfect joint is described as being the result, strong, and so complete, that it is impossible to pull the two pieces of board apart laterally, or in the plane of either one. By merely reversing the position of the tongued board, an angular joint is produced. The process can be adopted in the making of wooden or stone stairs, by which each riser would be so locked into the tread, that the stairs would be self-supporting. Many other uses are suggested.

SALE OF THE EDINBURGH THEATRE ROYAL.—Government having acquired the right to purchase the site of the Theatre Royal, Edinburgh, for the erection of a new post-office on that and the adjacent ground, and not being able to agree with the proprietors of the building as to the price to be paid for it, the matter was referred to arbitration, and has been so decided this week. We learn from the *Critic*, that the parties met on Wednesday, the 21st ult. and were engaged till Friday taking evidence as to the value of the building and site. Mr. Joseph Grant, agent for the proprietors of the theatre, stated that the proprietors were the representatives of the late Mrs. Siddons, whose family got possession of the property in 1811. About 1830 Mrs. Siddons let the theatre for twenty-one years to her brother, Mr. Murray, at a rent of 1,290*l.* Mr. Murray complained that the theatre did not pay, and Mrs. Siddons, in 1835, took off 290*l.* from the rent. In 1851, when the lease came to an end, the house was in an indifferent condition. It was then let to Mr. Lloyd. The site was variously valued for the proprietor by architects and others as follows:—40,000*l.*, 50,000*l.*, 30,550*l.*, 37,191*l.* For the respondents valuations were given at 17,930*l.*, 13,322*l.*, and 20,777*l.* 10*s.* 5*d.* After the evidence was concluded, there was offered, on the part of Government to the proprietors 30,000*l.* of compensation, with interest since Whit Sunday, and expenses, and these terms were accepted.

THE BUILDERS AT THE GOVERNMENT WORKS.—At the Woolwich Artillery Barracks considerable alterations are projected in the range of buildings recently occupied by the Horse Artillery, and operations have been resumed, with the aid of numerous artisans from the country, and of men who have hitherto received the dividend of the Conference. These men have verbally acceded to the terms of the document, which was read over to them by the foreman of Messrs. Downes previous to their admission. At the dockyard forty artisans have commenced work for Messrs. Smith on similar terms.

TENDERS.

For drainage and waterworks in the town of Fareham:—	
Henley & Co.	£3,820 15 9
Walker & Neave	8,120 0 0
Edwards	7,983 0 0
Ayres & Co.	7,317 0 0
Phillips	7,212 0 0
Eades	7,070 1 6
Bottomley & Hemson	6,659 15 7
Bellingham (accepted)	6,781 0 0
Gillham	6,450 0 0
Rogers & Booth	6,376 0 0
Harcourt	6,192 0 0
Richardson	5,442 0 0

For East Grinstead central workhouse. Messrs. Peck & Stephens, architects. Quantities supplied:—	
Ellis	£2,800 0 0
Fisher	7,430 0 0
Smith	7,200 0 0
Barnes	7,150 0 0
Noakes	6,882 0 0
Park	6,650 0 0
Evans, Brothers	6,367 0 0
Dancy	6,040 0 0
Naylor	5,983 0 0
Ayres & Co. (accepted)	5,947 0 0

For addition to mansion, Sunbury-park, by Mr. Arden. Mr. J. Elliott, architect. Quantities by Mr. Jolliffe:—	
Myers	£2,582 0 0
Patman & Fotheringham	3,472 0 0
Macey (too late)	3,445 0 0
Perry	3,277 0 0
Carter	3,275 0 0
Asheild	3,258 0 0
Hawkes	3,140 0 0
Cooper	3,138 0 0
Mender	3,000 0 0
Ashton	2,988 0 0
Hayne	2,967 0 0
McLennan & Bird	2,833 0 0

For two cemetery chapels, lodge, front fence, and entrance gate, at Oundle, Northamptonshire. Mr. Ed. Ward Browning, architect, Stamford:—	
Plan A.	Plan B.
Gann & Howe	£1,434 3 2
Oates	1,375 0 0
Jeffs & Roberts	1,367 0 0
Ellis & Son	1,284 0 0
Bradshaw	1,270 0 0
Seath (acc'd)	1,211 10 0
Bennett & Son	1,187 0 0

For a pair of pumping-engines, each capable of lifting 15,000 gallons of water per hour to a height of 110 feet:—	
The Buttery Company	£2,700 0 0
Gray & Son	1,650 0 0
Horn (accepted)	1,480 0 0
Burleigh	1,350 0 0
Easton, Amos, & Co.	1,350 0 0
Vass	1,125 0 0
Gilbert & Co.	978 0 0

For building a Workman's Institute in Euston-road. Messrs. Wadmore and Baker, architects. Quantities by Mr. James Williams:—	
Walker & Neave	£2,040 0 0
Welshman	1,720 0 0
Lawrence	1,690 0 0
Cushing	1,650 0 0
Partridge	1,520 0 0
Cooper	1,517 6 4
Piper & Son	1,473 0 0
Wills	1,393 0 0
Colls & Co.	1,300 0 0
Picard	1,245 0 0
Porter	1,242 0 0
Ashby	1,221 0 0

For nine small houses in the Victoria-road, Hammer-smith, by Mr. Hewlett. Mr. W. H. Heath, architect. Quantities supplied. Bricks and sand provided by Mr. Hewlett:—	
Pilkington	£1,520 0 0
Cowland	1,550 0 0
May	1,180 0 0
Smith	1,150 0 0
Bray	1,065 0 0
Cordery	975 0 0
Harvey	892 0 0
Newman	810 0 0

For building a board-room, offices, &c. for the Board of Health at Fareham:—	
Gover	£250 0 0
Tuttle & Jugs	218 0 0
Fullford & Boys (accepted)	793 10 0

For a residence at Forest-hill, for Mr. Edwin Jewitt. Mr. J. G. Stapleton, junior, architect:—	
Winder, junior	£685 0 0
Hammond & Neward (too late)	550 0 0
Cannon	485 0 0
Raye	150 0 0

For drainage, and laying out the ground:—	
Sharrou	£276 0 0
Smith	238 0 0
Bowker	203 16 0
Freeman (accepted)	202 10 0

For the Potteries Mechanics' Institute and Public Reading-rooms. Mr. Robert Scrivener, architect:—	
Aitley & Dean	£3,000 0 0
Jones	2,850 0 0
Matthews	2,777 0 0

For dwelling-house and stable, for Mr. R. Strong, at Finchley. Mr. T. J. Hill, architect:—	
Carter	£1,180 0 0
Coulson	1,125 0 0

For a dwelling-house, at Forest-hill, for Mr. J. G. Lewis. Mr. T. Roger Smith, architect. Quantities not supplied:—	
Nixon	£1,207 0 0
Walker & Neave	1,274 0 0
Carter	1,150 0 0
Ring & Stanger	1,130 0 0
Woodward	1,100 0 0

For workmen's institute, 237, Euston-road, for Mr. G. J. Bowyer. Messrs. Wadmore and Baker, architects. Quantities by Mr. Williams:—	
Welchman and Gale	£1,720 0 0
R. Lawrence	1,650 0 0
Cushing	1,650 0 0
Partridge	1,520 0 0
Cooper	1,517 0 0
Piper & Son	1,473 0 0
Wiles	1,393 0 0
Colls & Co.	1,300 0 0
Porter	1,250 0 0
Picard & Co.	1,230 0 0
J. Ashby (accepted)	1,221 0 0

For enlarging the Queen Hotel, Aldershot. Mr. Charles Marshall, architect, Farnham. Quantities not furnished:—	
Goddard	£749 0 0
Smither	738 0 0
Speakman & Haines	688 6 0
Snelling & Nash	672 0 0
Martin	615 0 0

For alterations and additions to St. George's Brewery, Portsea, for Mr. Joseph Lush. Mr. George Rake, architect:—	
---	--

Exclusive of founder, plumber, painter, and glazier. Aylen	£1,035 0 0	to complete in 3 months.
Backhurst	979 0 0	" 3 "
Hodges	925 17 0	" 4 "
Abalom	918 12 6	" 15 weeks.
Rogers & Booth	910 0 0	" 2 months.
King (accepted)	907 5 3	" 2 "
Light	890 0 0	" 5 "

For repairing and restoring the interior of the parish church of Fennyntaston, Hunts. Mr. Robert Hutchinson, of Huntingdon, architect:—	
---	--

	In oak.	In deal.
Matthews	£918 0 0	£790 0 0
Ringham	900 0 0	637 0 0
Thoday & Clayton	850 0 0	660 0 0
Monks	798 0 0	738 0 0
Bell & Son	798 0 0	668 0 0
Cox & Son	773 0 0	663 0 0
Ellis & Son	595 0 0	525 0 0
Kirkby	555 0 0	515 0 0
Bunting	544 0 0	481 0 0
Allpress	533 0 0	433 0 0

For the partial restoration of Astley Abbot's Church, Shropshire. Mr. A. W. Blomfield, M.A. architect:—	
Owen	£610 12 6
Neveit	625 0 0
Smitheman	500 0 0
Exley	493 7 11
Pickard & Son	479 8 6

For the erection of ale stores and warehouses, at Stoke-on-Trent, for Messrs. Alsop & Sons. Mr. Scrivener, architect:—	
Croswell	£1,059 0 0
Matthews	950 0 0

For warehouses, at Hanley, for Mr. J. Clementson. Mr. Scrivener, architect:—	
Watkins	£546 0 0
Jones	585 0 0
Matthews	570 0 0

For a set of stables at Lower Sydenham. Mr. Nicholas Lake, architect:—	
Buller	£295 0 0
Amer	310 0 0
Sugden	317 7 7
Messrs. Denton	307 0 0
W. & F. Barrett	295 0 0

For erecting a warehouse in Copenhagen-street, Worcester. Mr. Thomas Fiewett, architect. Quantities furnished by the architect:—	
Wilson	£570 0 0
Coker	540 0 0
Bishop	448 0 0
Hughes	422 0 0
Simmonds	420 0 0
Heming & Son (accepted)	418 0 0

TO CORRESPONDENTS.

I W. must have read your remarks with regard to the matter at which I take criticism. There we take the right of our own art, and I particularly usually obtain the thanks of another side. We hope we have better paintings than those of the latter, as appears. —P. R. should enlighten us as to the system he was in view. —J. H. —J. R. —J. P. —W. H. T. (we go to press on Thursday night). —W. S. —Subscriber from the first (will not be lost a bit of it). —An Architect. —B. P. —J. K. —T. S. (next week) —Inventive (ditto). —H. G. —J. H.

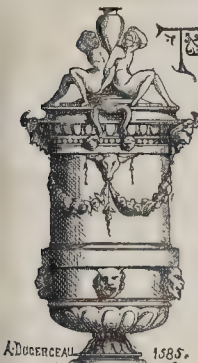
Post-office Orders and Remittances should be made payable to Mr. Morris B. Coleman.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

The Builder.

Vol. XVII.—No. 871.

The Social Science Association.



St. George's Hall on the principal occasions some of the seats were empty; it is only what might be anticipated from the difference in the age of the two places, and the habits of its occupants. Twenty years ago, Bradford was a comparatively unimportant place, and many of its principal inhabitants are the very men who, architects at the same time of their own fortunes, have made it what it is. There is great wealth in the town: men are pointed to, and to their credit, as worth a quarter of a million of money, and more, who have carried a pack in the town, or swept out a shop, but perhaps have less cultivation than would incline them, in the first instance, to anticipate pleasure or instruction from Social Science. With the rising generation it is of course different, and there can be no doubt that the visit of the Association will give a healthful impulse to important movements in the town. To the majority of the London visitors, Bradford is as great a novelty as Social Science to many of the Bradfordians. They have seen with astonishment its numerous fine warehouses in stone, the congeries of short streets, all running against one another, and leading nowhere directly, that form the town; its very handsome Music-hall, and its remarkable position on the side of hills, which renders its appearance at night, seen from a distance, with long ranges of lights running upwards almost till they are lost in the sky and jostle the stars, surprising and beautiful. St. George's Hall, where the chief meetings are being held, was built about six years ago, at a cost of 15,000*l.*, as our readers will remember, from the designs of Messrs. Lockwood and Mawson, the leading architects of the district, under whose superintendence Saltire also (which is close by) was erected. The hall, within the walls, is 152 feet long, 76 feet wide, and 50 feet 8 inches high; that is, the width is half the length, and the height is two-thirds the width, to meet an acoustical theory held by Mr. Lockwood, which at any rate has not disappointed in the present case, for the hall is remarkably good for hearing in.

On Monday evening Lord Shaftesbury opened the Congress, and for the first time in his life, as he said, *read* an address, in the course of which he made special reference to the aid the objects of the Association were deriving from the share that women had taken in its business:—

"We have seen the profitable results," he said, "in the various publications they have issued, replete with feminine acuteness of observation and minuteness of detail, composed in a clear and winning style, and calculated to render sanitary science and sanitary practice intelligible and acceptable in the daily, nay hourly, walks of humbly life. This is no trifling advantage, to have gained the whole female sex as our sympathisers

and fellow labourers. I say nothing of having thus added to our forces one-half of creation; but I insist on the value and peculiar nature of the assistance: men may discover principles, write big treatises, and indicate and do what must be done on a large scale; but the instant the work becomes minute, individual, and personal,—the instant that it leaves the open field, and touches the home,—the instant it requires tact, sentiment, and delicacy,—from that instant it passes into the hands of woman. It is essentially their province, in which may be exercised all their moral powers, and all intellectual faculties. It will give them their full share in the vast operations that the world is yet to see; and while the multiplication of Grant Easterns, of Atlantic Telegraphs, and Lord Rosse's telescopes (departments of intellect arrogated to themselves by the male sex, and inventions, in fact, to give greater ease to the already easy of mankind), while these add, day by day, to the wonder and activity of the inhabitants of every clime, woman will interpose to save the millions from neglect, and will labour to show that 'the mint, the anise, and the cummin' are as much the care of a thoughtful Providence, as the mightiest of the cedars of Lebanon. Let me not be supposed to decry archaeology, science, geology, or anything that exercises and enriches the understanding; anything that gives the intellectual an ascendancy over the sensual part of man. I admit their value, nay, their necessity. It is desirable—it is more—it is indispensable to have something to employ all tastes, all mental qualifications, each one according to its bent and genius. But on an anniversary such as this, we are called to consider the greatest amount of interest and improvement for the greatest number; but the pursuits to which I have alluded cannot, undoubtedly, touch the masses so deeply as those which affect their daily life: they are far more the business of leisure and education; while ours are only preliminaries to an enlarged state of things, when such studies may be more generally adopted, because more easily pursued. Let us, ourselves, see, and teach the people to see, that their social, but removable, discomforts fret and enfeeble them, and render them unfit for higher thoughts. Nor are the wealthier and more refined classes, when duly informed of these matters, without moral and material interest in them. They will relish an old tower, an ichthyosaurus, or a treatise on electricity, much more when they find reformation on the increase, disease on the decrease, and a better comprehension and practice, by all classes, of the principles and purposes of social life."

The speaker urged the necessity there was for a calm, constant, and preventive policy, always on the watch, giving notice of every form of evil, and every opportunity of good; listened to with favour; and weighed, when it speaks, with due deliberation; a frame of mind which we cannot hope will arise until the common sense of the public shall have been enlightened by various and sustained information, impressed by the convictions of duty, and brought to a sentiment of confidence both in the measures and in the men who are to carry them into execution. If this were the normal position of the British mind, we should have little difficulty in persuading it to "refuse the evil, and to choose the good." And he went on to touch most of the subjects included in the programme of the association. It was a general, healthful, and useful address.

Lord Brougham moved a vote of thanks to Lord John Russell, the president of last year; and the Right Hon. Joseph Napier, and others, spoke briefly.

On Tuesday morning Lord Brougham delivered his annual address. It occupied two hours in reading, and was for the most part distinctly given. Speaking of the evils produced by over-working, and the good results which had followed the efforts made to restrict the hours of labour, Lord Brougham said:—

"What has been done has, indeed, merits of a peculiar kind; for, while other plans operate indirectly and gradually, the benefits of this are direct and immediate. The health, the instruction, the morals of the community are directly improved by the action applied—and improved at once. The class, too, thus benefited, is the most important of the children of toil—those in whose work the mind is most employed. But it comprises, also, our artisans; those whose talents and industry make England the great capital of manufactures; whose exquisite skill and

admirable dexterity bear the fame of our arts into every sea that a ship can plough, teaching envy to the proudest of our rivals, and veneration to every tribe, however remote, as soon as its existence becomes known. Of the working classes at large, if not the besetting sins, certainly the most pernicious failings are improvidence and intemperance; and as there can be no greater evils than what proceed from these sources, it is fortunate that a remedy can be applied, certainly to mitigate, possibly even to effect an absolute cure. The two failings are no doubt closely connected; but it is fit that they be considered apart, as in some material respects they are not co-extensive, improvidence having the wider scope and more general operation. It is well said by Mr. Erskine Clarke, in his very useful paper at the Congress of 1857, that 'the great problem of social economy is how to help the working people to keep themselves with their own money' (in other words to teach them provident habits); and the plan which he strongly presses, and which Mr. Akroyd, in an able and important paper last year, more fully illustrated, is the establishment of Penny Savings' Banks. The great step made fifty years ago, and which we owe to a most wise and pious pastor of the Scottish church, my revered friend Dr. H. Duncan, was the institution of Savings' Banks, which received all deposits of a shilling and upwards. These very soon extended almost over the whole island. By the last returns there have been deposited above 32,000,000*l.* by 1,340,000 contributors. But in this, as in all other institutions for promoting popular improvement, it has been found that they do not at first reach the class for whose benefit they are chiefly designed, but a class somewhat above them; and the proportion of very small deposits clearly showed the tendency of the humbler classes to avail themselves of the banks as far as their rules allow; for 85 per cent. of the amount which has just been mentioned was for sums of an average not exceeding 12*l.* It thus became manifest that sums below 1*l.* ought to be received, and Dr. Chalmers proposed the Penny Bank, which completely succeeded. Without the knowledge of his suggestion and its success, the same thing was tried and succeeded perfectly at Birmingham, Halifax, Derby, Hull, and many other places. In Birmingham, in 1856, 84,000 accounts were opened for sums of 1*l.* and upwards, 11,500*l.* being paid in, of which 10,700*l.* were drawn out, clearly showing that the banks are used as they were intended, for a temporary deposit, and for keeping the money till wanted; but without the banks the pence would be squandered in providing some indulgence, probably drink. The great object is teaching the working men to begin saving: once beginning, he will add to the little hoard, and when it reaches a certain amount he will keep it, unless driven by bad times, by disease, or other accident, to encroach upon it. But we may safely affirm that a most salutary change is made in a man's habits, perhaps in his character, by his beginning to save for whatever purpose, and that providence in this one and very material particular will become the habit generally of his mind. It is to be hoped that our attention may be called during this meeting to the proposal of Mr. Sikes, for applying money-order offices in the Post-office department to the purposes of savings banks, or, possibly, in some cases, as a substitute for them."

He dwelt at very considerable length on the evils of intemperance, stating, as one of the smallest parts of the evil, that at least ten times as much money is spent upon drink as upon publications of all kinds.—

"That repressive measures are loudly called for in this country it is difficult to deny; but if there are objections to these, chiefly from the public mind not being prepared for them, at least we can cease to encourage intemperance by treating it as venial, and by suffering pernicious customs to be continued apparently for its protection. Not only do those greatly err, but they are positively criminal, who treat the subject lightly; and yet more to be condemned are those who regard intemperance as an extenuation of guilt, of which it is rather an aggravation. How much more criminal are persons in authority who sometimes so consider it in meting out the indictments of the police, or even of the penal law! But those are not to be forgiven who indulge in light talk upon that which is the fruitful parent of the worst offences, even of murder itself. What shall we say then of customs being maintained directly promoting intemperance, and which have neither antiquity to plead in their defence, nor any necessity whatever to require their continuance, nor even the fact of

their universality to allege in their favour? The existence of statute fairs is a disgrace to the police of this country. In some of the most extensive and populous counties they are unknown, and not the slightest inconvenience is experienced from the want of them. Wherever they are held all the best authorities among the magistrates and police officers are agreed in representing them as a great cause of drunkenness and every species of immoral indulgence. This important subject was fully treated by Mr. Nash Stephenson at our last meeting, and the progress was described of a remedy, by way of a substitute, in the registry of farm servants, which many persons have of late desired to see extended to all servants; and a society has been formed in London with this view. As it is clearly not enough that we should cease to encourage intemperance, and as positive repression is attended with great difficulty, there is every reason to rejoice in the exertions which have been made by individuals to apply a remedy, or, at least, a palliative, by such proceedings as may be taken without legislative aid. The formation of Temperance Associations have been highly beneficial; and these have spread over many parts of the country. Not only have these bodies published works admirably conducted, and several newspapers, besides circulating cheap tracts to a vast amount—the Temperance League, 300,000 a week—but they encourage their members to take the pledge, which, though often broken, is kept by many. The services of the grand Alliance and of its able and learned secretary, Mr. S. Pope, are truly above all praise.*

The demoralizing effects of bribery at elections, with the necessity for alteration in the laws, was the theme of a considerable portion of the address. We must confine ourselves to reporting the observations Lord Brougham made on the relations between employers and employed, which demand the attention of both parties.

"While some reasoners," he proceeded, "contend that the people are disqualified for the exercise of the franchise, in other words for the possession of political power, by want of information—and some would withhold it because of their evil habits—there has been at all times, but never so much as of late years, a disposition in a large and important body to assume power, by acts, sometimes of doubtful legality, and always leading, by their almost unavoidable consequences, to a breach of the law. I allude to combinations for raising wages, accompanied with a resolution not to work either for more than a certain time, or for less than a certain remuneration. If the proceeding is connected with any plan of preventing others from working, either by actual violence or by threats, it is manifestly an offence, and severely punishable. But without any violence or menaces, the raising a fund to keep one class idle, by supporting them when they refuse work, except on the terms prescribed by the body—terms to which the employers cannot or will not yield—and the wlaying another class coming from the country, offering to pay the journey back if they join in the refusal, approaches very near an unlawful conspiracy; or, if it be not absolutely illegal, is in the highest degree oppressive to the employers, because it deprives them of the ordinary advantages of competition, placing the whole relations of labour in a false and unnatural position. That which regulates all prices, whether of commodities or of labour, is the higgling of the market; and there is a kind of individual instinct, by which dealers in labour as well as dealers in other things adjust their demands. A combined action of 100 or 1,000 substitutes, for this individual instinct, a fixed rule, conceived without the least regard to the rate of supply and demand, to the circumstances of the party offering, and the party accepting or refusing, and enforces that rule in an arbitrary manner, and by no natural appliances. The fallacy is enormous, by which the labourers, complaining of machinery, as throwing hands out of work, hold that they ought to share directly with the employer in the gains which the machinery enables him to make. They do share in these gains, but not directly. The capital saved must always be employed in paying for labour; and the machinery that saves labour in one line to the capitalist enables him to employ more labour in other lines; the great probability being, that he will employ it in the line to which he and his workmen are accustomed. The combination of masters is the inevitable consequence of the combination of men; and as they have capital to draw upon, which is a far more certain and secure resource of supply than the contributions of the men, such a conflict

must always end in a great loss to both parties, but dreadful to the poor men, whose families suffer severely in the mean time, and who, after they have been defeated, are sure to find a great diminution of employment from the injury inflicted upon the masters. It is needless to observe, that the immediate tendency of such combinations is the very reverse of the influence of the establishment of guilds in the middle ages, which were the parents of skill in all the arts. The inevitable effect of strikes is to level all merit, to benefit the lazy and incapable at the expense of the industrious and skilful, and to rob all concerned in them for the profit of a few agitators and mob-seekers. But though the employers have an unquestionable right to combine in self-defence against the tyranny of their combined workmen, and though they are secure of success in the end, it is only to be gained by patience, at some sacrifice, and by joint and prudent action. It is sure to be lost by any imitation of the unjust and violent course pursued by the men; and it is most especially at a season of indiscreet and unscrupulous combination among the latter that the masters ought, more than ever, to beware of encroaching upon just rights, and rather to give their men more freedom than to curb them in any manner of way. It must be observed that all the errors into which one of the parties fall, and which are the cause of their unreasonable and unreasoning proceedings, and which present the enemies of an extended franchise with their most powerful argument, come from ignorance. If care were taken to teach them the plain, easily learnt, and easily understood principles, which, of all men, they have the greatest interest in understanding—the relation between prices, including that of labour and of supply and demand—between capital and wages—between machinery and profits, as well as masters as of workmen—between rights and duties—between the enforcement of the law and the interests of all,—if these principles were ever present to their minds, the course of conduct which they oftentimes pursue, to their own great detriment quite as much as to the injury of others, would be next to impossible."

Vice-Chancellor Page Wood made his address on "Jurisprudence" (when Lord Brougham concluded, and an admirable address it was, pointing out clearly and powerfully where reforms in our laws are needed).

The various departments then assembled to read and discuss papers, while a large party went to view Saltaire. In the Public Health section some valuable papers were read by Mr. Hudson, Mr. Beaumont, and Dr. Macturk, on the social and sanitary progress of Bradford, which elicited an animated discussion, of which we will speak hereafter. On Wednesday, in the same section, an excellent paper on "The Physical Effects of Diminished Labour," was read by Mr. R. Baker, showing conclusively the good results of the Factory Act: the diseases that were common before it was passed have entirely disappeared. Who shall now deny the importance of wise sanitary legislation? The paper induced a spirited speech from Lord Shaftesbury.

In the Department of Social Economy the ladies had mustered very strongly to hear Miss Bessie Parkes's paper on "The Market for Educated Female Labour." we cannot close our present notice in better company.

THE DOMESTIC ARCHITECTURE OF THE FIFTEENTH CENTURY.*

It has been generally perceived since knowledge was obtained of the nature of our state-papers, by the recent publications under authority of Government or the Master of the Rolls, that the history of England would require to be re-written. A similar observation might be made at the completion of the volumes on the Domestic Architecture of England, due to the editor of "The Glossary of Architecture," which furnish matter indispensable to the future historian,—matter that till lately had lain nearly untouched. True history has other objects of its concern as well as the stories of battles and the incidents in the lives of monarchs; but it was reserved for our day to work the mine comprised in the carved

and builded records of the art and of the manners and condition of our own ancestors, and to begin to fill up an omission such as had been in great part supplied in the histories of several ancient nations. There had been previous investigators in one part of the field over which the labours of Mr. Parker and his coadjutors have extended: we may allude to the quantity of the information collected by various hands and embodied in the "London" and other publications of Mr. Charles Knight; but no one had given us a view of the architecture as connected with the changes in domestic habits and social condition up to the middle of the sixteenth century, so comprehensive and so minute as that which is completed in the present volumes. Such a result offers the best testimony of the value, in one department of their study, of architectural remains, rightly used. As regards another department, whatever opinion we may have concerning the exact character of the improvement which has taken place, and is to be "observed in the churches built during the last quarter of a century," and whatever views on the question which Mr. Parker touches in his preface—the precise use to be made now, whether of Gothic architecture or the English Gothic,—Mr. Parker believing that the English Gothic, "with fair and proper development and adaptation," is still "the most suited to meet the various requirements of the present time,"—all architects should be of one mind regarding the very high value, for whatever phase or school of modern practice, of the English Gothic, and the domestic architecture of the same school. No class of examples is there but what has value to him who can use models rightly; and it may at least be said, that to the study of English Gothic we owe much of that correction of what were previous errors against all good architecture, which will be the foundation of after-progress that we may make. To preserve, therefore, remains of architecture in our country, and to study them, is one of the aids both to the knowledge of our history and to the progressive development of art.

The portion now published of the series of volumes, the first of which bore the name of the late Mr. Hudson Turner, treats of the period from Richard II. to Henry VIII. It is divided into two parts, issued as separate volumes, though pagged consecutively, whereof the second part is devoted to condensed notices of the principal remains of fifteenth-century work in England, with some information as to the distinctive character in the several counties, including also notices of some later buildings, and to shorter notices of the contemporary work in Wales, Scotland, and Ireland. A list from the Patent Rolls, of Licences to Crenellate, drawn out under the direction of Mr. Duffus Hardy, is added, the list extending from the time of Henry III. down to that of Edward IV. These licences are the foundation for Mr. Parker's series, the history of domestic architecture in England, during the Middle Ages, depending mainly upon them. Few houses of importance, in the thirteenth, fourteenth, and fifteenth centuries, were built without being fortified, so that the licences give the date within very few years; and these dates agree in almost every instance with dates assigned by style of architecture. Also with the second part or volume before us, and applying to the whole series of volumes, is a full General Index and a Topographical Index, besides the tables of contents of the two parts. The information in the second part being incomplete, even as to England, and not absolutely required there, we should have preferred its omission in this case, and, if necessary, the publication of a separate gazetteer. The author seems, however, to have been slightly trammelled by the desirableness of preserving uniformity in his series; and the works of the fifteenth century are too numerous to be easily managed. The preceding work, which related to the fourteenth century, contained some excellent illustrations of foreign examples. Similar illustrations of fifteenth-century work, for which he had collected the materials, he was reluctantly compelled in the present publication to omit; but he refers to the books relating to France, of M. Verrier and M. de Caumont, and prints from M. Viollet-le-Duc a letter, affording some information as to the principal examples in France, and showing that they belong chiefly to the latter half of the fifteenth century, the first half being the period of wars with the English and others, when there was little money to be spared for expenses of building.

The first of the two parts which are before us, of the work, is divided into six chapters. The first chapter treats of the general plan and character of the fifteenth-century residence, and of the social

* "Some Account of Domestic Architecture in England, from Richard II. to Henry VIII. With numerous illustrations of existing Remains, from Original Drawings." By the Editor of "The Glossary of Architecture." Two Parts, with General Index and Topographical Index to these and two previous vols. of the series. 8vo. pp. 491. Table of Contents and List of Engravings. Oxford and London, J. H. & J. Parker. 1859.

§ *Ibid.* p. 167. Clocks are mentioned as part of the furniture belonging to Henry VIII. at his palace at Greenwich, MS. Harleian, No. 1,419, p. 58.



ST. PAUL'S CHURCH AND NATIONAL SCHOOLS, CLERKENWELL.—Mr. W. P. GRIFFITH, ARCHITECT.

for the purpose? If not, they ought, if possible, to be made adequate. There was a general concurrence that the wages of large numbers of labourers were inadequate. Who paid these inadequate wages? Employers. The remedy seemed obvious. Let them pay so much more as was wanting to make them adequate. The answer of the employers was, not that they would not, but that they could not give more. "The whole of the capital in our business is appropriated," they would reply. It staggered the uninitiated to hear that the wages of some could not be increased without lowering the wages of others, unless capital be increased. But it was this increase of capital, the only source of general increase of wages, which was the justification for increasing the wages of some by lowering the wages of others,—of increasing the wages of the more efficient, by lowering those of the less efficient. The lecturer, after indicating the inductive process by which the schoolmaster should seek to make the youth under his charge acquainted with the requirements of the laws of capital, drew a contrast, derived from a recent incident within his knowledge, between the functions of the judge and the schoolmaster in their relations to the well-being of men. Mr. Ellis said that a few days ago he had been asked to name a premium for insuring a floating lighthouse of peculiar construction, circular form, prodigious strength, and large dimensions, proposed to be held by a chain of immense length and strength, at least twenty miles from land, in deep water, at the entrance to the English Channel. The ordinary lighthouse on the headland or on one of the cluster of rocks was frequently undistinguishable, or seen only when extrication from danger was no longer possible. The judge, said Mr. Ellis, like the lighthouse on the promontory, surrounded with terrors, while he held out his warning hand, cried aloud, "Profit by me at a distance, steer by me, but approach me not. I am the beacon erected on the rocky shores of life, and my embrace is awful, sometimes deadly." The schoolmaster was the floating lighthouse at the entrance of the channel of life. "Approach fearlessly," said he, to the inexperienced and bewildered little mariner: "comfort, guidance, encouragement, and confidence, are the only influences useable by me, and you shall be free to depart when invigorated and enlightened, on either tack, surveying through your glass, in the remote horizon, the light glimmering from the judge aloft on the

promontory, and contemplating with reverence, unmixed with apprehension, the terrors with which he is begirt, humbly but hopefully holding on the course that will conduct to your post of destination." The lecture having now come to a close, Mr. Ellis added that it would be difficult for any one in a single lecture to give an adequate idea of so important and extensive a subject as the one on which he had just treated. But he trusted he had said enough to stimulate young teachers there to whom the subject was new to engage in its study with the design of imparting instruction in it to the children about to be committed to their care. He hoped, also that those teachers who had already paid some attention to the subject would consider that he had offered reasons for their being more careful, if possible, that none of their pupils should leave school unprovided with instruction on matters so vitally affecting their well-being. To the principals of training-schools, also, and to those gifted men who, although not directly engaged in school work, were showing their appreciation of its importance, he appealed with confidence that they would use their influence not to suffer the schoolmasters to be surpassed by military men, but would endeavour to have them so provided with intellectual and moral weapons, and so drilled in their use, that ignorance and vice, let the iron plating in which they were encased be ever so strong, shall be unable to withstand their well-directed assaults.

ST. PAUL'S CHURCH AND NATIONAL SCHOOLS, CLERKENWELL.

ABOUT a year ago premises were secured in Compton-passage for the purpose of a school-church, to meet the urgent necessities of the very dense population in that neighbourhood. The Rev. R. Maguire, witnessing the rapid progress of the work in Compton-passage, and having been informed that the Board of Governors of the Charterhouse were renewing the leases of their estate in this portion of the parish, thought it a favourable opportunity to apply to that body for a site for a new church and schools. The memorial was favourably received, and a piece of ground, 215 feet by about 90 feet, was set apart in Allen-street for that purpose.

On this will be erected the church shown by the accompanying engraving. It is to accommodate 1,500 persons, and the schools will contain

300 children. The church is arranged with a nave 60 feet in width, under one large roof; south porch; chancel, with polygonal apse, and a tower at the west end 122 feet high. Its construction is to be of brick externally and internally: the jambs and labels of windows and doors, arches, quoins, and gables, are to be of stone. The schools are to be faced with red bricks, with stone labels and dressings. The boys' schoolroom is 7½ feet by 40 feet, and the girls' schoolroom of the same dimensions, and 18 feet high. The classrooms are 24 feet by 14 feet. The play-grounds are 100 feet by about 30 feet. The architect is Mr. W. P. Griffith, F.S.A.

HASTINGS.

REALLY there is not a more interesting spot on any part of the English coast than Hastings. Nearly a thousand years ago, at any rate, money was coined there, and is still to be seen; and how long previously the site may have been occupied by the Saxon Haestingas we need not attempt to settle. There was a castle here before William the Norman came to fight his battle with Harold; but William enlarged it, and part of his work, or that of Earl Robert, who received the castle from him, is still to be seen,—much more, indeed, than some of the guide-book writers fancied;—the staircase turret of the church, for example, with its herring-bone work, and the remains of a postern on the higher ground above the dyke, which shows how the gates were secured with a strong wooden bar, which, when not in use, was pushed back into a space left for it in the thickness of the wall. On one of the reveals of the postern is discoverable a "mason's mark" common in Norman and Early English work. Amongst the loose stones near the custodian's lodge, where Early English work appears to have been reapplied, other remnants of the Norman castle, in the shape of a capital or so, may be seen. The views from the castle are superb, and not less so is the appearance of the Castle Hill and its crowning ruins from the town. The greatest care should be taken to prevent injury to this effect: yet some houses are being carried up which will materially interfere with it on the St. Leonard's side. A town of this kind should have a committee of preservation and adornment, ever on the watch to effect improvements, and prevent unwise steps. We have noticed the new buildings in Hastings from time to time as they were commenced. Trinity Church is not yet finished,

especially at the east end. The flatness of the exterior of this church, through the tracery of the windows being nearly on the same plane as the walls, is very disagreeable. The extension of the town is marvellous. St. Leonard's, the work of Mr. Burton, and once at a distance from Hastings, is now joined to it, and the whole presents a range of sea houses only to be paralleled at Brighton.

Round about, inland, are two or three large modern houses of Mediaeval aspect, seen in the charming ride to the little church in the wood at Hollington, dedicated to St. Lawrence. This is at any rate a thirteenth century building, beautifully situated amongst trees, and recently damaged by the slavers; the more to be regretted as the campanile is peculiar. The church has little to interest within: some rude seventeenth century carving, against the east wall, were placed there by the present incumbent. The font is built into the north wall of the nave, so that we did not notice what we were told on the road, returning, that it is a heptagon, of which form there are but few examples in England.

All Saints' Church, bold and massive in its parts, and placed high up on the side of a hill, adds much to the beauty of one entrance to the town.

The place where William of Normandy fought Harold, and so came to be called *De Bello*, then *Battaille*, *Battail*, *Battel*, and now "*Battle*," is about seven miles from Hastings. Everyone knows of *Battle Abbey* as a place to be seen when at Hastings, but many are unaware of the beauty and interest of the ruins, apart from their connection with an event that placed William on the throne and changed the current of English history. It always seems to us a great mistake, by the way, to speak of this event as the conquest of England by the Normans. Edward the Confessor, who had a strong predilection for the Normans, sought to secure the succession for his kinsman, William Duke of Normandy, in spite of Godwin Earl of Kent, whose daughter he had married; but Harold, Godwin's son, the king being dead, usurped the throne. William asserted a promise of the crown by the Confessor, showed a connection by marriage (as Harold did) with the royal family, and had a strong party in England in his favour. It was a struggle then between two kings, England being divided against herself. However, we are not writing history. The writer of "*Knight's Excursion Companion*" says, "The present abbey is not the building which William commenced. No portion of that remains. The ruins that still exist are all of some centuries later date." But this is not correct. Considerable portions of the Norman structure remain, including a lofty boundary wall with buttresses, a range of vaulted chambers, and some isolated arches and piers not far from the Refectory. The latter is a noble Early English apartment, called 154 feet long and 35 in breadth, with beautifully moulded lancet windows, some of which are divided in their height by a transom, a rarity in windows of this period. At the south end, the exterior of which by the way is very noble, some Norman work is observable. So, too, at one end of the entrance gateway, which is itself one of the most extensive in England. It is mainly of the Decorated period (first half of the fourteenth century), and has some exceedingly handsome deeply sunk panelling, or rather arched, above archway. The underground story of the church, exposed to view some few years ago, is of the thirteenth century.

It is to be wished that those who desire quietly to study these interesting ruins should be allowed to do so. Free access to the abbey ruins and grounds is granted one day in the week (Monday); tickets being obtainable without charge at the bookseller's nearly opposite; but the way in which visitors are compelled along in droves under the guidance of mere bores, equally obstinate and ignorant, is anything but satisfactory.

The parish church of Battle was founded in the beginning of the twelfth century, when it was discovered that the monks had not time to attend to the spiritual wants of the parishioners. Externally, the chief features are a massive Perpendicular tower and an Early English clerestory. Within, however, remains are seen of the Norman church, especially an arch to the chancel in the south aisle. The font is late Norman, supported on a central and four outer shafts: the guide-book says there were originally nine, but this is erroneous. Amongst various brasses and other interesting memorials is a large altar tomb of white marble, in memory of Sir Anthony Browne and his first lady: it is of Italian design. Some

small columns, which divide the sides into three panels, and the plinth, are beautifully carved, displaying Raffaellian ornaments, while some angels' heads and small figures introduced in the panels are but coarsely and ignorantly executed. Sir Anthony Browne, to whom the abbey was granted after the dissolution, died in 1519. In the north wall of the nave should be noticed a small lancet window high up, the reveals of which are played to give a view of the chancel, the use of which, connected locally with lepers, does not seem clearly understood. There are many other things to be looked at, as there are in the abbey and at Hastings. Want of time, not of matter, brings our memorial of a more than pleasant day prematurely to an end.

THE STRIKE.

It seems that we can no longer speculate upon the time or manner of an end to the dispute which is yet maintained in the building trades. We abandon hope of advising where each effort at conciliation and explanation seems to result in greater animosity and entanglement. We chronicle week by week certain statistics, slightly varying, and to be followed by others, whence no inference can be drawn, save that of the gloomy future for all parties—the only issue that can be called probable. During the week there have been several efforts at adjustment of the difference, both by the masters and the masons, and the masters and the general body of men represented by Mr. Ayrton, M.P. Each effort, however, as we have said, has, after the first approach, been followed by a more considerable recoil.

First, Mr. Ayrton had attended the Executive Committee of the Masters' Association on Friday in last week, and presented the following proposition on behalf of the bricklayers, carpenters, plasterers, &c.:

"1. The 'declaration' is to be withdrawn, and those who have already accepted it are to be released from it.
2. There will be no objection to work with those who have accepted the 'declaration' in a peaceable and orderly manner.

3. It being alleged that the rules of the societies contain provisions contrary to law, the committees of the societies are ready to furnish to the master builders a copy of the rules, in order that they may take counsel's opinion upon them, and are willing to modify them in committees.
4. The workmen will work in strict conformity with the law."

In reply to some observations by the chairman of the sub-committee who received Mr. Ayrton, he stated that his application and proposition must be understood as on behalf of certain workmen, out of employment, at issue with their masters, and not on behalf of the United Trades' Conference. The sub-committee informed Mr. Ayrton the third section of his proposition was imperfect, and would practically be inoperative for solving the difficulties, inasmuch as there was no arbitration proposed; and that the precedent condition of any articles of agreement must be the public withdrawal of the strike at Messrs. Trollope's. Mr. Ayrton stated he would report the interview to the parties he represented, and communicate further with the secretary. Upon report of the sub-committee, the Executive Committee passed the following resolution:—

"That Mr. Ayrton be informed that the Executive Committee of the Central Association are of opinion that the most practical method of settling the differences which have arisen with the workmen in the building trade would be, firstly, the withdrawal of the strike at Messrs. Trollope's; and, secondly, the revision of the rules and by-laws, and the abolition of various trade practices (within the metropolitan postal district) as shall be considered by some eminent impartial authority to be contrary to the spirit of the law of the land, and that, in particular, all rules and practices should be removed which interfere with the freedom of workmen in preventing members of trades' unions from working with other workmen."

This is similar to what was stipulated by the masters previously, but with additional words referring to the strike at Messrs. Trollope's. As that was the starting point of the dispute, and it had been recently asserted by the men that the strike would not be withdrawn, the masters may be excused for stipulating for such withdrawal, though they would have stood with the public less in the position of making demand after demand, had they earlier put the stipulation into words.

The Executive Committee again met on Tuesday last, when Mr. Ayrton submitted certain amended propositions, together with a long explanatory letter. These amended propositions were to the following effect:—

"1. That the 'declaration' is to be withdrawn, and those who have accepted it are to be released from it.
2. There will be no objection to work with those who have accepted the 'declaration' in a peaceable and orderly manner, and the members of the Workmen's Conference will use all their influence with their fellow-workmen to effect this object.

3. It being alleged that the rules of the trade societies contain provisions contrary to law, the commit-

tees of the societies are ready to furnish the master builders with a copy of their rules, in order that they may take counsel's opinion on them, and are willing to modify them in committees, so far as the masters' counsel is confirmed by the legal adviser of the workmen, and, in other respects, so far as the several committees see that a modification of their rules is necessary.
4. The workmen will work in strict conformity with the law."

5. Should any differences arise between the master builders and their workmen upon the legality of trade practices, or of the rules of the trade societies, both parties will afford every facility for submitting the same to the decision of the Court of Queen's Bench, and will do their best to give effect to its judgment."

To these the Executive Committee returned the following reply, in the shape of a resolution:—

"That the Executive Committee of the Master Builders' Association regret that the proposition submitted this day by Mr. Ayrton on the part of the operatives does not embrace the withdrawal of the strike at Messrs. Trollope's, and also that the proposal creates (by the suggestion of protracted litigation, the simple plan proposed on the 7th inst. by the Executive Committee, of referring to some eminent impartial authority of such rules and practices of trade societies as are opposed to the spirit of the law of the land."

Mr. Ayrton's letter of the 11th regretted that the masters should confound together "two propositions which are totally distinct,"—viz., that of the withdrawal of the strike at Messrs. Trollope's, and that of the general conduct of the workmen in subordination to the law; and the writer mistakes for an act of the workmen of the Messrs. Trollope, that which was an act of the Conference, wherefrom followed the necessity for similar combination in defence, and the requirement as to the legality of the means used. It is necessary that whoever brings his services to bear, should, in the interests of both parties, consider the points in the dispute.

We were right in supposing that a renewal of negotiations would be made between the masters and the masons. At the masters' meeting before mentioned, in last week, they sent in amended propositions as under:—

"1st. The masons to resume work upon the same terms as before the 'look-out'—ten hours' pay for ten hours' work."

2nd. The masters to entirely withdraw the 'declaration.'
3rd. Should the masters have any grievance to complain of, the masons respectfully assure them that they will be ready to meet them at any time thereon."

4th. The masons will not object to work with those of their own trade or others who may have accepted the 'des' declaration.'

5th. The masons will resume work in conformity with the laws bearing on such agreements; &c. to be considered in accordance with the laws of the land."

The deputation, consisting of Mr. Perham, Mr. Hammett, and four members of the committee of the London Lodge, explained each clause of the proposition, their meaning of the first in fixing the period before the "look-out," that their society did not recognize the strike at Messrs. Trollope's, and that fixing any prior date to the "look-out" would identify them in some degree with it. They strongly disavowed any other meaning on the 2nd clause than that all trades should be exempted from the "declaration." On the 3rd clause they were willing to make it definite that their rules and by-laws should be examined in a month after resuming work. They contended that it would be inexpedient in the present state of excitement, to ask the men to meet and confer on their laws; that if any of their laws or by-laws were found illegal, they would ask the Central Society to consider the subject forthwith, and alter them accordingly. On the 4th clause, it was distinctly stated, after discussion, that Messrs. Trollope's should be considered an open shop, and that the masons' society should not exercise any influence to prevent men taking work under Messrs. Trollope. On the fifth clause, it was stated that the masons intended to observe the laws honourably.

The deputation seemed unwilling to consent to an arbitrator or umpire, as suggested by the resolution of the Executive Committee on the 29th ult. After some discussion on the subject, there seemed to be partial willingness to yield this point, and Lord Brougham and Lord Lyndhurst were named. The opinion seemed in favour of three rather than one neutral person to determine between masters and workmen in case of differences of opinion.

The deputation asked to adjourn the meeting, in order that they might consult their brethren as to the appointment of an umpire or umpires, and the meeting was accordingly adjourned until Tuesday. On that day, however, amended resolutions, passed at a general meeting of masons at Wilcock's Rooms, Lambeth, were submitted. These resolutions are as follow:—

"That this meeting is of an opinion that the terms of negotiation already submitted to the Central Association of Master Builders be considered final; and, further, we do not agree to refer our by-laws to any third party or parties."

That it is the opinion of this meeting that if the Central Association of Master Builders do not uncon-

ditionally withdraw the 'declaration' at their meeting tomorrow, the U.K. is the masonry, seek no further communication with them, and that all further communications cease."

These resolutions were rejected, and in their reply the Executive Committee state that—

"They regret that the operative masons should decline to be bound by the reference to an eminent impartial authority for the revision of the rules and customs of their trade societies, and making them conformable to the laws of the realm. And the committee would further point out to the masons that the entire withdrawal of the 'declaration,' as demanded by them, would admit the workmen of all other trades, without any guarantee either that the strike at Messrs. Trollope's was withdrawn or that the objectionable rules and practices of other trade societies would be modified."

The committee then adjourned for a fortnight.

To this juncture has the matter been brought. The masters found on Tuesday that 10,740 men had resumed work under the "declaration," and that in addition 2,100 had entered on establishments in which a shop rule embodying the spirit of the "declaration" is adopted. We have received a letter from Mr. Moxon, in which he shows that his returns relate to the men employed on the whole of his London works, not exclusively on the main drainage, and offers to submit to us the pay-sheets from which his returns were taken. The number of men which the Conference still diminishes, as appears from the official return of Monday, of the recipients, and amount paid. Condensed, it is:—

Trollope's men	250	0	0
Masons	353	71	4
Bricklayers	610	123	0
Carpenters	1,765	303	12
Plumbers	630	126	0
Painters	146	27	0
Woodmen	169	33	16
Stone sawyers	60	13	16
Labourers	2,918	123	12
5,768	£1,171	0	0

Whether the diminution is to be accounted for chiefly from the fact of men going to work in shops where the declaration is required, or otherwise, cannot be certainly stated. It is probable that the declaration, if not withdrawn, will gradually fall into disuse; but the masters may at the same time have a sufficient number of men, and the results of the strike be felt seriously during some considerable period after work is ostensibly going forward on the old system.

Certain "Suggestions for Settling the Strike" have been printed. They are to the effect that the "Digest of the Law," by Lord St. Leonards, of which we have already given the essential heads, should be hung up in every shop, and under it the following memorandum:—

"The law which binds both classes is set forth in the above digest. The masters accept the obligations without reserve, and the men themselves accept it both in letter and spirit. They have set forth the provisions of the Acts of Parliament in order that every workman may be informed of the law which binds him. The law itself, the masters find, lays down the rules both for them and for their men; they, therefore, have withdrawn the 'declaration' originally required from the men, and substitute this paper. It also will bind the workmen who have already accepted the original declaration, as all will be placed on the same footing. There will be no distinction between those now at work and those who may resume work. The masters, in the spirit of peace and goodwill, require nothing of the men but the same obedience to the law as they themselves are ready to pay. The law itself, and nothing more, but nothing less, shall become the *Rule of Trade*.

No signature will be required of the men, nor any counterfoil with numbers maintained; their liberty of quitting their employment will remain untouched. The simple object of the masters is, that according to the law, they and their workmen shall be free to make what agreements they please, without the interference or coercion of any other persons. With that object the acceptance of employment, where this paper is hung up, will be considered to amount to an admission by the workman that he is not at that time, and to a declaration that during his employment he will not become bound to, or a member of any society or body whose rules or customs do or would deprive him or his fellow workmen of their free liberty to accept and continue, or to relinquish employment upon such terms as they think fit.

Freedom of action will place every man according to his merit, but the motto of both men and masters should be 'LET LABOUR BE UNSHACKLED.'

We are disposed to think that this memorandum may be adopted by the masters.

Reports of difficulty as to the contracts of important works continue, and correspondence has passed respecting the Cancer Hospital. The truth of some of these reports is disputed on the other side. Cases of intimidation are still brought to the notice of the magistrates. Since the last refusal of the men relative to their laws, there has been an increased disposition on the part of the executive of the masters to revert to the "declaration"—however, eventually, to be withdrawn. We are disappointed that this latter result has not been attained through the interviews which have occupied so much time. We have said all that we need say now on the present difficulty and the general subject; but we find one of the true

friends of the working classes, Lord Brougham, on Tuesday, at Bradford, showing the inevitable tendency of such disputes as that which is now going on, almost in the words which we used, and only giving force to the points regarding the value of capital to labour, and the risk of offending against the law. His observations will be found quoted in our leading article.

CORRESPONDENCE ON THE STRIKE.

No one can be more sincere than myself in the desire to behold the termination of the present unhappy dispute in the building trades, but it is to be feared that the ill feeling engendered by the recent course of events will not tend to hasten that desirable result, especially when the men are so injudiciously supported by such as the Rev. E. A. Verity and others.

The latest proposal for the settlement of the dispute is, that the "declaration" be withdrawn on the part of the masters; that the "nine-hours movement" be abandoned, at least for the present; and that the rules of the trades' unions be revised, and all "illegal" clauses expunged. Now, those who have watched the progress of this disastrous struggle, must be fully aware that the "declaration" was solely a measure of defence against the aggressive measures which occasioned it, and that it is not aimed so much at the nine-hours movement, as against the mad and intolerable dictation of the executive committees of trades' unions in general.

But supposing the "declaration" to be withdrawn, and the nine-hours agitation abandoned, how about the revising of the rules of the trades' societies? This is where the real difficulty will commence. The unions will not object to everything *illegal*, or contrary to the laws of the realm, being expunged from their rules, because the retention of those clauses would endanger their very existence; but, after a calm perusal of some of the rules, I do not think there are any which would warrant the interference of the Legislature. No matter how shortsighted, ridiculous, or absurd any of the rules may be, yet if any person or persons *voluntarily* agree to be bound by them, they have a perfect right to do so; but they have not the least shadow of a right to enforce these rules on those who refuse to join their association, or to intimidate, no matter by what means, others into joining them. This is the basis of all the trouble, because they *will* by a thousand means intimidate the peaceable and quiet non-society man into joining them.

None but working-men know the sufferings they themselves have to endure, the often hopeless search after employment, and the distress of mind consequent on disappointment; and when these evils are aggravated by the tyranny and jealousy of those belonging to trades' unions, when they "black" their fellow-workman, avoid him in the street, ban him in the shop, and point their reviling fingers in scorn at him whosoever they may meet him, is it any wonder that the poor fellow should in sheer desperation join the very union whose principles he despises at heart, and whose pernicious practices he curses in his soul?

This is wrong, very wrong; and nothing will ever justify the infliction of this cruel tyranny on the part of the unions. If ever the "document" is to be withdrawn, it is to be hoped that, for the sake of those who resumed work under it, for the sake of those who remained stanch by the employers, whilst their mates, either from inclination or fear, stood aloof,—and for the sake of future peace, the masters will insist that no non-society man be persecuted, or "marked," for resuming work under the "document." This is but an act of justice, and ought not to be withheld.

As to the final settlement of the dispute, it is simply a question of time; and if by any means that time could be anticipated, it would be the better for all concerned. JOHN PLUMMER.

The present position of the opposing parties is in no degree changed from what it was at the commencement of the strife.

The strike, as against Messrs. Trollope's, continues, and according to the returns published by the United Trades' Conference, 504 are expended weekly to support those called out from that firm. The masters professed to have seceded from the Conference, and told the masters that for the future no masons would appear on the Conference list. Two such lists have since been published, and in both the masons appear as before.

It is asserted, in some of the daily papers, that

the nine-hours is given up, and that the rules, &c. are offered for revision: if it were so, it would indeed be matter of gratulation; but how stand the facts?

The masons suggest an alteration, but decline to enter into any arrangement for the purpose, and curtly close their "negotiations" by declaring that they will not even negotiate unless the "declaration" be withdrawn at once, and unconditionally, and from all trades.

The Conference send a Member of Parliament with suggestions, which the Member is asked to put into a tangible shape, and he returns with a scheme which throws the settlement of differences into such a shape as to insure a continuance of litigation for all time.

Nothing could be more desirable for all parties, nor more beneficial for the men, than that the rules and ordinances should be revised and put into proper order, so as to free the workmen from the oppression to which they are subjected by having their trade and benefit societies mixed together, and nothing would more readily bring the whole strife to an amicable conclusion. At present, however, no practicable scheme has been brought forward; and the simple and equitable suggestion of the masters, to submit the rules, &c. to the examination and revision of some eminent impartial authority, has been rejected.

In the meantime, the various shops are filling up with competent workmen, who, with London advantages, will soon become equally skilled with the best of those who remain out. Up to last Saturday, 10,714 had accepted the "declaration" altogether, and 1,800 more as a shop rule; and a strong *esprit du corps* is rising among those so situated, and they are pressing the masters by no means to think of doing away with the "declaration."

It is perhaps to be regretted that the "declaration" is so framed as to make it difficult for some of the society men to accept it; but in cases such as this there must be some difficulty, and it would be better that some modification should be offered, or some means of adjustment proposed, before so large a number of deserving men be thrown out of their winter's work, and condemned to so severe a penalty, at the dictation of those who have so signally exposed their want of generosity, by incurring the defeat of their movement, and the terrible discomfiture of their followers.

The Conference, be it observed, consists of a set of delegates sent from the managing committees or councils of the several trades, charged with the duty of carrying out the nine-hours movement, and having no other duties and no other powers: so that it is by its constitution incompetent to enter into any engagement which would be binding on the several trades' societies,—and whatever it might undertake, might be at once and fairly repudiated by the trades themselves: hence any mediation offered by this body would be *ab initio* worthless.

The committee of the Central Association at once consented to see the masons, because they were their own workmen; and they would on the same principle be ready to see any duly authorized authorities of any of the several trades; but it is more and more manifest that the interference of third parties and the intrusion of injudicious advice tend to no good; and I much fear that the intemperate article of a contemporary, last week, did more harm than can soon be set right.

Do not let the numbers be lost sight of;—upwards of 12,000 are already at work.

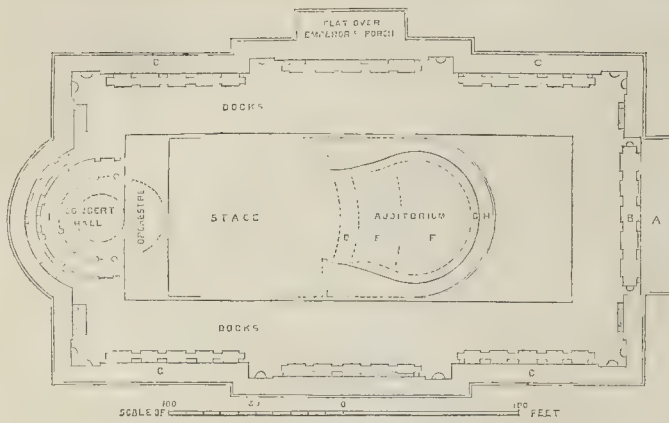
If the masters' suggestion were accepted, and fairly carried out, the society men could then take the "declaration" even as it is.

A CONTRACTOR.

METROPOLITAN BOARD OF WORKS' REPORT.

THE annual report of the Metropolitan Board of Works has just been published as a Parliamentary paper, and contains an elaborate account of their proceedings during the past year. In detailing the steps they have taken with reference to the main drainage of the metropolis, they revert to the transactions which occurred in connection with this question shortly before the close of the period comprised in their last report, and they give a summary of these works with which our readers are already acquainted.

The works executed by the Board during the year ending March 25, comprise various lengths of new sewers, making a total of 6,981 feet, thirty-four side entrances, sixty ventilating shafts, and a number of junctions, flaps, and gullies. The total cost of these, with that of the cleansing of 166 miles of main sewers, repairs, and the deodoriza-



SKETCH PLAN OF THEATRE FOR RIO DE JANEIRO.

tion of the sewage in main lines, with other incidental works, make the total expenditure on sewerage works 46,302*l.* 9*s.* 8*d.* This expenditure is exclusive of the sums paid for salaries and wages for attending the flaps and outlets of the main sewers. Plans for the construction of 34 miles 4,271 feet of sewers had been submitted to the Board by various vestries and district Boards.

Notices have also been served, and other steps taken, for carrying into effect the powers obtained for opening up a direct line of thoroughfare extending from the junction of the East and West India Dock roads to Victoria Park, so as to render that place available to a much larger section of the inhabitants of the eastern portion of the metropolis than is now the case.

The rules of the Building Act for the construction of buildings are enforced by the supervision of fifty-six district surveyors, subject to the appointment and control of this Board. These surveyors make monthly returns of all notices and complaints, works supervised, and fees charged and received within their respective districts. These returns are required by the statute to be examined and audited in the office of the superintending architect; and, from the annual abstract and report, it appears that during the years ending 31st December, 1858, fees to the amount of 21,732*l.* were received by district surveyors in respect of 15,500 works supervised; and that the expenses of their offices, which they are required to keep, were 4,632*l.* The works and fees included in the returns of 1858 exceed 50,000 entries. From these returns it also appears that the probable number of new buildings erected within the metropolis during the last three years exceeds 20,000, exclusive of additions to buildings.

Between the 25th March, 1858, and the 25th March, 1859, the receipts of the Board amounted to 159,886*l.* 4*s.* 7*d.*; and their payments to 185,290*l.* 16*s.* 11*d.* The moneys owing to the Board on the 25th March, 1859, in respect of assessments by precepts on vestries and district Boards, outstanding amount of improvement rate, contributions to sewerage works, &c. was 98,784*l.* 14*s.* 2*d.* Besides this, they had a general cash balance in hand of 28,998*l.* 12*s.* 6*d.*; and also the sum of 15,881*l.* 16*s.* invested in New Three per Cents. for the repayment of mortgage debts. Their debts and liabilities at the same date, including the amount of the mortgage debts and other special liabilities of the former Metropolitan Commission of Sewers, amounted to 458,048*l.* 7*s.* 1*d.* The above is exclusive of the moneys received and expended in respect of the Covent Garden approach, Southwark and Westminster communication, and Victoria Park approach improvements.

The Board, finding their present premises in Greek-street insufficient for the transaction of their business, found it necessary to seek another situation for the erection of offices, which they had found in the site of Berkeley House, Spring Gardens. They purchased the existing lease for the sum of 500*l.*, entered into an agreement with the Commissioners of her Majesty's Woods and Forests for the grant of a new lease for ninety-nine years, at a rent of 500*l.* a year until the 10th October, 1871, and of 350*l.* during the

remainder of the term, and had accepted a tender of Mr. George Myers for the execution of the requisite works for the sum of 14,829*l.*, and the building is now in course of erection.

MEDALS FOR THE HEROES OF PEACE.

THE recent presentation of a medal to a conductor of the fire-escape of the City district, for saving the lives of fourteen persons from death by fire, is a good sign.

It is curious how little thought is given to those upon whom we depend for the safety of our lives and goods during the hours of sleep. We have honours, decorations, and payments made to those who risk their lives in defending their country; but it is a fact, that to those who save many lives—who, by their scientific, literary, or other ability, promote the best interests of the nation,—but little attention is paid by the State.

Brindley, the originator of canals; George Stephenson, the originator of railways, which have so vastly increased the resources not only of Great Britain but the world at large; Watt, Dr. Johnson, John Howard, Sir Isaac Newton, Jenner, and a multitude of others,—useful as their works have been, and whose memory has been held in reverence by the nation, were but little noticed by the governments of their days: they were not rewarded like the warriors.

The fire brigade risk their lives almost daily. If an accident happens in connection with some great work, it is a matter to make us proud of our fellow men, to note how disregardful they are of peril. In case of explosions in coal mines,—when suffocation takes place in wells or sewers,—when shipwrecks, drowning, and other disasters happen—when fever and pestilence rage—men bravely meet the occasion. Is it right that these should have their services passed by without recognition?

Various societies have endeavoured to supply the deficiency in some lines, but the acknowledgments in this way made are but little thought of in comparison with even “decorations,” which might be cheaply bestowed for civil services by the State.

FOREIGN RAILWAY WORKS.

THE plans and specification of the new terminus, to be built instead of the actual one of the *Chemin de Fer du Nord*, have been ratified. Next season the works are to be commenced. The new station is to be ready for public use before the end of 1861. Six million francs are to be spent on it, and charged to the account of the original group.

On the Midi lines, the portion between Tarbes and Mont-de-Marsau will be open for public traffic this month (September), unless the rains prevent it.

An inquiry, which is to last a month, dating from the 25th August last, has been opened in the Seine-Inférieure, about the projects for a railway from Rouen to Amiens. Three surveys have been presented, upon which the Municipal Council will give a decision.

The opening of the Nouzon section, near Abbeville, on the Ardennes Railways, took place on the 14th September.

A precaution has been taken by the directors of the Paris and Soissons Railway. They have caused the mayor of the latter town to proclaim to the inhabitants that this railway works being obliged to be commenced before the crops could be cut next year, the proprietors of the lands included within the limits “nicked out” by the engineers should neither cultivate, nor prepare, nor manure the same.

Algeria has been exceedingly unfortunate with regard to the spread of railway civilization: perhaps, after all, their trade and commerce are not yet ripe enough to call for rapid means of communication. The Minister of Algeria and the French colonies has addressed a despatch to the *préfet* of Algiers, ordering that the works shall be resumed between Blidah and Boufarick, while waiting for a new law by which alone concession can be given of railways for that country. A credit has been obtained for 600,000 fr. to be employed on the works. Coolly enough, the *Akhay* says,—“On pourra utiliser la main-d'œuvre civile.” A futile attempt having been made to construct railways by military men and soldiers, “navvies” are permitted to work upon Algerian railways.

DESIGN FOR THEATRE IN RIO DE JANEIRO.

THE award of premiums to the authors of designs for the theatre proposed to be built in Rio de Janeiro has been already mentioned. We understand that the design which received the first premium will probably be carried out, with the addition of 2 per cent. only on the outlay; but no steps in the matter will be taken for at least two years.

We have engraved a perspective view of the design, by Messrs. Green & Louis de Ville, to which the second premium was awarded. The edifice will occupy a magnificent site at the head of the *Praca d'Acclamação*, a square exceeding, in front of it, more than a quarter of a mile; and the design, if carried out, would cover nearly four times as much ground as that on which the new Royal Italian Opera at Covent Garden stands, while its height would be nearly 100 feet above the ground. The diameter of the pit is 75 feet, or 15 feet wider than her Majesty's in the Haymarket, 13 feet wider than Covent Garden Opera-house, and about as much larger than La Scala at Milan. There are five tiers of lofty boxes, and in front of the two grand tiers runs a “balcon.” The stage is immense, and the arrangements are adapted for the grandest displays. The whole claims to be fireproof. On either side of the stage are suites of dressing-rooms, green-rooms, &c., intended for two complete sets of opera and ballet performers; while at the rear of the building is a concert-room, with its own staircases and refreshment-rooms: of this we will give a view hereafter. On the level of grand tier there is a suite of refreshment saloons 170 feet in length, opening on one side through large French casements to the arched portico, and being approached on the other from the grand staircase 20 feet in width. There are also numerous other entrances and staircases for the use of the public, designed with a view to prevent the recurrence of those panics which occasionally happen in crowded theatres. The emperor has likewise a private entrance communicating with suites of rooms for state and private use. He has also private and state boxes for himself and suite. The design is Italian throughout. The lower part is entirely surrounded with an ample covered promenade, protecting all the entrances from the sun and rain, above which is a deeply recessed arcade defending the interior from the intense heat of the climate, while above all rises the upper part of stage, with its carpenters' shops, &c., hovering above the rest of the building, and its flat roof affording a position for viewing those grand gala displays which are so often witnessed in the *Praca d'Acclamação*.

The interior was proposed to be richly decorated in every part, and in the interior are large quantities of white marble and rich sculpture. The whole would cost not less than 300,000*l.*

REFERENCES TO PLAN.

- A. Flat over the public carriage porch.
- B. Arched portico.
- C. Flat over arched footway.
- D. Orchestra.
- E. Stalls.
- F. Pit.
- G. Balcony.
- H. Boxes.
- I. Gallery to concert-hall.

DESIGN FOR THEATRE IN RIO DE JANEIRO, TO WHICH SECOND PREMIUM WAS AWARDED.—MRS. GREEN AND DE VILLE, ARCHITECTS.



TRADE ASSOCIATIONS AND FRIENDLY SOCIETIES.

THE trade associations and friendly societies or clubs, formed in more recent times than the guilds we spoke of last week, were more useful in those days when the roads were not so good as they have become since McAdam's labours,—when travelling by the stage-coach was an expensive affair, and there was no conveyance by railway, at the rate of a penny a mile,—than they are now. In each town, the members of the different trades had separate clubs, which, in some measure, resembled the ancient guilds;* and these clubs throughout the country had such an understanding with each other, that on the presentation of cards or other credentials, those who wandered in search of work were kindly received in places where their brother craftsmen dwelt. If there was a vacancy in the place, in the particular line to which they belonged, they were put in the way of applying with a view towards filling it. In case that could not be done, it was often managed that the traveller should have two or three days' or perhaps a week's work; if not, aid was afforded in the shape of free lodgings, provisions, and a supply of money, in proportion to the number of men of that trade who were at work in the town. This enabled them to reach another station, without the necessity of applying for assistance at the workhouses or elsewhere. In cases where the help was by necessity small, there was a kindly feeling shown which encouraged the traveller on his way. By means of this aid, when work became scarce in certain localities, when manufactories were burnt down, or men did not fall into regular employment, and in other emergencies, those who had been admitted into the trade clubs drew their cards, took to the road, and sometimes the kingdom was travelled by this means from one end to the other.

There was also provision made in connection with the clubs for support in sickness and assistance to survivors at the time of death. Owing, however, to the want of proper calculations of the risks, those societies often became bankrupt, and men who had subscribed for years were left in their old age without that provision which they expected they had made in the time of their strength.

The payment in connection with these clubs ranged from a shilling to one shilling and threepence a fortnight. This was applied to the relief of tramps, the support of the sick, and the burial of the dead. If members were thrown out of work, owing to no fault of their own, but in consequence of the slackness of trade or strikes, help was given for a time: in some cases express sums were levied for funeral and other purposes. Sometimes these funds accumulated to a large sum. No attempt, however, was made to place the money at interest, but it was deposited in a strong chest fastened with several locks, of which three, four, or more members of the society kept the keys. It often happened, owing to the causes above mentioned, that the fund was exhausted, and it became necessary to resort to borrowing in order to meet the regular expenses.

It is asserted that (say fifty years ago) nearly all the best workmen of the regular trades belonged to such societies, and only a few men, of indifferent character and little skill, could be found to work under masters who did not agree to the regulations of the men as regards the amount of wages, the number of apprentices, &c. It was the custom, if a master employed a man who was not connected with the trade-club, for the whole shop to strike, and turn out. For a time in these cases, the men remained in the neighbourhood endeavouring to get work, and were supported by the society. If they did not succeed, and the masters did not come to terms, the men went on tramp, generally leaving their families ill-provided for, and sought for employment at a distance.

As time passed on, in many trades in the case of strikes the masters employed such men as they could get, and taught numerous apprentices, and in many cases large establishments grew up, where good work was produced, at fair prices, which were independent of the members of the clubs. The increase of workmen who did not belong to trade societies and other causes led to the establishment of sick and burial clubs, formed of men of all crafts, in addition to those of men of the same trade. Besides these, lodges of "Odd Fellows" "Druids," "Foresters," &c. were formed, something in imitation of the Free-

maçons; and there can be no doubt that, although those clubs were almost in every instance held at public-houses—a condition always evil, and which sometimes led to excess,—these combinations had a beneficial effect on a large portion of the working classes, particularly at a time when education was not so general even as it is at present. Persons of bad and notoriously drunken character were not admitted, and for improper conduct members were expelled.

In the Odd-Fellows' and other lodges the various officers were elected by the voice of the majority of the brethren. These posts were considered places of honour, and created a spirit of emulation. The secret method of admission—the mysteries of pass-words—the emblems and arrangement of the lodges—the lectures of a moral tendency, &c. were not without their effect. And to a certain extent those lodges were an assistance to travellers, in the same way as the old trade societies were, for the credentials of membership caused a workman to be well received and assisted at various towns. We have read with great care the rules of several of these societies, and find that if adhered to, they could not be reasonably objected to by the masters, for they are provident and good in their intentions, and ought not to be a cause of dispute between masters and men. It should be remembered that workmen employ the best of their years and strength in toil, and that even in the most favourable circumstances, if men have large families to rear, they would not be able, but for those societies, to provide for sickness or old age. This is more particularly the case in large towns, where expenses of all kinds are greater, and the duration of life more precarious than in the country. In many manufactories and other works it is unfortunately too common a practice to get rid of men just after they have passed their prime; and then they are left with difficulty to find fresh employment. These and many other considerations should be taken into account by the employers of labour, and efforts should be made to link all into a closer brotherhood. Education is advancing the moral and intellectual condition of the British workman, and should lead to the mingling together of masters and men, on terms of greater equality than now prevail: this would be a great means of preventing strikes and divisions, which cause injury to all concerned. The trade societies might also be improved in many respects, and made safer; and the workmen should not refuse to listen to the advice of those who have long carefully, and with the best intentions, studied the financial working of those most important institutions.

On the subject of friendly societies of workmen, the Registrar recently remarked, that it is difficult to obtain returns from a large number of them, and that circumstances are in operation that often lead to bankruptcy, which is the means of driving many into the workhouse.

At 51, Threadneedle-street, a friendly society was established in the year 1820, under the patronage, as is shown by the published rules, of several noblemen and gentlemen, who allowed their names to be used as a guarantee of the soundness of the scheme, in addition to the patronage of distinguished persons. It was stated in the title-page of the report, that a capital of 20,000*l.* was subscribed: of this sum it seems only 180*l.* were paid up, and even this was afterwards returned to the subscribers. "The result," says the registrar, "was the natural course of things, and must have been foreseen: So long as the premiums were paid for deferred benefits, the present claims for sickness could be met, and the society could keep in existence. The amount of this misappropriation continued increasing with time, and the society was gradually getting into a worse condition, and on the 30th of March, 1858, the directors requested the registrar to give his advice on the state of affairs." The money in hand, about 3*l.* in the pound, was divided amongst the unfortunate members.

The registrar, in this report, has given some advice as to the conditions requisite for the safe progress of a friendly society, which ought to receive the most serious consideration from all concerned in them.

The importance of the subject will be obvious when it is remembered that in 1850 it was computed that the friendly societies of this country included 3,052,000 members, were in receipt of an annual revenue of 5,000,000*l.* and possessed an accumulated capital of 11,360,000*l.*

THE CAVE OF ELEPHANTA, BOMBAY.

SOME of the Indian journals' attention is being drawn to the fact that this remarkable excavation, which is on a small island on the east side of the harbour of Bombay, and about five miles from the main land, is fast crumbling away beneath the great spoiler's hand. The stone itself is of a mouldering nature, and many of the figures are becoming gradually buried in the vast masses of detritus which each rainy season sweeps into the caves. What is needed is a band of labourers to remove the heavy rubbish with which the caves are encumbered, and a few, during the rains, to prevent it again accumulating.

The Calcutta *Engineers' Journal* reminds its readers that the entrance is by a spacious front, supported by two ponderous pillars and two pilasters, forming three openings, under a thick and steep rock, overhung by brushwood; and the impression on reaching the interior is rendered very solemn by the long ranges of columns that appear closing in perspective on every side; the flat roof of solid rock, that seems to be prevented from falling only by the massy pillars, whose capitals are pressed down and flattened, as if by the superincumbent weight; the darkness that obscures the interior of the temple, which is dimly lighted only from the entrances, and the gloomy appearance of the gigantic stone figures, ranged along the wall, and hewn, like the whole temple, out of the solid rock. The interior consists of three principal apartments, the great temple, 133 feet broad and 130½ feet long, and two smaller temples, one on each side, which are approached by two narrow passages in the hill, one on each side of the grand entrance, but at some distance therefrom. Each of these passages conducts, also, to a side front of the grand excavation, exactly like the principal front. These two side fronts are exactly opposite to each other, on the east and west, the grand front facing the north.

The roof is supported by twenty-six pillars and eight pilasters, disposed in four rows. The pillars are strong and massive, and not without elegance. They rise to about half their height from a square pedestal, about 3 feet 5 inches each way, crowned on the top by broad bandage of the same shape. Above this rises a short, round, fluted shaft, forming about a fourth of the column, expanding towards the top into a round fluted compressed cushion, from which it is divided by a cincture of beads and leaves. This cushion supports a square plinth, on which rests the architrave, that slopes away on each side in scrolls, connected by a band or riband, till it meets the large transverse beam of rock which connects the range of pillars.

It is to be hoped the authorities will not fail to take all necessary steps to preserve this remarkable monument, the date and origin of which are very obscure.

DEATH OF MR. ROBERT STEPHENSON.

It is with sincere regret that we have to announce the death of Mr. Robert Stephenson, which took place yesterday (Wednesday) at his residence in Gloucester-square. We need not expatiate at the present moment on the history or the works of such a man, and therefore confine ourselves, in the meantime, to the simple and silent record of his lamented decease.

THE WESTMINSTER BELL.

MR. DENISON, in the *Times*, makes a serious charge against Messrs. Mears, the bellfounders, which they positively and indignantly deny. The charge brought against them is that the bell, so far from being a satisfactory casting, is "full of holes" in the sound bow; that "the holes were all as carefully stuffed as a bad tooth by a dentist, with some 'mineral succedaneum'"; [in a letter to the *Doncaster Gazette*, Mr. Denison says they were "fraudulently filled up with some cement"]; and that "to make all still safer, the bell was washed over with some colouring stuff, which the atmosphere had now removed." It is not explained how it was that Mr. Denison, before he gave Messrs. Mears their certificate, did not, or could not, distinguish the difference between the sound metal of the bell and any "mineral succedaneum" or "cement," however skillfully "washed over with some colouring stuff,"—especially since "some persons noticed this colouring as suspicious at the time." That others did not trouble themselves to follow up this suspicious circumstance is surely no excuse to him whose duty it was to see to and to certify the soundness and sufficiency of the casting. The holes in question are said to have "every external indication of a perfectly unsound casting."

THE LAST WITNESS AGAINST ILL-CONSIDERED STRIKES:—Big Ben of Westminster.

* A quarter of a century or so ago, it was the custom for them on certain days to walk in procession, dressed in regalia, seemingly a remnant of the Corpus Christi processions mentioned in the former paper.

which makes the matter still more unaccountable. Of course an official and *post mortem* inquiry will be made as to the alleged "scrofulous constitution," as Mr. Denison calls it, of the bell; but even now it is not explicitly alleged that these holes, or the foot-long cracks radiating from two of them, which were not found out "till the patient was at the point of death," and, "strangely enough, have not even yet [October 5], affected the sound," were the actual cause of any final catastrophe or "destruction of the bell."

Mr. E. T. Loebe, in the *Daily News*, we may here add, ascribes the cracking of both bells mainly to "the employment of so great a quantity of tin in the composition as to render it unusually brittle," and adds, that "for this disaster, as well as for the former one, Mr. Denison is entirely responsible." Mr. James, he says, "proved the extreme brittleness of the metal by breaking three small bells made from the same composition with very light blows in Mr. Denison's presence, at Messrs. Mears's foundry." An ironfounder, on the other hand, in the *Times*, suggests the use of coke or coal in the melting of the metal as a cause of brittleness, and advises the next casting to be prepared with charcoal, as in China and in Russia,—both of them celebrated for bell-founding.

THE LONDON AND MIDDLESEX ARCHAEOLOGICAL SOCIETY.

The annual meeting of this society was held on Thursday the 6th inst. at Harrow-on-the-Hill; that is to say, within the classical precincts of Harrow School.

In the absence of Dr. Vaughan, who was prevented by indisposition from presiding, the Rev. Mr. Cunningham, vicar of Harrow, took the chair at the meeting, which was held, in course of the afternoon, in the Speech-room.

Papers illustrative of the locality were read by the Rev. Thomas Hugo, Mr. W. D. Cooper, Mr. W. Taylor, and the Rev. Mr. Oxenham, one of the masters. Monumental Brasses, the History of Harrow, and the Registry, were among the subjects brought under consideration.

In the Statute-room were exhibited some very interesting relics. Perhaps the object which excited the most attention was the ivory chalice, out of which it was alleged Archbishop Laud took the sacramental wine on the morning of his execution.

Letters of apology for not being able to attend the meeting were read from Mr. Beresford Hope, Lord Londesborough, and other archaeological celebrities; but the reunion, although it might have derived strength from the presence of a few more friends, was satisfactory.

An examination of the church, new school chapel, and school buildings, closed the proceedings of a very agreeable day. The weather was fine, and the company included all the notables of Harrow and its neighbourhood.

SUFFOLK INSTITUTE OF ARCHAEOLOGY.

The general meeting of this society was held at Framlingham Castle Hall, on Friday, the 7th instant, under the personal presidency of Lord Arthur Hervey, the president of the Institute, who addressed the meeting on the value of archaeological studies, and their bearing on general history.

Mr. Phipson then read a paper "On the History of the Castle and the Changes that Time had wrought in the Structure." He held that though the Saxon castle existed on the spot as early as the seventh century, no visible portion of the present one is older than the twelfth century. Mr. Phipson, in a tour round the interior and exterior of the building, elucidated his observations by practical remarks on the existing remains; and throughout the day the meeting were indebted to this gentleman for explanations of the age and peculiarities of all the edifices visited.

From the castle the company adjourned to the church, when Mr. T. Shave Gowing, of Ipswich, read a paper, in which, after describing and characterizing in a few words every portion of the edifice, and pointing out the period of the erection of each, he adverted to one or two interesting points in the general proportions. This duty done, he entered into a dissertation of the various questions which had been raised, connected with the tombs of the three Howards. Incidentally, Mr. Gowing stated some facts of general antiquarian interest, as to the position of ladies on tombs, which appeared to excite a good deal of interest among the members of the Association.

Mr. Tymms read a paper, by Mr. William

Edwards, barrister, of Framlingham, on the same subjects, and involving similar conclusions. A large party then started for Dennington, a neighbouring village, when, after the Rev. E. Alston had read a paper, by Mr. Tymms, "On the Church," a seasonable adjournment was made to the Rectory, where lunch was partaken of. Parham, with its small but interesting church and moated hall, were afterwards inspected, and the last paper read by the general secretary, Mr. Tymms, when the business of the day terminated by a dinner.

WILTS ARCHAEOLOGICAL SOCIETY.

The annual meeting of this Society has this year taken place at Marlborough, under the presidency of Mr. Poulett Scrope, M.P.; and the neighbourhood being rich in antiquarian subjects, the proceedings have been more than usually interesting. The meeting extended over three days, and the members of the Society were fully occupied during the whole time.

The Town Hall Assembly Room was converted into a temporary museum, in which a large number of British, Roman, Saxon, and Mediaeval relics were brought together, as well as a number of objects relating to the natural history of the county.

The general meeting took place on Tuesday, the 27th ult. and was well attended. Mr. Scrope addressed the meeting at some length, and the report was then read, which congratulated the Society on its continued well-being: the number of members was now 388, being a slight addition since last year, though ten members had been lost by death. The Right Hon. T. H. S. Estcourt was then elected president, in place of the Right Hon. Sidney Herbert, whose term of office had expired.

A paper on "The 'Grey Wethers' and their Uses at Avebury and Stonehenge" was read by the Rev. Canon Jackson. He agreed with the late Mr. Algernon Herbert in thinking that Stonehenge was not so ancient as has been supposed; but in fact was an erection of the fourth or fifth century, and of Christian origin! Avebury, however, he regarded as of much more ancient date. The paper related chiefly to Avebury, the author intending afterwards to speak of Stonehenge in a separate paper (afterwards read). The name Avebury, he urged, denoted "the City of the Sun," and he conceived the stones to have been devoted to sun-worship. He did not believe in Stukeley's fancy that these stones ever assumed or indicated a serpentine outline in the course traced out by their relative positions. The ancient Roman road at Kennet cut right across the stones, so that in all probability the erection of them was more ancient than the Roman occupation of Britain.

"Strabo, the geographer, who lived in the time of Augustus, mentioned massive stones, standing on a grassy plain, in the west of Europe, connected with the worship of the sun, and which even at that time had become matter of tradition. Now this looked uncommonly like what we saw in Britain. Hecateus, who lived about 500 years before Christ, also mentioned an island on the Celtic coast where sun-worship in round temples, with music, was carried on. Without claiming these allusions either for Avebury or Stonehenge, he said, they at all events afforded a proof that sun-worship had at that remote period found its way to the west of Europe, and also to an island somewhere on the coast. Pliny the elder, who lived nearly at the beginning of the Roman occupation of Britain, also spoke of the Britons at that time as being amazingly devoted to the system of sun-worship."

The company afterwards proceeded to inspect the churches, the Castle Mound, and other objects of interest in the town; and the annual dinner of the society took place at the St. Peter's Schools, and was presided over by Mr. F. A. Carrington, a county magistrate, and recorder of Wokingham. About a hundred ladies and gentlemen were present; and, among the toasts, one name was proposed by the Rev. W. C. Lukis, a secretary of the society, namely, that of Mrs. Britton. They all recollected, he said, with feelings of deep gratitude the kind interest which her late husband took in the society, and how often he added to their collection. Since his departure she had followed his example, and shown the interest which she continued to take in the society by repeated contributions to their museum, of which they had an additional proof at their present meeting. The toast having been duly honoured, the company separated.

A *conversazione* at the Town Hall took place at seven o'clock, and was numerously attended. The Rev. Canon Jackson then read his promised paper on Stonehenge.

Objection was made to the theory of Mr. Herbert and Mr. Jackson on the ground that

the writings of the Welsh bards simply went to show that the building was standing at that time; and, indeed, that Mr. Davies, the author of "Celtic Researches," who well understood the old Welsh poetry, has said the opinion of the bards was that Stonehenge had been standing from time immemorial. Professor Buckland was of opinion that the stones were of Devonshire marble, and that the [sacred black "stone of power," or] "altar stone" [which the Druidical priests "consulted" oracularly, one of their number lying "reclined" and entranced upon it, as did the Cumean sibyl on a rock], was a kind of lias, probably from Wales. The outer circle of Stonehenge was believed to have probably been erected by the Phœnician architects who first settled at the Land's End, in Cornwall;—a supposition, it was thought as reasonable as that Merlin brought them from Ireland.

Mr. Cunningham then gave an account of some recent discoveries in a Roman station near Baydon, consisting principally of pottery and a comb, supposed to have been used for carding wool.

Wednesday was devoted to an excursion to the Roman station at Folly Farm, Chisbury Camp, Great Bedwyn Church, and Tottenham-park. Mr. Merriman acted as guide throughout the day; and, on the return of the company, in the evening, another *conversazione* was held in the town-hall, when Mr. Carrington gave an account of the ancient state of Marlborough and its inhabitants, and Mr. Merriman read a paper on "The Charity of the Velvet Pall and Maces of the Town of Marlborough."

Another excursion was made on Thursday: in this case a large party went to Silbury-hill and Avebury, and Dr. Thurnham gave an account of various barrows by the way; after which about a hundred persons assembled at a cold collation, and the Rev. A. C. Smith read extracts from a paper on Silbury-hill, which he ascribed to sepulchral purposes, notwithstanding that cuttings had not yet revealed any.

The Museum remained open on Friday for the inspection of the pupils of Marlborough College and of the Grammar School.*

PUBLIC BUILDINGS IN THE PROVINCES.

Malvern.—A new hall for public meetings and entertainments has been erected and opened at Malvern Link. The building is capable of accommodating nearly 300 persons. Its dimensions are 45 feet in length, 24 feet in width, and 17 feet in height in the clear. Means have been adopted to secure light, ventilation, and warmth, there being two fire-places, six windows, and four patent ventilators in the ceiling. Underneath are chambers fitted up for hot, cold, or shower baths. The building was constructed by Mr. Nott, of Malvern Link.

Hanley.—The following were the tenders for the erection of the new Mechanics' Institution for the Potteries, at Hanley:—Matthews, Hanley, 2,770*l.*; J. Jones, Hanley, 2,544*l.*; and Harley & Dean, Burslem, 3,400*l.* The committee accepted the tender of Mr. Matthews, and it is expected that the foundation-stone will be laid in the course of the present month.

Winsford.—A new town and market hall has been opened here, according to the *Chester Chronicle*. The building is a plain erection, but not without some little ornamentation on the front. The funds were raised in shares of 1*l.* each, of which 600 have been taken, and donations of 100 guineas have been contributed by the neighbouring gentry.

Liskeard.—A new town-hall has been opened at Liskeard with festivities. The building is in the Italian style, and stands on the site of the old hall, part of which was of ancient date. The principal walls, piers, and arches of the ground floor, are built of granite, from the Cheesewring quarries, having rustic points throughout. The upper walls are of local slate, in tooled ashlar with cement vermiculated main quoins, and cement window dressings and eaves cornice. There is a clock tower at the north-west corner, the basement of which forms a private entrance to the reading-room and hall, the principal entrance being at the south end of the building. The whole of the ground floor appropriated to the meat market is fitted up with stalls, having slate benches on brick piers, and iron rails, &c. over the same. On the upper floor is the hall, 53 feet by 28 feet 6 inches, and 23 feet high: it has a panelled ceiling and an orchestra. At the south end is a reading-room, 27 feet by 17 feet, and

* A very full report of the whole proceedings of the Society will be found in the *Wilt's Mirror* of the 5th inst.

22 feet high. There are also the requisite offices for County Court business, retiring-rooms, &c. The plans were supplied by Mr. C. Reeves, of London, Surveyor of County Courts. The contractors were Messrs. Sargent, Bone, & Firks, of Liskeard, who have executed the works under the direction of Mr. H. Rice, of Liskeard, architect. The painting and graining were done by Mr. C. Coath.

SCHOOL-BUILDING NEWS.

Hilton.—National schools have been opened here: according to the *Dorset Chronicle*, they comprise a boys' school 28 feet by 18 feet, and a girls' and infants' school 40 feet by 18 feet, both having open-timbered roofs, and being connected by wide doors on suspending rollers, by which they can be thrown into one apartment. The roof of the boys' school is surmounted by a bell-turret, and separate porches give access to each school. A cottage is attached for the master and mistress. There are likewise inclosed play-grounds and gardens. The funds were raised by voluntary contributions, aided by a benefaction from the Baron Hambro, including the site, and public grants.

Hyson-green (near Nottingham).—The foundation-stone of new schools was laid here on the 14th ult. The buildings comprise an infants' school-room, 57 feet 6 inches by 18 feet, with class-room, 18 feet by 14 feet, on the ground-floor; and girls' school and class-rooms on the upper story, of same dimensions. The school for boys is already built. There are separate entrances for each, forming a porch at the base of a tower. Adjoining, and on the left side, is the master's house, with a large garden. The whole are to be built of Bullwell stone, as rubble, with dressings of Coxbeck stone to windows, doors, quoins, &c. The roofs are to be covered with the blue and red tiles of the neighbourhood, and are to show their timbers in the interior, which are to be stained and varnished. The entrance to the girls' school comprises stone, moulded, and carved piers, surmounted with lamps of iron, in imitation of natural foliage, that to the boys partaking of the form of a high-gate, the gates themselves being composed of tracery-work above, and closed pierced boarding, of a Gothic pattern, below. The architect is Mr. C. H. Edwards, of Camden-town; and the builder, Mr. George Attenborough, of Hyson-green.

Pendleton.—St. George's Schools, Pendleton, have been built in a district containing a population of upwards of 5,000 people, chiefly miners and workers in mills. The day schools are placed under government inspection, and contain between 300 and 400 children.

Glasgow.—The Buchanan Institution, at Glasgow, for the education of children, was inaugurated on Monday. Mr. James Buchanan, of Edinburgh, bequeathed 3,000*l.* per annum to it to educate children, the city of Glasgow supplying the buildings, which cost 8,000*l.*

STAINED GLASS.

Faringdon.—In the east end of the chancel of Fernham Church, near Faringdon, recently erected and consecrated, a memorial window of stained glass has been put up, consisting principally of Scriptural devices and representations emblematical of charity and love. Another window, in the south side of the chancel, contains a representation of St. John the Baptist, to whom the church is dedicated. This was the contribution of a lady.

Worcester.—At a meeting of the Cathedral Window Committee for the purpose of inspecting and deciding either for or against the design sent in by Messrs. Hardman & Son, stained-glass manufacturers, Birmingham, for the east window, the question was resolved in favour of Messrs. Hardman & Son. The committee, however, considered that alterations would be found requisite in details. Sir E. A. H. Lechmere, bart. and the Rev. Canon Lewis were appointed a sub-committee to consider these details with Messrs. Hardman. Meantime the committee empowered Messrs. Hardman to commence the window forthwith with the five upper lights, and the centre light of the lower tier, and expressed a hope that these portions of the window would be completed by the 20th August, 1860. A gentleman long connected with this city and county, says the local *Harold* has offered 50*l.* towards filling the above window with stained glass, providing that not fewer than eight other persons will give the like amount. If such donations are forthcoming, the sum already subscribed, about 600*l.* would, with these additions, suffice for the proposed object.

Bromyard.—A stained-glass memorial window has been erected in Bromyard church. The subjects represented are "Christ's Charge to Peter," "The three Marys at the Tomb of our Saviour," and "The Ascension." The tracery is filled with angels bearing scrolls inscribed with texts; and the Saviour enthroned in glory, fills the upper light. The dedication is at the base of the window. The work was designed and executed by Mr. George Rogers, of Worcester.

Eckington (Worcestershire).—Mr. Crookes, of Eckington, has just completed a stained-glass memorial window, in Eckington church. The window is in the south aisle of the church. In the upper part of it there is a considerable amount of foliage, and the figures of the four Evangelists. The lower portion consists of a representation of Isaac blessing Jacob, Esau being represented entering the apartment bearing the venison.

Colwich.—During the last month a window has been erected at the west end of this church to the memory of Major William Hodson. The glass is by Mr. Wallis. The subject represents David in the centre light coming from the slaughter of Goliath (with the head of the giant in his hand), towards Saul, who is represented in the side light as seated on his throne; whilst in the opposite side light the Philistines are seen fleeing, and the Israelites in pursuit. Underneath is the following inscription:—"In affectionate remembrance of Major W. S. R. Hodson, third son of the late George Hodson, M.A. Archdeacon of Stafford, commandant of Hodson's Horse, who, after twelve years of distinguished service in India, captured the King of Delhi, September 20, 1857, and fell at Lucknow, March 12, 1858." The window is not a public memorial, but has been erected by a few friends of this distinguished officer.

GAS.

A MEETING of delegates from the various districts of the metropolis was held on the 13th instant, in St. Martin's Vestry Hall, when it was resolved that a deputation shall wait on the Home Secretary, to ascertain the views of the Government with respect to legislation on the important subject of gas.

The half-yearly report of the Surrey Consumers' Gas Company stated that the gas rentals for the past half-year amounted to 20,180*l.* 17*s.* 6*d.* and the receipts and expenditure on account of income during the same period presented the usual average results. The net profit amounted to 5,384*l.* 17*s.* 6*d.* and the directors proposed to apply 5,032*l.* 1*s.* 8*d.* in payment of the dividend for the half-year, being after the rate of 8 per cent. per annum upon the subscribed capital. This was agreed to. The report stated that, if the bill for regulating the supply of gas to the metropolis be introduced next session, they, in conjunction with the other companies, would be compelled to take steps to protect the property of shareholders.

At the Hebrew College, Cambridge-heath, an explosion of gas has occurred, with considerable damage to property, and probable loss of life. It seems that the gas had been left full on at the meter, and that some of the burners were fitted up with hydraulic cups, in order to lower or raise the lights to suit the sights of the inmates. The water necessary to regulate these cups having dried up, the gas escaped and filled the dining-room of the college, when some one either took a light into the place, or the surplus gas must have come in contact with another burner, whereupon the explosion took place, forcing out the windows, and scattering the glass in every direction. Another house was also damaged, and a gentleman severely burnt.

At Norwich, the British Gaslight Company have reduced the charge for gas from 4*s.* 6*d.* to 4*s.* 3*d.* per thousand cubic feet.

The Bristol United Gaslight Company have declared a dividend at the rate of 9*l.* per cent. free of income-tax.

The Manchester corporation have resolved to reduce the price of gas to the citizens from 5*s.* to 4*s.* 6*d.* per thousand cubic feet. The trade associations had threatened the establishment of a permanent amalgamated association for the obtaining of their gas at a lower rate. In the discussion on the subject in the city council, several of the speakers expressed their confidence that the reduction of price would not diminish the profits, but, on the contrary, would lead to an increase of consumption, which would increase them. The sales of gas for last year amounted to no less than 141,642*l.* and the profits were 43,418*l.* which went to effect public improvements, and to diminish the cost of the water supply to the city. No less

than 840,000*l.* have been contributed by the gas profits to the improvement of the city. In the coming year, it appears, there will be storage room for 3,400,000 feet of gas, or a million more than last year.

An influential meeting of the gas consumers of Market Rasen was held on Monday evening last, for the purpose of obtaining a considerable reduction in the price of gas. The meeting was attended by about eighty persons, including some of the professional gentlemen and nearly all the leading tradesmen of the town. Several resolutions were carried, to the effect that the meeting would endeavour to obtain a very considerable reduction from the present price (7*s.* 6*d.* per 1,000), and that they would not desist from using every legal means until they obtained the reduction. Six gentlemen were appointed as a deputation to confer with the directors of the gas company, and to report the result of their conference to a public meeting. The consumers are very unanimous, and consider that the increase in the consumption (which they have no doubt will be very great) must amply repay the shareholders for a considerable reduction in price.

CHURCH-BUILDING NEWS.

Chertsey.—The bells in the parish church here have been successfully restored: two new bells have been added, the tenor bell re-cast, and a new frame and all necessary works executed, making a perfect peal of eight; the whole carried out, we are told, in a very superior manner. Messrs. Mears & Co. of London, were the founders. Sundry alterations, &c. have been effected in the belfry, at a total cost of about 280*l.* raised by voluntary contributions. The famous curfew in this tower is jealously guarded by the churchwardens, and still rings out its time-honoured note from Michaelmas till Lady-day. The Chertsey folk made holiday on the day of the restoration of their peal.

Langloft.—Lastly, says the *Lincolnshire Chronicle*, the work of church restoration has been very progressive in this county. We have to record this week the re-opening of the church at Langloft, a village situate about two miles north of Market Deeping. The structure is dedicated to St. Michael. It is a moderate-sized stone building, with a square tower and spire. Previous to its restoration, the interior of the edifice was disfigured by a number of unsightly square pews, and a singing gallery which partly hid the western window. The vestry and chancel were in a most deplorable state: in fact, the whole of the interior was extremely dilapidated. The old seats and the singing gallery have now been entirely removed, the western window has been enlarged by an addition to the lower part thereof, and the old portion has been restored where required. The chancel and vestry have been rebuilt, and a new eastern window has been introduced in the chancel. There are two stained-glass windows in the vestry, containing Scripture subjects as memorials of the Rowell family. The seats in the church are all open. The works have been carried out under the superintendence of Mr. E. Browning, of Stamford, architect, the contractors being Messrs. Richardson (Stamford), and Sneath (Baston). The edifice has been re-opened.

Colchester.—St. Giles's church has been re-opened. The alterations chiefly consist in the removal of a large panel partition forming the vestibule at the western entrance, thereby throwing more space into the area of the church, in which new fittings have been constructed. The organ gallery above, which has been carried farther back and considerably enlarged, will now afford sitting accommodation for the school children, who were formerly obliged to sit in the chancel aisles. This, with the reconstruction of some large square pews, will give 160 new sittings, and enable the church to accommodate nearly 400 persons. Two new windows, in the Perpendicular style, have been inserted in the south wall, and the font has been removed from the chancel to the west end of the nave. The edifice has been cleaned, whitewashed, painted, grained, and varnished. The work has been executed by Messrs. Start & Son, builders, under plans prepared by Mr. H. W. Hayward, architect, of Colchester.

Oystermouth.—The contract for the restoration and enlargement of Oystermouth Church, says the *Cardiff Guardian*, has been taken by Mr. Holtham, the contractor for the new church at Pontardawe, which is now approaching completion. A new aisle will be added to the church on the entrance side, and, by the restoration of windows and entire renovation of the portion of the building which remains, the church will be given quite a new

appearance. Already 1,900l. have been collected or promised towards the cost of the work.

Blymhill (near Shiffnal).—The builder employed to re-erect the church of St. Mary, Blymhill, was Mr. R. Yates, not "Gates," as misprinted on 24th ultimo.

A CHURCH ON BUNKER'S HILL.

A PICE of ground having been obtained, by the Roman Catholic body, on Bunker's Hill, which gives its name to the celebrated battle fought there on the 17th June, 1775, they proceeded to make arrangements for building a new church on it. The necessary arrangements have been so far made, that the corner stone was laid on the 11th inst. [Sept.]. The services took place beneath a mammoth tent erected for the purpose, to which people were admitted on payment of 25 cents, each. Upon a platform in the centre were a large number of eminent persons of this and adjacent cities. The Roman Catholic clergy were represented by Bishop Fitzpatrick, Archbishop Purcell, and several others. There were about 3,000 persons in the tent, including two or three charitable societies in regalia. At the close of an address, which occupied an hour in delivery, the corner stone of the edifice was laid with the usual ceremonies, by Bishop Fitzpatrick.

The architect of the church is Mr. P. C. Keeley. The extreme length will be 150 feet, the breadth 71 feet; the height of the side walls, 40 feet, the gable walls, 68 feet, and of the nave ceiling, 55 feet. The chapel will be 48 feet long, and 24 feet wide; the height of the tower will be 87 feet, and of the tower and spire to the top of the cross, 180 feet.

The style of the architecture is the Celtic. All the walls will be built of blue stone, with granite dressings; the roof to be slated. The front of the tower, over the large window, will have an ornamental niche, with a life-size statue of St. Francis de Sales. Over this will be tower windows: over the tower windows are four handsome clock faces, with the frames deeply moulded. The spire rises in an octagon shape, and finishes with an ornamental ball and cross. Each side of the church will be lighted by nine large windows. All the pediments and gables are finished with crosses. The exterior, when finished, will present a solid, beautiful, and imposing effect.

The church contains 294 pews, which will seat 1,761 persons, besides affording accommodation for 800 children. The entire ceilings are to be vaulted, with sunk moulded panels, to be finished with rich fresco paintings; the subjects of the medallions to be taken from the life of St. Francis de Sales.

Roxbury, Massachusetts.

THE DRINKING-FOUNTAIN MOVEMENT.

THE fountain in *Golden-lane*, which was opened by Viscountess Falmouth in June last, appears to be acceptable to the inhabitants. The people are of the very poorest, who live in the courts round, and it is said to be astonishing to see the old mugs and pots which they bring to the fountain to get a drop of pure water, which shows the deficient supply of water in their habitations. The fountain is built in red, white, and black bricks; marble back and granite basin; and cost 75l.

The *Chelsea* vestry have resolved that a drinking fountain be erected in Sloane-square, at the south-east angle of the north-west enclosure, and another 3 feet eastward of the first tree east of Cadogan-pier.

At *Kilburn*, a fountain, supplied from the Monumental Works in Church-lane, Hampstead, was inaugurated on 22nd ult. The site selected is at the North-Western railway bridge, running obliquely to the Edgware road. The material employed in the background and shell is Portland stone, and a bronze dolphin-head comes from under this, forming the jet. The basin and shaft are of veined marble, polished. The base and dog-trough are of Gaby stone. The waste water running through the basin and shaft rises on one side of the base, and flows round to the waste-pipe on the other. The cistern is fixed (by permission of the railway company) in the parapet wall of the bridge, the background or top being cut away and fitted with a keystone and rings, for access to the cistern. The supply will thus be kept cool in the heat of summer,—a useful idea, suggested, in this case, as we are informed, by some remarks of Mr. Henry Godwin, in the *Builder*.

At *Bristol*, a fountain has been erected, on a suitable site of ground near the church, by the Society for the Prevention of Cruelty to Animals. They first contributed water-troughs for horses,

"beasts," and sheep, on the road, which were found to be of great benefit; but have subsequently extended their humane provision to that also often too much neglected "animal," man, and so a suitable drinking-fountain, with cups, has been added for the public accommodation.

At *Middlesborough*, the town authorities have erected a polished granite public fountain at the top of Durham-street and corner of Commercial-street. Similar fountains are to be put up in other parts of the town.

The *Lancaster* railway station has been supplied with a fountain in the simple form of a pillar of cast-iron, with two small dishes at the bottom for the dogs to drink out of. Instead of the water running away, a plug is pressed with the finger, and the water runs, stopping when the cup is full, and the pressure removed.

PUBLIC-HOUSE LAMPS.

LET me caution the District Boards against allowing heavy lamps to be projected over the footway, carried by cast-iron arms, faulty in construction, as cast-iron is a brittle material, liable to accident, breaking short off, as was the case with one I witnessed, the other day, falling with a fearful crash.

If permitted at all, wrought-iron only should be allowed; the arms should be bracketed from below, or suspended, to prevent undue leverage. Public-house sign-boards should not be allowed.

A SURVEYOR.

THE DECIMAL SYSTEM OF WEIGHTS AND MEASURES.

SIR,—The papers have announced that the fourth general meeting of the International Association for Obtaining a Uniform Decimal System of Measures, Weights, and Coins, will be held on Monday, 10th of October, at four o'clock, in St. George's Hall, Bradford, Yorkshire, and that M. Michel Chevalier, Vice-President, will take the chair.

This meeting has for its object the adoption of the metre, the gramme, and the litre, that is to say, substantially, the adoption by England of the French decimal metrical system.

If this system has not been put in practice here, it is undoubtedly because people perceive that it is far from being perfect, and that if it unites certain advantages compared with the existing anomalousness of weights and measures, it presents, also, great inconvenience. In fact, each unit of weight or measure, as well as its multiples and sub-multiples, cannot be divided without fractions by a fourth, and without a remainder either by a third or sixth. This system comprises neither the geometrical measures nor those of time. It is evidently defective and incomplete, and M. Michel Chevalier, with all his science and Saint-Simonism logic, will never be able to prove the contrary.

If this system be greeted here with a sufficiently numerous body of adherents, it is only because they ignore the fact of a superior and more perfect method which can be substituted for it.

Now, since its introduction into England is seriously contemplated, and that such a proceeding would lead to consequences exceedingly detrimental for the future, it is time to enter the lists and attack courageously this ill-born system, and to annihilate it as soon as possible.

The question is important. Do they wish England to be the imitator of a lame and imperfect thing, or rather do we wish that she should herself take the initiative, and offer to the world a work worthy of the nineteenth century; that is to say, a system logical, complete, harmonious, superior to all the methods of calculation at present in use, and combining all the advantages of the decimal system, without presenting either its inconveniences or anomalies—in a word, a system in accordance with the advancement of our present knowledge.

It is a matter, then, of nothing less than the pre-eminence of Great Britain in respect of her method of calculation. Now, she might claim this pre-eminence for centuries; but on condition of simplifying arithmetic, so as to accelerate the progress of art, science, and industry, shackled by the old methods.

When England undertakes such vast projects, when she makes immense sacrifices to construct "Leviathans" when no cost can deter her from flinging her endless telegraphic wires to the bottom of the ocean, why should she not undertake the enterprise of giving to the world a new system of calculation, which would be a universal boon?

But some one will say, "Where shall we find this famous system?" I answer,—"It is not difficult, since it is in existence. The fruit of the combination of many years, this work is now about to be published to the world, and to claim its right to live." F. REIMANN.

INSURANCE OF WORKMEN'S TOOLS.

SIR,—In yours of the 23rd September, I observed an article on the above-named subject, arising out of a recent fire. If there be no serious obstacle in the way of establishing a workmen's tool insurance fund, or society, it says but little for the self-dependent intelligence of the London workmen that they do not do so, if I may draw a comparison with some of their provincial brethren. In Glasgow we have had a tool insurance society in active operation for the last twelve years, and it has both promptly and satisfactorily discharged all just demands, and that at a rate of payments within the reach of every man, viz. 1l per cent. per annum, on the sum insured, or 3d. in the pound; 2l per cent. being the lowest sum charged at the private offices, and even that subject to many harassing restrictions which our own self-management enables us to dispense with. Let a few men take means to call a meeting of their own class, appoint a respectable treasurer from among their employers, a central committee, or even district committee, to give their services gratuitously, half-yearly or quarterly, and to meet fortnightly or otherwise, to suit themselves, and the thing would be done. THISTLE.

* The multiplication of small societies for such a purpose does not seem desirable. It could be more safely and more cheaply done by established offices.

COMPETITIONS AFLOAT.

Granton Harbour.—Sir: You will add another to the benefits you confer upon the profession, by calling attention to the absurd and insulting "proposals to architects," put forth by "His Grace the Duke of Buccleuch and Queensberry." Whether "His Grace" is really aware that he is proposing to reward (?) merit by about a twentieth part of its value is a thing I should much like to know: if so, it is Scottish liberality with a vengeance. Item 4 of instructions says, there is to be a site for "church, manse, schools, custom-house, hotels, markets, and three classes of dwelling-houses and shops;" and item 3, says there is to be "A plan, section, and elevation of the description of houses for each street, public buildings, &c.," which means, I presume, in plain English, that designs are to be furnished for each and every one of these subjects. Fancy 75l. for such a task! Item 9 is cool—very! "The approved plans shall be the property of His Grace," to which I feel tempted to add, "Don't he wish he may get 'em?"

In this age of strikes, it would not be amiss for architects to take a turn, and be unanimous, for once, that they will not subscribe to "the odious document." Already our poor craft has been sufficiently dishonoured, and I know of no more touching epitaph than the one I intend to have inscribed upon my own tomb,—"Alas! he was AN ARCHITECT."

Edinburgh.—Sir: I have a "Scottish grievance" to complain of. You may think it only an imaginary one, like its numerous namesakes, from the unworshipped Red Lion downwards, but at all events I bring it to our court of appeal in the *Builder*, to have that point decided. A plan or layout out part of an estate, near Edinburgh, for building purposes, is advertised for; plans of the several classes of houses proposed to be erected to accompany general plan; premiums, 75l. 50s. and 25l. Conditions of competition, &c. to be obtained on application, &c. So far so good, but the "conditions" being obtained, I find the following clauses amongst them—

"2. Plans, sections, and elevations of houses, &c. on a scale of 1l inch to 16 feet.
3. A plan, section, and elevation of the description of houses proposed for each street, public buildings, &c.
4. The arrangement to include a site for a church, manse, and schools, custom-house, hotels, market, first, second, and third class dwelling-houses, and shops."
The sum and substance of which, as that of 75l. not only must a general plan be provided for laying out ground, measuring nearly a mile in length, by about half a mile in width, but designs must be prepared for a church, a manse, schools, a custom-house, hotels, a market, and three classes of dwelling-houses and shops. I do not say, this is a modest request, but is it honourable? ONE WHO IS NOT DISPOSED TO EAT THISTLES.

OBSTRUCTION OF KING'S-ROAD, CHELSEA.—A deputation from the Vestry of Chelsea parish, we understand, were to have an interview with the Secretary of State for War on Friday, the 14th inst., at two o'clock, respecting the removal of the obstruction of the King's-road, caused by the high wall of the Royal Military Asylum.

ASTLEY ABBOTTS, SALOP.

This church, which had the stonework renewed and beautified in 1856 and 1858, is now undergoing further alterations: the pewing is to be made to accommodate a greater number, and a new roof is to be put upon the nave. The small steeple which has been erected at the west end is of singular arrangement, having an oblong tower, with cells for two large bells, and a lantern above, which is capped with a small broach spire, and in which is hung another bell, the smallest of the peal. The whole is very pleasing as viewed from the south, and the upper part especially so, if seen from the east; but below the lantern, on the eastern side, there is a want of finish, which was waiting for the opportunity of correcting, that the putting on of a new roof would present (the pitch of the old roof being low, and the roof itself being in a bad state); but it did not occur in time, to the parties who have now the management, to ask those who had the designing of the steeple whether they had any suggestion to make; and the consequence is that the part alluded to is left untouched, and must permanently appear unarchitectural: the gable of the nave, moreover, retaining its former low pitch, the opportunity of getting the chancel into a true ecclesiastical form, and securing a good outline for the whole, is unfortunately gone. LOOKER-ON.

METROPOLITAN BOARD OF WORKS.

EMBANKMENT OF THE THAMES.

At a meeting of the Board on the 7th, Mr. Doulton, pursuant to notice, moved,

"That the consideration of the propriety of constructing a Thames embankment, in conjunction with the low-level sewer on the north side, he referred to the Main Drainage Committee, and they may be authorised to confer with Her Majesty's Government and the Admiralty on the mode in which the cost of such embankment might be defrayed, and with the Thames Conservancy Board thereon."

He said that his motion would not pledge the Board to adopt the idea of the embankment of the Thames. It merely was his opinion that the Board should have full information upon the subject.

Mr. Bristow, M.P. seconded the motion. It was a most important matter for the Board to have the fullest information relating to it.

Mr. Alderman Cubitt suggested that the Admiralty should be consulted.

Mr. Alderman Humphrey considered that the embankment of the Thames was altogether impracticable. However, he thought information might be usefully gleaned upon the subject.

Mr. Tite, M.P. expressed the same opinion.

After some further discussion, in which Messrs. Freese, Taylor, Hughes, D'Almeida, and Carmichael took part, the motion was carried unanimously.

THE STRIKE AT THE POLICE COURTS.

Westminster.—James Mottram appeared at a warrant before Mr. Paynter, in which he was charged with using abusive language towards James Brown. The complainant stated that he was in the employment, as agent, of Messrs. Kirk & Perry, who have the management of the military stores, Finsbury. On Thursday last, about twelve o'clock, he was going along Lucas-street, when he saw a number of men, who were going to their dinner. Among them was the defendant, who called out to him to ask him to put his number on his back. There were several men with him, some of whom are in court. He also called him a blackleg. There was no violence used towards him. Mr. Paynter, after making some general remarks in reference to the case, it was his duty to prevent any course of conduct tending to produce a breach of the peace. He thought that nothing could more prejudice the cause of workmen than to pursue such a course as that which had been sworn to before him, of which he had no doubt. The defendant was fined 4s. or, in default, two months' imprisonment; and he was held to bail, himself in 40s. and two sureties of 20s. each to keep the peace for two months. The fine was at once paid, and the sureties obtained.

Miscellaneous.

CANADA HOUSES OF PARLIAMENT COMPETITION.—Under the heading "Bath Architects in America," the *Bath Chronicle* says,—"In Canada Mr. Green, as also Messrs. Fuller and Stent, all of them professionally educated in Bath, and the two former sons of two of our most respectable fellow-citizens, have attained high honours in the competition for the new Houses of Parliament to be erected at Ottawa. These structures will be built on a scale of magnificence worthy the grandeur of that fine country, of which Ottawa is to be the metropolis. Sixteen architects competed for the honour, out of which number Messrs. Fuller & Stent are the successful candidates. The following is the exact position awarded them:—Parliament Houses—Mr. Fuller, 1st premium, 1,000 dollars; Messrs. Stent and Laver, 2nd ditto, 400 dollars. Departmental buildings—Messrs. Stent & Laver, 1st premium, 1,000 dollars; Mr. Fuller, 2nd ditto, 400 dollars. Governor's residence—Mr. Cumberland, 1st premium, 400 dollars; Messrs. Fuller & Green, 2nd do. 200 dollars.

BLACKFRIARS BRIDGE.—The bridge committee, to whom the London Common Council referred Mr. Coombe's proposal for the renovation of Blackfriars-bridge, referred to some time ago in our pages, have come to the resolution not to advise the further consideration of the plan.

SHEFFIELD AND THE STRIKE.—The builders' strike in London is affecting one branch of trade at Sheffield, viz. the stove-grate manufacture. The builders' ironmongery trade has been similarly influenced. Some of the American houses are also falling off as regards orders.

TELEGRAPHIC.—An application has been made to the Board of Trade for joining the chief English and Irish ports by means of telegraphic wires, along which warnings may be sent from town to town of approaching and passing storms. The naval and military uses of such network of wires are also obvious.

THE EDINBURGH SCHOOL OF ART.—The School of Art here re-opens, at the Royal Institution, with improved accommodation. A considerable portion of the building has undergone extensive repair; and by an exchange of rooms with the Royal Society, the female section of the school has been allotted two large contiguous apartments, which are under the immediate and continuous supervision of the Art Mistress, with superior light, and a separate entrance. The rooms for the male classes of the Department of Ornament are in course of being thrown into one long and spacious gallery, with increased light. From the extent of work to be executed, this portion of the alterations has not yet been completed.

METALLIC AND MANUFACTURED METAL EXPORTS TO AUSTRALIA.—During the month of September (it appears from the circular of Messrs. J. P. Platt & Co. of Liverpool), there were exported from Liverpool to Melbourne and Port Phillip 8½ tons of anvils and vices, and a ½-ton to Sydney; castings, 10 tons to Melbourne and Port Phillip, and a ½-ton to Sydney; chains and anchors, 2½ tons to Melbourne and Port Phillip; copper and yellow metal, to Melbourne and Port Phillip, 10 cases; guns and pistols, 1 case to Sydney; ironmongery, 10 cases and a ½-ton to Melbourne and Port Phillip; lead and lead piping, 113½ tons 43 packages to Melbourne and Port Phillip, and 10½ tons 3 packages to Sydney; nails, 276 kegs to Melbourne and Port Phillip, and 277 kegs to Sydney; railway materials, 300½ tons to Sydney; tin-plates, 380 boxes to Melbourne and Port Phillip, and 216 to Sydney.

YARMOUTH SCHOOLS OF ART AND NAVIGATION.—The second annual meeting of the supporters of these institutions has just been held. It was intended at this meeting to present a prize of 1l. for the best outline drawing of the Parthenon frieze, executed by the pupils during the vacation, but as there was only one competitor, the prize was not awarded. The Mayor congratulated the members and subscribers on the report, which, he said, did not contain a single drawback. The Rev. J. B. Bampton said he was in some respects obliged to dissent from the Mayor. He was sorry that as yet they had not got a local marine board, or what would be substantially the same, a local examiner. He expressed regret at being compelled to resign the secretaryship, in consequence of his being about to leave Yarmouth, in May next. The officers were then re-elected. The national medallion obtained by James Cooper for an architectural design was exhibited. Thanks to the Mayor and Mr. Bampton concluded the meeting.

SOCIETY OF ANTIQUARIES, NEWCASTLE-UPON-TYNE.—The October meeting was held in the Castle of Newcastle; Mr. John Hodgson Hinde, V.P. in the chair. Various donations were made, and the chairman, according to the *Gateshead Observer*, made an oral report, from which it appeared that the patron of the society, the Duke of Northumberland, had intimated his intention to subscribe 250l. towards the erection of a museum; Sir John Swinburne, bart. president, 50l.; and Mr. Clayton, V.P. 50l. He (the chairman) would also be happy to subscribe 50l.; and his friend, Dr. Charlton, had just whispered to him that he would give 25l. The plan, if necessary, could be reduced; but he hoped they would keep before them the proposal as it stood, and raise the whole 2,000l. for the site and building. Dr. Charlton exhibited some Norwegian horse furniture, two or three centuries old, and called attention to the ornamentation, which, he said, resembled that of ancient remains discovered in heathen graves in Norway. So, also, he said, the modern axe of the country was of the same type as the axes found in ancient places of sepulture; and the peasants of the present day wore belts (of which the doctor exhibited a sample) bearing engraved ornaments of ancient character.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—We understand that Professor Blackie has agreed to deliver the introductory address of the ensuing session of this Institute, which opens in the end of November.

PURIFICATION OF THE THAMES.—The following report on the state of the Thames is from Mr. Bazalgette, the engineer to the Board of Works:—"I beg to report that, in consequence of the decrease in the temperature, the liming operations were maintained during the daytime only, from the 12th of August to the 3rd inst. at which latter date, upon the advice of Dr. Miller, the operations were discontinued. The total quantity of disinfectant agents used during the past season has been about 4,281 tons of chalk lime, 478 tons of chloride of lime, and 56 tons of carbolic acid at a cost of 17,733l."

DECISION AS TO PLATE-GLASS BREAKAGE.—At the Liverpool County Court, before Mr. W. A. Hulton, a case was heard arising from an accident. A person was driving a shandray, when the tire of one wheel cracked, came off, and rolled through the plate-glass window of a grocer, who, in consequence, summoned the owner of the shandray for 2l. 10s. 3d. the cost of the window. The defence was, that the occurrence was an unavoidable accident, and the window was unprotected. It was replied that the accident arose from a defect in the tire. The judge referred to an old decision, that in such a case the value of a common pane was all that could be recovered; but plate-glass, he said, was now so common, as to be almost an article of necessity; and as the defendants must be responsible for the defect in the tire which caused the accident, he gave a verdict for the plaintiff.

STRIKE OF BRICKMAKERS.—The masters and operative brickmakers of Oldham are now engaged in one of those unhappy disputes of which these times unfortunately afford so many examples. The brickmakers have a club, and it appears that the clubmen required that their employers should not engage any men who did not belong to the society. The masters would not tolerate such dictatorial interference, and at once discharged the clubbists. The latter have made reprisals in a variety of ways. Two sheds have been destroyed by fire, and it is now deemed necessary to have the remaining sheds regularly watched, in order to prevent their sharing a similar fate. But worse even than all this is the diabolical course to which the "lock-outs" have resorted in order to punish the non-society men. At those places where work is being carried on needles have been mixed up in the clay, and it was stated at a meeting of the masters on Monday night, that two operatives had thus sustained frightful injuries in the hands. One of the poor fellows, it is expected, will never gain the use of his right hand.

PURIFICATION OF FOUL WATER: AN IMPORTANT DISCOVERY.—Every one who recollects the discovery of electrolyte, will also think of Liverpool and Mr. Thomas Spencer, the chemist, in connection with it. The discoverer of electrolyte appears to have now made another discovery, of a different description, which bids fair entirely to eclipse even his former one in importance and value. He seems to have penetrated into nature's grand secret, whereby she converts all kinds of foul and contaminated water, as it filters through the rocky strata, into the pure and wholesome spring; and not only so, but he has shed a new light on the nature of ozone in connection with this discovery. It is impossible here to do justice to these discoveries, but we may state that Mr. Spencer has experimentally ascertained that the magnetic oxide of iron, which abounds in rocky strata, and in sands, &c., attracts oxygen, whether it exists in water or in air,—and polarizes it:—that this polarized oxygen is the salubrious ozone,—that this ozone, so formed, destroys all discolouring and polluting organic solutions in water, and converts them into the sparkling and refreshing carbonic acid of the healthful spring. Even sewage water can be thus almost instantaneously purified. Moreover, Mr. Spencer has discovered that the apparently mechanical process of filtration is itself magnetical, and it is now known that all substances are constitutionally more or less subject to magnetical influence: thus all extraneous matters suspended in water may be rapidly attracted in filtration, and so separated; and this may be done whether on a great scale or a small one, either by the magnetic oxide or black sand of iron, by a mixture of this with ordinary sand, or by various other means; and Mr. Spencer has discovered a solid porous combination of carbon with magnetic oxide, prepared from Cumberland hematite, which is said to have very great filtering power.

A CHURCH BELL MADE OF GLASS.—A bell of green glass, 14 inches high, and 13 inches in diameter, has been placed in the turret of the chapel at the Grange, Borrowdale.

REUNITING BROKEN IRON SHAFTS.—Shafts of cast-iron may be mended when broken, remarks the *Engineer*, by pouring on melted iron to form the part required; the pouring being continued with a surplus of metal until the new parts are fused upon the old.

THE GREAT EASTERN AS AN EXHIBITION.—Whilst the Great Eastern was lying in the Thames, off Deptford, the following number of passengers disembarked at Greenwich pier:—April, 70,000; May, 100,000; June, 140,000; July, 170,000; August, 180,000; and during the few days of September the vessel lay at her moorings, 95,000; making a total of 755,000 during a period of scarcely exceeding five months; and if to this goodly number those visiting the ship at Portland and Holyhead be added, probably the whole will not fall far short of a million of visitors, which, at say half-a-crown each, will have yielded a sum of something like 125,000*l.* nearly all free profit, there being little special outlay on account of such visitors.

THE OLD WESTMINSTER MEMORIAL.—On visiting Mr. Wright's Polished Granite Works in John-street we observed a most beautiful shaft of red Peterhead granite, intended for the Westminster Column, about to be erected near Westminster Abbey, to the memory of Lord Raglan, and the other "Old Westminsters," who fell in the Crimea. We learn from Mr. Wright that the column is to be surmounted by a figure of St. George and the Dragon, sculptured by Mr. Clayton. Below, in niches, are to be placed the figures of Henry III. Edward I. Queen Elizabeth, and Queen Victoria. This part of the monument is to be of Portland stone. The total height of the column is 62 feet. The height of the base is 14 feet 3 inches, and its width, 10 feet.—*Aberdeen Herald.*

IRON.—According to Messrs. Woodrow's circular, from Dublin, the occurrences of the past month, whether viewed politically or otherwise, have not caused any improvement in the price of pig-iron. The shipments for the month have been 47,691 tons, against 43,836 in September, 1858. The production of iron for the quarter just ended is nearly equal to that of the former quarter, although there are only 122 furnaces now in blast against 126 in July. But it must be borne in mind that the productive power of the furnaces lately erected is much greater than those of an earlier date, and that some of the old furnaces now out of blast are being taken down to make room for new ones of a larger size. The exports for the quarter are 160,820 tons against 147,650 tons same period last year. The local consumption is estimated at about 84,000 tons; in all, 244,820 tons; and the production about 240,000 tons, causing a reduction in the stock of 5,000 tons, leaving it still about 330,000 tons, irrespective of what is held by the Carron Company, which recent events have shown to be nearly four times the quantity at which it was estimated in previous statements. Their quotations range from 5*l.* to 5*l.* 6*s.*

STRAIGHTENING A COLOSSAL CHIMNEY STALK.—Operations for restoring a very large chimney at Port Dundas, Glasgow, to a perpendicular and safe position, have been successfully completed. This was accomplished by sawing several of the mortar beds between the courses on the side from which the chimney leaned, thereby allowing it to come back by its own weight, without the application of any external force. Only one draft was cut at a time, to guard against any shock which might have endangered the stability of the building; and, by keeping the saws wet, a bed of mortar was prepared for the superincumbent weight to settle down upon. Twelve cuts were made in this manner on different parts of the structure, which generally set before the saws had passed through half of the circumference, particularly in those made nearest the ground, where the weight was greatest. The *North British Daily Mail* says,—"Mr. Duncan Macfarlane was the architect by whose advice this method was adopted. The principal dimensions of the chimney are:—Total height, 468 feet; from surface to top of cope, 454 feet; outside diameter at foundation, 50 feet; at surface, 34 feet; at cope, 14 feet. According to calculations made by Professor Rankine, the building, independent of the adhesion of mortar, is capable of sustaining with safety a lateral pressure of 66*lb.* per superficial foot at its weakest point, being 11*lb.* more than the force of the greatest storm registered in this country."

ARCHITECTURAL LIBRARY.—We are informed that on the 8th of November is to take place, at Brussels, the sale of the library and drawings of the late M. Dumont, the architect of the penitentiary of Louvain, and several other model cellular prisons.

THE MYSTERIES OF BOILER EXPLOSIONS.—A strong blast of air discharged from a pipe within a short distance from a flat surface, correctly says the *Engineer*, will not repel, but will attract any object placed in the intervening space. A blast of air once made to discharge against a wall in Mr. Roberts's works, at Manchester, would not repel a board that had been applied as a valve, but, on the contrary, attracted it to the pipe. It has been suggested that safety-valves are sometimes attracted to their seats in the same way when a thin annular discharge of steam is going on under their edges. According to Armstrong's hydro-electric battery invention, steam evolves electricity, so that the attraction may be electrical, or may not electro-magnetical attraction be generated so as to attract the valve to the seat?

SYDENHAM PUBLIC LECTURE-HALL AND SCHOOLS.—On the 13th inst. the Lord Mayor laid the first stone of the Sydenham Public Lecture-hall and Schools, at Sydenham-hill, in the presence of a numerous and fashionable assemblage. The architect is Mr. Henry Dawson. The proposed building will comprise a public lecture-hall and schools, for the education of boys, girls, and infants, on the system of the British and Foreign School Society, and a room for the use of the Sydenham Working Men's Institute. There will be school accommodation for 200 boys, 100 girls, and 100 infants. The lecture-hall will hold between 500 and 600 persons. The front building will contain the boys' school on the ground story, and the girls' and infants' school on the upper story. The lecture-hall will be in the rear. Campanile towers will flank the buildings on either side, containing the principal entries and staircases, and are also intended to serve the purposes of ventilation. The walls of the building will be of brick, the exterior elevations being varied with courses of bricks of different colours, inlaid tiles and stone blockings and weatherings. The style will be the Anglicised Italian.

THE TIMBER TRADE OF BRISTOL.—The following is an extract from the circular just issued by Messrs. Barnes & Sons:—"This trade during the last month has been animated; considerable business has been done at improved prices; and, as the stock in the port is but moderate, we have no doubt but a steady advance in the value of all goods will be maintained, particularly as the Fall importation is likely to fall very short of the usual supply. The arrivals for the past month have been, 27 vessels, 11,591 tons register (against 18 vessels, 8,226 tons for the corresponding month last year), and consist of 6 from Quebec, 3,888 tons; 6 from New Brunswick, 3,493 tons; 1 from St. Petersburg, 435 tons; 2 from Onega, 720 tons; 4 from Wiborg, 1,238 tons; 1 from Stettin, 220 tons; 7 from Norway and Sweden, 1,597 tons; showing an increase of 9 vessels, 3,365 tons register, compared with the corresponding month of last year. For the season commencing on February 1, 1859, to the present time, there have been 123 vessels, 60,134 tons register arrived against 96 vessels, 44,846 tons, for the same period last year, showing an increase of 27 vessels, 15,288 tons register."

THE RHINE BRIDGE AT COLOGNE.—The inauguration of the railway bridge which will have so material an influence on travelling from Belgium through Cologne to the northern part of Germany, and *vice versa*, has taken place, under the most favourable circumstances, in the presence of the Prince Regent of Prussia. We have before spoken of it, but we may on this occasion remark that it is a tubular bridge, for both railway and common traffic, consisting of two tubes, one with two rails for the trains, and the other for carriages and foot passengers, together 51 feet (Prussian measure) broad, and 1,352 feet long. The tubes rest on three pillars only, each 313 feet distant from the other. This unusual width of opening was deemed necessary on account of the danger which any stoppage of the floating ice in the Rhine always creates for the adjacent towns. Five thousand tons of hammered iron have been employed in the construction of the tubes. The bridge reaches the left bank, on which Cologne is built, exactly in face of the cathedral, and the ground between has been cleared of houses, and is to be formed into a square. It is earnestly to be hoped that the cathedral stands in no danger of damage during the possible future contentions of armies for possession of this bridge.

RESTING-PLACES.—In some parts of the old City of London, there are in recesses of the walls, and in other places, seats and shelves fixed, on which the tired wayfarer or porter may obtain a few minutes' rest. On some of these the benevolent have placed inscriptions, requesting those bent on business, not to tarry too long, nor to leave their goods behind them. In late years a less kindly spirit has been shown, probably enforced, in this respect. In many instances the posts, in parts of the streets, may be seen with sharp spikes, ingeniously placed, to prevent even such uncomfortable positions being used as seats. In the modern squares the railings have been so arranged, that it is not possible to find rest, and in the spaces in front of public buildings and churches, where convenient provision might be placed with but little trouble or expense, and would not, if properly managed, disfigure the architecture; as at present arranged, a person may travel for miles and not find a seat, except the doorsteps of dwellings, from which the police would probably warn them.

NEW CLOCK.—An "atmospheric clock" has been recently invented. This clock is said to be in appearance like a long thermometer, without, however, the bulb of mercury at the bottom. It has a glass tube about three-eighths of an inch in diameter, and the length of the thermometer-like frame: this tube is secured to the frame by two bands, through which the tube easily slides. Inside of the glass tube is another and smaller glass tube, at each end of which is a portion of mercury and a scrap of blotting paper, or other absorbent material, for the purpose of absorbing any damp which might find its way into the tube. About an inch and a half from each end of the inner tube is a small throat, through which the mercury has to pass. On each side of the glass tube are the divisions of time. The mercury in the top end of the tube is placed opposite the proper time, and it descends to the bottom of the tube exactly as the time lapses. When the mercury has reached the bottom of the tube the frame can be turned, and the mercury set to the same time on the other side; and so the time may be continually indicated. It is a sort of perpetual hour-glass.

STREET TRAMWAYS.—Great success, it appears, has attended the laying of horse tramways through the principal streets of New York, Boston, Philadelphia, and other large places of business in the United States. In the first-named city the introduction of the new mode of locomotion was effected about seven years ago, amid the decided opposition of owners of houses along each line of street, and furious denunciations from many shopkeepers. Since that date the effect of the traffic has not only not detracted from the previous course of business, but actually given it a considerable stimulus, and the last two years' dividends to the shareholders averaged ten per cent. In the market for stock the shares in the street lines sell at thirty-five per cent. premium. The scale of fares in the carriages on these lines is exceedingly low,—four miles for five cents, or a slight advance on one halfpenny per mile. Last year the merchants of Philadelphia, seeing the successful results of the New York tramways, got up local lines in that city, and there, too, the principle has worked favourably; and, as we learn, the cost of laying down the lines was only about one-third that expended in New York. At present the premium on shares in the eighty miles of roads through the streets of Philadelphia is up to 200 per cent.

THE ROMAN VILLA AT CARISBROOKE.—The entire excavation of the Roman villa has lately been progressing with rapidity, six rooms having been this time entirely uncovered and cleared. Other portions are also in process of excavation. A quantity of relics of the Roman occupants have been found, consisting of pottery, coins of Claudius and Severus, and other antiquities of interest. Relative to the pottery and more fragile curiosities, it is to be hoped that as the explorations take place a competent person, thoroughly acquainted with the probable uses of the articles found, will be on the spot, ready to superintend the placing of the fragments of pottery. It would be advisable for the workmen to use every caution; and, when relics are discovered, the person appointed to overlook the disposal of the diggings should be immediately informed of the circumstances under which each relic was found. It has been suggested that the covering in of the villa be completed before any fresh clearance is made: the extent of the villa is now known, and the roofing would entirely protect it from rain or severe frost, whereas, if the villa is permitted to be exposed to rain and sun, the walls, which are only of chalk, will crack and ultimately fall.

The Builder.

Vol. XVII.—No. 872.

Social Science in Bradford.

FULL account of the proceedings of the Social Science Association in Bradford would be altogether beyond our limits, as will be seen when we mention that 175 papers were read during the week, and many of them discussed; not quite so fully, by the way, as was desirable, but what was to be done? A certain amount of work had to be got through, and the cry was necessarily "forward." The Society deals with Jurisprudence, Education, Punishment and Reformation, the Public Health, and Social Economy. Under the

last head fifty papers were read, and touching public health there were thirty. To these we will principally restrict ourselves, looking first at those which illustrate the condition of Bradford itself, some of which were mentioned in our last notice.* The town-clerk, Mr. Hudson, showed in his paper the increase of the population from 13,264 in 1801 to 103,786 in 1851, and now probably it is 130,000. He cited tables of population and mortality to establish the important conclusion that, in spite of the rapid increase in the population, the borough has actually become healthier as inhabitants have crowded in its previously vacant spaces. He thought it most probable, and all but capable of demonstration, that the prime cause of this good result was to be found in the sanitary action exercised by the corporation under the powers of their Act of 1850. He showed, from various tables which he read, a death-rate from 1849 to 1859, of upwards of 28 to 1,000, against rather less than 22 in 1,000 in the five years ending 1858, or nearly 25 per cent. more deaths in the former period. Above 1,000 persons more would have died in that time, if, instead of the death-rate being reduced to less than 22 per cent. in the last five years, it had been maintained at upwards of 28. It has been argued that if Bradford be a moderately healthy town, and able to stand a comparison in that respect with any place where a system of sewerage has been carried out, why not allow that question to lie on the shelf till the present heavy public burdens consequent upon the formation of the large water-works in course of construction have in some degree been lightened by the increased revenue expected from those works when completed? But, surely, who rightly said, past experience having to all reasonable demonstration shown how human life has been saved by the use of such inferior and secondary agencies as have been adverted to, there ought to be an additional anxiety not to neglect the very first principle and foundation of sanitary action—the removal of the excreta from a town by the construction of a proper system of sewerage. Though economy be the pretext for neglect, no greater extravagance can be committed than when human life and health are sacrificed from the want of this great requisite, while no greater economy can

be practised than in using the best means, even if costly, for preserving the health and vigour, and lengthening the duration of life, of our population. Not that sewerage works and other works of local sanitary administration are to be regarded as a universal remedy for an excess of the normal and natural deaths, an opinion favoured, perhaps, by the Registrar-General, who has lately made a strong appeal to the public to lessen the amount of preventable deaths by sanitary measures, and he apparently assumes that all the deaths above seventeen in a thousand of the population are artificial and preventable by the means alluded to. But this large margin of deaths is hardly, it may be supposed, controllable to the full extent by any public health machinery, unless the occupations of the people are interfered with, and they shall cease to crowd in towns; for, after all, towns will continue to trench upon the great vital rule of a sufficient amount of space being allowed for each individual to live in.

Mr. Alderman Beaumont, in a paper, "The Social Progress and Condition of Bradford," showed that the lightning of labour in factories had added to the duration of human life, as shown not only in the decrease of disease but in the almost perfect security of life in the mills. The passing of the Act constituted an epoch in the history of this town, and the general improvement in the physical, social, and moral condition of the people had been strikingly manifested. The result had been that the Factory Act had originated half-day holidays and early closing for the rest of the community. The substitution of machine for hand combing had been of immense value in promoting the general health and longevity of a numerous class, while the machine mode of combing had added largely to the means of employment and wealth of the community; the trade being thereby largely extended. He then earnestly urged the necessity of smoke consumption.

Dr. Macturk read a paper "On the Increase of Epilepsy, and on some Changes in other Diseases in Bradford." There was cause, he said, both for congratulation and regret: while on the one hand fever, which some years ago was remarkably common, was now greatly diminished, consumption was increasing. The less frequency of fever was to be noticed contemporaneously with a better supply of water for domestic purposes (which would soon be much further increased), an improvement of the drainage of the town (which was still, however, very defective), and a greater attention to the general cleanliness of the town by the public scavengers. While such causes exercised a very beneficial influence upon the standard of health, there were other malign agents at work. Amongst them he feared that he must place the factory system itself foremost. He alluded to the crowding together of large numbers of persons of both sexes in the same room; to the fact that many young married women worked at the mill, and left young children behind them very inefficiently provided for; and to the frequent occurrence of sudden and severe depression of trade. These effects he attributed in a great measure to the factory.

The papers were then discussed.

Dr. Holland observed upon the remarkable fact that in Bradford the deaths were now only three where they had been four. From those various little causes of sanitary improvement which had flowed from the measures of the corporation, perhaps a thousand deaths in a year were prevented. There was no question that the great cause of mortality in Bradford was impure air, and if they would improve the health of the population they must purify the air.

Mr. Slaney suggested the wisdom of taking care there were no other causes besides those proscribed, such as pig-styes, &c., tolerated in the midst of the population; and the Mayor said that the authorities had taken care, though they had encountered difficulties, to remove all pig-styes beyond the range of dwellings, where they would be injurious to health; and illustrated the great and beneficial influence which had been exerted by the corporation since 1850, in causing the erection of privies in connection with dwellings, it being frequent, prior to that

time, for whole rows of cottages, in some localities—a dozen or twenty—to have no more than one privy, &c.

Dr. Farr expressed his high gratification with the able and satisfactory paper of Mr. Hudson, exhibiting the fact, as it did, that the number of deaths had been reduced from twenty-eight to twenty-two during a period of five years, and still impressed the mayor and the burgesses of Bradford with the fact that, if in the suburban districts the average mortality was only seventeen in a thousand, there was still an excess in the twenty-two, which was the average of Bradford, and the obligation still rested upon them to adopt all those sanitary arrangements, arising from an increase in the water supply, and a better system of drainage, cleanliness, improved ventilation, to remove even this excess; there being an increase in some diseases in the borough, as Dr. Macturk's paper showed, which a purer atmosphere would prevent or greatly reduce.

Mr. Godwin entreated the inhabitants of Bradford not to relax in their efforts till they had done all in their power to purify their borough by an effective system of drainage. He strongly condemned the system of cesspools as being inimical to health and life. So far as his observation went, he found that in Bradford, even in what might be termed model cottages, the refuse was allowed to accumulate and fester, to the detriment of health and of life, instead of being immediately removed from beyond human habitation, by an effective system of drainage.

The Chairman, the Right Hon. W. Cowper, summed up the whole discussion.

Touching some of the observations made, we must reurge that the drainage of Bradford is frightfully bad: the town is further polluted by a canal running through it, which looks like a filthy sewer, and indeed is in such a condition that at some periods of the year the gases from it may be ignited. We lighted on several most injurious nuisances even in the briefest survey of the place, and should deeply regret to find the authorities, led by the reduction which has been already effected in the death-rate, to rest contented with their present position. They are about to spend a large sum of money for the provision of water, and it is to be hoped that they will proceed with the good work by immediately taking steps to drain the town effectually.

On a succeeding day Mr. Robert Baker, the Factory Inspector, read a particularly interesting paper on the Physical Effects of Diminished Labour. He said that prior to the passing of the Factory Act such diseases as in-knee, flat-foot, curvature of the spine, prevailed in the factory districts. Up to 1832 there was great physical deterioration in factory districts. But all the evidence since then showed that there was nothing in the employment of factory labour to induce an excessive mortality: in fact, all the diseases arising in factory labour in 1832 had entirely disappeared, and such diseases as a factory-leg, flat-foot, and curvature of the spine, had become extinct. The change in factory life with regard to health had been most wonderful, especially as regards the females. Such a striking difference in twenty-five years he could never have believed, had he not witnessed it in his own experience.

Factory owners spoke, and showed that the result had been beneficial to the trade itself—masters as well as employed. It had not only made the trade more regular, but it had been the means of raising the factory workers physically, socially, and morally.

Evidence to the same effect was given at other meetings of the society.

The rise and progress of Bradford was illustrated in the Social Economy department by the Rev. Joshua Fawcett. Bradford, he said, probably occupied the site of a Brigantine town. In 1311 the township covered 1,600 acres of land, and had probably a population of 645. The rate of increase during the last fifty years had been 5 per cent. whilst that of England was only 1.35 per cent. The population of the borough was increasing at the rate of 2,000 a year. In 1801 there was only one mill in Bradford, having 15-horse power, whilst in 1850 there were 129, with 2,972-horse power,*

* See p. 673, ante.

employing 21,412 persons. As to the staple trade, some idea might be formed as to its extent from the amount of drawback accounts on worsted manufacture. In 1850 the drawback was on 1,633,920 lbs.; in 1850 on 21,121,280 lbs.; and within the last fifty years the consumption of wool had probably increased sixteen or seventeen fold. With respect to the increase of houses, he could only go back as late as 1851, in which year there were 18,728 houses; in 1858, 24,905. The rateable value had increased from 137,776*l.* in 1841 to 272,749*l.* in 1858.

Mr. John James, F.S.A. read a paper "On the Condition of the Factory Operatives of Bradford," the object of which was to prove that worsted-factory labour was not essentially injurious to health, and to give a general picture of the state of the mill hands of Bradford, viewed in their physical, moral, and educational aspects.

What we saw in the town forbids us to agree altogether with the writer. In some departments of the worsted factory the air is vitiated mechanically, as well as chemically, to an extent that must be injurious to human life. Some means might surely be devised to protect the respiratory organs of the workmen.

Homes are much needed for factory workers, and this was discussed by a lady whose name was not given. Some time ago a "Factory Homes' Association," for obtaining an improved factory system, was promoted by Mr. William Wood, the late member for Pontefract; but we are not aware of the progress that has been made with it. The means proposed to be employed were,—1. The combining with the ordinary factory a home for the board, lodging, instruction, and protection of the workers; 2. The organization of the time and labour of orphans, the deaf and dumb, and the destitute, so as to enable them to maintain themselves; and 3. The instructing and training these classes under the voluntary superintendence of educated ladies. The idea is an exceedingly good one, and ought to command support.

At one of the meetings Mr. T. W. Rathbone read a paper "advocating a uniform and general system of registration of houses," on the ground that the Act of 1851 had been productively extended, and might be advantageously extended, as he showed by illustration of the operation of Lord Shaftesbury's Act. The lodging-houses, instead of as formerly being places of danger and mortality, were now places of safety and health. There were found to exist in Liverpool great numbers of unregistered houses, in which filth, indecency, and mortality abounded. Great numbers evaded the registration by alleging they took weekly lodgers only; but even those taking in weekly lodgers had found the benefit of registration whenever they had adopted it.

This view was dissented from by Mr. McGowan; and a sharp discussion ensued chiefly as to the condition of Liverpool, concerning which it would seem that much difference of opinion still exists.

Lord Shaftesbury said that lodging-houses had been hot-beds of fever, but now there was scarcely one case. It was never contemplated by this Act that a private family should be brought under the inspection of the authorities. The result of the Common Lodging House Act was such as to encourage the friends of sanitary improvement to go forward in their efforts to extend the operation of the plan of registration, though he was aware the matter was surrounded with great difficulty.

In a paper of Mr. H. W. Ramsey, on "Certain Deficiencies in our public Records of Mortality and Disease, with Suggestions for an improved national System of Registration," the author advocated the construction of a mode of registration which should place the public records under the management of scientific persons; and also a more definite description of the cause of disease and mortality. The officers to whom would be entrusted the records were to be a kind of sanitary inspectors, who, from their scientific knowledge, would be able to observe and note physical phenomena in every district, and the causes adverse to health. Sanitary appointments were to be the result of examinations.

The Liverpool question came again under discussion, when Mr. McGowan read a paper entitled "The Air we breathe: ought every one to do as he likes with it?" The author showed the great injustice which was committed upon the community by persons polluting the air, and maintained that it was the duty of the manufacturers and creators of atmospheric pollution to aid the public to remove the impurity. He then denied the statements of the Registrar-General as to the alleged unfavourable sanitary condition of Liverpool, and maintained that the corporate authorities were most energetic in applying all the means within their power to improve the health and sanitary condition of Liverpool. A discussion followed; Dr. Farr stating that the mortality of Liverpool having been reported as high as thirty-seven in a thousand yearly, the people of Liverpool were roused by the statement to great activity to improve their sanitary condition, and the result was, that this high mortality of thirty-seven was reduced to twenty-seven. Mr. Newlands, Dr. Duncan, and Mr. Dawson entered into a defence of the condition of Liverpool,—a town which they maintained had done more than any town in England (having spent in eleven years not less than three millions sterling) to improve its sanitary condition.

Of the papers and discussions having reference to strikes and trade combinations, we have given an epitome under a separate head, as having a distinct interest.

The Health department had its grand Friday on Friday, when Mr. Cowper, as president, delivered his address in St. George's Hall. It was a very able and striking essay, and ought to be circulated in a separate form. He rightly pointed out how little the impurities of the air are regarded. The most refined persons, who would indignantly refuse to enter a room with soiled walls, and muddy floor, and dirty company, sit complacently in ball-rooms and theatres, where every one is breathing impure air, soiled with the fumes of gas or wax candles, and with other pernicious exhalations. The impurities in which they are steeped are disregarded, because they are not visible, and people who are most particular about the materials of their dinner, cannot spare a thought for what they are breathing; and yet one is no less important than the other. The accurate fitting of modern houses leaves few crevices for the passage of air, and builders are well satisfied when they have prevented any escape of air, except up the chimney. But the law of expansion by heat has provided that vitiated breath shall rise towards the great ocean of air rolling for a height of fifty miles above us, in which all impurities are lost by dilution; but our impervious ceilings stop the intended ascent, and drive down the cooled carbonic acid gas to be again inhaled with injurious result. But a hole in the ceiling and a hole in the wall, permitting the natural movement of air, make nature our friend again, instead of our enemy; and if we take the precaution of admitting the external air by a channel passing round the back of our fireplace our current of air flows in warm instead of cold. After touching on the want of statistics and more complete registration, the speaker went on to say:—

"It is estimated that if all the population were living in healthy condition, and life were only terminated by natural decay, the ordinary age at which men and women would depart would be eighty. But it is more important to know that in 64 out of 628 registration districts, the average annual death rate is less than 17 in 1,000 persons living. These districts are salubrious in their natural feature: their population, amounting to 1,000,000, is chiefly employed in agriculture; but, on the other hand, the cottages are exposed to many of the evils that we most denounce: they are not model districts, but they are districts from which the chief evils we are seeking to remove are absent, and they furnish a fair practical standard of what is possible to attain. While, then, persons die at the rate of 17 in 1,000 in these standard districts, above 22 in 1,000 die on the average of all England, and 36 in the worst urban district; and as 419,815 persons died in 1857, if the mortality of the rest of England had been no greater than it was in these sixty-four districts, 91,652 lives would have been preserved in that year. England has been divided by the

Registrar-General into two classes of registration districts of about equal populations, one consisting mainly of urban and the other of rural inhabitants, and it is found that the rural death-rate reaches only 22 in 1,000, while the urban is 26. The facts we possess at present support the theory that unhealthiness prevails in proportion to the density of population; but this, like other branches of the subject, requires elucidation. An examination of the soils on which epidemics mostly prevail would, I believe, lead to some remarkable conclusions, for the different influence exercised over certain diseases by clay and gravel soils has been too much overlooked. But the light we now possess is sufficient to prove the startling fact that in England alone a hecatomb of victims, at least 100,000 of our people, are being annually sacrificed to ignorance and disregard to the laws of health, and that in addition to these 100,000 deaths far more than a million of persons are suffering from serious illness from the same cause."

Typhoid fever has its home in ill-drained places, and requires for an ally some impurity in the air. It never springs up in the homes of the wealthy, though it sometimes invades them by means of contagion. The nature and locomotion of the cholera poison have not yet been discovered, but all experience shows that only amid the decomposition of organic substances can it develop its crushing power and acquire its full virulence. This is also notoriously the case with its kindred diseases.

After referring to some of the causes of cholera, and noticing Mr. Simon's report of the large number of infant deaths, Mr. Cowper remarked that the returns from nineteen towns in which drainage-works have been executed under the Public Health Act show that the mortality which, previous to these sanitary measures, averaged 28 in the 1,000, fell, after them, to 21 in the 1,000; this indicates a clear saving of 7 lives in each 1,000 of the population; and as these towns contained a population of 468,000, the saving amounted to 3,200 annually. At Croydon the sanitary changes altered the death rate from 28 to 22·9 in the 1,000; a saving each year of 196 lives; the outlay, too, has been compensated by such corresponding diminution of expense, that the total amount paid in rates is only 4*s.* 11*d.* while the average of the neighbouring towns is 5*s.* 9*d.* At Bradford the death rate has been reduced from 28½ to 22 in each 1,000.

About a hundred years ago, it is stated, when the pauper infants of London were received in workhouses and brought up amidst impure air and unwholesome treatment, not 1 in 24 lived to be a year old; so that out of 2,800 received into these places 2,690 died: in the large establishment for pauper children at Norwood, the sanitary arrangements which have been made have reduced the death rate to 20 in the 1,000. Other striking instances were mentioned of the vast salvation of life by proper sanitary measures. In the prisons—take Pentonville for instance—notwithstanding the cares of confinement, the death rates are only one-third of the average number of persons of a similar age and class in large towns. Again, Mr. Cowper said:—

"Formerly, underground cellars were considered to be all that was absolutely necessary for the habitation of the poor. In Liverpool, a large portion of the poorer sort lived underground; but their local Act of 1846 enacted a higher standard; and there, as in many other towns, the law will not allow even those who in their blindness may desire to live in so injurious a manner. But, to our grief and shame be it spoken, thousands of our fellow-subjects, both in villages and towns, are actually at the present moment living in rooms which, according to any proper standard of wholesome, self-respect, and decency, are utterly unfit for the habitation of civilized Christians. I am confident there is no other way in which so extensive, rapid, and certain a benefit could be conferred upon the poor as by the improvement of their dwellings. Think only of the difference on the whole moral being between a mere resting-place for one's degradation, a place obscure enough to hide the blush of shame at entering it, and a decent dwelling, which, however humble and unadorned, has yet the honest gratification and the blessed and peaceful associations connected with a home. The family life is a strong safeguard of virtue, but its efficacy is gone, and its sweetness turns to bitterness, when it has to be carried on in the hideous den of a back slum. The evils which are shortening the days, enfeebling the vigour, and destroying the comfort of our people, are deeply rooted and widely spreading, but cannot discourage those who are in earnest to uproot them. We see our way, we know the means, we only want courage and perseverance to employ them."

It is to be hoped that not only Bradford, but all England, will listen to the teaching of the Social Science Association, and act upon it.

We have sung the same song for years. We have piled facts upon facts, argument upon argument, and, so far as we know, neither facts nor deductions have ever been controverted. Something has been done, but the vast mass of evil remains untouched.

It seems clear that cholera is threatening our shores. The pestilence has raged in Hamburg, and is now said to be ravaging the ancient city of Bruges,—too near us to be disregarded. No one can say how soon the disease may be wafted across the Channel, and we should everywhere prepare to meet the fell invader with those arms which Social Science places in our hands.

It is of no use talking and listening, unless at the same time we DECIDE and ACT.

BYZANTIUM AND ITS ARCHITECTURE.*

In tracing the progress of Byzantine art, we find ourselves insensibly led to connect with it that of literature, for the one cannot well be separated from the other. In both we behold the reflex of the national defects, and the vast preponderance of Eastern influence over such elements of freedom and enlightenment as were not entirely obliterated. Both, however, were destined to exercise a certain amount of re-action upon the world of art and letters. The art, limited and confined at home, and presenting in the monotony of its expression but the ceremonial tendencies of the Byzantine mind, when engrafted abroad on the unfettered forms of Teutonic inspiration, showed a capability of combination that the Greeks had not imagined, and the extent of which, has yet, perhaps, to be developed. The literature, florid but artificial, learned but pedantic, prolix but devoid of genius, of itself can claim small merit but as historical record; but upon the fall of the empire, the dispersal of ancient manuscripts which an affectation of patronage had collected, proved of essential service in the revival of letters generally.

We have already alluded to the decline of letters after the Augustan era. After the five or six writers of the Augustan history who flourished somewhere about the time of Diocletian, and from whom we gather the lives of the preceding emperors, we seek in vain, as Tiraboschi observes, for an historian who could exactly describe to us who were the people, now conquerors, now conquered, that from all sides precipitated themselves upon the empire; whence they came and what were their laws, manners, and customs; and what the real character of the emperors and the illustrious men of their times. *Un Polibio, un Cesare, un Sallustio, un Livio, qual ampio campo avrebbero avuto a spiegare i loro talenti!* Excepting some minor authors, such as Aulus Victor and Eutropius, no such is to be found until we come to Ammianus Marcellinus, a Greek by birth, but long resident in Rome, and the last subject of Rome who composed a profane history in the Latin language. The first thirteen books of his history, an epitome of 257 years, are lost: the last eighteen, which contain more than twenty-five years, concluding with the reign of Valens, preserve the copious and authentic story of his own times. Truthful and accurate, though prone to wearisome digressions and unequalled for declamation, his work is of great importance and value.

Literature was rapidly declining in the third century. Among the Greeks, excepting Dionysius Longinus, the rhetorician, and Dion Cassius, the historian, and a few others, no writers of genius appeared. The schools of philosophy of Alexandria and Athens seem to have waned men's minds from more useful studies, and the disciples of Ammonius, Plotinus, Porphyry, and Jamblichus, found a more congenial task in disseminating the subtle doctrines of their instructors, than in contributing to the diffusion of real knowledge.

The fourth and fifth centuries were, on the whole, not unfavourable to letters, and the emperors, from Constantine, omitted no means at their disposal that might awaken and cherish a thirst for learning. "Schools," says Mosheim, "were established in many of the towns; libraries were formed; and literary men were encouraged by stipends, privileges, and honours. Although the illiterate had access to every office, both civil and ecclesiastical, yet most persons of any respectability were persuaded that the liberal arts and sciences were of great use to mankind. Hence public schools were flourishing in the larger cities, as Constantinople, Rome, Marseilles, Edessa, Nisibis, Carthage, Lyons, and Treves; and competent masters were maintained at the expense of the emperors. But

the wretchedness of the times, the incursions of barbarians, and the paucity of great genius, prevented either the Church or the state from reaping such advantages from these efforts, as were hoped for by those who encouraged them."

After the time of Constantine, the ecclesiastical writers, from Eusebius, the "father of Ecclesiastical history," occupy the most prominent place in Greek literature; and the discouragement of heathen philosophy and heathen literature had as great an effect in hastening the decline of letters in general, as the mixture of Syrian, Bulgarian, and Gothic dialects, and Latin idioms, had in deteriorating the Greek language. The Greek poets, philosophers, and orators, lost their attractions, and the studies of Christians became daily more Oriental and less classical, till, at last, the old learning was represented by such exceptional and rare examples as Stobaeus and Photius. Other causes, too, operated in accelerating the decadence of Greek learning. The great library at Alexandria, in the temple of Serapis, and its school, which had been damaged by Diocletian, and had almost disappeared at the end of the fourth century, in consequence of the edict of Theodosius, were totally destroyed by Caliph Omar in A.D. 640. Justinian closed the schools of Athens, and the Arabs overthrew those which had begun to flourish at Edessa, Berytus, Caesarea, and Antioch. Constantinople and Nicomedia alone remained, encouraged or neglected according to the character or taste of the reigning emperor, and long before the establishment of the Turks on the ruins of the Byzantine empire, Greek literature had ceased to claim original or independent existence.

Although in Italy it may be said, that, owing to the earlier triumphs of barbarism, literature and philosophy were virtually extinct from the time of Boethius to the Revival, yet in the Eastern empire literature still retained a varying vitality, and for eight more centuries, the old Greek language was spoken at Constantinople, and Greek books, especially historical ones, written with more or less purity. Fortunately for the world it was so, as it was from these works, which form the "*Corpus Scriptorum Byzantina Historie*," that Gibbon was able to present to the world a continuous history of the Lower Greek empire.

The history of Byzantine literature, as of architecture, includes the period between the accession of Justinian and the Turkish conquest, and may be sub-divided into four epochs, commencing respectively with Justinian, and with the houses of Basil, of the Comneni, and of the Paleologi: "for at each of these eras," says Dr. Donaldson, "a fresh stimulus was given to the cultivation of letters, and a new, but rather spasmodic life was infused into the decrepit and moribund senility of Greek genius."

The conquests of the Arabians in the seventh century commenced the contraction of the area which owned the Greek language as vernacular; from that time Greek literature ceased at Alexandria, and the native Aramaic supplanted the Greek language in Syria. North and west of the capital, Slavonian and Germanic tribes gradually diminished the extent of both land and language. The principal historian for the events of the reign of Justinian, is Procopius, who, as secretary to Belisarius, accompanied that general in his wars in Asia, Africa, and Italy. His most important work, continued by Agathias, is the *Istoriai*, on the Persian, Vandal, and Gothic wars; a faithful narrative of exploits, in which Justinian had no share; and it was as a salve to the wounded vanity of that monarch, that Gibbon attributes the writing of his next work, the *Kriypara*, or account of the buildings erected or restored by him. His last work, the *Anakora*, a collection of anecdotes forming a chronicle of the court of Byzantium, from 549 to 562, has been thought beneath the dignity of so grave an author; but, as Berington observes, "He who will flatter is not unlikely to calumniate."

The period of the Macedonian dynasty is thought to represent the Augustan age of Byzantine literature. "A ray of historic light," says Gibbon, "seems to beam from the darkness of the tenth century. We open with curiosity and respect the royal volumes of Constantine Porphyrogenitus." If the title of Leo the Philosopher to authorship is questionable, that of his son is undoubted. At any rate, by the munificence of both monarchs, "the treasures of antiquity were deposited in the imperial library; by their pens, or those of their associates, they were imparted in such extracts and abridgments as might amuse the curiosity without oppressing the indolence of the public." Of the many works of Porphyrogenitus the "*De Administrando Imperio*" (wanting a Greek title), is the most useful and important, and the

"*De Ceremoniis Antie Byzantine*," or "*Εκθλιας της Βασιλειας Τακτικα*," the most tedious and wearisome. It is of much use, however, as reference, and as a reflection of the love of the trivial in the Byzantine royal mind, and though abounding in terms of foreign origin, is yet elegant and well written. In the immediate successors of Constantine Porphyrogenitus, we in vain look for a monarch either devoted to the arts himself, or favourable to them in others. Of his grandson, Basil II. Zonaras observes that he regarded learning as useless and unprofitable lumber.

In the same century occur the embassies of Liutprand, bishop of Cremona, from the great Otto to the Greek Court. A keen observation and descriptive facility, though marred by prejudice and passion, have afforded us an insight to the state of Constantinople at the period, and the despicable paganism of a Byzantine court reception,—and the historian of the "Decline and Fall," has availed himself of this addition to his scanty materials for his 53rd chapter.

Liutprand's description of Nicephorus Phocas, as a filthy monster, *hominem satis monstruosum, pygmaeum, capite pinguem, atque oculorum parvitate talpinum, barba curta, lata, spissa, et semicana sedatum*, &c. and his unmeasured abuse of the manners, dress, feasts, processions, and amusements of the polished Greek court, unfortunately, betray his resentment, and deteriorate his portrait. Stung to the quick by his contumacious reception, after scribbling some satirical verses on the wall of his hateful abode, he quits for ever the city, which he apostrophises as "once opulent and flourishing, now furnished, perjured, lying, crafty, rapacious, and avaricious." Then, once more unburdening himself of his spleen in a plentiful application of the gerund in *do*, he adds,—"*After a tedious journey, asiando, ambulando, equitando, jejunando, silendo, suspirando, flexu, genuendo, Nequaquam veni.*"

The third period of Byzantine literature awakens fresh interest in the names of the Princess Anna Comnena and her husband, Nicephorus Bryennius. Endowed with rank, beauty, and talent, versed in every branch of science, and as she herself tells us, thoroughly acquainted with Aristotle and Plato, the vanity of the young female philosopher was flattered with the homage of the Greek literati and artists of the day, and her house was long the centre of all that was great in Constantinople.

It was in her exile, after the unsuccessful attempt of her husband to seize the Crown, that she wrote the *Αλεξιας*, or life of her father Alexis, containing his youth, early exploits, accession, wars, and connection with the first Crusaders. Though her style is affected and false, and her pen influenced by the indulgence of a threefold vanity, personal, domestic, and national, her work, nevertheless, forms one of the most valuable and interesting of the Byzantine records. The *Ἰστοριας* of Bryennius, comprising the lives of Isaac I. Constantine II. Romanus III. and Michael VII. is likewise of great value.

The Comneni and connections of the house of Ducas, brought to the patronage of literature the most favourable intentions; but the taste of the age was too corrupt to admit of much amelioration, even from imperial example, and the Latin invasion once more extinguished the feeble flame of literature.

One more effort was made to rekindle the fire which perchance yet smouldered beneath the ruins of Greek learning. Upon the reinstatement of the Paleologi the outward forms of government were restored, and an endeavour made to revive the spirit of learning, so depressed by misfortune; but it was now too late; the vital spark had died, and the possession of the language of Plato and Demosthenes was all that remained to the degenerate descendants of ancient Hellas. "In their lowest servitude and depression the subjects of the Byzantine throne were still possessed of a golden key that could unlock the treasures of antiquity; of a musical and prolific language, that gave a soul to the objects of sense, and a body to the abstractions of philosophy."

When the Turks were gathering round Constantinople in the fifteenth century, Byzantine Greeks were still teaching their language in Italy as a living one, and Gemistus Pletho was established as a teacher at Florence, Theodorus Gaza at Ferrara, and George of Trebizond at Rome; and there, a century before, Manuel Chrysoloras had interpreted his native literature, and Leontius Pilatus had explained the text of Homer to the accomplished author of the "*Decameron*."

The final catastrophe over, still did the language survive the nation's downfall; and in the Chronicon of Phranza, continued to 1477, and the

* Continued from p. 646.

history of Chalcondyles, to 1463, we take our leave for ever of the Byzantine Greek historians. Such was the finish of a literature, which, from the time of the great Homeric epic, had comprised a period longer than two millenniums; such the vitality of a language, which to this day seems rather slumbering than dead, and which may even yet awake to a second life, and evoke a new literature for the instruction of generations yet to come.

We have seen how the first Christian temples of Byzantium were modelled upon the pagan basilica, of which type that of St. John presents an example to this day. On the same plan is the Church of the Nativity at Bethlehem, and *was* that of the Martyrium at Jerusalem, of which only a fragment remains in the outer gateway of the Atrium, now known as the Golden Gateway. From the description of Eusebius it must have been similar to that at Bethlehem. Other instances of this form of church may possibly still exist at Constantinople, converted into mosques, like the ancient church of St. John Studius, or buried beneath the ruins of the Byzantine capital. This form was soon supplanted by the circle, and the Church of the Holy Sepulchre at Jerusalem set the fashion for a period. The form of this building, so obscurely described by Eusebius, becomes clear from the simple statement and rude sketch of Arculphus, furnished to the abbot of the Benedictines in the eighth century amid the remote regions of the Hebrides. In alluding to the oft-told story of Arculphus, we are of course aware of Mr. Fergusson's conviction, that the Mosque of Omar, or Dome of the Rock, is the identical church of the Holy Sepulchre, erected by Constantine, and that the description of the monk was perfectly suitable to that building, but quite inapplicable to the form of the present church of the Holy Sepulchre, and therefore that the plan of the present church, instead of furnishing that of Arculphus, was derived from it. We are unable to enter into that discussion, but merely repeat the old theory. Such, then, is supposed to have been the immediate type for the sepulchral churches of Constantine, as still existing at Rome in the Torre Pignaterra and Sta. Costanza. In the great central seats of Christianity in the East, such as Antioch and Alexandria, there are no remains of this period to aid us in our knowledge of the forms of their churches, and the flowery description of Eusebius of an octagonal church built by Constantine in the former city, is the only aid left us in the matter. However, there can be little doubt that either the basilica or the circle formed the basis of their plans.

From Constantine to Justinian round and polygonal churches were in vogue in Constantinople, as we may gather from Procopius and early travellers, from Arculphus downwards. The same period produced many in the East, as those dedicated to the Virgin, in the Valley of Jehoshaphat, and at Antioch, before mentioned, and that of the Ascension, on the Mount of Olives. San Stefano Rotondo, the largest of the existing round churches, illustrates still further the adaptation of this form of plan.

A fine example of a true Byzantine round church is that of St. George, at Salonica, of about the end of the fourth century. This building is altogether 121 feet in diameter, and the wall, which is of great thickness, contains eight niches, of which one forms the entrance, and the opposite one opens into a choir, finished by an apsis. The whole is surmounted by a dome, 80 feet in diameter, likewise divided into eight compartments, each containing a mosaic painting of a saint, with his name and that of the month dedicated to his worship in Greek characters. This church Texier considers one of the most interesting in the East, and altogether conformable with the description Eusebius has left us of the churches built by Constantine's order in the different towns of the empire in the twelfth year of his reign. Whether so or not, the fashion was not of long duration, and the examples of the Byzantine round church bear no proportion to those of that peculiar arrangement that was the acknowledged invention of the nation. The circle, or polygon, as a whole, never obtained much in Italy, and it is in the form of the detached baptistery, which, from that of the Lateran to that of Pisa, formed a peculiar feature of that country, that we find it perpetuated there. On the contrary, as a portion of a plan, that is, united to a nave of greater or less length, and surmounted by a dome, it became, in the Revival, an important characteristic of church architecture, and from the conception of Arnolfo da Lapo, at Florence, realised by that of Brunelleschi, to that of Bramante at Rome, realised by that of Michelangelo, the dome thus

disposed has upheld its character as the noblest of architectural features.

By round church we mean those, whether circular or polygonal, which had their type in the Pantheon (for with that before us it is idle to look elsewhere for a model), but which, for the obtaining extra space without extra danger, assumed such forms as San Stefano Rotondo, at Rome, or St. Angeli at Perugia, or the Baptistery at Nocera dei Pagani, or San Vitale at Ravenna. The pure Byzantine plan, on the contrary, was that wherein the circle became united to the square or the rectangle, under such circumstances as made the development of the Greek cross an important feature in the plan; or rather, as Gally Knight describes it, where the oblong was shortened into a square, with a view to the noble addition of a dome, which the Byzantine architects had now learnt to support, and which was at last introduced into Italy by the Greeks themselves, in such parts as remained in their possession, and in the North by the Venetians.

It is true that the churches of St. Sergius at Constantinople, and San Vitale at Ravenna, are very much allied to each other; the one presenting an octagon within a square, and the other an octagon within an octagon; but this difference is essential to their classification, as the former is thus referable to the Pantheon, or rather the Minerva Medica, for its type; whilst the latter typifies the Byzantine union of the circle with the rectangle.

It is this form of plan, in its various modifications, which prevailed in the numerous churches, which, to this day, lie scattered over the countries of the ancient Greek empire, and in the monasteries constructed by Justinian over its whole extent, from Carthage to the Black Sea, from Asia Minor to the Adriatic.

In the ecclesiastical remains of antiquity, Leake observes that Thessalonica surpasses any other city in Greece. The important part this city played in the history of Christianity will account for the number of its ancient religious edifices. Amongst the thirty-seven mosques, and ancient Byzantine churches converted into mosques, which are described, but not illustrated, in Texier's "Asie Mineure," besides the round church of St. George, already alluded to, are several of great interest. The most important of these is that of Demetris, the patron saint of the city, built since 690, when the former edifice was destroyed by fire. It is a five-aisled basilica, with a transept and apse with five windows terminating the central aisle. The narthex is covered by the floor of the Gynæceitis, which extends the whole length of the building. Some of the details resemble those of St. Sergius and Theotokos. The Eski-Djouma, the Christian dedication of which is lost, is a three-aisled basilica, terminating in an apse with three windows, having an outer and inner narthex, and an upper gallery like that of St. John Studius. Some Byzantine mosaics on a gold ground are still visible; and were the white wash removed, which at present covers the whole interior, the entire decoration might be brought to light. The Church of the Holy Apostles, says Texier, comprises everything which is most varied and elegant in Byzantine architecture of the seventh century. The building, which is square, is surrounded by a corridor. A double narthex and five domes give the usual Byzantine character to the structure. St. Bardias, consecrated in 987, much resembles that of *Μονή της Κόλας* at Constantinople. The church of *Αγία Σοφία* presents a Greek cross surmounted by a cupola 33 feet in diameter, which yet retains, in mosaic, a colossal figure of the Virgin between two angels, and the figures of the twelve apostles. Many other monuments of this style are to be found in this city, the illustration of which might be of great service in advancing our knowledge of it.

Greece is believed to possess a great number of remains of these singular Byzantine buildings, though but few are yet known to us. "At Mount Athos, there are at least 100 buildings of various sorts, and of all ages; but all these are as yet architecturally unknown, being only described in words that convey the impressions of their authors, but not the forms of the buildings." In the first ages of Christianity, Athens, shorn of its ancient splendour, obtained celebrity as a Christian town. In the middle of the first century the Gospels of St. Matthew and St. Mark, written in Greek, were read in the Gardens of the Academy; and in the time of Justinian, the possession of more than 300 churches or chapels may argue its importance as a seat of the new religion. From Athens, too, did Copronymus select a virgin as his son's bride, and the erection of

twelve or more churches there by the Empress Irene attests her affection for her native town.

The plans of Justinian's churches were imperfect, owing to the novelty of the style; and those of his successors were better adapted to the wants of Christian worship. The exedra, adorned with columns which contributed to break internal regularity, were suppressed, and the sacristies, placed in the axis of the naves, or near the sanctuary, were terminated, to the east, by little apsidæ in the thickness of the wall, as in the Catholican at Athens, or projecting beyond it, as in the Panagia Lycodemio. Although conceived in the same monotonous idea, the study of the many variations of plan, which are presented in the examples that have been already described and illustrated, display the fecundity of Eastern conception, and not only show what would possibly have been achieved had peace and prosperity operated to the development of enterprise and genius, but also what may hereafter be done. As Mr. Petit observes, "Can we make use of these buildings as models, or can they furnish us with any hints? There is certainly much beauty, picturesqueness, and elegance in their outline. Their proportions are often remarkably pleasing. They are treated with a breadth and simplicity from which we might well take a lesson. We find no miniature reproductions of constructive features, no useless blank arcades or panelling; full scope is given for very delicate and refined workmanship, but where this is not to be had the commonest brickwork is made available in counteracting any baldness or meagreness of effect; a good and useful internal area is secured, with little or no loss of space; the construction is sound and durable, and the materials of the whole building, roof included, are, or may be, perfectly imperishable and indestructible. The architects of the revival by no means neglected these examples."

One of the oldest and smallest but most elegant of the Athenian churches, is the Catholican, or old Cathedral, built of white marble, and in its external sculptured decorations and deep cornices, strangely savouring of the old classic type. Its exterior presents a short oblong, surmounted by the usual characteristic little dome, the arches that carry which are supported on very slender piers, curiously substituted for antique columns. The mixture of Byzantine sculpture, with a Classic frieze, raises a doubt as to its alleged antiquity, in spite of its sculptural marble casing; for, as Mr. Petit observes, the use of old classic materials is no argument against age, but that of Byzantine materials is. The church of St. Theodore seems to be one of the best preserved, and, with its three apses, dome, and varied exterior, looks the very type of its class. The largest and finest of the Athenian churches is the Panagia Lycodemio. The roof, being a flat, is of course invisible externally, and the want of a cornice to the façades gives it a bald and unsatisfactory appearance. The many-sided dome, which is wide and low, with an ogee covering, is much larger than usual, and presenting a pronounced feature in the general mass, relieves the ugliness of the front façade. The Kapnicarea is, or was, more curious than pleasing. We saw *was*, as Couchaud, in 1842, observed that its fate was sealed to make way for a new street; but as it yet existed two years ago, it may perhaps still be spared to illustrate this singular page in architectural history.

The Church of the Virgin, at Mistra, near ancient Sparta, presents novelties both in plan and exterior. An arcade, supported on columns of classic type, and a picturesque belfry, ornament the latter. The church of the Monastery of Daphni, in Attica, and the Church of St. Nicholas, at Mistra, are much allied to each other in character, and especially as regards their domes, which are large and well proportioned, giving a monumental character to the buildings they surmount. The peculiarity of plan to be observed in both these churches is, that each side of the square that supports the cupola consists of three arches instead of one, the centre one being the widest, and a better relative proportion to the whole area is thus given to these domes than we usually remark in these singular buildings. Other churches and some interesting details may be found in the short work of Couchaud, although some of them, as St. Taxiarchus, have since disappeared. But this work relates only to one province of the Byzantine empire.

"There is considerable difficulty," says Mr. Fergusson, "in writing an account of the Byzantine architecture in Asia. This does not arise either from the paucity of examples or their insignificance, but because it has happened here,

even more than in Europe, that they have hitherto failed to attract the attention of travellers; and the few examples that have been published have neither been selected as the best suited to illustration, nor have they been accompanied with such discriminating remarks as would make up for the deficiency in materials." The important position of the seven churches in the first centuries of our era, makes it probable that large religious buildings were erected there even before the time of Constantine, and that ruins of such must still exist. Larger, finer, and more numerous must have been those built after his time, if we may judge from the examples set at Jerusalem and Antioch. All at present known of these are the Romanesque examples already mentioned, and a few others, such as the church at Pergamus, examined by Mr. Falkener, or the church at Nisibin, of the fourth century, measured and drawn by M. Bouché. The Basilica at Tyre, built by Paulinus, in the same century, and described by Eusebius, was in all probability a fine example of its class.

The church at Ancyra, one of the oldest of its class, is of the ordinary domical type, the members of the Greek cross being of almost equal length. The upper narthex communicates with the women's gallery, which thus runs all round the church. The church of Syon, in Myra, dedicated to St. Nicholas, is of the same character. Being in a very ruinous state Textor only shows a section of it, but describes the building as composed of a nave and side aisles preceded by an inner and an outer narthex. The same author gives plan and section of another church in the valley of Cassaba, in Lycia. It is of the same type as the above, and is considered by Textor to belong to the seventh or eighth century. It consists of a nave finished by semi-circle, and side aisles terminated by little chapels. Right and left of inner narthex are two square towers, which once enclosed staircases. An octagon tower stands on either side of the church, towards the apsis end, to which entrance can only be had from the interior. They may have served possibly as library and sacristy. Towers of the same description are found at the church at Pergamus, and also at Ancyra, but in the latter church they form a portion of the building itself. Whatever their purpose, they seem to be only in accordance with the early custom of grouping one or more circular buildings, in close proximity to the main rectangular one. We have no space to allude further to the Byzantine churches of Western Asia Minor, and those of the Eastern or Armenian province will be found illustrated in Dubois.*

POSITION OF THE STRIKE.

MATTERS unfortunately remain much as they were, with statements on the part of the masters that they are gradually filling their shops with non-society men, and from the men that individual masters have ceased to require "the declaration." The latter assertion is doubtless true. Nevertheless, the great body of the associated masters declare themselves quite determined not again to subject themselves to the gradual ruin which the regulations of the trades' unions were bringing upon them. A well-known and esteemed firm, the Messrs. Lucas, have recently drawn out and submitted to their own men a statement of what the labour in some of their works has cost them. They have shown, for example, by the name of each bricklayer and labourer, the time they were occupied, and the wages paid, that the labour to the brickwork at Woolwich has cost them 57. 13s. a rod!! Not long ago such work was done for 22. a rod, and under present circumstances the utmost cost should be 22. 10s. No architect, in checking a builder's account, would allow him more. The result, therefore, to the builder is obvious.

We have already mentioned the failure of the attempted mediation of Mr. Ayrton. We cannot compliment the hon. member on the ability he displayed in the transaction. He mistated the premises, and put on one side a main point in the dispute. He says, in his letter to the secretary of the Association of Builders,—"The Association of Master Builders some time ago determined to dismiss all their workmen who would not accept a declaration, then for the first time tendered. The workmen regarded this as an odious document, which in terms required them to forego their legal rights, and which was in other respects objectionable. They refused to accede to it, whereupon they were deprived of employ, and

thrown upon the benevolence of the workmen of England for support;" and he declined in any way to interfere as to the withdrawal of the strike at Messrs. Trollope's. Now, as every one knows but Mr. Ayrton, the master builders did nothing of the kind. A strike was declared at one of the establishments, Messrs. Trollope's, and the rest of the masters, knowing perfectly well that it would be successful if the Messrs. Trollope were unaided, and that, if successful, they would each be dealt with in their turn, closed all their shops, and refused to open them until Messrs. Trollope were again at work. The declaration was an after-matter.

The strike at Messrs. Trollope's has not been withdrawn to this day. How Mr. Ayrton, then, could imagine that the masters would enter into any arrangement which did not include this point is beyond the comprehension of common-sense men. If the affairs of the country are managed by such legislators, the Lord have mercy upon poor old England!

A proposition is, we believe, on foot for the establishment of a benefit society, which will commend itself in a remarkable manner to workmen.

Houses of call are being instituted for non-society-men.

On Monday the Conference made their thirteenth weekly payment to the men on strike, and the eleventh to those locked out. They paid, as before, 12s. to the skilled and 8s. to the unskilled labourers on strike from Messrs. Trollope's, and the usual dividend of 4s. to the masons, carpenters, plasterers, and Woolwich men. To the stone sawyers and labourers they paid 3s. or 1s. less than they have hitherto received. The return shows a total of 6,079 men, and of cash expended 1,098l. 6s. as compared with 5,786 men, and 1,209l. last week, or an increase of 293 men, and a decrease of 110l. 14s. paid. The result is explained by a considerable number of men having been "called out" from the jobs where they were at work, and the diminution of the dividend to the labourers.

This diminution led to a riotous commotion at the Paviors' Arms, on the part of a body of labourers, which was only quelled by the appearance of the police.

The usual meeting of trade delegates was held on Tuesday, when a resolution was proposed declaring the opinion of the meeting to be that "The employers do not desire an amicable or equitable arrangement, but have other objects than those avowed, viz. the utter prostration and degradation of their workmen;" and expressing a hope that the men who have been brought from the country, and have accepted the "document," will return to their homes.

An amendment, however, proposed by the delegate of the Amalgamated Engineers, to refer the resolution to a sub-committee, appointed by the meeting, with instructions to draw up an address to the whole of the trades of the country, urging upon them an organized and permanent system of pecuniary support, was carried by 45 to 5.

THE RULES OF THE TRADE-SOCIETIES.*

THE Executive Committee of the Central Association of Master Builders, considering it as proved that the secret of much evil lies in the illegal rules of the Trade Societies, and practices which are adopted, and having announced that they require the whole of these laws to be revised by a retired judge, or some other impartial authority, have thought it expedient to have printed for the use of members of the Association, the rules now in force in the London postal district, of some of the most important of the societies. Such rules of the societies themselves. We have already given the purport of some of the rules deemed odious by the masters, and unjust to non-society men; but we are now furnished with the whole of the rules of each of six different societies.

The members of such societies conduct their proceedings much in imitation of the Freemasons; and they meet in "lodges," or by general meeting "of all the lodges" when necessary. There appear to be ten lodges of the Metropolitan Society of Operative Bricklayers in the locality to which, as the name implies, the society is confined; and the plasterers' society seems to be very similar in its character and its laws to the bricklayers'

society. The Pimlico Society of Carpenters and Joiners holds its meetings in Warwick-street, Pimlico; and the labourers' society is similarly confined to London. The National Association of Carpenters and Joiners seems intended to take in a larger area; whilst the masons' society, of which so much has lately been said, extends throughout England and Wales, and comprised in January last more than 200 lodges. Though all the societies are friendly societies, none of the number appear as having had their rules certified by Mr. J. Tidd Pratt, the Registrar of Friendly Societies, excepting the society of the labourers,—which, spoken of as meeting at a tavern in Fawn-street, Aldersgate-street, probably includes only a portion of the men set down every week in the reports of the Conference of United Trades, as belonging to different "lodges." The masons have the most complete system of organization. The Central Society, or "Seat of Government," is established in one principal town after another—the present head-quarters being at Bristol. Local lodges have power to make their own bye-laws and trade regulations, subject to confirmation; and such local bye-laws "for the operative masons of London and its vicinity," which "it is hoped that all whom it may concern will think seriously before violating," are printed in the pamphlet now before us. The general laws, or those which are the same throughout England and Wales, extend to considerable length. The Carpenters and Joiners' Societies are more numerous, and the laws differ in many respects. The rules have been selected of one of the best organized of these latter societies—one of twenty years' standing, to which are added those of the "National Association of Carpenters and Joiners," which was established in August, 1857, and is understood to be in great favour in the trade. "Among the Carpenters and Joiners' Societies," says the secretary of the Association, "it is found that benefit objects (sickness, accident, &c.), are rarely blended with trade objects—the only point for which provision is generally made in these societies appears to be against loss of tools by fire or theft." The rules of the Labourers' Society were registered so recently as the 5th May last, as in conformity with the law, the society being duly established from that date "at the White Horse Tavern," and made "subject to the provisions, and entitled to the privileges of the Acts relating to Friendly Societies." In the certificate it is observed that "the rates of contributions and payments are not stated to have been prepared by any actuary." Many friendly societies, it is notorious, would find it impossible in an emergency to meet their liabilities. Defects of the constitution of many of them were referred to by the registrar in his last annual report, recently issued; where also, all ill effects on societies, by their being held at public-houses, are dwelt upon. A society held at a public-house is "generally considered by the publican as a part of his property," societies are bought and sold with the houses. From the last three annual reports of one society, it appeared that 258 gallons of beer had been consumed in the time by 120 members; and by the common plan of the compulsion of every member to purchase beer, no rent being paid, the landlord receives a sum as profit, "far larger" than the "most exorbitant rent would amount to." Some of the operative builders' trades' societies seem to recognize this evil: in these instances stringent rules and fines are imposed in case of members refusing to leave the lodge when intoxicated, as also for swearing and using abusive language; and the National Association of Carpenters and Joiners, in the Introduction to their General Laws, dated Paddington, 1858, say:—

"With respect to the moral and intellectual culture of its members, the committee need not enforce its necessity, for all will remember that 'knowledge is power.' Regarding the evils attendant upon the holding of lodges at public-houses, where temptations for drinking and spending money are so numerous, it is particularly desirable that other places more suitable to the 'wants of the age' should be selected. The formation of libraries, with newspapers and periodicals, will, it is to be hoped, tend to elevate its members, and make them better members of society."

Such views we know are becoming prevalent; and the present strike in London is traced by some non-society men, altogether to the practice of meeting at public-houses. Institutions, with objects similar to those of the institution lately commenced by the non-society men, in the Euston-road, might effect the praiseworthy objects which there are of the societies, and without some of the disadvantages.

The rules of each of the societies in the pamphlet before us relate in part to strikes, except the rules certified of "The Accident and Burial Society of Labourers." The rules of the Pimlico

* "The Laws and Rules of the Metropolitan Operative Bricklayers' Friendly Society of Operative Masons, General Society of Operative Plasterers, Pimlico Society of Carpenters and Joiners, National Association of Carpenters and Joiners, Accident and Burial Society of Labourers." Printed for private circulation. 8vo. pp. 102. London, October, 1859.

* To be continued.

Society of Carpenters and Joiners mention "strike-pay" only incidentally; whilst those of the Masons' Society are very minute on the subject of strikes, and the support of those who are "out." Several clauses of the bricklayers' rules are devoted to the same subject; and one of them, which we lately quoted, and which was adopted only last year, treats of the "Members' objection to work with a 'Black,'"—sanctioning applications to a master for the immediate discharge of a "black," and the course of striking and picketing the job in case of non-compliance of the master.

Nearly every one of the sets of rules in the pamphlet is preceded by a preface, or introduction, in which the advantages of society are dwelt on, and the cultivation of brotherly union is spoken of. The absolute necessity for a society is insisted on, in order to preserve or ameliorate the condition of the artisan, as against the interests, supposed antagonistic, of capital. It will have been noticed that this idea of the antagonism received countenance in one of the papers on the subject of strikes, read at Bradford at the recent meeting, whereat, also, the Preston strike, and the strike of the engineers, were spoken of by those who were their conductors, as having had some good results,—though the same parties did not fail to recognize the necessity for prevention of such evils as ensued, by cultivation of a better understanding between masters and workmen.

In the General Laws of the Metropolitan Society of Operative Bricklayers, passed April, 1853, and including forty-eight articles, the "most refined enjoyments and greatest comforts" of Man are stated, in the Preface, to be "those which spring from proper elevation of his mind, and society of his fellow men." The pleasure of meeting together to consider the means of promoting "our well-being in society," is dwelt upon, as well as the necessity for a society and a solemn compact, or union of interest between the members,—“so that we may be prepared as one man to resist any unjust attempts made towards the interests of our trade.” The advantages to a society, are then pointed out, of good rules,—by strictly adhering to which, “the evils attendant upon our respective occupation, the advancement of the rights and privileges of labour, the cultivation of brotherly affection, and a mutual regard for each other's welfare, cannot fail to be the result.” &c. The Objects and Laws of the General or "Friendly Society of Operative Plasterers" are set forth also in forty-eight clauses, which were revised and agreed to in June, 1857; and the Preamble, addressed to "fellow workmen," requests them to unite "to protect the interests of our trade, and endeavour to create an amicable and friendly understanding," through supporting each other in case of accident, the creation of a burial fund, and ultimately the reduction of hours of labour to a like standard in summer and winter. "Also," continues the Preamble, "to protect ourselves from the vast influx of men and boys who are not plasterers, but who are introduced into our trade by selfish and unprincipled speculators in our labour, in a wild endeavour to compete with each other, heedless of its ruinous effects upon us and the trade in general. Let us bear in mind, that singly we are helpless and unprotected, and he is not worthy the name of man who refuses to assist in procuring advantages which he will enjoy, but allows others unaided to struggle for him." In conclusion, the Preamble speaks of "the necessity and duty of becoming more acquainted with the glorious principle of union, and to bring the whole power of the body to bear in protecting every single member."

The Plumico Society of Carpenters and Joiners, whose rules, revised in 1858, are thirty in number, is to consist of an unlimited number of members "well affected towards the rules and customs of the trade," and whose contributions shall be applied to raising a fund to support the members in upholding the rights of the trade, as defined in the rules; to compensate for loss of tools by fire, water, or robbery; "for a donation at the death of a free member or his wife," and subsidiary objects. The National Association of Carpenters and Joiners, whose rules "for the protection of trade" are eighty in number, after speaking of "the creation and fostering of a union of sentiment among one another," advert to the failure of many trade societies through having blended too many objects, as those of sick and burial funds, and special relief, "with those every-day wants connected with the rights and duties of trade." To avoid such perplexities, therefore, it is held imperative that the structure of the association should be on a firm basis, and that a kindly

feeling should be maintained between employers and employed; with which views "they seek to avoid strikes and lock-outs, if possible, by all peaceable means, in the attainment of their just rights." They well remark that many strikes could have been avoided had employers conferred with their workmen, "and in many instances," they say, "while the men's demands have been fair and equitable, employers have met them with arbitrary exactions, and not unfrequently with contempt; consequently, strikes have been precipitated, to the great loss of both parties." They also say:—

"Another subject of importance is the increasing use and varied application of iron in the erection of buildings, &c. and the great extent to which machinery is made subservient to the use of employers, whereby great numbers of workmen are daily thrown out of employment; added to which is the prevalent and pernicious habit of piece-work. The latter grievance stands prominently forward as being most detrimental to our obtaining a fair day's wage for a fair day's work, whilst it reflects great discredit, in many instances, on the character of employers, as such work, very frequently, is not done in a workman-like manner."

Amongst the objects is also stated that of ensuring at the earliest moment information concerning employment.

The laws of the masons' society, which came into operation on the first day of this year, are divided into seven or eight "classes" of ten to thirty clauses each, and they are introduced by a preface, which is signed "Richard Harnott, C.C. Sec." at Manchester, where the head-quarters were in December last, and headed with the motto, "United we stand, divided we fall." The societies are fond of a rallying cry,—such as, "Unity, Friendship, and Trade," which appears on the title-page of this Society of Stonemasons.

There is much in the constitution of the masons' society especially, as there is in objects of all of those we have named, that is calculated to gain for the artisan class "the esteem of all good men," which, says Mr. Harnott's preface, "should be the aim at which every operative mason should aspire," &c. The "truly-valuable object of a self-protecting power against the selfish and unprincipled proceedings of the capitalist," however, stands prominent as "the great principle" of the masons' society. "The great benefit" experienced by those who are members of "trade-societies," is put forward as answer to the charges that they are monopolies and unjust restrictions. The constitution for the regulation of the particular trade, is spoken of as "available" for "the assistance of the unemployed," "the support of the sick and disabled members," and "the last tribute of respect in carrying out a decent interment." Association and organization, as in the case of other societies, are much insisted on. The laws, in the several classes, are framed for the Guidance of Lodges, and the Duties of those Officers and Members, or for guidance of those who are "Members of Trade Fund only," or "Members of Trade and Sick Fund" (one of the rules in the second class applying to "apprentices"); and the remaining classes are headed "Provisions for Accidents," "Strike Laws" (ten clauses), "Tramp Laws," "Central Committee's Duties," and "English and Scottish Laws," to which are added forms of application for sick money, and funeral money. The first rule defines the objects of the society as being "to mutually support each other while in search of employment, and also in case of sickness or accidents, and for the interment of deceased members; as also to regulate the price and lessen the hours of labour." By the second rule in this class, support may be rendered to trades in union, for the purpose of resisting any infringement against their rights and privileges. Each lodge is to be governed by a president, vice-president, treasurer, secretary, and "tyler." There are fines for late attendance and other omissions. Any member wishing to speak, must address the president as "worthy president," and the rest of the members as "brothers," or forfeit a penny; and any member attempting to speak before another speaker has sat down, is to forfeit two-pence. Any member attending intoxicated, is to be requested to withdraw, and in case of his refusal, is to pay a fine of one shilling, and if he again refuse, is "to be turned out for that evening." These last laws, excellent as is their intention, may be taken as evidence that the necessity for them has been found. Abusive language is similarly disposed of. The 23rd Law in this Class provides for the printing of "an annual revised Black List, showing the names of those who have worked in opposition on strikes," and of those who have defrauded the society. In Class II. of the Laws, mixed up with regulations for the relief of members and their wives, we find the following:—

"Working overtime tending to our general injury by keeping members out of employment, shall be abolished, excepting in cases of accident or necessity, but no strike to take place for the abolition thereof without a special grant. Where members persist in working overtime in opposition to the lodge of which they are members, that they be fined at the discretion of such lodge. A lessening of the hours of labour would prove a great remedy for the wrongs we suffer, and may each member speedily perceive how deeply he is interested in its attainment. It is also requested that lodges harassed by piece-work, or sub-contracting, do apply at a reasonable time for a grant to abolish it. Where sub-contracting or piece-work are abolished, such is binding with the society."

In the fourth class, it is ruled that members disabled from work by an accidental cause, shall receive one hundred pounds, provided twelve months shall have elapsed from the date of full entrance-money paid, and provided such members shall have been "clear on the books within fourteen weeks previous to the time of the accident;" whilst those who have "worked in opposition," must have paid their fine, "and continued payable" for twelve months previous to the accident, or not to be eligible to the provisions. The father, mother, wife, or child of a member who has died from an accident, is to receive fifty pounds. The Strike Laws first provide for the support of "payable members," thrown out of employment through having transacted business connected with the society, if the member have not used abusive language towards the employer or foreman. Strikes for advance of wages are to be preceded by inquiries into the state of trade, and the position of the society in the neighbourhood; but the third rule says:—

"If any employer attempt to reduce the current rate of wages at any period of the year, or attempt to introduce piece-work where it has been abolished, or to increase the hours of labour, or infringe upon the established meal hours, or introducing individuals not of the trade, or on the refusal of paying and non members to contribute to the Society, members may resist such infringements without a grant, if acceded to by a majority of the members of the Lodge; but in all cases to wait on employers previous to striking."

The Tramp-Laws allow members travelling in search of employment, sixpence and a bed, or on Sundays, Christmas-day, Good-Friday, and fast-days, one shilling and a bed; but members leaving with strike-cheques are to be allowed ninepence instead of the sixpence. Other provisions are added for the relief of travelling members by the different lodges. It would appear that there is a distinct society for Scotland, and an arrangement for interchange of good offices. The local bye-laws for London 1855. Working hours are to be from six a.m. to half-past five, p.m. except on Saturdays, when they are to be till four, p.m. The current wages of London are stated to be five shillings and sixpence per day; and should any mason work under them, and be considered by his shopmates qualified to receive the 6s. 6d. "he shall be deemed 'black,' and be fined 2/." Any mason losing time, is not to be allowed to make it up by working overtime, unless he has "time and half;" and any mason working after the hours without receiving "time and half," is subject to a fine of 40s. Any man known to work piece-work, except on granite, curb, or York paving, is to be fined 10s. In the rules of the Plumico Society above mentioned, we read:—

"That no member shall work at a greater distance than five miles from the standards of London for any master that lives within the standards, and not at a greater distance than five miles from any master's shop out of the standards without having his lodgings paid."

In the plasterers' society, the fines on members for performing any kind of labour on works where there is a strike, may amount to as much as five pounds; and would always amount to a considerable proportion of that sum, in the case of employment of any other than a plasterer to assist in plasterers' work.

We are thus presented with a tolerably accurate picture of the organization of the trade-societies; and the explanation of their popularity with those who are members, and of their singular power over even those who do not belong to them, is in part afforded. Meritorious as are their objects of one description, their beneficial influence in the matter of remuneration for labour is more than questionable; and at least, it cannot be tolerated that they should impose restrictions on the labour of those who do not choose to belong to them.

RUSSIAN RAILWAY TO INDIA.—The St. Petersburg papers state that a line of railway is about to be laid between Europe and India, traversing the Russian possessions. With what motive?

THE SOCIAL SCIENCE ASSOCIATION ON STRIKES.

On Friday, the 14th, the department of Social Economy were occupied wholly with papers relating to strikes and trade combinations. Amongst others,

Mr. John Holmes read a paper, entitled "Facts and Inferences relating to the West Yorkshire Coal Strike, from July to December, 1858." The writer commenced by observing that the interests of capital and those of labour were at present antagonistic, and the proceedings of both were often conducted as though there was no rule of right; and then proceeded to give a history of the unions both of employers and workmen in the West Riding coal districts, and the effect of such unions on the price of coal and the position of labour. The first union of the masters was formed in the year 1853, and that of the men in 1858,—the latter being to resist a reduction of 15 per cent. by the masters, and which resulted in a strike and lock-out. Efforts were made to settle the dispute by arbitration, but unsuccessfully, until December, when some of the masters came to terms with their men, and the lock-out broke down after being in force six weeks, and the strike, which had been carried on thirty weeks, was brought to a close. The loss by this strike to both masters and men he put down at not less than 100,000*l.* besides the increased suffering and mortality amongst the men, and concluded by asking whether some other mode of settling these disputes could not be adopted.

Dr. Watts, of Manchester, made a communication on "Trade Societies." After stating the politico-economic principle that wages were dependent upon supply and demand, he said that attempts by trade societies to obtain the same wages for inferior workmen, to limit the number of apprentices, and to exclude men who had not served a certain specified apprenticeship, were mischievous, and must in the end defeat their own object. Every obstacle to production, whether by the Government or trade societies, was injurious to society, and especially to the poor, by raising the price of commodities. But it might be asked, "Are the men to submit to all kinds of insult and oppression?" No. Let the secretary of the society place himself in communication with other towns, and ascertain what were the wages, and the openings for employment, and draught off the men accordingly, and thus prevent an unfair reduction in wages. If, however, it was found there was no opening, and that wages were not higher, it would prove that the master was right, and it would be folly to attempt to resist the reduction. This principle would apply whether the objection to a workman arose on a question of wages or on one of character.

Mr. Malcolm Ross read a paper "On the Evil and Impolicy of Strikes, and what might be substituted," in which he pursued the same politico-economic argument urged by Dr. Watts. He submitted that the question of wages must be settled by the masters and men conjointly, and not by arbitration of third parties, which the experience of France showed rather increased than diminished the evil. Of course, there must be mutual good-will and a desire on both sides to expunge everything that might be offensive or unjust to each other.

Mr. Henry Fawcett, M.A. delivered an address "On the Political Economy of Strikes." After remarking that experience showed that in some sciences observation alone was not sufficient, but that induction was also required, he said he was going to take a hopeful view of the strike movement. He argued that it was not sufficient to say strikes were inconsistent with political economy, and that men must not, therefore, strike, but they must endeavour to ascertain the causes of such strikes, for they often fell in error in applying to practical questions the abstract principles of political science, which frequently required time to bring out their results. After laying down the law of wages as depending upon the relation of capital to population, he proceeded to argue that there were disturbing causes which interfered with the absolute operation of the principle, and gave rise to these strikes. In illustration of this he referred to the position of the agricultural labourer, whose wages were below the average of the artisan, and said that he arrived at the conclusion that there was this tendency in strikes to equalize wages in different employments, and it had also the tendency to give the labourer a share in the extra profits of the em-

ployer when they were raised by a temporary cause. The strikes might be directed, but they could not be checked. The interest of employers and employed were not identical, but were as much opposed as those of buyer and seller: the latter wished to give as little labour as possible, and the former as low wages as possible. The working classes, as they became more intelligent, would see this, and would use their abilities to secure every advantage which they legitimately and fairly could from the employer. Thus it seemed to him that, as society became more intelligent, the community would be divided into two great opposing interests. This was not a gratifying view, but it raised the question whether another state of society than that which prevailed in England was not possible, and whether the ultimate result of these collisions between labour and capital might not be an association of the labourer with the employer in the profits of trade.

Mr. Hughes read the report of the committee appointed at the Liverpool meeting as to trade societies. The committee stated that they had not yet been able to collate all the information they had received, nor was the inquiry yet completed, and they were not, therefore, prepared at present to express any opinion on the subject; but they recommended that they should be re-appointed for the purpose of continuing the inquiry.

Mr. Forster expressed his conviction that the public could do very little in the question under discussion by legislation, and said that the reenactment of the combination law would be one of the worst steps possible. Neither had he much hope of the courts of arbitration established in France. He expressed his dissent from the advice of Lord Shaftesbury that the working men were not to strike, nor to combine, because such advice would not be followed, nor did he think it ought. If they did not combine, he could not but fear that masters would take advantage of that non-combination. Public opinion, however, might be brought to bear in putting down all coercion, and he appealed to the working men to strike out of their rules anything which should seek to force their members against their will, for public opinion would not sanction it. The greatness of their country was due to their freedom of action, and that principle must not be sacrificed by one side or the other.

Mr. Cowell, the principal conductor of the Preston strike, explained the cause of that great strike as arising from the reduction of wages during periods of panic, without any corresponding advance on the return of prosperity. This, he said, was the general cause of the Lancashire strikes, and he supported his statement by a brief sketch of the history of some of them. The Preston strike failed because of the panic arising from the breaking out of the Russian war; but it had not been without its good results, and both parties would be loth to enter upon another struggle. In conclusion, he expressed his conviction that they would have fewer strikes if there were more sympathy between masters and workmen.

Mr. Newton, of the Society of Engineers, contended that workmen could not make their arrangements with the employers individually but collectively, and combination, therefore, became necessary, which led to trade societies. One of the great causes of strikes was the want of good feeling between master and workpeople.

PARIS NEWS.

PARIS will shortly contain a new and brilliant promenade, in addition to those already so much frequented by travellers in search of a delightful lounge through a beautiful city. Active measures are being taken to transform into a square that portion of the *Marché des Innocents*, which lies between the *Rue St. Denis* and the continuation of the *Halles*, of a superficies of about 1,000 metres square. The fountain of the market is to be removed into a more favourable position: it was known by the name of the *Fontaine des Nymphes*, and it is to be placed in the centre of the promenade, of which it will form the principal ornament. It was partly executed by Jean Goujon, and partly by Pierre Lescot.

Après de Jean Goujon,—they are finishing at present, at the Gobelins factory, a series of portraits of the celebrated French sculptors, artists, and painters of the sixteenth and seventeenth centuries. These portraits are to adorn the gallery of Apollo, at the Louvre. The first is that of Jean Goujon, the restorer of sculpture in France; then follows his contemporary, the architect Etienne Dupérac.

After these are three men, who were either friends or pupils of Jean Goujon, viz. Germain Pilon, Pierre Lescot (mentioned above), and Jean Bullant.

At all hours of day and night, there are "traffic takers" posted in the principal thoroughfares of Paris, which have been macadamized, instead of being paved, to keep a record of the number and class of vehicles which pass. This operation, carried on by the *Ponts et Chaussées* men, for a year past, is to ascertain the wear and tear of the roads compared with the greater or less circulation of vehicles of all sorts.

The Paris tunnel of the Saint-Germain Railway, under Batignolles, is to disappear very shortly. The company have long felt the inconvenience of a tunnel of that length close to a terminus which is used by so many lines: in consequence it has been decided that an open cutting should be made. The works, which are to be commenced immediately, will be carried on without the interruption of the present traffic or interference with its arrangements.

THE STRIKE, IN THE POLICE COURTS.

IMPORTANT DECISION AS TO WORKMAN'S WAGES.

A FEW days ago a case was brought before the Clerkenwell County Court, in which a working mason, named Stephens, sought to recover 2*l.*, being one week's wages in lieu of notice, from Mr. Tombs, the plaintiff being locked out on the 8th of August. He had left another place for the defendant's situation. On the 6th of August he was told that the works would not be opened on Monday; and, though he attended on the latter day, no employment was offered him, and his claim of a week's notice being refused, he brought this action for the amount. On the part of the defendant it was stated that it was not customary to give a week's notice, and that the plaintiff was only in the position of 10,000, who were locked out at the same time. The Judge said he had no doubt that plaintiff was entitled to his claim, since he was not only kept about the works, but the defendant had wages in hand due to him (plaintiff) till seven days after the lock-out. The plaintiff said he had removed his family and furniture from Pimlico to Holloway when he commenced to work for defendant. Judgment was then given for the plaintiff for the full amount claimed, with costs.

CONCERT-ROOM IN DESIGN FOR THEATRE, RIO DE JANEIRO.

IN making the design for a theatre in Rio de Janeiro, of which we gave illustrations in our last number,* Messrs. Green and De Ville included a Concert-room as necessary to render a first-class theatre complete, and of this we annex a view. The concert-room is placed under the wardrobe, and the orchestra is under the painting-room. It consists of a ground-floor and one gallery: the floor, like the floor of the pit of the theatre, is capable of being altered in inclination. The room is approached on either side from the arcade through an entrance-hall and staircase, with a curved corridor joining the two sides. The staircase also leads to the gallery, and there are attached refreshment-rooms, and ladies' and gentlemen's cloak-rooms. The orchestra, which is approached from the stage entrances, has its principal performers' retiring-room, its musicians' retiring-room, with music-stores, &c.

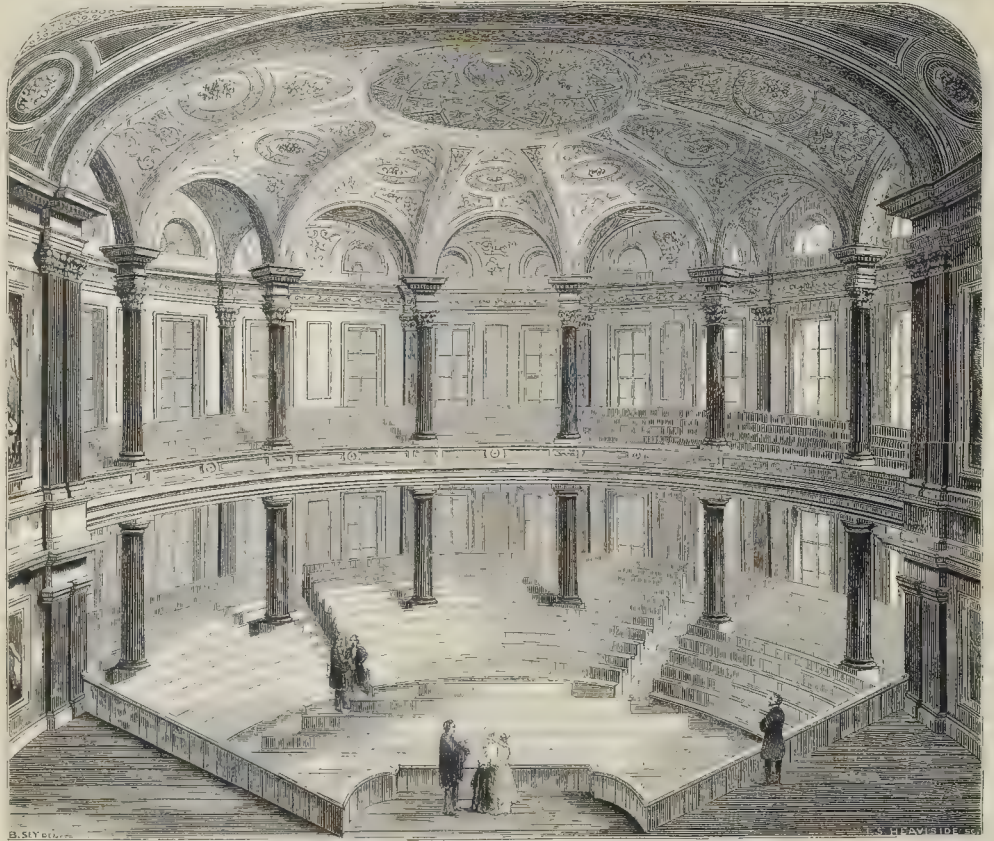
THE NEW WESTMINSTER BRIDGE.

WITH our present number, we publish a page of illustrations of the construction of the piers and arches of the New Westminster Bridge. In our volume for 1856 will be found illustrations of the construction of the foundations, and reference to the controversy pending at the time. The design and details of the superstructure of the bridge have since been noticed and described by us at considerable length, as in our present volume,† in which we have also spoken of certain alterations, not much concerning the principle of the construction, which were made in the substructure of the piers on the resumption of the works; and we have since chronicled the progress of the undertaking up to a period as recent as the present month. We have, therefore, little to add, beyond particulars of the state of the works, from inspection of them in this week.

It has been necessary to be very precise in speaking of the particular portion of the bridge

* Page 680.

† Page 213, ante.



CONCERT-ROOM IN DESIGN FOR THEATRE, RIO DE JANEIRO.*

[Oct. 1859]

now nearly completed, to explain to those at a distance the relation of the works in progress to the whole design; and it may be well here to repeat that the portion more particularly referred to is the southern division, or nearly one-half of the full width of the intended bridge, the old bridge being retained as a means of communication till the completion of the southern division, the intention having been to open this division first, and then to remove the old bridge and complete the design by the remaining portion of the work to occupy the site of the old bridge. The undertaking involved the removal of the houses on the south side of Bridge-street, Middlesex, and of those on the south of Bridge-street, Surrey side, or up to Stangate, for the approaches; but all these houses are still occupied, and we reiterate the question to the Commission of Works, put in our last notice—Is it intended to open the new communication before the end of the year, and incur the responsibility of the accidents which there will be every hour of the day, on each side of the river, should the houses be not removed?

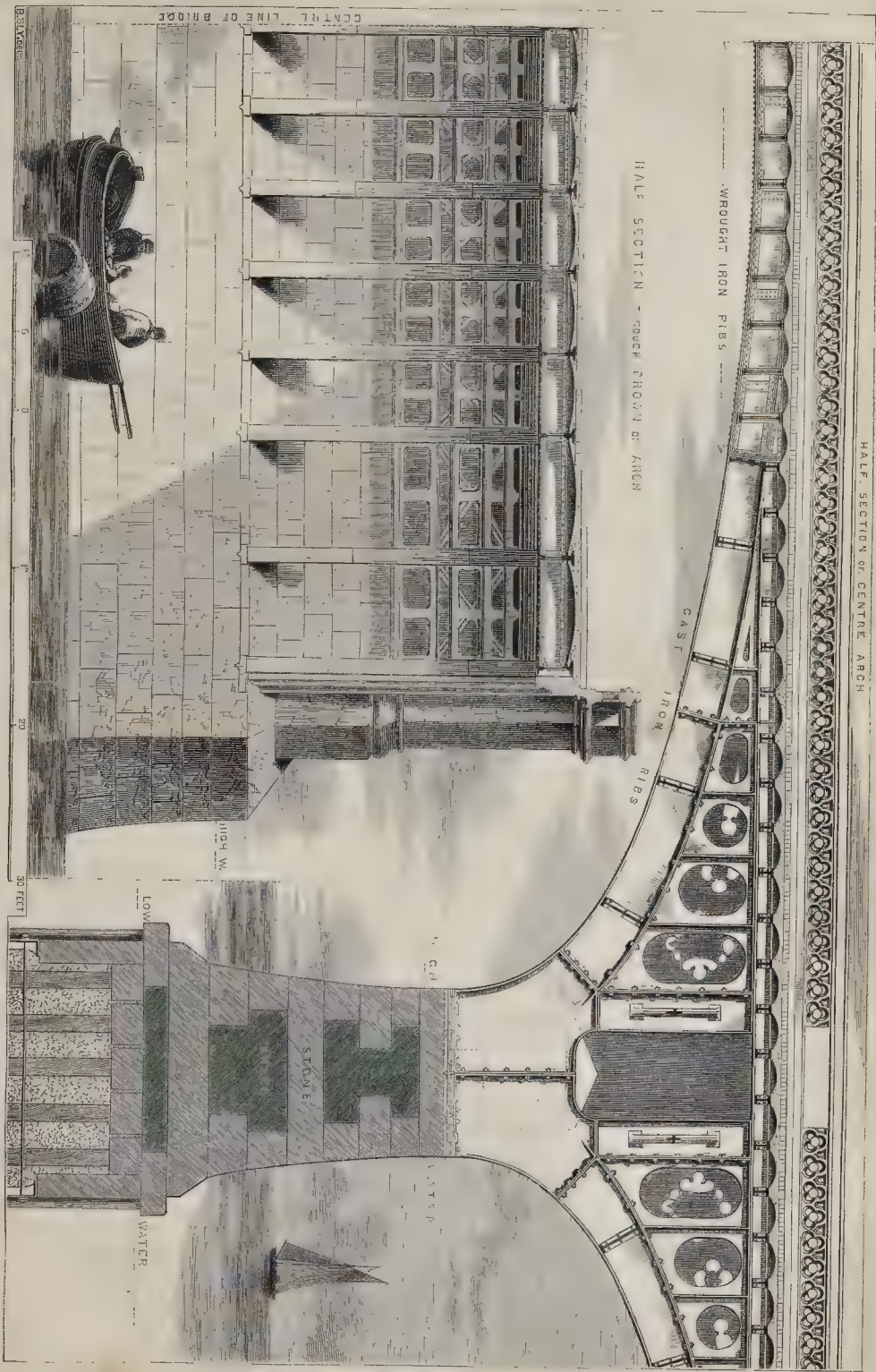
We may also repeat that great progress has been made with the works of the northern portion of the bridge. Three of the piers not occupying positions the same as those of piers of the old bridge, that is to say, the piers first, third, and fifth from the Surrey side, have been continued under the arches of the old bridge, and are complete, in readiness for the iron superstructure; and a similar construction of the sixth pier has been commenced in the foundations; though these last, at the line of the iron casing, fall within the projection of the apron-work and piles which retain the foundations of the old bridge; and the work therefore has to be carried forward cautiously.

The structural ribs of the southern half of the bridge, except the centre one, are now complete, save the insertion of one or two of the wedges, or filling-up pieces, which are required in two places

in each rib, at the junction of the wrought-iron centre portion with the next casting. The buckled plates are fixed, with the exception of one or two; and the formation of the roadway has been commenced. The temporary parapet on the north side is nearly completed. It is not intended now, that the temporary footway here shall overhang. The spandril tracery and cusping or general facing of cast-iron work (which is indicated in the cut), is being fixed at the arch next to the Surrey side. The pieces which form the decorative facing are hung from, and bolted to, the outer structural rib. The masonry of the parapets of the approaches is also nearly completed. These parapets are of Portland stone from the old bridge: they should have been of granite. Nearly all the projections of the piers of the old bridge have been cut away on both sides, and the stone made use of. The substructure of the Middlesex approach, in the whole width of the bridge, has been proceeded with under the arches thereof of the old bridge; and the stone facing north side of that part of the bridge, is likewise commenced. From the work already done, and the facilities which the completed piers of the new bridge will offer for the removal of the old bridge, we may anticipate that the northern portion of the bridge will be completed in a much shorter time than has been required for the works of the first or southern portion: at any rate it is to be hoped so.

Our illustrations comprise sections taken, one across the pier and through half of the centre arch, showing the iron-work superstructure of the pier, or springing of the rib, and the other through the crown of the centre arch; and they also exhibit the character of the parapet and other intended decorative details. They show two of the four cast-iron pieces of the rib, besides the wrought-and-riveted iron centre-piece, and the cast-iron skew-back pieces which are first fixed on the iron-crading shown, which last is laid in

grooves cut for it in the granite, and is fastened by bolts to the masonry. They also show the spandril castings, which are separate, and the portions of one of the castings each side in the rib, which fill up the space to the required curve for the line of roadway—these castings, therefore, differing as required in the arches on each side the centre. The superstructure of the piers is strutted by diagonal cross-bracing, and the remaining portions of the ribs similarly by straight pieces between the ribs. Upon the spandril castings is laid the framing of longitudinal and cross bearers, which carries the buckled plates. The bridge will be remarkable both for the flatness of the arches at the crown and for the small space (2 feet 10 inches) between the soffit in the centre and the surface of the roadway. Some dimensions are here added to save trouble of reference. The breadth of the entire bridge, inclusive of the parapets, will be 85 feet; whilst the old bridge is 44 feet. The portion of the bridge to be first opened will be 37 feet in width. The span of the centre arch is 120 feet; and the headway will be 20 feet above Trinity datum. At high water, 2 feet of the piers below the springing of the arches, at most, will be visible. Each arch, complete, will contain fifteen ribs, besides the decorative facing. Seven of the structural ribs in each arch are now fixed. They are 5 feet 2 inches apart, except under the future footpath, where they are 7 feet 6 inches. The wrought-and-riveted portion of the rib in the centre arch is 52 feet 9 inches long, and 2 feet 4 inches in depth, and is of 1½-inch metal. The portion in cast-iron next each pier, of the same thickness, measures 3 feet 9 inches at the haunch, or iron skewback,—which latter portion of the rib, as it might be called, spreads out to 5 feet 3 inches, where it is bedded on the horizontal cradling. The cross bearers for the flooring are 2 feet 9 inches, or 3 feet, apart.



IN MEMORIAM.—ROBERT STEPHENSON.

"Weep no more, woful shepherds, weep no more,
For Lycidas your sorrow is not dead."

LYCIDAS.

O'er more! ere yet the echoes of our grief
Melt into air; before the tears are dry
Shed o'er departed worth, the circle brief
Of one autumnal moon scarce hastens by
When the destroying angel smites again,—
One in the prime of honourable days,
Rich in esteem of all his fellow men,
In the full noon of reputation's blaze,
With love and reverence known in life's familiar
ways.

Twain giant of his brother, gone before,
He, too, has dared, Prometheus like, to climb,
The difficult steep of knowledge to explore,
And build a name beyond the touch of time;
And science in his track, with fostering care,
And peace their blessings manifold shall bring,
Plenty with golden horn, and commerce fair,
While freedom o'er the tranquil lands shall
fling,
Watchful, the shadow broad of her protecting
wing.

His task has lessen'd labour, vanquish'd space,
And through remotest years, belied afar,
His spirit leaves her everlasting trace,
Where'er impetuous speeds the fiery car;
And with his strength was childlike gentleness,
And tender sympathy, and prompt desire
To lift the fallen, with kindly words to bless,
And from his store of wisdom to inspire,
In youth's desponding breast, hope's re-awaken'd
fire.

Worthy his sire's renown, o'er whose young
morn,
Cold penny her wintry shadows threw,
Alone in toil, in contumely, and scorn,
Still to his Heaven-appointed mission true;
For Nature on his soul the seal had set
Of her nobility—his high-wrought aim,
Steadfast through doubts, through wrongs
devoted yet.

He wins, at length, amidst the world's acclaim,
And stands victorious on majestic hills of fame.

And in our island history enrolled,
Henceforth they are amongst the glorious dead,
The mighty, unforgotten men of old,
Bards who have sung, and freemen who have
bled:

O'er desert wastes parched by the tropic glow,
Fearless, still following duty's clarion call,
Or locked in icy grasp of Arctic snow,
No dread could shake, no danger could appal,
The stern, undaunted mind that triumphs over all.

They are not dead, but sleeping: from the past
Their voices speak,—and age shall teach to
youth

The story of their lives; conquerors at last,
Through calm endurance and heroic truth:
As lamps upon some sea-surrounded tower
O'er the wild billows pour unchanging light,
So pressing onwards in the dark'ning hour,
We hail them, star-crown'd, on the eternal
height,

Guiding through storm and strife, our faltering
steps aright. W. R. N.

ROBERT STEPHENSON.

WITHIN the space of a short month, two of our
most famous engineers have been removed from
the scene of their labours. They were nearly the
same in age, and both have died prematurely.
The coincidences of their career are remarkable.
They were both the sons of eminent fathers, who
had paved the road for their ability to work in.
They were both engaged in the same description
of gigantic works, which will remain for cen-
turies yet to come, as monuments of their skill,
and evidences of the advancement of this age.
We need not now inquire to whose works the
palm of superior merit is to be awarded; but if
the shareholders in the works of the two were
appealed to, the reply would be in favour of Mr.
Stephenson. The "broad gauge," advocated by
Brunel, has evident advantages over the "narrow
gauge" of Stephenson;* but it may be ques-
tioned in this, as in other instances, if the advan-
tages compensate for the enormous capital which
has been required to carry out Mr. Brunel's ideas.
In glancing at the railway works of the Stephe-
nsons, it will be noticed that the general features

are—plainness, massiveness, and utility. Cost has
been usually considered; and it may be generally
observed of the works of Stephenson, that while
permanency and use have been thought of, the pockets
of the owners have also been studied of. Brunel
was splendid in devising, leaving many matters
uncertain, and depending in some degree on
chance. Stephenson, on conceiving the idea
of a great work, first of all made careful in-
quiry and investigation, and then he engaged
persons of the greatest eminence in their various
ways to assist him in details. Thus, long
before the tubular bridge was built across the
Britannia Strait, all the difficulties had been con-
sidered, and every problem solved. Robert
Stephenson gradually felt his strength, by placing
the tube at the Castle of Conway, and took such
other steps that, when he floated on the huge tube
of his great bridge, he had no uncertainty or fear
of failure. We were forced, when speaking of the
construction of this bridge, to give more credit to
Mr. Fairbairn than some of Mr. Stephenson's
friends thought desirable; but what we said would
scarcely lessen the praise due to the latter in
respect of the work as a whole.

In building the great bridge across the St.
Lawrence, a work which will have the effect of
immensely improving the condition of Canada
and the United States, the same principle was
adopted. In this work the engineer proceeded in
his usual careful manner. He went to Canada at
the end of the summer of 1852, at the request of
the directors of the Grand Trunk Railway Com-
pany, and, after an examination into the facts, on
the 2nd of May following, addressed a report to
the directors, in which he considered the question
in three branches. 1st. As to the description of
bridge best calculated to prove efficient and perma-
nent; 2nd. As to the proper site; and, 3rd, as to
the desirability of such a structure. The engineer
on his arrival in Canada received alarming accounts
of the force of the ice in this famous river at
the time of the breaking up of the frost. The pro-
blem to be solved was to erect a permanent bridge
that would resist an amount of pressure, which
seemed incalculable, of ice, 4 feet or 5 feet thick,
in a running stream of a certain inclination,
velocity, and breadth. In order to ascertain the
force of this power, Mr. Stephenson got at
the inclination of the river; he then carefully
learned that the thickness of the ice was from
4 to 5 feet, and that about nine miles from Mon-
treal, there was a fall which separated the ice
above from that below.

Mr. Stephenson found that no bridge con-
structed in the ordinary manner could resist the
force of the ice: his first idea was to raise a bridge
with the piers defended with timber "cribs" of
great strength, similar to those much used on the
rivers of Norway. This plan was abandoned, and
piers of solid masonry, with large cut-waters of
solid stone, turned against the current, were built
at a considerable interval between each, and
spanned in the same manner as at the Britannia-
bridge.

By the time these lines are before our readers
all that remains of Robert Stephenson will have
been carried to rest within the solemn gloom of
Westminster Abbey, in honourable company with
the kings, queens, statesmen, warriors, and poets
of the past. It ought to be an encouragement to
the youth of England to consider the humble com-
mencement of this successful career. We met recently
with some who remembered Robert Stephenson
playing in the neighbourhood of the cottage
in which he was born, at Wellington Quay, and in
that of Killingworth Colliery, dressed in a home-
spun coat of George's own cut, full of life and
mischief, but most observant of all connected
with engines and engine-fires. Near the house
occupied by George Stephenson after the death
of his wife, at Killingworth, a quarry of large size
and depth may be seen filled with water: in
this quarry was a peculiar kind of ochre, which
was scarce, and also in considerable demand.
The quarry, when Robert Stephenson was a
boy, had become filled with water, as it is at
present: it was, however, worth while to get
it cleared of the water in order to reach
the mineral: so windmills and other con-
trivances were used for the purpose, but the
draining went on slowly, until George
Stephenson undertook to erect a small steam-
engine, which in a short time drained the place.
While the work was going on, Robert, who was a
very little boy, was scarcely for an hour of the
day absent. George Stephenson was at this time
not rich; but finding that the village was in-
sufficient for the purpose of his son's education,
he arranged to send him to the academy at New-
castle (about three miles distant), superintended

by Mr. Bruce, which was then under the care of his
son (a well-known antiquary), and the best school
in the district. George bought a donkey for his
son's use: and on this, morning and evening, the
young engineer might be seen cantering along
with his wallet of provisions for the day, and bag
of books slung over his shoulder. He could not
then have dreamt of sending locomotives whistling
through the land of the Pharaohs, or spanning the
mighty St. Lawrence or the Menai Strait; or of
that noble bridge which is such an ornament and
of such use to his native town; or that he would
be called upon to construct and superintend no
less than 1,850 miles of railway, at an outlay
of about seventy millions sterling. Give every
aid to the development of every child. Who
shall say how that child is to influence the world?

Under the care of Mr. Bruce the education of
Robert Stephenson rapidly progressed; and it may
well be doubted if George, in consequence of his
imperfect education, and his want of clear know-
ledge of drawing and mathematics, would have
been able, but for the aid of his son, to have com-
pleted with success the locomotive. From the
school at Newcastle-on-Tyne he went to Edin-
burgh, where an education well founded, not only
in book learning, but practical engineering, was
completed. Afterwards, he worked about two
years in his father's manufactory (then in its
infancy) at Newcastle; and then Robert Ste-
phenson sailed to South America. From South
America he was soon called back to assist his
father with the locomotive. And it may here
be mentioned that his love of the sea was great.
For many years past he has kept a steam yacht,
in which he has spent a portion of each season.
It was from this vessel that he was carried, only
a few days since, after a voyage to Norway, to
his home to die.

Not long ago Mr. Stephenson went to look
at his old haunts in Newcastle,* and although
in delicate health, he called upon the old people
who had known him in former times, helping
where need was, making little thoughtful pre-
sents, and talking in his kind and cheerful way.

Accustomed to superintend great works, having
thousands of workmen at the power of his bid-
ding, and feeling the strength of his position, it is
remarkable, although not lacking energy when
necessary, how modest and unassuming was his
manner, how considerate he was of the feelings
of the deserving though poor, and how usefully
he assisted rising talent.

Although not a professed antiquary, Robert
Stephenson took interest in, and had liking for,
matters of the past; and to his credit it must be
mentioned, that he has on several occasions
diverted the line of a railway for the purpose of
saving some ancient land-mark. He had a good
appreciation of art, and high respect for literary
ability. To the Philosophical Society in New-
castle, an institution to which both father and
son were indebted at an early part of their
career, Mr. Robert Stephenson has been a munifi-
cent patron.

Thousands, both at home and abroad, will re-
gret his premature death, and many will lament
the loss of a pleasant companion and a kind and
considerate friend.

THE COLUMN OF THE CONGRESS AT
BRUSSELS.

THIS structure was inaugurated during the
September fêtes: they lasted four days. On the
23rd was celebrated the commemoration of the
heroes of the Belgian revolution, in the cathedral,
magnificently decorated, and also took place the
opening of the Horticultural Exhibition, visited
by the Duke and Duchess of Brabant. On the
24th, the annual target practice, or "tir national,"
came off at the Champs de Manœuvre, and prizes
were distributed on the same day to artist
painters. The 25th commenced with a concert,
and was followed by allegorical representations in
procession, and the usual programme of these
public fêtes. The inauguration of the column
took place on the 26th. A design was accepted
from public competition in October, 1857, and the
protracted delays in its execution called forth the
bitter criticisms of the Belgian artists; but, as the
journals remark,—"Il faut se taire en pré-
sence d'un brillant résultat." For the last two
years M. Rogier has made the greatest efforts to
stimulate the exertions of artists and workmen,
having been very often seen on the scaffolding
encouraging and advising the men.

The column contains the history of the nation,

* The sun-dial made by George and Robert Stephenson
is still to be seen in front of the cottage once occupied by
them.

* It is said that the "narrow gauge" of George
Stephenson was taken from the wagon-way at Wyham.
This cannot be correct, for the gauge there is much wider
than the "narrow gauge" now in use.

from September, 1830, to the month of July, 1831. On the lower portion of the surbase, are found inscribed, first, the names of the citizens who, under the very fire of the Dutch troops, formed a provisional government; then follow the names of the citizens forming the congress, and that of the regent in charge of sovereign powers, when the proclamation of the constitution was read forth. Above this large tablets of inlaid white marble contain, in alphabetical order, the names of 237 members of the congress, appointed to take seats at the assembly. On the principal face of this block are engraved the twenty-seven articles of the constitution determined by the congress. Scrolls placed above the garlands, between four bronze statues, in a sitting posture, at the corners of the pedestal, contain the dates of the most remarkable events of the revolution, viz.:—"L'Affranchissement National;" "La Proclamation de la Constitution;" "La Réunion du Congrès;" "L'Événement du Roi Léopold." The pedestal is 4.80m. high, of the same dimensions on each side, and rich mouldings decorate it.

The first torus round the base of the column is of laurel-leaves: the second is of oak-leaves. Above this a lion's head holds a scroll, encircling the pillar, containing the names of the nine provinces. The shaft is fluted Doric: it commences at a row of shields representing the arms of the country and its provinces, supported by statues representing the same, nearly 3.50 m. in height. Two wreaths entwine the column, forming breaks in the fluting of the shaft: the lower one is of oak and olive leaves, with the emblems of Justice, Prudence, Providence, and Concord: the second "bracelet" is adorned with two oak crowns, and others of laurel and palm leaves.

The contours of the capital are graceful. On the frieze slender mutules break its monotony, while the centre of each face is adorned with an allegorical figure. These are Wisdom, Force, Immortality, and Glory. The capital supports a landing 4 metres square, and a balustrade 1.30 m. high, composed of four winged lions at the angles; and on the centre of each side there is a crown and garland, with the initials of his majesty, all done round with scroll-work. This latter is in gilt bronze-work. The pedestal surmounting the capital, and in which the door of the staircase has been placed, follows next. The doorway is of carved stone, sculptured with varied ornaments surmounted by a crown. A solid framework of iron fixes the colossal statue of the king, and every means is taken to prevent oscillation. The bronze-work was executed by MM. Corman & Co. The lower entrance door, in bronze, of remarkable excellence, was cast by M. Wanderbrande. The staircase leading to the summit of the capital has 200 steps sheathed with iron plate: its width is 80 centimètres at the base of the column, and 60 towards the upper portion: it is ventilated and lighted by holes ingeniously concealed in the folds of the scroll-work and the ornaments of the exterior. The two lions at the angles of the columns below are the work of M. Eugene Simonis, who also executed the bas-reliefs representing Belgium and the nine provinces; also the statue of *La Liberté des Cultes*. The statue of *La Liberté de l'Association* is due to the chisel of M. Fraikin: the two other figures, *La Liberté de la Presse* and *La Liberté de l'Enseignement*, are by MM. Melot, frères. These four statues of Florentine bronze adorn the stylobate of the base of the monument. Mr. William Geefs made the statue of the king on the summit. A medal, engraved by Leopold Weiner (of the Belgian Mint), will preserve the *souvenir* of the ceremony of the inauguration of the Congress pillar.

Honorary distinctions have been conferred upon a number of artists who were concerned in the erection of the column. A decree declares:—MM. G. Geefs and E. Simonis, sculptors, to be commanders of the Order of Leopold; M. J. Poelaert, architect, to be officer of the Order, for the talent evinced by him in the conception and execution of the monument; M. J. Geefs, sculptor, at Antwerp, to be officer of the Order, for the distinguished talent in his art, and as a compensation for the service he had rendered to the sculpture; M. C. A. Fraikin, decorated in like manner; M. Melot, sculptor, to be knight of the Order, for the active and intelligent assistance he has given in the execution of the ornamental works of the column; M. Samuel, to be knight, for his distinguished talents, of which he had given proof in connection with the monument, and especially for the *cantata* which he composed on the occasion of the inauguration; M. Bouillon, director of the popular chants on the occasion, to be knight, for the services he has rendered to the cause of popular musical instruction; M. Suys,

père, architect at Brussels, vice-president of the Royal Committee of Monuments, member of the Fine Arts class of the Royal Academy of Belgium, to be commander of the Order, for the acknowledged services he has rendered in his long and honourable career.

"ARCHITECT AND BRICKLAYER."

A CORRESPONDENT obligingly sends us, from Hull, the circular of one who calls himself "Architect, Valuer, and Builder," and denies the truth of the report that he has given up "the bricklayer department." Our correspondent sends it, he says, "to show what the practice of architecture has come to in the country." The circular ends thus:—

"By employing T. to do the work, you save the expenses of engaging an architect, as he will make plans and give instructions without charge, and allow a liberal discount for cash."

Some greater men than "T." do exactly what he is doing; and we have such a strong feeling in favour of freedom of labour, that we must even allow them quietly to take their own way, and leave the public to follow that course which they may discover to be the best. It should be the aim of architects to make this strikingly obvious.

ENGINEERING EXPLORERS AT THE FALLS OF PAOLO ALFONSO, ON THE RIVER SAN FRANCISCO, BRAZIL.

SOME of our readers may, perhaps, recollect an extract given in our pages a few months back, from the private letter of a young engineer, written on an exploring journey from Bahia to the interior of the country, with a view to the extension of the railway from that city. A few extracts from the same source, recently forwarded to England, may not be without interest to some, and especially to those who are admirers of that peculiar national temperament which enables Englishmen to cut their way through dangers, difficulties, and privations, into all the remote parts of the world, with an object in view:—

"Ivaziero (Lat. 9° 24' 31'; Long. 40° 24' 55'), June, 1859.

We reached Ivaziero on the 11th of May, and since then we have been indoors plotting our work, and have made a sketch of the road traversed—on the whole very favourable for a cheap line of railway. If I have been disappointed with the country passed over (excepting the beautiful regions of the Itimbe mountains and Villa Nova district), the sight of the majestic river San Francisco repays my disappointment. The width of the river from opposite the town to a little lower down, varies from half a mile to a mile in some parts, and the current runs at about two miles an hour, but varies very much from the rapids, which down the river are very numerous, there being some twenty-five from here to the celebrated Falls of Paolo Alfonso: to this place, distant about 350 miles from Ivaziero, we purpose making an excursion in a few days, and this I believe will be a sight very few have enjoyed: the falls are said to be only second to those of Niagara. The trade carried on at Ivaziero is principally in cattle and hides; also sugar, which is brought in barges up the river, from 300 to 800 miles; but as yet *all* is carried on in a small way, and the traffic remains to be opened out.

August 21st.—We left this place for the falls on the 20th of June, taking (as we thought) a good stock of provisions; and started in an "ajoujo" down the river. An ajoujo consists of two canoes lashed together and covered over with sticks and hides. In the stern we erected a cabin for ourselves with our tent and a few hides. The ajoujo is propelled down the river by "caboclos," a set of natives who gain their living by this sort of work; they use a rude kind of oar. The journey down the river was very pleasant, as we had the current in our favour: we passed, in the course of a hundred miles, the towns of Capion and Bon Vista, miserable places; their population will be from 800 to 1,000 souls. On leaving Bon Vista the navigation ceases for "barcas" (large boats), and the river is navigated only by canoes or ajoujos. A few miles below the town the rapids commence: we passed two or three small ones before coming to the "panellas," one of the most dangerous on the river on account of a whirlpool that comes within its influence: we passed within 10 chains of it through a tortuous passage among the rocks, along which our Indian pilot guided us with great skill, the waters rushing past us at a fearful speed, roaring and foaming over the rocks. On the 25th of June we came to an Indian settle-

ment on the Island of Santa Maria (about 120 miles from Ivaziero); here we found the ruins of two churches, one bearing the date 1734: the architecture and workmanship of one were quite of a superior kind, and reminded me of similar ones that I had seen in our boyish pedestrian excursions in Wales. The next place we came to was Cabrabo, built on the level plain, and surrounded by "catings" (brushwood); it has a miserable aspect, and though Indian corn and farinha were cheap at this place, we could obtain nothing else. The country here was very uninteresting, so we endeavoured to beguile the time with trying to shoot crocodiles, Mr. Vivian, who had a gun, only killing one. Fishing, also, we tried with great patience for some time, but caught nothing, although the fish were jumping up before our eyes, and we had to leave off minus hook and line. Mr. Vivian shot a good many birds and a few wild ducks, and one day we were obliged to spend half a day duck-shooting, to procure a dinner.

The navigation of the river ceases, even for canoes, nearly fifty miles from the falls of Paolo Alfonso: so we had to obtain horses, and rode to Curral das Boas, where the vigairo (vicar, or priest) of the place treated us very kindly. The next morning we continued our journey (crossing the river) and came within four miles of the falls. This was a very pleasant ride by the river side, the country being beautifully green, quantities of rain having fallen. Here the river presents to the eye a black mass of innumerable rocks and small islands, by which it swiftly rushes. In the background are craggy mountains, and the scenery is very wild. Here an artist might find plenty of occupation for his brush. The next morning we rode to the falls, and encamped in a small hut, half roofed, in which a fazenda man lived while tending his cattle. While the breakfast was preparing we took our first sight of the falls. I cannot give way to any exclamations; suffice it to say I was silent at the grandeur of the scene. I am a poor hand to give a description of such a scene as this magnificent waterfall presents, and must therefore tell you, in plain words, the mere form of the thing. You must understand that the river falls first from the level plain into a deep cut, and runs between high cliffs for twenty-five miles. The commencement of the fall is a rapid; the water rushes roaring and foaming through a narrow channel filled with dark rocks, that have a fearful and demon-like aspect, until it comes to the first fall, when it makes a leap of some 80 feet. It has not time to take breath, when it dashes wildly down an abyss some 120 feet deep, where it boils like a huge cauldron, the reaction of the water rising up and down some 50 feet. A little farther on it is joined by the most beautiful model of a waterfall that you can imagine, some 130 feet in height, on each side of which are smaller waterfalls trickling between the green stones: these unite with the boiling waters below, to make the last leap of, I suppose, some hundred feet; after which they roll forward, but are broken in force by the opposite cliff (on account of the sharp bend in the river) against which they curl and foam with rage. We measured the cliff, and found it to be 242 feet in perpendicular height (lost all our ropes once, and had to recommence), and the width averaging from 400 to 700 feet. I made two or three sketches—mere outlines, for I was ill at the time: altogether I must say it was a grand sight, and well worth a visit, but which should be made *coming up* the river.

We left the falls on the 10th July, and rode that evening ten miles by moonlight, and the next day continued our journey, passing the rapid or waterfall of Itaperica: it is here that the Itimbe mountains cross the river, and not at Paolo Alfonso. We reached Vargim Redondo at midnight, having ridden that day forty miles. We took a canoe, and joined our ajouja some six miles up the river, and here I was taken ill with ague fever; and it was very tedious work during seventeen days remounting the river, and we were hard up for provisions. I sometimes crawled from my couch (in the ajouja) much excited by the passing of a rapid; for we would work hard against the stream, and sometimes be driven back three or four times: whilst passing the critical point the yells of the "caboclos" were deafening. There are some twenty rapids, more or less, dangerous to pass between Bon Vista and Vargim Redondo, on account of the hidden rocks.

After our arrival at Ivaziero, having had a severe attack of ague fever, I was much benefited by an excursion we made to see a wonderful cavern some 200 miles from hence, up the valley of the Saletre. In this valley are grown great

quantities of sugar-cane, and the sugar is sold in the form of bricks, called *rapaduras*. We rode some forty miles a day for five days; but were well entertained by the way. The cavern is in a level plain in the Catinga. You descend some 70 feet by a sort of shaft, much blocked up with *debris*, and then enter a series of galleries, some of which are decorated with beautiful stalactites; there are the forms of the caranaba-tree, stump of the cocoa-nut, barrels of an organ, pulpit, &c. We traversed passages for about two miles (and there were others we did not explore), when we came to a shaft about 50 feet high and 3 chains in diameter, which we could not ascend, so returned on our steps, gathering a few curiosities by the way.

WALTER RUSSELL CROUDACE."

THE STRIKE, IN THE QUARTERLIES.

BOTH the *Edinburgh* and the *Quarterly* devote a considerable space in the current number to the discussion of Strikes and Trade Combinations, and ought to be widely read. The writer in the *Quarterly* points out, as we have already done, the effects produced by the trammels of the early guilds, and proceeds to show the sums of money that have been wasted in strikes. Thus, the spinners' strike, in Manchester, in 1810, cost a loss in wages of 300,000*l.* and the men returned to work without in any case obtaining an advance. By another strike, in the same place, in 1829, 250,000*l.* were lost in wages, and the men returned to work at a considerable reduction. During the Preston strike of 1853, the funds contributed by operatives, during the thirty-six weeks it lasted, amounted to 97,000*l.* Nevertheless, the workpeople went back to work without the ten per cent. increase they had asked for. "The loss in wages by the operatives during the strike was a quarter of a million sterling, and the total amount of the loss to all parties involved in the struggle was upwards of half a million!"

For a long time each fresh improvement caused riots amongst the operatives, and these in their turn produced further improvements. Moreover, with machinery came advantage to the operatives. "In whatever counties machinery is the most perfect, there production is the greatest, and the remuneration paid for wages is the highest."

The last strike against machinery was, oddly enough, that of the Amalgamated Engineers, who live by the manufacture of machinery:—

"In 1853 the Engineers' Union commenced an agitation throughout the country to put an end to overtime and piecework, and to procure a reduction of the hours of labour, and the abandonment of machine-making machines. Among other things, the men required of the masters 'the unconditional discharge of all labourers, or such class of persons engaged in working planing-machines, or tools of a similar character, and the employment in their stead of mechanics, members of the union.' This proposal was similar to that of the Millwrights' Union in 1824, when they prohibited even a grindstone being turned save by a regular journeyman millwright, at two guineas a week. To the demands made by the Amalgamated Engineers, the masters replied by insisting on the mechanics and others in their employment signing a document repudiating any connection with the union. A turn-out was the consequence. The masters saw before them the prospect of a heavy loss; but as both their capital and profits were at stake, and as it was necessary to determine whether they or their men were to govern in the engineers' shops, they fought the battle out. Steam was set to work to do its utmost, new labour-saving machines were invented, and many workmen not belonging to the union came in, some of them unskilled, who thus gained a footing in the trade. The result was, that after fifteen weeks' idleness, and a loss of some 43,000*l.* the men consented to go back to work at the old wages, but under considerably more stringent conditions than before. This was all that the engineers gained by their strike."

The building-trades, united in a powerful union, have made many attempts to keep up wages by strikes:—

"For instance, in 1833, the building trades of Manchester served a requisition on the masters calling upon them to abstain from erecting buildings on the system of sub-contracts. The masters complied, but the concession only led to fresh demands on the part of the workmen, who proceeded to issue a series of regulations requiring the masters to abide by certain rules respecting the equalization of wages, the machinery they were to employ, the number of apprentices they were to take, &c. &c. The masters again complied; but the workmen proceeded to even more dictatorial measures, such as levying fines upon their employers when they had violated any regulation of the Union, ordering the masters to appear before them at their meetings, and demanding them to dismiss or take back such and such workmen, and obey such and such rules. Non-compliance with these tyrannical decrees was, in several instances, followed by an immediate strike of all the hands in the shop. The employers, alarmed, threw themselves into an Association for mutual defence, being unable longer to endure restrictions which threatened to involve them in ultimate ruin. They accordingly determined to employ no workmen who did not sign a declaration that he did not belong to a trades' union. A general turn-out was the consequence, and it lasted six months, during which the vast building operations carried on in Liverpool and Manchester were almost entirely suspended. No attempt

whatever had been made by the masters to reduce the wages of their workmen, or to interfere with any one of their usual practices or privileges. The pay of the bricklayers had even been increased three shillings weekly a short time before the strike took place; for the building trade was brisk, and the masters desired to attract workmen into their employment. Good hands were enabled to earn as much as thirty five shillings a week during the summer months. The men were well supported during their strike, their brethren in the building trades all over England forwarding liberal contributions. Not less than 18,000*l.* was received in this way. The sacrifice which the operatives made in wages during the six months they remained idle was at least 73,000*l.*; and as there was no prospect of the masters acceding to their proposals, the combination was voted a nuisance, and the men went back, entreating to be employed upon the old terms. But many of the bricklayers, formerly in progress had by this time been discontinued; a considerable number of fresh labourers had been brought from distant parts of the country; and machinery had been introduced to perform certain parts of labour to which it could be applied. Thus only a proportion of the former hands could be taken on; and many of them never recovered from the misery into which they had sunk, or from the habits of idleness and dissipation which they had acquired, during the period of the strike."

In Ireland, the writer shows, some trades have been ruined by successful strikes. Capital flies from turbulence, and gives its aid only where security and freedom are assured. The following table is printed to show that "a steady increase has taken place in the wages of workmen employed in the building trades in London during the last thirty years."

ANNUAL WAGES PER WEEK.

Description of Workmen,	1820.	1839.	1849.	1859.
Masons	5.	8.	8.	8.
Bricklayers	28	30	30	33
Carpenters	27	29	29	32
Joiners	29	30	30	33
Plasterers	28	30	30	33
Painters	27	28	28	32
Plumbers	30	30	30	33
Labourers	18	18	18	29

"This increase in wages has taken place without strikes, and is attributable to the increased demand for labour, arising from various causes. It is, however, worthy of remark, that the increase in the money rate of wages does not represent the actual increase, which can only be fully estimated by going into the comparative quantity of necessities which the money earned will purchase. During the period referred to, the average price of bread has been reduced from 9*d.* to 6*d.* the 4*lb.* loaf; sugar from 7*d.* to 4*d.* per *lb.*; tea from 6*s.* to 3*s.* 6*d.*; soap from 7*d.* to 4*d.*; and coals from about 3*s.* to 1*s.* 6*d.* the ton. If, therefore, the increase in money wages, together with the reduction in the price of necessities, be taken into account, it will be found that the men employed in the building trades of the metropolis have, within the last thirty years, secured an increase remuneration for their labour equivalent from 30 to 40 per cent."

The article in the *Edinburgh* deals with the "secret organization of trades," and its object is to show that the operation of the trades' unions is fatal to the political and social interests of all within their sphere. The writer says:—

"Their aim and object is, in every case which we have been enabled to investigate, to stultify the action of superior physical strength, moral industry, or intelligent skill; to depress the best workman in order to protect the inferior workman from competition; to create barriers between the society-man can surmount, and which few non-society-men dare to assail; and, in short, to apply all the fallacies of the protective system to labour. Such a system injures first the individual, whose sole robe of a free market for his labour; secondly, the class of manufacturers to which he belongs by increasing the cost and diminishing the efficiency of the workmen; and, lastly, the nation at large, by curtailing the productive power, and consequently the wealth of the community."

It is stated that, according to the best accessible authorities, the trades' unions in the kingdom are not fewer than 2,000, comprising 600,000 members, and commanding a fund of 300,000*l.* If we suppose each member to have three persons dependent on him, it would appear that nearly two and a half millions of the working population are regulated by their own special laws. A large number of instances are given to show the despotism exercised by trades' unions towards those who are not of their body, and the writer sums up in the words of the Handloom Commissioners' report:—

"We believe that if this state of things is to continue, we shall not retain the industry, the skill, or the capital on which our manufacturing capacity, and with that superiority our power, and almost our existence, as a nation depends. But, though we believe in the truth of these premises, they are not the grounds on which we wish now to proceed. Our immediate object is to give freedom to the labourer; and we firmly believe that as soon as he is made master of his own conduct, he will use his liberty in the way most useful not only to himself, but to the rest of the community."

Avoiding the revival of restrictions, we must rely on gradual effects of education, urging on masters that they should not entrench themselves too sternly behind what they may consider their rights, but by cordiality and frank explanation seek to remove causes of dissatisfaction. We agree with Lord Ellesmere, that "the working classes of this country are disposed to reward with their

goodwill and affection those to whom, rightly or wrongly, they attribute similar feelings towards themselves."

GLASGOW NEW WATERWORKS.

GLASGOW is at length to be supplied with a purer water than it has had heretofore. The new works, works of great magnitude and cost, were opened on Friday, the 14th, by the Queen. Under the powers of an Act of Parliament obtained in July, 1855, water is brought from Loch Katrine, lying at an elevation of 360 feet above the sea. The district of thirty-four miles in extent which intervenes between the loch and the city has been penetrated by tunnels, crossed by aqueducts, or traversed by iron pipes, in the execution of the necessary works for ultimately conveying to the city fifty million gallons of water per day.

The tunnel into which the water of Loch Katrine is to flow is 8 feet in diameter, 2,325 yards in length, and 600 feet below the summit of the mountain under which it passes. It is the first of a series of seventy distinct tunnels, of the same diameter, which measure in the aggregate 13 miles in length, the longest being at the southern extremity of the works, and 2,650 yards in length.

Loch Katrine, Loch Venacher, and Loch Drunkie, are all laid under contribution, either for the supply of the city, or for affording an increased and more regular supply in dry seasons to the river Teith below Loch Venacher, as compensation for the privilege of diverting 50,000,000 gallons of water per day to Glasgow. The total area of these lochs is upwards of 4,000 acres, and the available capacity within the limits to which they may be drawn off is 1,600,000,000 cubic feet of water.

The works have been about three years and six months in course of execution, under the management of Mr. John Frederic Bateman, engineer, and have given employment to about 3,000 men in the country for a large portion of that time, besides ironfounders and mechanics engaged in the manufacture of the iron pipes, and in the various iron work and machinery connected with the works. The cost of construction of the new works will be between 600,000*l.* and 700,000*l.* and the total cost of the undertaking to the city, including the purchase of the works of the former water companies, compensation for land, water privileges, and other expenses, will be nearly 1,500,000*l.* The present population of the city and suburbs to be supplied with water extends to upwards of 500,000.

The drainage area of Loch Katrine is 23,800 acres, and of Loch Venacher and Loch Drunkie 23,000 acres, making a total of 45,800 acres. On this the average fall of rain is between 70 and 80 inches per annum. That which falls on the collecting ground of Loch Katrine is about 80 inches on the average of five years' observations. If all the water which flows from the mountain-sides into Loch Katrine were impounded it would afford a regular daily supply of 80,000,000 or 90,000,000 gallons. The storage which is provided by the works which have been executed is equal to 50,000,000 gallons per day for 120 days without rain. It is obtained by raising the water by proper masonry and sluice-gates at the outlet four feet above the ordinary summer level, and by drawing it down, if necessary, to three feet below that level, giving seven feet in depth in all. The requisite storage for compensation to the river Teith, which consists of a regular guaranteed quantity per day, is obtained by raising Loch Venacher 5 feet 8 inches above its ordinary summer level, and drawing it down 6 feet, giving 11 feet 8 inches in all, and by raising Loch Drunkie 20 feet. The works at the outlets of the lakes are interesting and important.

The aqueduct from Loch Katrine to Glasgow is about thirty-four miles in length, ten or eleven of which consist of ridges of rock of the hardest description, forming the spurs of Ben Lomond, which towers to 3,000 feet above the level of the works. Through these ridges, in a tolerably straight direction, the aqueduct is carried principally by tunnelling, the tunnels being, as we have said, eight feet in diameter, and having a fall of ten inches in the mile. Across three deep and wide valleys the water is conveyed by cast-iron pipes four feet in diameter, with a fall of five feet per mile; and at the distance of about twenty-six miles from Loch Katrine, near Mugdock Castle, a large reservoir of about seventy acres in extent, and containing 500,000,000 gallons of water, has been constructed. From this reservoir, the surface of which is 311 feet above the sea, the water is taken to the city by two

lines of cast-iron pipes, each three feet in diameter, one being about seven, and the other eight miles in length. Of the twenty-six miles which lie between Loch Katrine and the service reservoir, thirteen miles are tunnelling, three and three-quarter miles are iron piping, and the remainder, where the ground has been cut open, is an arched aqueduct of eight feet in diameter, having the same inclination as the tunnels. Where the ground has been excavated it is filled in again over the aqueduct, which is covered throughout, and the surface restored to its original condition. In the Loch Katrine tunnel, and generally in the mica slate, the ordinary average progress was about five yards in a month. In drilling the holes for blasting the rock with gunpowder, a fresh drill or chisel was required for every inch in depth upon the average. About sixty drills were constantly in use at each face, and the cost of gunpowder alone was from 27s. to 80s. per lineal yard. There are twenty-five important iron and masonry aqueducts over rivers and ravines, some 60 and 80 feet in height, with arches of 30 feet, 50 and 90 feet in span; and, in addition to about forty-six miles of new pipes within the city for distributing the water to the inhabitants, there are about twenty miles of large cast-iron pipes of 3 feet, 3 feet 6 inches, and 4 feet in diameter, for conveying the water to the city.

Amongst the resident engineers and inspectors should especially be mentioned Mr. George H. Hill, Mr. James Gale, and Mr. Alfred Moore.

INAUGURATION OF THE WEBSTER STATUE, BOSTON, U.S.

On this occasion, September 17th, the statue was transferred to the city, and Mr. Everett, amongst others, delivered an eloquent oration, which occupied an hour and three quarters. "What citizen of Boston," said he in the course of it, "as he accompanies the stranger round our streets, guiding him through our busy thoroughfares, to our wharfs crowded with vessels which range every sea and gather the produce of every climate—up, to the dome of the capitol, which commands as lovely a landscape as can delight the eye or gladden the heart,—will not, as he calls his attention at least to the statues of Franklin and Webster, exclaim:—'Boston takes pride in her natural position: she rejoices in her beautiful environs: she is grateful for her material prosperity; but richer than the merchandise stored in palatial warehouses, greener than the slopes of sea-girt islets, lovelier than this encircling panorama of land and sea, of field and hamlet, of lake and stream, of garden and grove, is the memory of her sons, native and adopted,—the character, services, and fame of those who have benefited and adorned their day and generation. Our children, and the schools at which they are trained, our citizens and the services they have rendered;—these are our jewels—these are abiding treasures.' Yes, your long rows of quarried granite may crumble to the dust; the cornfields in yonder villages, ripening to the sickle, may, like the plains of stricken Lombardy a few weeks ago, be kneaded into bloody clods by the maddening wheels of artillery: this populous city, like the old cities of Etruria and the Campagna Romagna, may be desolated by the pestilence which walketh in darkness, may decay with the lapse of time; and the busy mart, which now rings with the joyous din of trade, become as lonely and still as Carthage or Tyre, as Babylon and Nineveh; but the names of the great and good shall survive the desolation and the ruin; the memory of the wise, the brave, the patriotic shall never perish. Yes, Sparta is a wheat-field; a Bavarian prince holds court at the foot of the Acropolis; the travelling virtuoso digs for marbles in the Roman Forum and beneath the ruins of the Temple of Jupiter Capitolinus; but Lycurgus and Leonidas, and Miltiades and Demosthenes, and Cato and Tully, 'still live,' and He still lives, and all the great and good shall live in the heart of ages, while marble and bronze shall endure; and when marble and bronze have perished, they shall 'still live' in the memory, so long as men shall reverence Law, and honour Patriotism, and love Liberty."

Mr. Everett thus closed his address:—

"Two hundred and twenty-nine years ago, this day, our beloved city received, from the General Court of the Colony, the honoured name of Boston. On the long roll of those whom she has welcomed to her nurturing bosom is there a man who shines with a brighter lustre than his? Seventy-two years ago, this day, the Constitution of the United States was tendered to the acceptance of the people by George Washington. Who of all the gifted and patriotic of the land, that have

adorned the interval, has done more to unfold its principles, assert its purity, and promote its duration? Here, then, under the cope of Heaven; here, on this lovely eminence; here, beneath the walls of the capitol of old Massachusetts; here, within the site of those fair New England villages; here, in the near vicinity of the graves of those who planted the germs of all this palmy growth; here, within the sound of sacred bells,—we raise this monument, with loving hearts, to the statesman, the patriot, the fellow-citizen, the neighbour, the friend. Long may it guard the approach to these halls of council! long may it look out upon a prosperous country! and, if days of trial and disaster should come, and the arm of flesh should fail, doubt not that the monumental form would descend from its pedestal, to stand in the front rank of the peril, and the bronze lips repeat the cry of the living voice—'Liberty and Union! now and for ever, one and inseparable!'"

THE DRAINAGE OF HULL.

WITH reference to a paragraph on this subject in a recent number, our informant says that he was misdirected as to the division on the drainage question, the numbers being 19 to 15, instead of 29 to 15. Mr. Butler, it should be mentioned, is the assistant surveyor of the board. The surveyor is Mr. R. A. Marillier.

The above division was not for and against the plan, but whether a rate should be laid as the works progress; or that the board should again apply to the Secretary of State to borrow the money for a term of twenty years;—the Local Board having, in October, 1855, adopted the plan by 38 to 7 votes; the 7 votes being for Mr. Hawksley's plan.

Mr. Marillier sends us the following, as an outline of the history of the West District Drainage Question in Hull:—

"In March, 1853, Mr. W. Clark, who was at that time surveyor to the Board, and now is engineer to the Municipal Commissioners of Calcutta, presented a report to the Local Board, recommending a system of drainage. He considered that efficient drainage could not be obtained without the assistance of pumping. This plan was subsequently approved by Mr. Austin, engineer to the General Board of Health. On Mr. Clark's leaving for India, Mr. Newman succeeded him. In June, 1855, he reported on the subject, confirming Mr. Clark's views. In May of last year I was called upon to report on the same subject: the plan I proposed was very similar to Mr. Clark's. About the same date Mr. Butler sent in a plan, and laid it down as a principle that the town could be drained without resorting to pumping. Mr. Hawksley was subsequently called in, and in October of last year sent in a report, and recommended a plan somewhat different from the others before the Board, but agreeing with Mr. Clark, Mr. Newman, and myself, in considering that steam-power was absolutely necessary to ensure efficient drainage. Shortly after this period, the Board resolved to carry out Mr. Butler's plan. The Secretary of State for the Home Department was then applied to for his sanction to borrow money, on security of the rates, for carrying it out. The plans were by him put into Mr. Ranger's hands for examination, and, from the report he made, were by him (the Secretary of State) returned to the Board for 'reconsideration.'"

CHURCH-BUILDING NEWS.

Lound.—On the 11th ult. the new church at Lound, near East Retford, was consecrated by the Bishop of Lincoln. The building, which has been erected at the expense of Miss Burnaby, the site being the gift of F. Walker, esq. both being residents, is Early English in character, and of red brick, with stone dressings, having a south porch of open woodwork, and a bell-cot on the west gable. The plan is a parallelogram, 45 feet by 19 feet 6 inches. The roof is high-pitched, framed with open timbers; and the interior is fitted up with low, open seats—pulpit, altar-rails, &c.—the whole being of deal, stained and varnished. Mr. J. G. Weightman, of Sheffield, was the architect; and Mr. W. Bows, of Gringley, the builder.

Dover.—A site has been decided on for the erection of the new church of St. James, in a large meadow at the foot of the Castle-hill, Eastbrook. Its cost is 600*l*, which have already been provided by subscription. The new church will be from a design of Mr. Talbot Bury, architect. It will have a lofty spire, and is to contain 1,400 sittings—more than double the number

in the present edifice. The estimated cost of the fabric is about 7,000*l*, of which 4,000*l* have already been subscribed.—Hougham Church, which had fallen into a state of great dilapidation, has lately undergone a renovation. A new tower has been built, at an expense of 325*l*, laid out by Mr. Steriker Finnis; and increased accommodation has been found for the parishioners.

Fenstanton.—The following tenders, for repewing and restoring the interior of the parish church here, were received on the 4th inst. Mr. R. Hutchinson, of Huntingdon, architect:—

	Seats and Screens executed in Oak.	Seats and Screens executed in Deal, stained and twice varnished.
Mathews, Elm, Wisbech	2918 0 0	2790 0 0
Ringham, Ipswich	900 0 0	687 0 0
Thody & Clayton, Cambridge	830 0 0	660 0 0
Moaks, London	798 0 0	738 0 0
Bell & Son, Cambridge	798 0 0	608 0 0
Cox & Son, London	773 0 0	663 0 0
Ellis & Son, Peterborough	595 0 0	335 0 0
Kirby, Henlow	535 0 0	515 0 0
Bunting, Fenstanton	544 0 0	484 0 0
Allpress, Broughton	533 0 0	433 0 0

THE WESTMINSTER BELL.

STR.—In your notice of the bell, given in last week's number of the *Builder*, I am made to assign only one cause for the fracture, and to leave out the one which I regard as the principal: perhaps you will therefore allow me to state that the primary cause was, in my opinion, the excessive weight and fall adopted for the clock-hammer; which struck the bell with seven times greater force than that which, according to my views, published before the first bell was broken, should be capable of bringing the full tone out of a bell of this weight, providing its proportions were of the first order. E. T. LOSREY.

FRIENDLY SOCIETIES AND INSURANCE OF TOOLS.

STR.—My experience of twenty-five years proves to me that the much-abused friendly trade societies are the best for insuring workmen's tools by fire. About six years ago we had a policy from the County Fire and Life Insurance office, Blackfriars: from that office we were transferred to —. Two years ago we had a member who lost his tools by fire, amounting to little less than 10*l*. We were insured for 200*l*, for which we paid 21s. per cent. besides duty. Being one of the trustees, I took a detailed list of the tools lost to the office, and produced our books and rules to —, the surveyor, to satisfy him that the man was good on the books. After some time we were informed that 4*l*. was the amount due to us. We objected, and for six months longer continued corresponding first with the office then with the surveyor. Coming to a resolution not to receive the money offered, we were paid 6*l*. and some odd shillings, being two-thirds of the amount claimed,—the whole amount having been paid to the man by the society some time previously. This was the treatment we received after insuring for six years, with only one claim during this time. This is only one good object amongst several others all in the right direction. These societies, everywhere spoken against, are capable of improvement, as all things are; they have existed from early time, through the Freemasons of the Church and corporate bodies; and lastly, friendly and trade societies existed under the combination laws. It is useless to bind the free-born mind in iron chains. You will be pleased to let this appear in the *Builder*.

C. TAPERELL, Carpenter and Joiner.

DEPUTATION TO THE SECRETARY FOR WAR.

A DEPUTATION from the vestry of the parish of St. Luke waited, on Friday afternoon in last week, on the Secretary for War, at the War-office, Pall-mall, with respect to the removal of a great obstruction in the King's-road, Chelsea, caused by the existence of a high wall which separates it from the Royal Military Asylum. The deputation consisted of Mr. Tite, M.P. and Messrs. Miles, Whitehead, Leete, Hall, Perry, E. V. Symons, G. W. Richards, and Lahee, vestry clerk.

Mr. Tite having introduced the deputation to the right hon. gentleman, observed that the vestry were exceedingly anxious to remove the obstruction complained of, but as the parish was an exceedingly poor one, they wanted the right hon. gentleman's help to enable them to do so. Formerly the King's-road was private, and had bars placed across it, to prevent persons from passing;

but thirty years ago it was given up to the public, and the authorities of the parish, seeing that the wall of the Royal Military Asylum had proved a great obstruction, used every exertion to get it removed. Behind the wall itself sheds had been erected, and a house, which was not a very healthy one; and they wished the authorities of the Chelsea Asylum to take the wall down, and they would undertake to build a new one. As to the land which they required to widen the road, and which was about 20 feet beyond where the wall now stood, the vestry thought it would be rather hard to ask them for its value, but they were prepared to erect a palisading if their wishes were complied with. If given up, it would be a contribution on the part of the War-office for the benefit of the public.

Mr. S. Herbert asked what the quantity of land was, or what was its value?

Mr. Tite replied that it was about a quarter of an acre; and, taking its value at 1,500*l.* per acre, would be worth 350*l.*

Mr. Herbert wished to know what the parish authorities proposed to do, and he was sure those of the Chelsea Asylum would be disposed to go half-way.

Mr. Tite replied that they would build the wall, and he hoped the War Office would spare a very poor parish the expense of purchasing the land. They were entitled to that exemption on public grounds, for they had already done a great deal to improve the approaches to the hospital. He regretted to say—for he was a member of the Board—that the Metropolitan Board of Works would not do anything, and their only hope, therefore, was to have recourse to the assistance of the right hon. gentleman.

Mr. Herbert had no doubt that the obstruction complained of was a great inconvenience, nor did he think there would be any difficulty about the land, because it belonged to a public establishment. He would not, however, give the deputation any definite answer, because he should lay the matter before the Commissioners, who were trustees in the matter.

The deputation then withdrew.

ASTLEY ABBOTT'S CHURCH, SALOP.

As architect of the works now going on at Astley Abbott's Church, I feel called upon to make a few remarks on the paragraph which appeared in last week's *Builder* on this subject.

"*Looker On*" says that "the stonework was renewed and beautified in 1850 and 1853." This consisted in the rebuilding of the south wall of the nave, and in the addition of a porch and a bell-turret at the west end. The old walls are of rubble; but the new work is of squared masonry, and unlike anything suggested by the original or by any village church in the neighbourhood, and the whole is of such costly character, that had it been thought desirable to do so, it was quite out of the question to attempt to continue any further works on the same scale. Without wishing to express any opinion as to what had already been done, I thought it right to advise that the present work of restoration should be carried on rather in conformity with the original character of the building than in the late additions. There were other reasons for preserving the not unusual pitch of the old roof, which, though rude, was massive and characteristic. The works now in progress do not touch the chancel walls or roof.

ARTHUR W. BLOMFIELD.

SOCIETY FOR IMPROVING THE SOCIAL POSITION OF THE BLIND.

This society, of which we have already spoken, is making steady progress. A house has been taken in the Walworth-road, and classes are opened in Peckham, Pimlico, and Paddington. Lectures and musical meetings are also arranged for. On the 18th, a meeting was held to open the Institution, when a report was read, showing that from a very humble beginning it now numbers 150 warmly interested friends.

The report went to say:—

"A serious but unavoidable responsibility has been incurred by the committee in taking extensive premises in a particularly suitable locality, and admirably adapted for general business purposes, in order to establish a base of operation from which their future efforts will be directed to all parts of the United Kingdom; for the fundamental principles of this Society are to assist those that other institutions cannot possibly relieve from local causes, the limited nature of their constitutions, and to adopt any measures that may tend to alleviate the innumerable trials of blind domestic life, hitherto almost overwhelmed by society in general.

A series of gratuitous, interesting, and instructive miscellaneous entertainments for the blind have been organized, extending over the ensuing winter until Easter, consisting of twenty-four lectures on various subjects, by clerical, literary, and scientific gentlemen of acknowledged ability; twelve vocal and instrumental performances, at which several talented blind artists will assist; and seven social evenings for interchange of thought between the blind and those interested in their welfare, or for select readings, comprising, in all, a course of intellectual recreation hitherto withheld from a heavily afflicted class, affording for the enjoyments produced by the exercise of reflective faculties and social friendly intercourse."

Resolutions were passed to the effect, first,—

"That the existing institutions on behalf of the blind in Great Britain and Ireland are, numerically, totally inadequate to the mental, physical, and general requirements of that afflicted class, there being upwards of 27,000 out of 30,000 unprovided for in any way whatever by public efforts."

And secondly,—

"That an institution based on principles enabling it to extend general benefit to the blind throughout the United Kingdom is absolutely required."

It is to be hoped that it will be supported as it well deserves.

THE STRIKE IN BRISTOL.

COMMITTEE FOR INTIMIDATION.

On the 15th, three members of the union, named Arthur White, George Clark, and George Clark the younger, were taken for examination before Mr. Edward Saumson and Mr. Frederick Tothill, at the Lawford's-gate session-room, upon a charge of having, by threats and intimidation, and in divers other ways, molested one William Brown, and endeavoured to force him to depart from his hiring in the service of one John Yulland, as a mason, contrary to the statute, &c.

Mr. Ayre, for the prosecution, stated that the charge was a criminal one, founded on the provisions of the 6 Geo. IV. c. 139, s. 3, which enacted, that "if any person shall, by violence to the person or property, or by threats and intimidation, or by molesting, or in any other way obstructing, force or endeavour to force any journeyman, manufacturer, workman, or other person hired or employed in any manufacture, trade, or business, to depart from his hiring, employment, or work, &c.; or if any person shall use or employ violence to the person or property of another by threats or intimidation, or shall molest or in any way obstruct another for the purpose of forcing or inducing such person to belong to any club or association, or contribute to any common fund, &c., such person shall be imprisoned and kept to hard labour for any term not exceeding three calendar months." The facts, as gathered from a very lengthened examination, were these:—Some time ago the Bristol masons, emulating the example of their brethren in the metropolis, but instead of asking for an abridgement of the hours of labour, they asked for a money addition of 2*s.* per week to their wages. After standing out for some time the masters gave in, and the increased wages were agreed to be paid to the men, and have since been paid. Mr. Yulland is employed upon the erection of a new county lunatic asylum for the city and county of Bristol, at Filpods, and among the men employed by him were five or six who lived in the suburbs, and do not belong to the union. The union men took offence at this, demanded the immediate dismissal of the non-unionists, and on Mr. Yulland, who considered it a tyrannical proceeding, refusing to comply with their demand, they again struck. Since then the non-union men have been assailed in going to and from their work by mobs of men, women, and boys, who hooted and yelled at them, calling them "blacks," and "Yulland's hounds," and threatened them with personal violence. Mr. Ayre and Mr. Yulland did not ask for extreme penalties, but it was necessary that his workpeople should be protected. The magistrate said the wish Mr. Yulland had expressed was very creditable to his feelings, and in passing judgment they would take his recommendation into consideration. It could not be tolerated, however, that a mob of workpeople, who claimed for themselves the right to control their labour, should assemble together to deter others from working when and for whom they pleased. The sentence upon Arthur White and George Clark the younger was that they be imprisoned and kept to hard labour in Gloucester goal for the term of six weeks. George Clark the elder had not been quite so violent as the others, although clearly acting with them, and in his case imprisonment would only be for one month to hard labour.

Books Received.

British Timber Trees: their Rearing and subsequent Management, &c.; with Directions for the Measurement and Valuation of Standing Timber. By JOHN BLENKARN, Agricultural Engineer and Surveyor. London: Routledge, Warne, & Routledge, Farringdon-street, 1859.

THE purpose of this practical and able treatise is to instruct those interested in the raising, management, and value of British timber trees, in woods, groves, and plantations. It is divested of technical phraseology and easily understood, while conveying much useful and reliable information, not only as to the trees themselves, but also on soils and situation, the general improvement of landed estates and mountainous districts, and on the measurement and valuation of standing timber.

Mr. Blenkarn acquired much of his experience on the extensive Clumber estates of the Duke of Newcastle, to whom the book is dedicated.

Such a work as this was much wanted, inasmuch as previous treatises have in general been overlooked with much only interesting to or appreciated by the scientific botanist, while the more practical and useful matter, even when hinted out, is found to be often sadly compressed, or curtailed, and almost unintelligible. To landed proprietors, landscape gardeners, agricultural engineers, architects, surveyors and timber valuers, auctioneers, land agents, and others practically

interested in landed estates, on the other hand, this cannot but be esteemed as a valuable and instructive treatise, indispensable, indeed, to their respective interests in landed property.

The value of growing timber is often greatly underrated. A correct knowledge of such matters would, in many instances, prevent much unnecessary anxiety, as well as pecuniary loss; particularly when it is considered that timber is an article easily converted into money, and is a natural production that, in the course of a few years, at the cost of a trifling outlay, may be replenished with greatly-increased advantage. It may be further affirmed, indeed, that, on most large estates, a great portion of the timber could be cut down, to the benefit of the trees which are left standing.

"An acre of oak woodland, containing 100 loads of timber (which is a very low estimate), is worth," says the author, "650*l.* at a moderate computation; and fifty acres of such property would thereupon yield 32,500*l.* worth of timber! Is it of such valuable property that proprietors should be careless or negligent? On the contrary, what an incentive it offers for planting, without taking into account the beauty imparted to the landscape, the essentials of shelter to cattle, cover for game, and many other matters. It is a well-known fact, that estates abounding with timber will command a high price, and are eagerly sought after; whilst others, although possessing a better soil, and considered more eligible, in many respects, are often disposed of with difficulty, even at low prices."

The oak, above all other British trees, is the king of the forest and the glory of England. With reference to the size that an oak will attain in a given number of years, much must depend on the situation and soil.

"Three thriving oaks, growing on a hard, gravelly, and poor soil, were felled in Nottinghamshire, which on an average girth 15 feet at 3 feet from the ground, and each tree contained about 430 cubic feet of timber. The trees were planted in 1692 or 1693, and were above 149 years old when they were felled. As these trees were perfectly sound, and yearly increasing in size, it is probable that, had they been suffered to remain another century, their bulk and cubical content would have been increased fully by one-half. The value of the trees when cut down was more than 120*l.* a sum equal to 30*s.* per acre (without taking interest into account) for the land they occupied during the 149 years of their growth—a reply to such a state, without consideration, that timber will not pay the rent for the ground it occupies or injures by its shade. For the first fifty years the land would receive little injury from the trees, and in after-years the acorns, as food for swine, would amply compensate for the loss of herbage under the trees. But the land on which these trees grew was not worth 1*s.* an acre even at the present high rentals, and of course much less valuable when the trees were planted."

Again:—

"I am acquainted with an instance of a will made many years ago for the endowment of a school in the midland counties, in which the testator directs a border to be raised round a plot of ground on which the building is erected, and to be sown with acorns, for the purpose of rearing oak trees. Those which were to remain for timber he directs should be left at certain distances apart. When the buildings should require repairs or alterations the trees were to be cut down and sold, and the money applied to that purpose, whilst other trees should be raised in their stead to keep up the succession. At first sight this appears rather an uncertain provision, as no order was made for repairs; but, on consideration, it will be found ample for the purpose intended. During the first century a substantial building would require little repair, and by this time the trees would have attained an average cubical bulk of 100 feet, or two loads, at least. Suppose twelve such trees to have been cut down, and their value, at 6*l.* 10*s.* to 8*l.* 15*s.* per load, to have amounted to 156*l.* only a small deduction (for which the bark and tops would pay) would be required to be made for expenses, and the requisite fund is at once provided. The plot of ground alluded to is two acres, and the number of trees from thirty to forty."

Gentlemen of landed estates, even where it is not intended that the timber shall be cut down, would find it both convenient and useful to have a correct valuation of the trees, on which they could lay their hands when required: it must be satisfactory for them to know what value in timber they really possess. They could then more readily form an opinion as to the desirableness of a fall at any time, and to what extent it should be carried, and also to what extent additional planting is required. The author believes that in cases of emergency many valuable estates have been sacrificed through the want of such knowledge. The expense of a proper valuation is no barrier to its being made on any estate, large or small, as it would be in proportion to the actual quantity of timber on the property, and a mere trifling percentage on its marketable value.

Even before employing a valuer, however, in cases of emergency, or before proceeding, on the other hand, to enhance the value of an estate by planting, the proprietor ought to procure and to study well just such a practical book as the present.

Miscellaneous.

NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.—In consequence of the public autumn meeting of the Architectural Society of the Archdeaconry of Northampton having been held this year at Stamford, a meeting of the members was held in the society's room, Northampton, when the report for the year was read. The Rev. Lord Alwyne Compton occupied the chair. The report was received and adopted, after which various matters were discussed, but no important business was transacted.

POSTMEN'S APPAREL.—The authorities at the General Post Office, we are glad to observe, have wisely come to the determination of granting in future to the letter carriers, &c. two coats, instead of one as heretofore; one of a light description to be worn during the summer months, and the other of a heavier material, to serve for the winter. These coats are now in course of delivery. Our readers will recollect the *Builder's* expostulations with the Post Office authorities on this subject in course of the summer just past.

ST. DAVID'S CONGREGATIONAL CHURCH, LEWISHAM-ROAD.—The corner-stone of a new Congregational Church has been laid in the Lewisham-road by the Lord Mayor. The church will be dedicated to St. David. It has been designed by Mr. H. E. Coe, architect, and will be in the Decorated style. It will consist of nave and aisles, with transept and chancel, and the tower, through which will be the chief entrance, facing the High road, is to be surmounted by a spire reaching to the height of 160 feet from the ground. The material is Kentish rag with Bath stone dressings.

A NEW THEATRE FOR CANTERBURY.—The theatre at Canterbury having been bought up by a person who refuses to allow it to be used as a theatre, the City council have agreed to give a site at the corner of the market, on a lease at a nominal rent, in order that a glass and iron building be erected thereon for theatrical and other purposes. The cricketers and others have promised to subscribe between 1,000*l.* and 2,000*l.* the citizens to provide the remainder of the sum of upwards of 2,000*l.* required for the erection of the building, which will occupy 80 square feet of ground, and accommodate 1,050 persons. The structure will be 117 feet by 71 feet, and painted like the first exhibition building.

FREE SCHOOL FOR ENGRAVING AT PARIS.—The Government here, says the Paris correspondent of the *Daily Telegraph*, has just announced the establishment of a free school for teaching drawing and engraving on wood. The pupils are to be admitted as young as nine years of age, and the course of study is to occupy eight hours a day. M. Carbasson, who is occupied in illustrating the "History of Painters," is appointed drawing-master, and M. Pannemaker teacher of engraving. This is a praiseworthy endeavour to aid the working classes; but there is the standing danger with respect to all such schools, namely, the production of a large mass of second and third-rate artists, who lower the standard of art, and starve each other. The number of young men who spend the prime of their life in qualifying for artists and architects, that can never possibly find employment, is truly lamentable. At the present moment there is a competition going on at the Beaux Arts for admission into the architectural school; and the proportion of the candidates to the vacancies is more than three to one, there being thirty of the latter and more than a hundred of the former.

THE TOWER OF CHRISTCHURCH, NEWGATE STREET.—Sir: Observing that a scaffold had been raised about the tower of Christchurch, Newgate-street, I addressed a too-hastily penned note to your contemporary, the *City Press*, simply suggesting the propriety of restoring the vases, which originally adorned the upper stages of that structure; the removal of which vases, Bartholomew laments, "ruined the outline" of "one of the most beautiful campaniles in the world." I am persuaded that, although the said vases contain but a few cubic feet of stone, you will not consider them too trivial for remark, as it is quite certain that the tower, as denuded of them, presents a far more unfinished appearance than the work of the renowned man and boy,—the Nelson Column itself. I do not know if the work is under the charge of an architect: if so, surely a few words from you would secure the desired object: if not, I should scarcely think that the officers of the parish of Christchurch would so little emulate the example of those of St. Michael, Cornhill, as to neglect what remark you might make on the subject,—S. C. R.

DESTRUCTION OF HULL THEATRE.—The Theatre Royal, Hull, has been burnt into bare walls. The fire, which was the second within a few weeks, originated in the private room of the lessee. Most of the "properties" were destroyed. The building was insured by the proprietors to the extent of 8,000*l.* but not the wardrobe, &c.

BRITISH MUSIUM.—Mr. John Wilson, who has been Messrs. Baker's principal foreman of works here for more than twenty years, has been appointed, through the recommendation of Mr. Panizzi, Mr. Sidney Smirke, and others, clerk of the works in the room of Mr. Dennison, who has held that appointment for twenty-four years, and who, we believe, carries with him in his retirement the goodwill and esteem of all who have had occasion to transact business with him. The new appointment, which is under government, entails a residence on the premises. It is believed Mr. Cat will succeed Mr. Wilson as Messrs. Baker's principal representative there.

LOFTY CHIMNEY IN GLASGOW.—A chimney, 168 feet high, has been completed in connection with the Crawford-street Chemical Works at Glasgow. The foundation extends to 14 feet under ground, and is 50 feet in external diameter. The base of the chimney at the level of the ground is 34 feet wide, and the inner diameter is there 20 feet, while the wall is 5 feet 6 inches thick, exclusive of a coating of firebrick 1 foot 6 inches deep, which reaches up for about 50 feet on the inside. To build the chimney, a million and a half of bricks were required, each of which is capable of sustaining a pressure equivalent to 90 tons per square foot. The cost of putting them over each other is estimated at about 10,000*l.*

TRACTION-ENGINES FOR COMMON ROADS.—One of Bray's traction-engines, denominated the "steam-horse," manufactured by Mr. Taylor, of Birkenhead, for special use to supersede the employment of teams of horses in the removal of timber and other materials at the dockyard, Woolwich, steamed down from London on Wednesday morning and reached the dockyard at half-past twelve, having started from London-bridge at eleven. The "steam-horse," under the control of the helmsman and engineer, was then tested at various rates of speed, and was driven repeatedly round, forming a circle of about 60 feet in circumference. It afterwards proceeded along the principal thoroughfare of the yard at a speed of eight or ten miles per hour, and was subsequently handed over to the authorities. The engine is fitted with springs, to reduce friction. A couple of trucks, to be attached, are in course of construction, for daily use in the yard.

SYDENHAM PUBLIC LECTURE-HALL AND SCHOOLS.—The ceremony of laying the foundation-stone of this institution was followed by a banquet, on the ground, at which the Lord Mayor presided, supported by a large number of the resident gentry of the district, and on which occasion Mr. J. Scott Russell, who was a donor of 52*l.* to the fund, proposed "The Cause of Education as the Pioneer of Public Order and Social Happiness."

It was announced at the close of the proceedings that upwards of 1,000*l.* out of 3,000*l.* required for the completion of the building had been already subscribed. The design, which is in the Anglicised Italian style, has been presented by Sir J. Paxton, and will comprise a spacious lecture-hall and school-rooms. The latter will accommodate 200 boys, 100 girls, and 100 infants; and the lecture-hall is to hold from 500 to 600 persons. A portion of the building will be appropriated to the use of the Sydenham Working Men's Institute. Mr. H. Dawson is the architect and Messrs. Hollins are the builders.

SUSSEX ARCHITECTURAL SOCIETY.—Thursday the 6th, was the day appointed for the quarterly excursion of this society. The day's programme consisted of "a day out" by the Brookside, including visits to the Monastic Grange of Swanborough, the churches of Iford, Rodmell, South-east, Piddinghoe, Tarring, and Biddingham, and a luncheon at Newhaven. The route was to be down the western banks of the river Ouse, halting at Newhaven, and returning along the eastern banks. About fifty persons were present. South-east is one of the three round tower churches existing in Sussex, the other two being the church of the adjacent parish of Piddinghoe, and the church of St. Michael, Lewes. The church is small; style, Early English; very plain, with Scriptural inscriptions running round the walls; has a font of ancient Sussex stone, and will accommodate about 100 persons. It now comprises chancel, nave, and western tower, but formerly had additions both to the north and south sides of the chancel.

THE NOTTINGHAM SURVEYORSHIP.—The town council of Nottingham have appointed Mr. M. O. Tarbotton, of Wakefield, to be their surveyor. There were eight candidates, of whom three were selected, 30 voting for Mr. Tarbotton, 9 for Mr. Fergusson, and 6 for Mr. Thorburn. The proposal to elect Mr. Tarbotton was then agreed to.

STONE-CUTTING MACHINE.—"We have just seen in operation," says the *Journal de l'Aisne*, "an ingenious machine for cutting stones, invented by a clockmaker of Fessieux, in this department,—M. Jean Marie. This machine hews, scaples, and carves the hardest stones with remarkable precision. The bed on which the stone to be worked is laid runs on iron rails, backwards and forwards, as may be required. We saw it hollowing out, although it is very hard stone, a job which would occupy a man three or four days, but scarcely an hour's work for the machine."

A MANUFACTORY BLOWN UP AT ECKINGTON.—The inhabitants of the village of Eckington, twelve miles from Sheffield, were recently alarmed by a terrific explosion, followed by the smashing of falling *débris*. The explosion had taken place in the scythe and sickle manufactory of Mr. Mark Keeton. The place was almost completely shattered, and some of the displaced joists and rafters were blazing. The fire was extinguished, and after some of the *débris* had been removed, it was found that the explosion had occurred in the centre of the smithy floor, where there were the remains of a 25 lb. powder-barrel, and several fuses. From footmarks in the garden at the back, it is supposed that some persons forced open the shutter at the back of the smithy, put the powder in, and then fired it, with a view to the destruction of the place!

SUBMARINE TUBE BETWEEN LIVERPOOL AND BIRKENHEAD.—A paper on the subject of a Submarine Passage across the Mersey was read at the last meeting of the Liverpool Polytechnic Society by Mr. Hignett. The plan is Mr. McArdle's, and consists of a wrought-iron tube sunk to the bottom of the river, and long enough (about 1,300 yards) to extend from the Liverpool to the Birkenhead side of the river. It would have an outer tube, to be filled with water in sinking it, and ultimately with sand. The cost is estimated at about 105,000*l.* Interiorly the tube would be divided into two by an upright division or diaphragm, and one side could be used for foot passengers, and the other for railway trains.

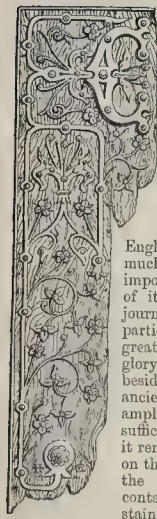
"BIG BEN" OF THE FIRST WESTMINSTER BELL.—"Big Ben, the largest bell ever cast in England." Under this title we have a large lithographic engraving of Messrs. Warner's bell, executed by Messrs. Lewis & Co. The diameter of the mouth of this (the first) bell was 9 feet 5½ in.; height, 7 feet 10½ in.; thickness of sound bow, 9½ in.; weight, with clapper, 16 tons 11 cwt. 2 qrs. 20 lbs. The illustration represents "Big Ben," (we quote from the marginal note under the engraving), as "suspended for the various severe tests to which the referees subjected the bell: on the left is shown the experimental clock-hammer, weighing 13 cwt. raised by machinery, and allowed to fall on the bell with a weight and force equal to 1½ ton. On the right is represented ten men, whose combined power pulled 'Big Ben's' monster clapper, and caused so much motion at times that the bell often struck the fixed experimental hammer." This print will be useful hereafter, when the history of the two castings gets mixed up, as it doubtless will.

CRYPT AT CHRISTCHURCH, HANTS.—During the restoration here, under the direction of Mr. Ferrey, a crypt has been discovered under the north transept. The crypt is apsidal, measures 30 feet by 12 feet, and is 9 feet 7 inches high. The vault is supported by two broad arches, resting on pilasters with rounded edges. At the east end the diagonal ribs spring from short pillars with simple bases and capitals. The walls are 7 feet thick, and pierced on the south and west by loops; the north-east splay having a stair-like graduation. On the south side are two ambries. In the east wall a door of a much later date, once fitted with folding doors, opens upon three steps, which are closed by a wall. It is not certain whether they led up into the yard or formed the approach to a secret locker and receptacle for sacred vessels. The apse in the story above was shorn away to give place to two Decorated chapels built by the Montagues, Earls of Salisbury. A committee has been formed to effect the necessary repairs, and, if supported by the inhabitants of the county and those interested in church architecture, to carry out a restoration inferior to the works accomplished in the neighbouring ministers of Romsey, Sherborne, and Wimborne. The cost is estimated at 5,000*l.*

The Builder.

Vol. XVII.—No. 873.

Chartres Cathedral.



AHARTRES, the small and ancient town in which this most interesting cathedral stands, is situated about midway between Paris and the west coast of France, and is easily approached by the western line of railway; passing by the way Sévres, Versailles, Trappes, Rambouillet, Epemon, and Maintenon. Being out of the common route of

English travellers, it is not so much known or visited as its importance deserves. Although of itself worthy of a special journey and prolonged study, particularly in regard to its great cathedral, which is the glory of the town, there are besides three or four very ancient churches and some examples of domestic architecture sufficient in themselves to give it renown; while farther west, on the same line of railway, is the cathedral of Le Mans, containing some magnificent stained glass; besides smaller towns on the same route, more or less interesting.

Taking the above line of railway as a southern boundary, a very interesting tour might be made in one vacation of the north-west quarter of France; to be followed up by a journey through the north-east, and afterwards in the southern parts. This method cannot be impressed too strongly on young art-students, if they would do a little well and usefully, instead of racing over all France to see everything, but come home with no deeply-impressed results.

The town of Chartres is situated on the only eminence in the vast and fertile plain of the Beauce, which sends almost all its varied produce, especially corn, to Chartres, as the great central market, thus giving it, although strictly an ecclesiastical seat, additional importance from commerce. The cathedral is built on the summit of the hill and centre of the town, towering like a mighty giant over the dwellings of the people that seem to cling closely round.

In studying this grand relic of the power and devotion of the Middle Ages, great assistance is afforded by the "Description de la Cathédrale de Chartres, par M. l'abbé Bulteau,"* a highly intelligent writer, who gives a complete account. Notwithstanding his keen enthusiasm and glowing language, we cannot do better than translate a few remarks from his work. In commencing his description, he says:—

"The cathedral of Chartres is one of the rare edifices which enjoy in France a popular renown. There is scarcely any one but has heard of its vast extent, of its beautiful statuary, of its rich enclosure round the choir, of its magnificent stained-glass windows, but above all, of its two towers, and has not associated its fame with that of Amiens, of Rheims, and of Beauvais. They say, in the popular language, that the towers of Chartres, united with the nave of Amiens Cathedral, the choir of Beauvais, and the porch of Rheims, would form the most beautiful cathedral in the world. Among the archaeological riches which compose the treasure of Christian art in our beautiful France, this splendid cathedral is one of the most precious. It might even be selected as the expression most complete of Christian and artistic study of the Middle Ages: this idea shows itself in fact in all its developments, in all its majesty and magnificence."

Another writer says:—

"When they see for the first time the cathedral

of Chartres, it causes an indescribable emotion, produced by the reunion of thoughts of all kinds, and strange sensations, which vibrate even to the deepest recesses of the soul. There, in that glorious edifice, is so much majesty, so much grandeur, a religious character so imposing, a train of pious and illustrious memorials so distinguished, an expression so thrilling in all the parts which compose it, that the imagination is carried away in spite of oneself. They recognize there without any difficulty the house of God."

Further on he asks:—

"But who could reproduce that breathing mass, that general harmony, that animated perfection, that admirable union of members, which in man constitute the life, and which, in a monument, expresses to the eyes of the Christian the *divine mind*, which reigns there as in its tabernacle?"

Like all other great cathedrals of the twelfth and thirteenth centuries, that of Chartres was dedicated to the Virgin Mary. There is a tradition that, one hundred years before Christ, a sacred grove and grotto existed on the present site of the cathedral, dedicated to the Blessed Virgin by the Druids, in which they worshipped her image made of wood, on which was the inscription, "*Virgini Parturæ*." The place of this grotto served as a temple to the first Christians converted by the missionaries, Saints Savinien and Potentien, until they had erected a plain episcopal church for the increasing number of converts. This cathedral they dedicated to the Virgin, consecrating as its first bishop their disciple, St. Aventin, in the year 69.

During the persecutions of the Christians by the Emperor Claudius, Chartres did not escape the tyranny of his lieutenant, Quirinius, who did not even spare his own daughter, called Ste. Modeste,* a convert to the new faith, who was with many others massacred and thrown into pits, ever since called the "Puits des Saints-Forts." They are not to be seen now, as the chapel of the crypt is over them. At the same time of the massacre the church was totally destroyed.

It was not until the reign of Constantine that the cathedral was again reared; and it existed till destroyed by the Normans, in June, A.D. 868, led on by Hastings. Thereafter, a third basilica was commenced by Bishop Gislebert, but it soon shared the fate of its predecessors; being sacked and burned by Richard, Duke of Normandy, during the war with Tiliant-le-Tricheur, Count of Chartres, in 963. Again they rebuilt the church anew, "and made it the most beautiful, and when but scarcely finished, it was desolated by a fatal disaster. For, on the 7th September, 1020, under the reign of Robert, and episcopate of Fulbert, it was burned by the lightning of heaven, so completely, that there remained only ashes and deplorable ruins." This suggests that it might have been constructed of wood; or, at least, of such materials as were generally used at that epoch, which were mostly of an inflammable nature.

Bishop Fulbert (a name illustrious in the annals of the cathedral) commenced a new church. He wrote to King Robert, called the Father of Religious Architecture, to all the sovereigns of civilized Europe, and to the princes and nobility of France, to co-operate with him by donations for his grand work. His application was warmly responded to: all gave liberally. Fulbert himself, with his clergy and all the people, contributed with generosity. The works were commenced on a grand scale, and advanced rapidly. In the course of twelve years the crypts were completed, and these in themselves are vast solid constructions. Fulbert died, A.D. 1029, leaving his work far advanced, and bequeathed a great part of his fortune to rebuild the church. His successor, Thierry, carried on the works with zeal, and consecrated

* The graceful statue of Ste. Modeste exists at the west side of the north porch of the cathedral; which, with other noble sculpture, the authorities have attempted to reproduce and restore with the most exact care, and which Mr. Ruskin denounces in his *Crystal Palace Pamphlet*. This porch will soon undergo demolition previously, to futile restoration. Propped as it is at present, it might stand for ages. Its fault has been the tendency of level lintels to crack; but the great sin and shame lie with its guardians, who have allowed the rain to penetrate and destroy it.

the building in the year 1037. King Henry I. gave the expenses for the roofs to complete the cathedral, which were of the most enduring materials, and so vast, that the great roof over the main vault was called the *Forest*. St. Yves embellished the church with a magnificent rood-screen in 1099. He solicited and obtained from our Matilda, Queen of England, the necessary funds to cover the roofs with lead. The pious queen also gave very magnificent bells, which were placed on an eminence in the church, for the towers were not built then.*

In 1115 they laid the foundations of the two great western towers. The construction is of most solid nature, and the blocks of stone used are of gigantic dimensions, built as if to last for ever. The stone of which the entire cathedral is formed is from the quarries of Berchieres, a few miles from Chartres. Including these two towers, Chartres cathedral might have boasted of nine altogether, viz. its great central one, four at the angles of the transepts, and two at the springing of apse aisle round the choir.

It was during the construction of these west towers, that Haymond, abbé of St. Pierre-sur-Dive, was struck with the devotion and labour of the people in assisting. He says:—

"It is a wonder rare, to see powerful men, lawless from their birth, and from their riches, accustomed to a soft and voluptuous life, rein themselves to a waggon, and draw stones, lime, wood, and all necessary materials for the construction of a sacred edifice. Several thousand persons, men and women, harness themselves to the same waggon, on which the weight is immense; and all the time maintain a deep silence, not a murmur being heard. When they stop in the roads, they speak, but only in whispers, in which they make confession with tears and prayers. * * * If any one is found so hardened as not to pardon his enemies, and refuses to submit to the pious exhortations of the priests, he is immediately detached from the car, and expelled from the holy company."

He also records that the works were carried on principally during the favourable seasons, and that during the night they burned lights while working, and chanted hymns and canticles. This custom took its origin at Chartres, and was then continued in Normandy, and then through all France, associations being formed with neighbouring counties for the same object.

The "old tower," as it is called, that shown in the view† with the octagonal spire, was scarcely finished, and the new tower, that with the richly-traciced spire, only carried up to the height of church roof—both being built much alike thus far—when a fourth fire destroyed the cathedral in 1194. That this fire took place has been doubted, and many think that the present building is that of Fulbert and Thierry, but numerous documents, as well as its appearance, prove otherwise; and it is evident that, excepting the crypt and towers, the church is of the thirteenth century, these only being uninjured. By the energy of Melior, Cardinal-Legate of Pope Celestin III. the church was again attempted, and built with a solidity capable of resisting time. The bishop and canons gave up their revenues for three years towards its expense, and the people also gave liberally, even to their furniture. The works were zealously carried on, and greatly aided by Philippe Auguste, Louis VIII. and St. Louis. No less was the zeal of the architect, called Jehan le Marchant, and his workmen. It was consecrated in 1260. St. Louis, it is said, assisted at the ceremony, with all the royal family.

Many portions were added in succeeding years, it being not altogether completed when dedicated. The sculpture of the two side porches was not finished even in 1280, for some statues are of the fourteenth century. The jube, or screen, was not erected till the end of the thirteenth century, nor the sacristy. The three gable ends, which have all niches and statues, are early fourteenth-century work. The chapel of St. Piat, No. 8 on our plan, was

* These bells were destroyed by the fire in 1194.

† See pages 712 and 713.

added in 1349. The Vendôme Chapel, No. 13, is of date 1413. The spire of the *clocher neuf*, or new tower, was commenced early in the sixteenth century by Jean Texier, called Jehan de Beauce. Formerly it had a spire constructed of wood, and covered with lead, but this spire was burned in 1506, when it was replaced by the present stone spire finished in 1613. The said Jehan had seven sons six deniers per day, and his masons, five sons, of the money of that time.

In this latter spire are placed the great bells; 1st, Marie; 2nd, Joseph, on fourth stage; then, 3rd, Anne; 4th, Elizabeth; 5th, Fulbert; and, 6th, Piat, on fifth stage. They were all cast between 1840 and 1845. The design and workmanship of this spire, although of such a late date, are excellent: and although one who is struck with the solemn grandeur and simple majesty of the old spire, would wish the new work to be the same, we must be thankful for it; for, on the whole, Jehan has not destroyed the magnificence of the cathedral; nor, though his spire is higher, has he beaten the glory of the old *clocher*.

Between these two towers was originally built, in a line, with their back-wall towards the nave, the western wall, removed afterwards to nearly in a line with the front of the towers, which gives the nave greater length. The western entrance has three bayed porches, called the Port Royal, decorated with the noblest and most richly carved sculpture of kings and queens, and foliage, of the twelfth century. Above is a triplet window, containing some of the best specimens of painted glass of the twelfth century; and above that again a magnificent rose window, filled with fine glass. Above this rose-light, on the exterior, is a gallery communicating with the two towers; and above it is the range of the kings. A statue of our Lord forms the pinnacle of the gable.

We have digressed somewhat in the description, not having completed the tale of the disasters that occurred to this most unfortunate cathedral. We have already stated that the *clocher neuf* was burned in 1506. In 1671 the carpentry work of the belfry there was destroyed by fire, owing to the imprudence of one of the workmen. At last, in June, 1836, the whole timber-work of the roofs of the cathedral was utterly destroyed, along with that of the two towers; and all the bells and lead work were melted by the heat. The fire continued raging for eleven hours, despite the most strenuous efforts of the people and all the engine forces organized in the whole plain of the Beauce. This fire also originated in the carelessness of some workmen. From one end of France to the other this great misfortune was deplored. The Government most nobly repaired the loss, and voted 1,185,028 francs for the new roof, which is constructed of iron, and covered with copper sheeting.

But after all these disasters to the cathedral, mostly accidental, what shall be said of the greatest evil and outrage that could befall it, when we think of the carefully planned, deliberate scheme of the authorities to cut out some of the richest and loveliest thirteenth-century windows in the clerestory of the choir, with another here and there throughout the church, to give light forsooth? The men of the so-called dark Middle Ages felt they had light enough; but we, in the improved Modern Ages, need more it seems to show our taste, and do jollify by. These windows are now filled with white glass. And as if they could not do enough, they raved to the ground the beautiful jube of the thirteenth century with the most reckless carelessness, using what was available for paving stones, with the carved work of the history of David, and the Adoration of the Magi, buried in the dust; fragments of which were recovered afterwards, and are securely preserved in the crypt. The gold, the blue and purple colours, are still to be traced.

Instead, now stands the ugly Classic Parisian work, and inside the choir is modern work of the same kind.

Round the exterior of the choir in the inner aisle is work of a different sort, of the sixteenth century, showing the history of our Lord, carved with the most delicate finish.

By the plan given with the view may be seen the form of the cathedral. The aisles are double round the choir and sanctuary. At the entrances of north and south transepts are projecting porches of three vaults, all richly decorated with statues and carved work. Formerly, these porches were partially coloured, remains of which work are still to be seen. The crypt extends the whole length of the cathedral under the aisles. Under the double aisle round the choir are various chapels dedicated to different saints. In some of the chapels may be seen remains of decorative painting on the walls, of the twelfth and thirteenth centuries. The principal chapel dedicated to the Holy Virgin has lately been richly decorated from the designs and labours of M. Paul Durand, whose name and works stand high in the preservation and revival of early Christian art. Each transept facade has above its triple doorways a gallery, then a row of five lancet lights, and a great rose-light about 36 feet in diameter—all completely filled with richly-painted glass. The inside of the western facade is shown on the half-section illustration.

The exterior length of the cathedral, including the chapel of St. Piat, is, according to the abbé's measurement, 154 m. 60 c.; breadth of west front, 47 m. 90 c.; breadth of nave from centres of columns, 16 m. 40 c.; height of vault of nave, taken in transept (for the paved floor inclines gradually from the western entrance up to choir), 36 m. 55 c.; but the aisles are level, so that there are some four steps on each side at the west end of aisles. The height of vault of aisles is 13 m. 85 c.; height of *clocher neuf*, 115 m. 17 c.; height of *clocher vieux*, or old tower, 106 m. 50 c.; height of the six towers at transepts and at sides of apse, 40 m. 50 c. It is reckoned that the cathedral can accommodate 15,600 persons.*

In the number and importance of its painted windows, Chartres Cathedral has no rival in the world; and these are all mostly of the thirteenth century. It possesses 115 painted lancet windows, three great rose-lights about 36 feet in diameter each, twenty-three medium-sized roses, about 17 feet in diameter, such as is shown above the double window in the half section, and six smaller roses. The painted glass of Bourges Cathedral ranks next to Chartres.

In sculpture Chartres holds the first rank: of human figure and animal sculptures alone there are 4,272, varying in dimension from an inch to nearly 9 feet in height.

An expensive and elaborate "Monographie" of the cathedral in imperial folio is in process of publication under the French Government, which should be in all our public libraries. This work was edited and illustrated by the late eminent M. Lassus. Coloured illustrations are given of the best specimens of painted glass, reduced with scrupulous care from the faithful and exact tracings of M. Paul Durand, the joint compiler with M. Didron, of the "Christian Iconography" and "Guide de la Peinture."

In concluding this brief description, it must not be omitted to mention that M. Viollet le Duc, the eminent architect and inspector-general of the French Government, in his "Dictionnaire Raisonné de l'Architecture Française du XI^e au XVI^e siècle,"† refers constantly to Chartres Cathedral as affording examples of the purest and finest forms in

architecture and decoration. Nothing more need be attempted after this great essay by M. Viollet le Duc on the Gothic architecture of France, in which he glances occasionally on the best architecture of England also. He knows and has studied every yard of France, and not only France, but Italy and other countries.

The other churches in the town of Chartres are those of St. Pierre, containing a treasure of glowing glass of the fourteenth and fifteenth centuries; St. Aignan, a very ancient church, and St. André, commenced in the eleventh century and finished in the fourteenth. In the villages around, especially at Chamfol, are small ancient churches worthy of a visit. Architectural students who have difficulties in the French language will find themselves considerably aided in their researches at Chartres by the obliging landlord of the Hôtel de France.

POSITION OF THE STRIKE.

THIS melancholy affair is passing through all the phases which have distinguished similar occurrences, even to the retaining of the lawyer known as the trades' union "attorney general" to defend some of the men against a charge of intimidating others, mentioned elsewhere; and will end in the same way, with distress, and, in many cases, ruin, to those concerned; benefit to none.

At the end of last week the Trades' Delegates issued an address in accordance with the arrangement we reported in our last, appealing to the trades throughout the country for aid to the men locked out.

At the Paviers' Arms on Monday, the usual weekly dividend was paid, but in consequence of a decrease in the available funds, there was a diminution of 6d. for skilled and 6d. for unskilled labourers as compared with last week. Trollope's men were as usual paid 12s. skilled, and 8s. unskilled labourers; the dividend to the men locked out was 3s. 6d. and 2s. 6d. respectively; and the following return shows the numbers of each body who are still dependent on the funds, as well as the amount paid:—

	Number of Men.	Cash. £. s. d.
Trollope's.....	110 ..	50 0 0
Masons.....	350 ..	61 0 0
Bricklayers.....	580 ..	101 10 0
Carpenters.....	1,000 ..	175 0 0
Finistors.....	630 ..	110 5 0
Painters.....	180 ..	31 10 0
Woolwich men.....	89 ..	15 11 6
Stone sawyers.....	50 ..	7 10 0
Labourers,—Lodge 1.....	340 ..	42 10 0
" " 2.....	132 ..	16 10 6
" " 3.....	154 ..	19 5 0
" " 4.....	210 ..	31 5 0
" " 5.....	81 ..	10 5 0
" " 6.....	418 ..	52 5 0
" " 7.....	149 ..	18 12 6
" " 8.....	31 ..	4 5 0
" " 9.....	309 ..	38 12 6
" " 10.....	199 ..	24 10 0
" " 11.....	37 ..	4 12 6
" " 12.....	29 ..	2 10 0
" " 13.....	7 ..	0 17 6
Non-society labourers at the Mitre, St. Martin's-lane.....	620 ..	77 10 0
Non-society labourers at Woolwich.....	36 ..	4 10 0
Stone polishers.....	2 ..	0 5 0
Total ..	5,769 ..	£899 16 6

The number of men last week was 6,079, showing a decrease in the number paid of 310.

The sum paid in the previous week was 1,098*l.* 6*s.* as compared with 899*l.* 16*s.* 6*d.* being a decrease of 198*l.* 9*s.* 6*d.*

In the provinces, several meetings of workmen have been held, as hitherto, to receive deputations from the Conference, and have passed approving resolutions.

At the Birmingham meeting, according to the local *Journal*, Mr. Potter said, with reference to the origin of the strike for nine hours,—“The Conference, not being willing to do things rashly, selected four firms. The men of each were directed to draw up a respectful memorial, and the four memorials were sent. Each of the four builders discharged the men who presented the memorial, and this exasperating the men still more, they left their work one morning before breakfast.” Is this correct? Even in the one case which has been before spoken of, Messrs. Trollope have denied again and again, in the most explicit terms, that the discharge of the man had anything to do with the presentation of the memorial. To repeat the story in the face of this denial is of course to call the Messrs. Trollope liars.

A meeting was held in Woolwich last week, and the usual resolutions passed, concerning which, by the way, we may take the opportunity of saying

* The numbers on our plan refer to the chapels, &c.:—

1. Chapel of Notre Dame, &c.
2. " Trinité-Dieu.
3. " Black Virgin.
4. " Ecce Homo.
5. " Sacred Heart of Mary.
6. " John the Baptist.
7. " the Communion.
8. " St. Piat.
9. " not used since fourteenth century.
10. " Sacred Heart of Jesus.
11. " All Saints.
12. " Lazarus.
13. " Vendôme or Martyrs.
14. " Calvary.
15. " Sacristy.
16. " Lady with.
17. Renaissance Clock of Cathedral.
18. Bishop's Palace and Grounds (modern building).
19. Rectory of Cathedral's House.
20. Treasury.
21. Chorists' House and Schools.

† Paris: Baucé, Editeur, Rue Bonaparte, 13.

* Paid at Woolwich.

the men have shown a power of expression which is very remarkable. Notwithstanding the number of places at which resolutions to precisely the same effect have been proposed, the wording has been in all cases, so far as we have seen, different. At this meeting the chairman, Mr. Breeze, a joiner, is reported to have said, in the presence of a deputation from the Conference, that "it should be understood that the men had given up the nine hours question, and that therefore all they now required was the withdrawal of the 'document.' " This, if we are to judge from speeches since delivered in the metropolis, is a clear misstatement. The men have made no withdrawal since their first step. They struck against Messrs. Trollope for the day of nine hours, and that strike they insist on maintaining. Let them withdraw it (we implore them to do so), and they will then be able with better grace to ask the masters to give up the weapon that strike led them to seize, namely, the "declaration."

On Monday evening, the 24th, a large meeting of those concerned in the building trades was held in St. Martin's Hall, London; Mr. Heaps, the chairman of the committee of Amalgamated Engineers, in the chair.

The secretary of the Conference reported what had been done since the last meeting,—with which our readers are sufficiently acquainted. He said he saw in the Registrar-General's report an account of the mortality of last week, and a statement that sixty-four women and children connected with the lock-out had died within that period; but who was to be charged with these deaths? He denounced the authors of the "document"—the illegal, and un-English document—as the cause of all these evils. He stood before them that evening, feeling deeply for all they had suffered during this protracted struggle, and which must be increased now that winter had come so suddenly upon them. He hoped, however, that the severe weather, as it was untimely, would not last long; and in the meantime he would remind them that this was not a question of money, but of principle, and he believed that to that principle they would adhere. He believed that, notwithstanding the opposition they had encountered, the building operatives would persevere, and that within twelve months of that time they would not only have resumed work without any "declaration," but that the nine-hours movement would be successful.

Another of the speakers, Mr. Facey, said, in the course of his address, that he thought there had been a want of judgment on the part of some of their friends, who were constantly parading, as proofs of success, the giving way of individual employers, and taking these scattered secessions from the main body of the employers as indications that the whole were ready to give way. Why it was as unwise to look upon the twenty-seven or twenty-eight masters who had given up the "document" in that way, as it would be for an army to assume that it had won a battle because a few skirmishers were defeated. The main body still remained obstinate and determined; and, when that fact was thoroughly known and understood throughout the country, he was sure the subscriptions of the trades would be commensurate with the object in view and the demands upon their funds.

On the 25th the trades' delegates met in aid of the funds, but nothing of importance occurred. The secretary of the Conference said he believed that now it was known the struggle must continue, the trades would organize themselves more thoroughly for the supply of funds; and, if so, the building operatives were ready to maintain their position; but they could not do so without that assistance which had been heretofore so liberally and generously given.

And what does the supply of money on the part of the trades mean? Why the application of funds to the support of this ruinous strike, intended for wholly different purposes. Many of the provident societies are, we are assured, bankrupt; and more are considerably crippled; so that if any number of those who have been paying to them for years were to require assistance, it could scarcely be rendered.

Surely there are grounds for a successful mediation on the part of any man of acknowledged sense and standing, in whom both parties might have confidence.

THE RHINE BRIDGE AT STRASBURG.—It is expected that the bridge over the Rhine at Strasburg will be shortly opened to the public, when the journey from Paris to Vienna will be made in thirty-four hours, and from Paris to Stuttgart in fifteen hours.

JERSEY: ITS PROGRESS AND ITS WANTS.

THIS island, the oldest appanage of the British crown, hitherto but little frequented or known, is now rapidly growing in importance: its mild climate, and the beauty and fertility of its surface, attract annually an increasing crowd of tourists and sojourners: the enterprise of its merchants has established it as an important *entrepôt* of commerce. Ship-building is carried on there with success; and, standing as an outpost of the dominions, within sight of France, strong in defences, as well as in natural difficulty of its marine approaches; its value to this country can hardly be overestimated.

The town of St. Helier, with a population of 32,000 inhabitants, rather more than half that of the whole island, is advancing in improvement at a rapid pace: it possesses a large harbour, protected by commanding forts, and occupies a position which can hardly be surpassed for scenic beauty, as well as for the convenience of trade. Within seven years very many fine buildings have been erected,—a college, founded by the Queen, and several churches, together with many establishments and mansions of no ordinary pretensions; the Union Bank and the Independent Chapel, by Mr. Bree; and the Monument, erected last year to Mr. Le Sueur (late mayor), by Mr. Gallichan. The latter has also designed and is now carrying out the reconstruction of an hospital, to replace that lately destroyed by fire, and has in hand plans for a court-house, which is to occupy the end of the Royal square.

It was under Mr. Gallichan's superintendence, as surveyor for the island, that the late improvements of the harbour were carried out; and the very noble esplanade which extends far above half a mile along the sea-beach, and for two miles around the port, was also his performance. The mole of the new harbour extends three-quarters of a mile, and nearly as far as Elizabeth's Castle, into the sea, enclosing a second basin, and the wall of the old harbour. It was the plan prescribed by the municipal council of St. Helier's, but it is short by 300 feet of the proper length, as vessels of small tonnage, and even the steam-packets are forced to anchor outside at low water. This is a great shortcoming, and must be redressed, so as to meet the growing commerce of the island.

As formerly in the Isle of Man, so Jersey is now exempt from duties on wines, spirits, and excisable articles. Their laws, too, are of the old Norman and feudal stamp; their pleadings in French are ill-adapted to Anglican usage and modern requirements; but a commission is now in action to revise and reform their civil code, which seems to be much at variance with English notions of either justice or expediency. There is, however, no want of public spirit amongst the native municipality, as the improvements of the town, and indeed of the whole island, amply testify.

The revenue of the harbour, about 20,000*l.* a year, is, together with only one solitary and moderate assessment, all that the insular authorities possess to carry out their plans; and had the large sums which have been disbursed by our Government (nearly 300,000*l.*) in forming a harbour or mole at St. Katharine's, on the east of Jersey, of more than doubtful utility, been at the disposal of the State Council, the island would have been further improved and the harbour perfect.

Numerous modern buildings have been recently erected in the town; the most notable, Victoria College, which occupies a noble and commanding position above the town, which educates over 300 pupils, and has asserted its superiority by the success of its *élèves* in the late competitive examinations. This building is of a modern Gothic type.

The site of the Scotch Church, now just finished, is, like too many others in Jersey, too confined; for there is not one point of view at which it can be appreciated for its lightness and the fantastic variety of its details. This church is built of rubble, with Cuen stone dressings.

Another chapel, that of the Old Cemetery, above the town, is built, as well as the gate and entrance towers, pretty much in the same character, but plainer.

For many years gas has been in use, and the company derives a good dividend, as might be expected from a town containing nearly 3,000 houses, many of which, as magazines of retail business, surprise not a little the London visitors who have frequented Sewell & Cross, or Shoolbred's. The streets very much resemble in the Old Town those of London City, but the New Town partakes more of the character of our

suburbs. The markets, four in number, far surpass our own in solidity, utility, and convenience; but there is still a want, and that is, *there is no water*, save what is yielded by pumps, of which almost every house has one. From the sandy nature of the soil, and the position of the town, occupying a plateau of one mile in length by about three-quarters in breadth, from the base of a lilly amphitheatre to the sea, there is a great diversity in the quality of water. The gas, as is usual, contaminates some wells, and the sewers, which are now being completed in the town, vitiate many more, while those at or near the level of high water are invariably brackish.

These circumstances, coupled with the great increase of population, render it necessary that a permanent supply of pipe-water should be established. The frequent recurrence of fires, and the impossibility of arresting their progress by means of pumps, have lately shown the value of such a provision. The Infirmary was burnt down in July last; and, not long since, five houses of a row were consumed to the bare walls, and they now stand as a monument of improvidence in this respect. But the sanitary requirements of a great population, if viewed in the warm clime of Jersey as we regard them in these somewhat colder latitudes, demand still more peremptorily that the living element should be supplied without stint, more particularly to a town which nature has provided amply with streams of more than ordinary purity.

A company, supported by the leading men of Jersey, has projected a plan for a perpetual supply. Mr. Easton, C.E. has estimated and approved the enterprise, and it is hoped that it may be accomplished within the ensuing year.

The important fortresses of Elizabeth's Castle and the fort, as well as the numerous ships of the harbour, were, and still are, forced to have water pumped and carted some half mile for their service. The public establishments had, of course, their pumps, but in cases of fire these are insufficient.

It is proposed that the grand reservoir shall be placed on the hill over the town, and within half a mile of it, at an elevation of 200 feet; that the supply shall be permanent and at high pressure; and that the fort (standing 140 feet above high water), as well as the loftiest eminences of the suburbs, shall have the benefit of so great a desideratum.

INSTRUCTION IN DRAWING.*

In our last year's volume, together with that of the year 1857, we printed some useful remarks by Mr. Walter Smith, on systems of instruction in drawing, suited to parochial and first-class schools. The most recent of the papers has been reprinted, under the original title, by the Committee of the Huddersfield College. The author, it may be well to repeat, starting from the principle now admitted, that a child who can "draw the figure 0, when it stands for the idea of nothing in arithmetic," can equally well draw it when it stands for the form of an egg, or that a young man who can be taught to write can be taught to draw, urged that, if we are to derive the full value, the instruction in first-class schools must comprise something more than the mere practice of drawing—that is to say, the drawing, whilst being acquired, should be conducive to the acquisition of other knowledge. He endeavoured to show, in continuation, that beyond mere rudiments, drawing should not be taught always in the same way, to the boy intended to be brought up as an artist, and to one intended for the surgical profession, and that the *degree* in which certain elements would be taught should vary. He would "take care that a careful execution of straight lines and curves should precede all other drawing," and so on to the last exercise, "the symmetrical drawing of straight lines and curves on opposite sides of a central straight line," which would teach the balance of objects, and is the most useful practice in drawing, as showing the value of curves and proportion, and inculcating correct appreciation of symmetry. So far, the method by class lectures, and the black board, would be adopted. The common language of all drawing, however, having been learned, "the practice each pupil requires must determine in what branch he is to be specially educated."

He goes on to show the importance at this stage, of drawing from memory; the exercises which he adopts in his own courses, having reference to

* "Suggestions for a System of Teaching Drawing in First-Class Schools." By WALTER SMITH, Art-Master in Huddersfield College. Reprinted from *The Builder*, 8vo. pp. 8. Huddersfield, 1859.

architecture, botany, anatomy, and like branches of study,—a system which must lead to deeper knowledge of such branches by inculcating habits of observation. The author has, probably, not omitted to consider the difficulty which there is in settling the character of the future calling whilst the boy is at school; a point we have sometimes touched upon in treating of architects' education: all that he means to say, probably, is, that the drawing, as such, will be learnt all the better, and that the time given to it will be better spent, by being made conducive to an additional object. Scholastic instruction, till a very late period in the education, is best when comprehensive and elementary. An exception *may* be granted in the case of collegiate education; but, as regards the younger pupils in ordinary schools, it is unsafe to calculate on what the future calling will be, and it is best to use the time so as to secure what is never to be afforded afterwards,—the knowledge which the tendency of the age most requires to ward off prejudice and narrow-mindedness. No man ever was really great whose knowledge was limited to that of his ostensible profession.

The author's "Suggestions," however,—the result of experience,—deserved the notice which the committee have given to them. We have long urged that drawing, as a department of education, may be learnt as easily and as generally as other departments,—whilst that as an educator of the eye, and a developer of the powers of observation, it may be expected to have very beneficial effects upon other branches of education. We must get rid of the notion of its difficulties, and treat it as a language having alphabet and grammar, to be learned and taught systematically and carefully as other languages. "This consummation," as our author says, "will not be brought about by the mere drawing-master of the present day, who teaches a pretty picturesque young-ladies' style of drawing."

MR. BROADWOOD'S TOWER, AT HOLMBUSH, SUSSEX.



NEW prospect tower, says a correspondent, "has been erected on Mr. Broadwood's estate at Holmbush, between Crawley and Horsham, both of which you have described so pleasantly, and ride where we will—I live in the county,—we see its head high up, and are coming to regard it as an old friend, like the Wakehurst tree, Chantebury

Chine, the tower of East Grinstead church, and other landmarks of the neighbourhood. Can you and will you tell us anything about it?" Of course we can, and of course we will, first thanking Mr. Broadwood for erecting it and so adding a recognizable feature to the landscape, visible all around. And no wonder it is visible, for, paraphrasing an old inscription in London, Mr. Francis Edwards,—he was the architect of the tower,—might have inscribed on the base of it, for the information of tourists,—

When you have tramp'd fair Sussex round,
This still you'll find the highest ground.

Within a few yards of the very spot was set up one of the fire-beacons used at the time of the anticipated invasion by the French under the first Napoleon; and should Polly and Wickedness ever produce a similar intention (such a child could only come of such parents) the tower may be made a true *pyr amide*, or *flame-tower*, as Carlyle puts it, and prove useful, notwithstanding the electric telegraph has superseded beacon fires. It is about 106 feet high from the natural surface of the ground to the top of the parapet, so that it commands most beautiful views, right away, on a clear day, to the sea between Brighton and Worthing. The tower itself, you would find, if you went close to it, through the forest of pines and other trees surrounding it, is square, 16 feet 6 inches both ways at the bottom, and 15 feet at the top. Within it is 12 feet wide all the way up, but the walls get thinner, ranging from 2 feet 3 inches in thickness on the ground story to 1 foot 6 inches at the top, and thus form it externally into four stories, although there are eight within. There is a window or recess on each of the four sides in every story above the lowest (where there

is a door), the largest being at the top. And then when we add that the tower is battlemented, and the chimney forms a sort of turret, we have told all that need be said of its appearance.

The material of which it is composed is a hard sandstone, quarried on the spot, and the great peculiarity of the structure after all is, that it was built up stone by stone from the foundation to the chimney-top, by a single mason, one Edward Sumner, and his labourers, in the space of about fifteen months.

"There's glory in the shuttle's song;
There's triumph in the anvil's stroke;
There's merit in the brave and strong;
Who dig the mine or fell the oak."

Sumner is evidently a man who would say with another stone-layer, rare Ben Jonson, "When I take the humour of a thing once, I am like your tailor's needle—I go through." An uncommonly good resolve, gentle reader. Perseverance is a power. Whenever you make up your mind to a good work,—be a needle and,—go through.

LINGERINGS OF THE PAST.

OLD styles and customs linger, particularly in those districts where knowledge has not had much access. On the downs of Suffolk, while a living line of "navigators" were burying that wonder of modern times—the electric telegraph—in this wild and picturesque land, the shepherd might be seen playing on the same simple pipe that had been carried in those parts for many centuries.

The use of oxen in the yoke may still be seen, even within six miles of the metropolis in the direction of Epping Forest. In the southern districts the men are sowing and ploughing the fields at this day dressed in the same costume as the figures engaged in the same pursuits are shown in Anglo-Saxon illuminations, and in Southern Italy, in the rural districts, there does not seem to have been the slightest change, in the fashion of the materials of dress since the days of the Cæsars. The coats of the men are of undressed sheep-skins with the fleece on, and the rest of their attire is made of flax cultivated in their own fields, spun with the distaff, and woven with a loom quite as simple as those in use in the days of Homer. A recent writer on South Italy remarks, that in several parts of the Campagna of Rome the dresses of both sexes are identically the same as we see represented in bassi-relievi and other sculptures in the Vatican, in the great gallery at Florence, or in the splendid museum at Naples. This identity of costume is found in numerous districts of the Neapolitan kingdom. At Paestum, dug up under the eye of the author, the workmen discovered a great many female figures beautifully executed in fine clay or terra cotta; and the costume of these figures, which must have been buried in that spot for some 2,000 years, was the same, without the slightest variation, as the present dress of the female peasantry of the district.

In the northern parts of England, a sword-dance is performed by the coal-miners at Christmas time, dressed in picturesque costume and gay with ribbons, each armed with small swords. Bands of the miners thus arrayed wander throughout the neighbourhood, and visit the houses of the gentry and villagers. This dance is as old as the time of the Romans, if not of greater antiquity. In the "harvest homes" and other ceremonies, the antiquary can readily trace the lingering of customs of a classic origin, and in the bonfire lighting on the hills and other practices at New Year's time, customs connected with more barbarous ideas.

The stone hand-mill for corn-grinding is still in use in many parts of the world; and in the Holy Land and many other parts of the East, both young and old may be seen working with the distaff, weaving at looms, carrying leather water-bottles formed of the stitched skins of animals, drawing water from wells, or threshing corn with flails in barns of the same form as prevailed when our Saviour wandered in that interesting land.

Railways are now branching over Egypt: they have taken root in the ancient land of India. How far is the day off when the whistle of the locomotive and the progress which accompanies it will be the means of multiplying the resources of those prolific lands, and rendering their products available in a twofold extent for the uses of mankind throughout the world?

In art and literature there are conventional ideas which have been retained and handed down from one generation of workers to another. In Gloucestershire, not long ago, we saw the common stone-cutter of a rural district fashioning pig-troths of a purely Gothic form, and ornamenting

them with so much skill, that those who had not witnessed the operation might mistake them for remnants of old churches.

In the county of Northumberland, where the blood of the inhabitants is a good deal mixed with that of the old Danish naval warriors, we have often noticed in carvings a singular correspondence with the ornamentation of a Scandinavian origin: this is to be noted in the little lingerings of carvings in ships and boats. We have seen the helms of some of the small steam-vessels on the Tyne fashioned with the heads of beasts and birds, and covered with interlaced and zig-zag ornament. The carvers who executed these works were neither antiquaries nor educated artists, and yet, if one of these helms could be so exposed to the weather as to give it the appearance of age, many of the learned would be inclined to compare it with the details of an ancient style of art.

The art of wood-cutting, as it was practised in England before Bewick's days, is still carried forward with wonderful integrity. By chance we met with an artist who executed this description of engraving, and so skillful was he in this style, that the most cunning collector of old broadsides and ballads could not well distinguish between his works of yesterday and those of a hundred years ago. It is remarkable in this metropolis, notwithstanding the changes and improvements of the public taste, and the entire revolution which has taken place in wood engraving, to find persons who can design, draw, and cut figures on the old Tyburn gallows type, the milk-maid with her pails, the cottages and meadows, the Babes in the Wood, and other decorations of children's books with all the imperfections and absurdities of a kind of art which in these days would be disgraceful to a schoolboy. There is, however, a market for such productions, in the same way as there was for the parrots and cats of the Italian image-ma's board about thirty years or so ago, to which we have before referred.

It should be remarked that the artist just mentioned had as good an opinion of his artistic ability as might be expected in Michelangelo or Albert Durer, and that he had a supreme contempt for the modern style of wood engraving, which he denominated "mere clap-trap, sir,—mere clap-trap."

FUNERALS IN WESTMINSTER ABBEY.

ROBERT STEPHENSON.

ALTHOUGH the famous old Abbey of Westminster is in these days seldom the scene of such stately and picturesque processions as were common there in the olden time, events do occasionally occur which, spite of the prosaic costumes of those assisting in the ceremonies, give increased interest to the structure. During the last twelve or fifteen years, but few funerals have taken place within those walls. A few, however, may be remembered,—that of the late Duke of Northumberland, the poet Campbell, and not long since the translation of the remains of John Hunter from the church of St. Martin-in-the-Fields. On the first of these occasions the great west door was thrown open, and the body was met at the principal doorway. It appears to be the established etiquette that none, however famous, are to be permitted to pass under this portal except the royal and the noble by birth.

The gatherings on these occasions were characteristic. At the first of these ceremonies a not very numerous assembly lined the aisle, and few of these were men of mark, or famous in the various arts and sciences; still it was with great state that the body was conveyed to the ancient resting-place of the family. At the funeral of the poet when the leaders in literature and art were assembled together, those engaged in such pursuits wondered at the large body which those of acknowledged name formed when collected there.

At the time of the re-interment of John Hunter, the spacious nave of the Abbey was crowded with known physicians, surgeons, and other members of the medical profession. There were many venerable with age; others at the meridian of

* It is related that Foote suggested that anything could be obtained second-hand in London, except coffins: even the cast-off wigs of the lawyers were ingeniously put into a market by a knowing shipper who traded to the Guinea coast. The captain thought that the negro chiefs might like them, and took out a few! Never did a small speculation turn out better: the negroes were all mad for wigs, and other shipments soon followed of the same articles. It was a sight to witness the chiefs, nude, except at the waist, wearing the flowing wigs, which once might have been worn upon the honoured heads of the English Lord Chancellor and judges. Perhaps the lawyers' wigs, and even pig-tails and "Hessian boots," may still be found in fashion in some of those countries.

their fame and usefulness; and earnest students, in many of whom this honour done to the dead could not fail to raise feelings of emulation.

It was a sight not readily to be forgotten when the coffin of John Hunter—the gilded ornaments tarnished, and the covering mildewed and worn by time—was carried on a bier, above the heads of the crowd, by several tottering old men. No religious ceremony was used in this case; but the Dean and other church dignitaries mingled with those who, closely and in disorder, surrounded the moving coffin. A great rush was made towards the grave in the north aisle, into which the coffin was soon lowered. The tones of the organ rolled through the place, but not one word was said. There was, however, a feeling of pride and exultation throughout the large gathering at the distinction which, after nearly a century, had been conferred on this great man. It is curious to notice classed companies of those who are engaged in various pursuits, and note their varied aspect. Seldom has there been a more intellectual-looking crowd than that which was found in the Abbey on this occasion.

With regard to Hunter, the time which had elapsed since his death had changed the natural emotions of grief felt for the loss of a friend or benefactor to those of respect and admiration. There was exultation, but no sorrow.

Within the last few days the Abbey has been once more opened, to receive the remains of the illustrious engineer who was suddenly cut off in the prime of his usefulness and from the midst of sorrowing friends. At the time of this funeral, more than 3,000 persons were admitted into the nave of the Abbey, including men of rank, officers of the naval and military services, learned professors, painters, and men of letters, directors of great companies, architects, engineers, contractors, and operatives who had assisted in carrying out the designs of the deceased.

All present acknowledged the genius and value of the man who was here to be laid to rest. A large portion of this crowded assembly had been for years intimately associated with Robert Stephenson, and had with him carried out those great works which have in a measure changed the condition of the country. Many had been raised into important positions by the assistance, advice, and instruction of the kindly engineer; and the bulk of the large assembly were truly mourners. It is difficult to convey a notion of the feeling which was shown by stern men of the world, when the grave was closed on him they had known so well and long. The music of Croft and Parcell added to the solemn effect; and it is doubtful if anything more touchingly impressive has been witnessed within those venerable walls than the scene presented when the words rose from the choir:—

"His body is buried in peace,
But his soul liveth evermore."

Mr. Stephenson has bequeathed 25,000*l.* for public purposes, the greater part of which is allotted to his native Tyne—10,000*l.* he gives to the Newcastle Infirmary; 7,000*l.* to the Newcastle Literary and Philosophical Society (to which Institution he had recently given 3,000*l.*); 2,000*l.* to the Mining College; 2,000*l.* to the Institute of Civil Engineers; 2,000*l.* to the Christian Knowledge Society; and 2,000*l.* to the Additional Curates' Society.

It is urged by Sir Joseph Paxton, in the *Times*, that the body of George Stephenson should be raised from its quiet resting-place in Chesterfield, and placed in Westminster Abbey with that of his son. With the greatest consideration for the excellent motives of the suggester, we must express an earnest hope that the proposal will not be listened to. The removal of the dead, except under very special circumstances, is much to be deprecated; moreover, there is no reason why we should rob Chesterfield of its object of interest and permanent lesson. The worth of George Stephenson needs no enforcement.

THE GRAVES OF THE GOOD AND GREAT.

It is not generally known that the remains of General Wolfe were brought from Canada and interred at night with much ceremony in the burial-place belonging to his family in Greenwich church. The circumstance was lately referred to in the *Standard*. After this, a correspondent of the same paper writes as follows:—"Perhaps it will not be less interesting than your communication in yesterday's paper, although exceedingly painful to many of your readers, to hear that the burial-place belonging to General Wolfe's family no longer exists under the church of St. Alphege,

Greenwich. The vault has been broken into, and a wreath and a Quebec newspaper removed from the coffin, and the vault filled in with rubbish; so that it is impossible to say whether the remains have been removed or not." Many will be sorry to read the above statement, and regret that, provided there were no injunctions to the contrary, the ashes of this brave general should not, like those of Dr. Hunter, have been translated to Westminster Abbey, where the monument of the warrior is placed. On this monument is the following inscription:—

"To the Memory of
JAMES WOLFE,
Major-General and Commander in Chief
Of the British Land Forces,
On an expedition against Quebec;
Who, after surmounting by ability and valour
All obstacles of art and nature,
Was slain in the moment of victory
On the 13th of September, 1759,
The King and Parliament of Great Britain
Dedicate this Monument."

It would have been well to have brought the remains close to the monument, or else to have marked with certainty the spot where they rest, although with but a plain stone.

When lingering on the spot where all that is earthly is left of men who were eminent in their generation, thoughts of their works and circumstances connected with their lives crowd the memory. We have sought in vain for marks of the grave of Massinger; the little spot of ground which received poor Chatterton,* after the early close of a life so full of trouble; and the burial-place of others whose names are well known and distinguished. At the present time great, yet necessary, changes are taking place in the crypts of the London churches: during these alterations, living representatives can, if they choose, take the opportunity of removing the remains to the suburban cemeteries or other places, or else making a record of the exact spot; where they may, after having been covered in the manner now recommended, rest for many generations.

It is most desirable that we should preserve the memory of all connected with our literature and history; and, as we have so many associations for the advancement of archaeology, and twenty other worthy objects, why should there not be a society formed having for its object the preservation of the existing monuments to the memory of eminent persons who are now no more; and where these do not exist, to provide memorials—even humble ones—of the graves of English worthies, which might otherwise be forgotten? In the case of Dr. Hunter, it was in a great measure owing to the energetic exertions of a single individual, that the remains were transferred to their present honourable position. In other instances there is no one to undertake the large amount of trouble necessary, and neglect is the consequence. In many cases it is only necessary to commence a movement towards placing a monument or restoring one, in order to ensure the support and assistance of the public.

When the Old St. Pancras Church was altered a few years ago, the architect and authorities of the church wrote in some instances to the descendants of the persons whose very interesting monuments are placed there; in other cases to law societies with which they were connected, and funds were sent to restore these memorials. It might have been in this case that those connected with the church were careless of such matters, and the monuments which are now so well cared for, and looked at with so much curiosity, would have been lost. In order to prevent the chance of this taking place, it is suggested that, as the Government will not undertake the matter, great need exists for some association or society, whose object should be to watch with care the numerous monuments in the metropolis, which have either an antiquarian, historical, or literary interest, and to suggest instances in which it might be useful to mark particular spots. Such an association might do a great deal in the way of judicious restorations; but more than that, the example would have great weight with the public, and cause many very desirable works to be executed.

SOUTH SHIELDS—We understand there is under consideration a scheme for the formation of docks on the shore at South Shields, between the Trow rocks and the south pier, where a sea entrance may be had with a depth of 30 feet at low water. There is a choice of 500 acres for the constructors of such docks.

* The exact place of Milton's grave is a matter of uncertainty; and if the question is not investigated and the place marked before those who are now alive pass away, that of Daniel de Foe will also be forgotten.

ON THE CAUSE OF COLOUR AND THE THEORY OF LIGHT.

At a meeting of the Manchester Literary and Philosophical Society, held on the 4th, a paper by Mr. John Smith, M.A. was read by his brother, Dr. R. A. Smith, entitled "On the cause of Colour and the Theory of Light."

The author, in attempting to explain certain natural phenomena, could not satisfy himself by applying the principles of either theory of light, and said that many natural phenomena indicated beats or vibrations in the luminous ether very different from what science taught; that is, that there were greater intervals between them than Newton had demonstrated and scientific men believed. He therefore endeavoured to contrive experiments by which he would be able to make as many revolutions or beats in a second as he considered the effective vibrations of light were repeated in a second of time, and argued that by certain contrivances to produce light and shade in alternate vibrations he should produce colour. A series of experiments was subsequently undertaken, which led to the conclusion that varieties of colour are produced by pulsations of light and intervals of shadow in definite proportions for each shade of colour. That is, supposing white light to consist of the motion of an ether; blackness to consist of an entire absence of motion; then a certain colour, blue, red, or yellow, will be produced by the alternate action of the light and the shadow. The author used shadow in the positive sense as the sensation was positive.

On pursuing the inquiry, he first caused a small parallelogram cut in cardboard to revolve over a black surface with a rapidity which he considered equal to the vibration of light. By this motion he obtained a distinct blue, whilst, at another time, in different weather, he obtained a purple. He then made a disc with several concentric rings, which he painted respectively $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{4}{5}$ black, leaving the remainder white, and on making this disc revolve the rings became completely coloured. There was no appearance of any black or white. In a bright day with white clouds in the sky the rings were coloured respectively a light yellowish-green, two different shades of purple, and a pink. By using discs of a great variety of shapes and different proportions of white and black, the author said that he produced successively or together all the colours of the rainbow, although he had not yet arrived at the exact arithmetical determination of the amount of light and shade needful for each.

These experiments were made before the Society by the light of a paraffin oil lamp with a reflector. The author said that they were much more brilliant by sunlight.

There was another set of experiments which the author considered as very effective, and especially as being easily made and described, but requiring strong sunshine to show them. These were made by casting a shadow of a particular figure on a white wall or on a sheet of paper, so as to produce alternate beats of light and shadow when put in revolution. The figure became coloured of different shades, and because these could be seen on the wall, like the spectrum from the prism, he called them spectra by reflection.

He mentioned, also, that the colours may be produced by making a black disc, with figure cut out of it, revolve before a white cloud or white screen.

The author considered that his theory gave an entirely new and simple explanation of the phenomena of refraction through the prism.

THE "GREAT EASTERN" AND ITS COAL CELLAR.

DURING the recent trial voyage of the *Great Eastern*, it was found that the largest consumption of coal in the screw stoke-hole was 26 tons in four hours, and that the consumption in twenty-four hours was 125 tons, while the quantity of coal consumed in the paddle engine-room was about 100 tons in the same time, making the entire consumption of coal 225 tons in twenty-four hours. Calculating the voyage to Melbourne at thirty-six days, at the above rate, 8,100 tons of coal would be required.

Each hour this monster of the deep will devour more than 9 tons of coal. If kept at work only one half of each year, the consumption of coal would be upwards of 41,000 tons! What an army of busy hands would be required to dig this dusky treasure from the earth! It would need a fleet of about one hundred colliers of the ordinary size to carry the burden.

The above figures do not seem so startling

when it is considered that the tonnage of the great ship is 27,000; that in ordinary circumstances the fuel used, by means of screw and paddles, is to give a power of 2,600 horses, while at high pressure the power might be raised to 10,000 horse-power; and that an army of 10,000 men, with field equipment, might, by this force, be conveyed at the rate of fifteen miles an hour to distant lands, that is, if the ministry thought it wise to risk so many eggs in one basket.

It is curious to glance at the progress of steam power thus applied. The power and size of vessels have been constantly increased, as well as facility and safety, both for the conveyance of goods and travellers. Not forty years ago the water communication between London and the north of England and Scotland was a matter of uncertainty; travellers, who from motives of need or economy took passage in the swiftest of the trading vessels, were often kept tossing for three weeks or a month between the Thames and the Tyne. In this time a vessel like the *Great Eastern* would have travelled nearly to Australia. Since the introduction of steam-packets, the times of arrival can be calculated upon with almost as great certainty as the stage-coach or locomotive, and a voyage is performed by the coasting steamers with nearly as much rapidity as the "Royal Mail" of past times.

There is a little drawing by Nasmyth in the mechanical department of the Brompton Museum of the first steam-vessel which sailed on British waters. This event—great, not only in a national point of view, but in a far wider sense—look place in an artificial lake near Dumfries. Amongst the passengers in this little steam-craft may be noticed Robert Burns, in a homely-cut brown coat and scarlet waistcoat. Little could the poet and his companions have foreseen of what has been since achieved in this department of science?

MR. BLACK, M.P. ON WAGES, TRADES' UNIONS, AND STRIKES.

ON Saturday evening, the 22nd inst. Mr. Black, member for Edinburgh, delivered, to a crowded meeting of the working classes in Dundee-hall, a lecture on the subjects of wages, trades' unions, and strikes. The meeting was presided over by the Lord Provost. He showed that labour and capital were both articles of commerce, that they were essential to each other, and that capital must necessarily and proportionately share with labour the profits of their united enterprise. He pointed out the means by which working men, when the moment chosen was opportune, might obtain higher wages. Instead, he said, of organizing a determined contest, were workmen to threaten to leave, or actually to leave their masters, unless their demands were agreed to (but without obstructing or intimidating others), if circumstances warranted a compliance with their terms, some masters would agree to them, and others would be obliged to follow their example, as otherwise they would lose their best men. But if already wages had reached their proper level, and masters could not carry on their works with a fair profit if a larger proportion was paid away in wages, the resistance to the demand would be so general that the workmen would find it to be their interest to accept the largest wages that could be mutually agreed upon. This would accomplish the same object as a strike in every instance where a strike would have naturally been successful, without the disastrous consequences which uniformly attend these intestine wars. He then went on to show at considerable length the loss sustained in various strikes referred to in our last number. After quoting from the last report of the Amalgamated Engineers, as illustrating the inquisitorial and tyrannical character of trades' unions, Mr. Black mentioned the following incident of the London strike: Shortly before I left London I witnessed a strike at the great Westminster Palace Hotel building, just opposite my windows. While numbers of the men were loitering about the streets, I went down to inquire what was the reason of the commotion. I saw one man particularly talkative, with a pipe in his mouth, and without a working jacket, but in a coat with a rent from the nape of the neck to the pocket. I did not choose to encounter him, but accosted a quiet-looking working man, and asked him the cause of this commotion. "Oh," he said, "it is a strike among the men." "What have they struck for?" I asked. He said it was because master had employed men to lay the concrete who did not belong to the union. "But do they lay it properly?" "The work," he replied, "is well enough done." "Then why should they not be allowed to gain their bread by doing work which

they can do perfectly well?" "They must first belong to the union," he said. Some of the labouring men who were employed to lay the concrete were standing near and overheard us. One of them said, "We don't want to belong to the union, and if we do we must pay 5s. of entry money besides something weekly; and we have not 5s. to pay, and the union men won't let us work till we get our wages, when we could pay the 5s." I then asked my union friend if we were living in a free country when he and his brother unionists were exercising a tyranny over these poor men greater than any despot on the Continent would venture to do? I asked him if they all got the same wages. He said they did. I then asked him if he thought a man who laid a hundred bricks in an hour was not entitled to more than he who laid only fifty? He said that might suit the masters well enough, but would not suit them. "But do you call it fair?" I said, "that the man who did half the work should be paid as much as the man who did twice as much? If you went to purchase a loaf do you think it would be fair if the baker were to make you pay as much for a half-loaf as he charged another for a whole loaf?" By this time a knot of listeners had congregated round us, and I thought it time to decamp, but before doing so one of them gave it as his verdict that what the gentlemen said would be best for the country, but "perhaps the other way may be the best for you." Now, I do not altogether acquiesce in the verdict of this self-constituted foreman of the jury of bystanders, but I accept that part of it which acknowledges that my plan would be the best for the country. The lecturer then went on to give some particulars of the miners' strikes in Lanarkshire, and of some of the strikes in the town of Preston, and proceeded to show the effects of strikes in raising up foreign competition. After some further observations, he continued: "In most of these contests I have no doubt there are many who, in their own minds, are satisfied that they are unnecessary and ruinous, but are as much afraid of stating their convictions and acting upon them as men who live under the nightshade of the Inquisition are afraid of professing their faith in the right of private judgment, lest they should be persecuted for heresy. Most men would rather suffer at once some severe loss than submit to the continued isolation, suspicion, and malignity of their fellows. Where such a system of terrorism prevails there can be no liberty.—The best energies of men are cramped, and their rise in life rendered impossible. My desire is to procure entire freedom to every workman to dispose of his labour as he pleases. The liberty of both workmen and their employers is often arrogantly encroached upon by rules imposed by the unions. One of these, that masters shall not be allowed to take a certain number of apprentices, I consider to be especially cruel. What right has any man, or society of men, to prevent a boy from learning a trade by which he may earn an honest livelihood? To prevent him is inhumanity to the boy, is cruelty to his parents, and injurious to the country. And what is the class that is injured? These boys are the sons of workmen, and it is workmen who doom them to idleness. They are their own children who are thus barbarously treated. And what is the reason for so doing? It is avowedly to secure a monopoly of the trade, by preventing an increase of workmen. While you so rigidly maintain monopolies among yourselves, who are so ready to denounce monopolies in all other cases? Another way in which unions encroach on the rights of both masters and men is, their dictation of the manner in which work is to be executed. From the nature of these rules, they appear to be devised by the most idle and unskilful men of the union, as they generally favour these at the expense of the industrious and skilful. For example, they insist that the wages shall be uniform; that the man whose work is superior in quality and quantity shall receive no more than the man whose work is inferior and deficient. I have known operative masons, industrious, frugal, and skilful, who, by taking piece-work and making extraordinary exertions, gained money enough to enable them to commence as masters, and, by good management, rise to great eminence. Had these men been doomed to the dead level of an average wage, cramped and manacled by trade-union rules, they never could have reached their eventual prosperity. The noble workmen, George Stephenson, Telford, and Tredgold, I believed as journeymen at not more than 12s. a week. They, by the exercise of their free and unfettered talents, increased the power of the country, and added immensely to its wealth and happiness: had they been fettered and con-

fined by trades' union rules and control they would have died unknown and unhonoured, and Britain would have been deprived of the incalculable benefits resulting from their exertions.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE session will be opened in the new rooms of the Institute, Conduit-street, on Monday, the 7th of November, when Earl de Grey will preside, and Mr. Tite, M.P. will deliver an address on the present state and position of architecture at home and on the Continent.

The portrait of the president, to which we referred some time since, has been obtained; other portraits have been presented; and thus, with the pictures previously the property of the Institute, the walls of the new rooms are pleasantly covered.

The removal fund now amounts to about 240*l*. and the council are in hopes that, through the liberality of those members and friends who have not yet subscribed, the necessity of trenching on the funded property of the Institute may be confined to the sum they had to pay as a premium on taking possession. We shall hope to see a large influx of new members, and a corresponding exhibition of the energy and vigour that belong to fresh comers. Conduit-street must be the rallying point for the profession from all parts of the kingdom.

THE ARCHITECTURAL ASSOCIATION.

ON this Friday evening, the 28th, the Architectural Association will hold the first meeting of the new session in their rooms, in Conduit-street, when the president will deliver an address. The committee of the Association being desirous of making the advantages of the society generally known, have circulated a copy of the rules, and a list of the members of the Association, amongst the profession, in order that they may bring them under the notice of their assistants and pupils. We shall be glad to find the appeal warmly responded to. The objects of the Association are admirable, and the means of attaining these objects are materially improved by the position they have now taken. It will rest with the governing body to ensure co-operation and increased success.

GLASGOW ARCHITECTURAL SOCIETY.

THE annual general meeting was held last week, when there was a *commerciozione* and exhibition of drawings. Mr. Jas. Salmon was elected president, and took the chair vacated by Mr. John Baird, the retiring president. In his address Mr. Salmon urged that non-professional men should join them, and said he did not know any particular mind engaged in any occupation whatever which would not be benefited by the operations of that society. If the professionals were strengthened by a number of laymen to give the society a standing, it would, he believed, be a means of effecting many changes, and be useful in a variety of important ways. So long as sanitary questions came before the public, so long as there were suburbs to regulate, streets to widen and improve, working-men's houses to build, and other like measures to consider, architecture and its branches would be important, as channels through which all these would pass.

Mr. McLean, secretary, read the first report of the council, showing that the society has been in existence since January 1858, and there are now nearly 100 members enrolled. The society has been indebted to the following gentlemen for the papers read at the meetings:—Mr. Sheriff Strathern, "Introductory Address;" Mr. Thomas Gildard, "Some of the Causes which affect Architectural Design;" Mr. James Salmon, "Domestic Sanitary Arrangements and Drainage;" Mr. John Honeyman, jun., "Drainage of Glasgow, with special reference to the Disinfection of Sewage and the Ventilation of Sewers;" Mr. John Mossman, "Sculpture in connection with Architecture;" Mr. Alexander Thomson, "Masonry;" Mr. J. A. Hutchison, "Painting as applied to Architecture;" Mr. Thomas Currie Gregory, "Foundations—Natural and Artificial." It is proposed, when funds permit, to procure and distribute among the members, engravings, lithographs, or photographs of buildings, models, or other works of art, to promote the taste for the higher styles of architecture, and in process of time to institute a library, or form a collection for the use of the members. Professor Rankine read a paper, wherein he said the engineers had formed a similar institution. It was somewhat older, and also in a very prosperous state. Nowhere were such

societies needed more than in Glasgow. It turned out some of the highest architecture in the world. Its ecclesiastical buildings, buildings for public purposes, and buildings for amusements, together with its warehouses, are some of them samples of the finest kind of architecture. In these circumstances, therefore, it would be extraordinary if an architectural society were not successful in Glasgow. In the course of his paper the Professor said:—

"The different styles of architecture may, to a certain extent, be distinguished and classed according to the kind, and the greater or less complexity, of the principles which regulate the stability of the structure. The simplest kind of stability is that of a single mass resting on a base: this is exemplified by pyramids, obelisks, and solitary pillars. Next, in point of simplicity, is the stability of a load resting on a lintel, whose two ends are supported by pillars, each of sufficient dimensions to be stable in itself. This we find exemplified in Egyptian and Greek architecture, and in those examples of Roman architecture from which the arch and dome are absent. The next degree of complexity consists in supporting the load, on each piece of which the structure consists, by a pair of pressures inclined to each other; that is, by introducing the arch and dome; and this we see in later examples of Roman and Italian architecture, and in various styles of the earlier Middle Ages, such as the Byzantine, the Lombard, and the Anglo-Norman. The perfecting and extending the application of the arch, so as to sustain the entire load of the higher parts of the structure by means of the thrust exerted through the suitably formed and arranged, characterizes Gothic architecture. The balancing of overhanging loads is seen to a certain extent in the beehiving battlements and turrets, which form the most picturesque feature of the Scottish Baronial style. The balancing of bulky arches upon comparatively slender pillars, whose lateral stability depends very much on their connection with the mass above them, is characteristic of Saracenic architecture. The styles of framework in roofs, and in buildings of wood and iron, might be classed in a similar manner, according to the way in which the principles of statics regulate the stability of the structure. Another mechanical characteristic of styles in architecture is the way in which the strength of their materials is exerted. In the obelisk, pyramid, and simple tower or column, resistance to crushing is alone brought into play; and the same is the case with the most elaborate combinations of ribs, groined arches, and tracery in Gothic architecture. In the styles which employ architraves supported by pillars the transverse strength of lintels or beams is also employed. The support of overhanging loads requires the transverse strength of corbels and cantilevers, and in some cases the tenacity of cement and cramps. Timber and iron frameworks bring every form of strength into requisition. A subordinate distinction of styles, founded also on mechanical principles, depends on the hardness and durability of the material of the building."

Mr. J. Honeyman, jun. then delivered an address "On different Opinions regarding Beauty in Architecture." He expressed his admiration of Professor Rankine's classification of styles according to mechanical principles, and the manner in which he had discriminated between the beauty which architecture has in common with works of engineering, and the beauty which it ought to possess in common with works of fine art. Professor Rankine had, he might say, demonstrated the anatomy of the body of architecture: he proposed to address them regarding its spirit; that to which it owes expression and everything comprehended in vitality. Referring to the various opinions on the subject of architecture which have been elicited by the recent discussion on the style of the proposed Foreign Office, he denied the right of Lord Palmerston or any one else to an opinion on taste for which they could show no title. If taste were a mere matter of individual caprice, there would be no end of confusion; but while one party of architects and critics maintained that this must necessarily be, there was another, a smaller party, who maintained that there is an ultimate standard of appeal for taste as well as for morality; for the Great Source of physical as well as moral perfection is one, nor is His ideal of the one more faithfully portrayed in the written word than in the other on the broad pages of created beauty. It was only, what might be expected, that those who acknowledge such principles should prefer Gothic to Classic art, but it was most unfortunate that their architecture should be known as Gothic, and the sooner we got quit of that term as applied to modern architecture, the better. Since our mediæval styles are

known as Gothic, let them retain the name by all means; but we have done with Mediævalism for ever, and there is no reason why we should call the architecture of the nineteenth century Gothic, unless we are particularly anxious to perpetuate misapprehension and confusion.

Mr. Gildard offered a few pithy remarks on Mr. Honeyman's paper.

Votes of thanks were then awarded to Professor Rankine and Mr. Honeyman for their addresses, and to the secretary and treasurer for their services; and

The next meeting was announced to be held on the third Monday of November.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE first meeting of the present season of this society was held last week at the Royal Institution. Mr. Horner occupied the chair. Various archaeological specimens were exhibited, and several new members were enrolled.

The secretary read an article from the *Scotsman* of the recollections of a tour through Lancashire, in which the drinking-fountains of Liverpool were commented on.

Mr. Pictou observed upon several pleasing specimens of Mediæval architecture he had met with at Shrewsbury, Ludlow, Leominster, Hereford, Worcester, and Gloucester, in the cases of various buildings which were undergoing reparation. Touching drinking-fountains, he observed that, although Liverpool was first in the field with them, other localities had gone far beyond them in beautifying and adapting them to the purposes for which they are intended; and he did think there was some room for improvement in their fountains; for, however grateful they might be to the gentleman who had introduced the granite fountains, little could be said for the taste and design they displayed.

After some further conversation, the chairman read an inaugural address, which we postpone in order that we may not misreport.

RATING OF THE VICTORIA DOCKS.

An appeal was tried on the 19th instant at the Quarter Sessions at Chelmsford against the rating of the Victoria Docks at the sum of 25,000*l.* net rateable value, by the parish officers of West Ham, the previous rate having been made upon the sum of 10,000*l.* Mr. Charles Lee, Mr. William Ponsford, Mr. William Tite, M.P. and Mr. Henry Arthur Hunt, gave evidence for the lessees of the Dock Company in support of a valuation of 13,981*l.* Mr. Wilson, Mr. John George Hammaek, and Mr. George Smith gave evidence for the parish officers in support of the valuation of 25,000*l.*

The docks are held on lease at a large rent by Messrs. Peto, Betts, and Brassey.

The first point raised was that of the principle to be adopted in rating these docks; Mr. Bovill, Q.C. for the lessees, maintaining that the nature of the occupation must be taken into consideration, and that therefore the earnings of the lessees should be the basis of the valuation. Mr. Tindal Atkinson, for the parish officers, maintained that the rent actually paid by the lessees should be the basis of the valuation, or, if this were decided against him (which it was afterwards), that then the means, advantages, and capacity of the warehouses and docks for the transaction of business should be taken as the basis.

Mr. Lee, in his evidence for the lessees, stated that he adopted the principle of earnings, and that the gross earnings of the whole concern in the year 1858 were.....£166,678

And the trade expenses were..... 122,728

Leaving the net earnings at	£13,950
From this amount he deducted	£.
depreciation on trade plant	3,276
Ditto on Buildings, &c.....	6,690
Ditto interest on 100,000 <i>l.</i>	
trade capital at 5 per cent.	5,000
Ditto tenants' profit on 100,000 <i>l.</i> ..	
including management at 15 per cent.....	15,000
	£29,966

Net rateable value£13,981
Mr. Wilson, the chief witness for the parish officers, stated that he had taken the number of feet of wharf frontage at a certain price, and the number of squares of warehouse flooring at a certain price, and after deducting the proper allowances for repairs, insurance, and depreciation, he arrived at the net rateable value of 25,000*l.*

The Bench decided that the nature of the occupation and the earnings were the proper basis of valuation for such property to the poor rate, and reduced the rate from 25,000*l.* to the valuation of 13,984*l.* net rateable value; each party to pay their own costs.

EXETER COLLEGE CHAPEL, OXFORD.

THE new chapel for Exeter College, erected from the designs of Mr. Scott, by Mr. Symm, builder, was consecrated on the 18th, the Bishop of Oxford preaching the sermon. We have already given a view of the building, and some particulars. The interior exhibits the application of marbles to a considerable extent, and has a groined roof of stone. Three of the windows are filled with painted glass, by Clayton and Bell. The total cost is said to have been 15,000*l.* of which 4,000*l.* are still wanted.

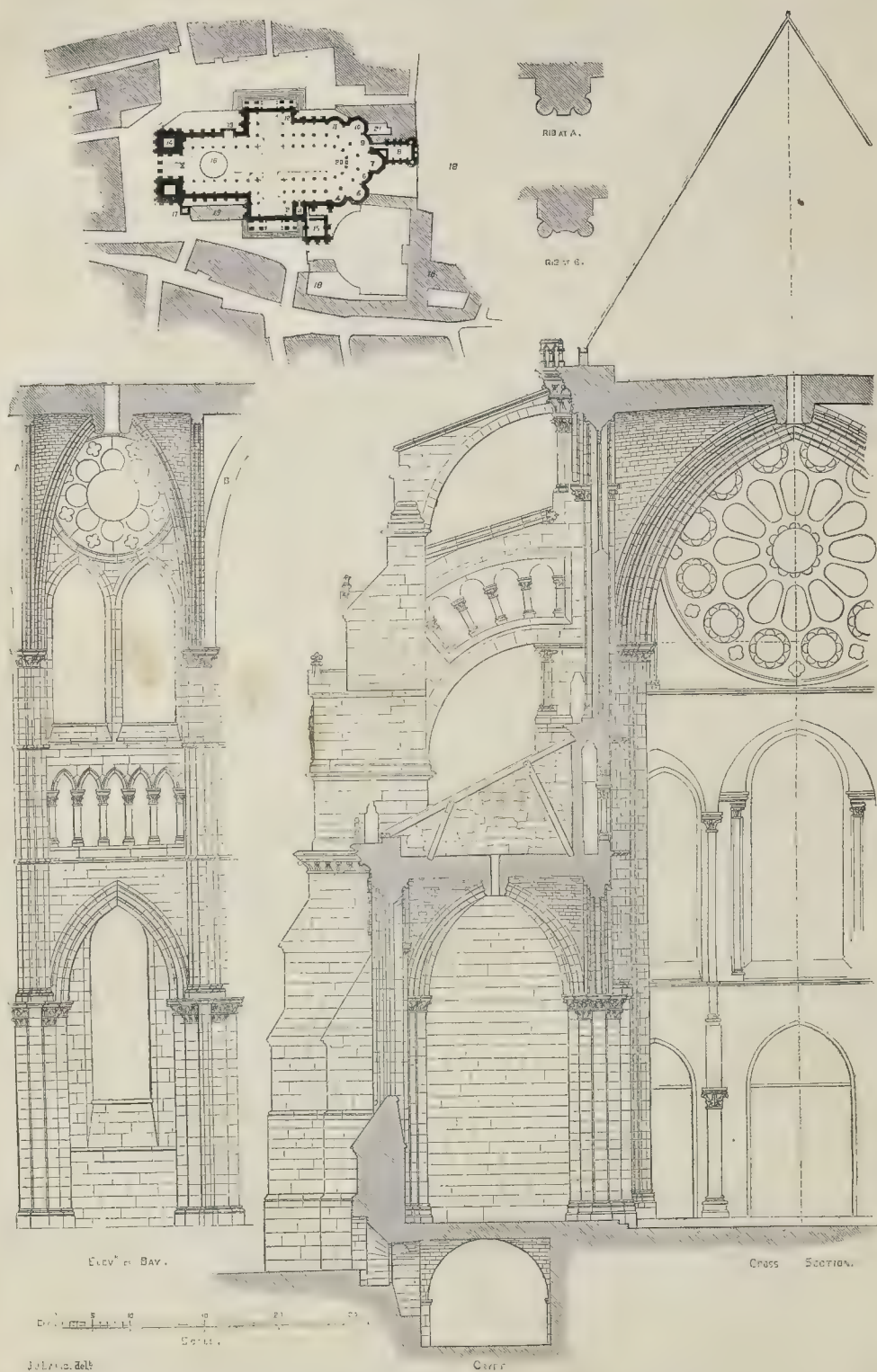
Mr. Buckeridge, an old pupil of Mr. Scott, has superintended in his absence, and Mr. Clare was the clerk of the works.

THE WORKMEN'S INSTITUTE.

THE movement of the non-society men of the building trades, with respect to the strike, has led to a somewhat unexpected result, which has been already alluded to in the *Builder*, namely, the establishment of the Builders' Institute in the Easton-road. Several benevolent gentlemen, such as Mr. G. T. Bowyer, having made inquiries respecting the condition and requirements of the various workmen employed in the building trades, have cordially given their assistance towards the furtherance of a scheme which, if successful, will tend in a great degree to promote the social and moral comfort and welfare of workmen in general. A room in the Easton-road has been kindly placed at the disposal of a committee, by Mr. Bowyer, for the purpose of a reading-room and place of call for unemployed workmen; and the same having proved successful to a certain extent, it is proposed to extend the plan. With this view an influential committee has been formed, including the names of G. Smith, Alderman Cabitt, Capt. John Grant, J. Lubbock, and others; and a large building is now in course of erection in the Easton-road, at a cost of more than 1,000*l.* The new structure will comprise reading, lecture, and smoking-rooms, offices, and a series of dormitories, after the plan of the model lodging-houses. The latter will be for the use of building workmen alone, and will prove a great boon to those who visit the metropolis in search of work. There will also be a benefit society, which, in fact, has already commenced, and numbers over 150 members, who enjoy all the benefits and privileges of a provident association, without the wasteful expenditure occasioned by its being held at a public-house. Everything which tends to render the dram-shop attractive, except intoxicating liquors, will be provided at the institute. Chess, draughts, and refreshments will be supplied for the use of the members; and discussion on all subjects, save politics and religion, will be allowed. Lectures will be regularly delivered, and everything will be done to render the institute both popular and attractive. Branch establishments are to be immediately opened in various parts of London, the first at 34, York-road, Lambeth. The importance of the Institute can scarcely be overrated, especially when it is borne in mind that many trace the origin of the present unhappy strike to the influence of the public-house. At any rate, it must certainly tend to the elevation of the condition of the artisans, and it is to be hoped that they will cordially avail themselves of the opportunity. The necessity of a house-of-call apart from the beer-shop has been strongly insisted on before now, and it will be a matter of lasting regret should the present praiseworthy enterprise be allowed to fail.

In many large establishments preference will be given to those who are members of the Institute, and as this fact becomes known it will tend to draw many who would otherwise be tempted to join the various trades' unions; consequently, it merits the support of every right-thinking and intelligent man. Every attempt will be made to render the Institute self-supporting, but it is obvious that at the commencement such assistance will be required. Those who feel disposed to aid in the furtherance of such a benevolent and practical plan will obtain every information on application to the secretaries, Mr. G. T. Bowyer, of Amphil-square; or Mr. Conrad Wilkinon, of Beckenham; or of Mr. C. Mill, at the Institute (temporary), 237, Easton-road, N.W.

JOHN PLUMMER.



CHARTRES CATHEDRAL: SECTION, PLAN, AND DETAILS.



CHARTRES CATHEDRAL, FRANCE.*

* See p. 705.

THE BUILDERS' BENEVOLENT INSTITUTION.

The annual festival of the Builders' Benevolent Institution, established in June, 1847, for giving relief and granting pensions to decayed members of the various branches of the building trade and their widows, and also for affording relief to workmen in case of accidents, was held on Thursday last at the London Tavern, Bishopsgate-street.

The chair was taken by Mr. G. Smith, the president; and among the gentlemen present (of whom there were about 200) were the following:—Mr. W. Lee, M.P.; Mr. P. Rolt, Mr. G. S. Smith, Mr. Rigby, Mr. Dunnage, Mr. Plucknett, Mr. T. Piper, Mr. Gillyers, Mr. J. Nicholson, Mr. G. Corderoy, Mr. G. Mausfield, Mr. Lucas, Mr. Godwin, Mr. Nichol, Mr. Waller, Mr. George Bird, Mr. Stanley G. Bird, Mr. Joseph Bird, Mr. Cozens, Mr. Hutchons, Mr. Head, Mr. R. Head, Mr. Thorne, Mr. Higgs, Mr. Fish, Mr. R. Richardson, Messrs. T. & W. Stirling, Mr. Howard, Mr. J. Williams, Mr. Davis, Mr. W. Higgs, Mr. G. Myers, Mr. W. Bird, &c.

The usual loyal and patriotic toasts having been disposed of,

Mr. Piper (one of the patrons of the Institution) then rose to propose the toast of the evening, "Prosperity to the Builders' Benevolent Institution," and in doing so observed that their excellent chairman had said, "You are to do the clerical part of the business, and preach the sermon." He felt that he could not refuse the application, especially as but for a family affliction which occurred last year, it would have been his privilege then to preach the sermon, and propose the toast of the evening. The subject to which he had to invite their attention was to be found at the third page of the programme, and was the fourth toast on the list. Benevolence was the tie which bound them together, or, to speak more familiarly, the keystone of the arch. The builder's occupation was one which they had reason to be proud of; for while Greece and Rome testified by their literature to the enduring character of their mental labours, the ruins of Nineveh and Thebes showed the world that the builders' craft endured for ever. In the present time, the builder's trade was in everybody's mouth; and therefore it was impossible, on such an occasion as that on which they were met, to ignore the fact of the fearful strike, which had lasted for some months, and which still raged. It was a fact which stared them in the face, for they could not but suppose but that it would interfere with that which they were now met to establish, continue, and foster. He need scarcely say that he deplored that strike; for if they were to cast their eyes back to ancient history, they would arrive at the conclusion that the decadence of nations arose, in the first instance, from the separation of classes and from the alienation of those who were mutually bound together by a common interest. They might, therefore, depend upon it that he was no friend of the State, nor a lover of his country, who endeavoured to set aside the principle of mutual goodwill and mutual dependence. This reminded him of the second head of his discourse—the benevolent object for which they were met. They were assembled to promote the spirit of benevolence—that benevolence which meant good will and that cordial charity which bound men to the one to the other—not the charity which a limited philosophy would confine to alms-giving, but that genial, warm charity which blessed our daily life, that kindly feeling which met us in our families when we came down to our breakfast-table in the morning, and which joined our hand with that of a friend in the course of our daily avocations; in fine, that sweet sentiment of human love and cordiality without which we would find the everyday routine of life but dry, hard work. If, then, they could be inspired by those feelings round the social board, let them think of those who were not so fortunate as themselves, and let them remember, in the words of the song, that

"The bravest worker of us all may strive without success;
Then let us lend a helping hand to brothers in distress."

This reminded him of the third division of his subject,—the Institution, the object of which was to illustrate in practice that spirit of benevolence which was one of the leading characteristics of the age, and which it would be impossible to direct in a better way than in assisting the distressed members of the building trade. Coming, then, to the application of his text, he would ask them to think of those who, although they might have sat at the same social board with themselves, might, nevertheless, now

be in want and distress. It might be their own case to-morrow, for it was impossible to tell when or where the blow might fall. If, then, they were able to congratulate themselves upon present immunity from the fate which had descended upon many once, perhaps, as prosperous as themselves, let them feel that there were those to whose sad and pining hearts they could bring joy and consolation. Let them also feel that, while they were enjoying themselves at the festive board, they had a higher and nobler mission to perform, and that, in fact, they had no business to be there at all if they did not come to support with all their ability the Builders' Benevolent Institution. Twelve male pensioners at 24*l.* per annum each, and fifteen females at 20*l.* each, were receiving their charity at the present moment; but pleasant as this was, he regretted to say that at the last election there were twelve unsuccessful candidates, while no election took place in November from want of funds. The committee, however, hoped the liberality of the present meeting would enable them to elect most of the applicants in May next. He ventured to express a hope that the members of the trade would exert themselves among their friends to obtain additional annual subscribers. It should be remembered that it was not every one who could afford to give a large donation. Better would it be for the institution to get a yearly dole, accompanied with yearly good wishes, than an occasional donation of a larger sum. And whatever might be given he was sure would be given with a free and generous spirit. It might be possible to give a liberal gift in such a way as to make it a rebuke, and it was possible to give something which, like the widow's offering, might be infinitely valuable. He was informed that the total sum now invested was 6,683*l.* being 1,557*l.* for the relief fund, and 2,125*l.* for the building-fund. With regard to the latter, he might perhaps be excused if he indulged in the speculation as to whether his, or his friend Mr. Bird's grand-children would lay the foundation-stone of the Asylum; but whoever might in future years have that privilege, let them not forget their present duty, and do all in their power to further the interests and promote the prosperity of the Builders' Benevolent Institution.

Mr. Charles Lucas next proposed the health of the Chairman, remarking that there was not a better tradesman, a more honourable man in the community, or one connected with the building business who was more deservedly respected.

The Chairman having acknowledged the compliment, proposed the "Patrons of the Institution," coupling with the toast the names of the patrons present, Mr. Lee, Mr. Piper, Mr. Lucas, and Mr. Rolt.

Mr. Lee, M.P. returned thanks, and said he felt sure, from the character of the gentlemen on the list of patrons, that friends would not be wanting to aid the Institution. He was glad to see so many working men among the presidents, and was convinced they would do the utmost in their power to promote so valuable an institution.

The Chairman then gave the "Vice-Presidents and Trustees of the Institution," connecting with the toast the name of Mr. Dunnage, of the firm of William Cubitt and Co.

Mr. Dunnage returned thanks.

Mr. A. G. Harris (the honorary secretary) then read a long list of subscriptions, including the Chairman, 25 guineas; Mr. Dunnage, 5 guineas; Mr. G. W. Rogers, 5 guineas; Mr. T. Robinson, 5 guineas; Mr. Plucknett, 5 guineas; Messrs. Lucas, Brothers, 10 guineas; Messrs. Myers & Son, 10 guineas; Mr. W. Webb, 20 guineas (making the fifth of that amount); Messrs. W. Corderoy & Sons, 5 guineas; Messrs. W. & J. Freeman, 5 guineas; Mr. Kelk, 10 guineas; Mr. H. S. Smith, 5 guineas; Messrs. Rose and Co., 10 guineas; Mr. Joseph Bird, 10 guineas; Messrs. Waller and Son, &c.

The chairman, in proposing the health of Mr. George Bird, the treasurer, dwelt upon the important services which that gentleman had done the Institution, and remarked that had it not been for his untiring energy, zeal, and perseverance, it never could have attained its present prosperous position.

Mr. Bird, who was very warmly received, expressed the satisfaction he felt at finding so large and respectable an attendance. The subscriptions received up to that moment amounted to 407*l.* 17*s.* and more were expected. But the most gratifying duty which he had to perform, was to announce the circumstances that a lady who had taken one of their collecting-cards a few months ago had been so successful as to procure, in small sums among her friends, the sum of ten guineas. This was an

example which he hoped would be followed by the wives, sisters, and sweethearts of those whom he saw around him. Five guineas collected in this manner would entitle the lady to become a life-governor, with the same privileges as if she had subscribed the amount herself. The cards to which he referred were got up by Mr. Stirling, and as there were plenty of them in the room, he hoped gentlemen present would apply to him for a supply. He could not sit down without stating how much the Institution was indebted to their friends at the upper table, to their worthy president, Mr. George Smith, and to Mr. Piper. To the latter gentleman their thanks were especially due, for his words could not fail to be of benefit to the Institution.

Mr. Rigby proposed "The Architects and Surveyors," and said he wished to refer in complimentary language to an architect present who had especially deserved the thanks and consideration of all connected with the building trade. Mr. Piper had told them that the monuments of the ancient cities of the East bore enduring testimony to the skill of the builder; but it should be remembered that it was not the hand only which executed, but the head which designed. In mentioning the name of Mr. Godwin he might remark that it was not only with his pencil as an architect, but with his pen, that they, as builders, were familiar. In this respect he believed they all knew how much they were indebted to the intelligence of the press and to its freedom of expression. The publication with which they were best acquainted was the *Builder*, and he need hardly remind them how much it was distinguished for intelligence, freedom of opinion, fairness, and impartiality; and how in the sad strike with which they were afflicted (he said afflicted, for it was impossible not to witness without pain thousands of men, willing and anxious to work, prevented from doing so), the *Builder* had endeavoured to make the public understand the true aspect of the question. He begged to propose the "Architects and Surveyors," and he felt assured the toast would be well received, as the best thanks of the builders were due to them, and to the gentleman whose name he had given them.

Mr. Godwin said he could have wished it had fallen to some more eminent member of the profession to thank them for their kind expressions; but Mr. Rigby, who had so ably proposed the toast, probably remembered him not simply as an architect, but as one of the earliest friends of the Institution. The architects and the builders were very closely connected. If the builders looked to the architect for invention, science, and high feeling, architects in their turn looked to the builder for skill, intelligence, and equal integrity—an integrity which made the exercise of their duty a pleasure. This state of things, he ventured to say, existed to a considerable extent; and what was the result? Why a corresponding degree of estimation on the part of the public for all concerned in design and construction. What a spectacle had they seen within a few days, when the Queen threw wide the gates of the park to allow the funeral of one of our great captains of industry to pass through; and Westminster Abbey, filled with the eminent, opened to receive his remains; while, at the same moment, a thousand working men in mourning were listening to a memorial service in the parish church of his native town. Such associations as the Builders' Benevolent Institution, by bringing men together, and eliciting their better feelings, aided in this progress. Heartily he thanked them on the part of the architects and surveyors of the metropolis, and wished the Institution even a greater degree of success than had already attended it.

Other toasts, including "The Directors," "The Brighton Branch," and "The Stewards," followed, and the party broke up at a late hour.

MANCHESTER.—Little progress seems to have been made as yet, says the local *Courier*, towards preparing for the erection of the Manchester Assize Courts. The delay is partly owing to the heavy labour of excavating the site for the foundations, a clay hill having to be cut away by the shovel and removed by carloads to a valley at the top of Southall-street. Mr. R. Neill is the contractor for this work, and he must complete it before March. Before this time the committee hope to be ready to receive tenders for the entire building. A large main sewer is being made in Great Ducie-street, to carry off the sewage and waste water from the courts.

CHURCH-BUILDING NEWS.

Beccles (Suffolk).—The church here has been repaired and altered. Prior to the alteration, the west end of the church, to the extent of two bays, was cut off by a wooden enclosure, which contained the parish fire engines, &c. There was also an unsightly gallery in the south aisle, and the pewing was of the worst description. These enclosures and disfigurements have been removed, and the whole church thrown open. The roof has been repaired and re-leaded. The windows of the clerestory, and the great east and west windows, have been restored and re-glazed. Messrs. J., W., & G. F. Garnham, of Beccles, and other friends, have presented an amber window, with crimson border in cathedral quarries, in the south aisle; and next to it, towards the west, a window has been restored, also in cathedral quarries, with green border, by subscriptions from young persons engaged in the town. The fittings are all of oak, open seats, with bench ends, and the stall seats have carved panelling and elbows. The organ, which used to be at the west end of the church, is now at the east end of the north aisle, and has been rebuilt, at a cost of about 300*l.* by Messrs. Bishop, Starr, & Richardson, of London. The works have been executed by Messrs. Godbolt, builders, of Brockdish, near Scole, Norfolk, under the direction of the architect, Mr. J. H. Hakewill.

Southoe.—The church of Southoe, Hunts., has been re-opened. Nearly the whole of the south side has been rebuilt. The roof is new throughout, those over the nave and aisles being covered with lead. The sittings are all new, those in the body of the church being of deal, and the stalls in the chancel, as also the pulpit and reading-desk, of wainscot. On removing the old pulpit a hughoscope was uncovered, which commanded a view of the altar from the north side of the church. The works have been carried out at a cost of about 1,200*l.* by Mr. Edlin, builder, of Cambridge, from the designs and under the superintendence of Mr. Arthur W. Blomfield, architect.

Hambleden.—The church here, according to the *Reading Mercury*, was reopened on the 11th inst. A north aisle has been opened into the chancel, and a few feet added to the east end of it. To the east again of this a new vestry has been built, the door opening into the chancel. Two arches on the east side of the north transept have been opened, and a new arch has been thrown between the north chancel aisle and what formerly was the vestry. On the south side of the chancel a new aisle has been constructed, and an arch, like those in the north transept, had been filled in, has been reopened. The roof has been repaired, and laid open to the church. The pews, with high backs and narrow seats, have been exchanged for open sittings. A screen of oak and glass at the west of the nave separates the great door from the body of the church, forming a vestibule, in which many of the mural tablets are placed. Stairs found under the seats are of deal, in the aisles of Staffordshire tiles, in the body of the chancel, plain tiles, black, red, and buff. There are five small stained-glass windows, the gifts of Mrs. Murray and her family. Another in the west side of the north transept, the gift of Mrs. Anne Hind, the owner of Ewden estate, is in course of erection by Hardman. The architect employed was Mr. Henry Woodyer, of Grattam, Guildford.

Farnham (Surrey).—Farnham Church has been rebuilt at a cost of between 5,000*l.* and 6,000*l.*; 4,000*l.* of which were subscribed by Robert Gosling, Esq. of Hassbury, and the remainder by the Rev. W. J. Copeland, the rector. The works have been carried out from the plans and under the direction of Mr. Joseph Clarke, the diocesan architect; Mr. Charles Foster, of Whitefriars, being the builder; and Mr. Thomas Lansdown, the clerk of works. The church holds 300 persons, and consists of a chancel 30 feet long and 17 feet 6 inches wide; a chapel on the north side, with the nave 50 feet long and 20 feet wide; and a north aisle the same length and 14 feet wide. On the south side is a porch, and a tower stands at the west end, capped with a pointed roof. The walls are of brickwork, faced with flint, and the stone is from the newly opened quarries of Mr. Thompson, of Ancaster. The chancel is covered with an oak roof, all the rafters being ribbed. The reredos and carving throughout were done by Mr. Farmer. The tiles are Minton's. All the external ironwork is galvanized. Messrs. Mears have put up a peal of six bells.

Maidstone.—The foundation-stone of a new church has been laid at Maidstone, in the northern part of the town, hitherto comprised in the Trinity district, but now to constitute a district

of St. Paul. The site is on the estate of the Conservative Land Society, by whom it was presented. The amount originally hoped for was 10,000*l.*—namely 5,000*l.* for the church, 1,000*l.* for the parsonage, and 4,000*l.* for the endowment. Of this about 7,400*l.* have already been received. The design was selected in a private competition of local architects, and others from London, that of Messrs. Peck & Stephens, of Maidstone, being chosen. The builders are Messrs. Sutton, Walter, & Goodwin, of the same town. The style of architecture adopted is that prevailing during the fourteenth century. The plan consists of nave with clerestory, north and south aisles, chancel, vestry, south porch, and tower at north-west angle, under which is arranged the principal entrance to the church. Externally the church will present a lofty elevation, chiefly on account of being placed on a terrace to meet the irregularities of the ground. The spire and tower rise to the height of 136 feet. The west end of the church has a gable of lofty pitch, rising from the ground 60 feet; in this gable is placed a large five-light window, 28 feet high, and in the east gable of the chancel there is a window of corresponding importance. The accommodation provided is for 800 adults, on the ground floor only.

Southampton.—The decorations of All Saints' Church are nearly completed, the whole having been executed by Mr. Josiah Pantis, from plans and designs furnished by Messrs. Guillaume, Parmentier, and Guillaume. The cost of the improvements, says the *Hampshire Independent*, will be defrayed by the various gifts and voluntary donations of the public. The ceiling is composed of arched panel-work, painted in distemper; the panels cobalt blue; the banding and ribs fawn colour; and the flowerets and Grecian ornaments white and gold. The pilasters are grained in Sienna marble, with the caps enriched in white and gold. The entire cornice is veined Genoa marble. The pewing is painted in grey drab, whilst the balustrade front to the galleries is stone colour, relieved in the background with crimson lake. The ceiling of the chancel is of diamond panel-work, and white, blue, and gold are interspersed in the ornamentation. In the centre, over the entablature, which is veined Italian marble, is a dove with wings of silver-gilt, and body of gold, bearing an olive-branch in its mouth. On either side are branches of the olive of the desert, gilt. The large Ionic columns are veined Sienna marble, with alabaster capitals, and base enriched with gold; the masonry at the back is also of Italian marble. The pilasters which support the frieze-work are of porphyry, and the larger ones supporting the archway of the chancel, are veined dove marble. The organ is painted in diaper, the alternate pipes blue and gold.

Salisbury.—The church in the village of North Burcombe, says the *Sherborne Journal*, has lately been restored and enlarged in the Perpendicular style, all the walls above 2 feet from the ground having been rebuilt. It has also been re-seated, re-floored, and re-roofed. A new aisle has been built on the south side, which will accommodate fifty persons, so that the church can now hold 192 persons. The stained glass in the Early Decorated window at the end of the chancel is inserted to the memory of the late Mr. Hughes, who ten years ago built the parsonage-house. The whole of the works have been carried out by Mr. Mills, of Shaftesbury, from designs by Mr. Wyatt.

St. Ives.—Progress is being made in the restoration of the parish church. The western galleries are now destroyed, and the church is seated throughout with open oak benches. A vestry, on a plan drawn by Mr. W. White, is in progress of building; and an organ, by Telford, of Dublin, will be erected on the north side of the chancel.

Cardiff.—New vestries have been added to the Charles-street Wesleyan Chapel. The vestries are of Gothic architecture, and in unison with the chapel, and it is intended to use them as a Sunday school for adults. The same architect was employed who built the chapel, Mr. Wilson, of Bath, who also designed the Wesleyan Chapel, in London-square, and whose plans for Cardiff New Police Station have been approved by the town council. The builder was Mr. W. Williams, of Cardiff. The cost of the vestries and minister's house is 1,400*l.* of which 780*l.* have been collected, 600*l.* previous to the holding of the opening services, and 130*l.* since. The superintendent minister's residence is erected on the north side of the chapel, fronting Charles-street, in a line with, and adjoining, the other houses. It is three stories high, built of Newbridge stone, with Bath stone dressings, and in the Gothic style of architecture.

St. Asaph.—The new Jewish Synagogue here has

been consecrated. The building is situate in Goat-street. It is in the Italian style. The principal front is set back from the line of Goat-street, and presents an ornamental appearance; the facing, mouldings, and ornaments being of Bath stone, from the Comb Down quarries. The ground-floor area of the pewing is 47 feet 9 inches in length, and 25 feet in width. The entrance of the building being towards the east, a passage runs the whole length of the synagogue, which is entered from the west; this passage is covered with a slated roof and skylights. A staircase conducts to the ladies' gallery and retiring-room. The timbers of the main roof are visible, and stained and varnished. The ceiling is of plaster, following the shape of the rafters. The height of the synagogue internally, from the ground-floor to the top of the sloping ceiling, is about 31 feet. The woodwork of the pews, doors, gallery-front, &c. is stained, sized, and varnished with Swinburn's liquid dye. The ark is of an ornamental character, as is also the reading-desk. Ventilating flues are built in the walls of the synagogue under the gallery ceiling, and have iron ornamental working or sliding plates. The number of sittings which are provided are 178. The architect for the building was Mr. Baylis, and the builder Mr. Holtham, of Bath. The total cost is about 1,700*l.*

Trusley.—The new church in Long-lane, within the parish of Trusley, in the county of Derby, has been consecrated. The church has been erected for the accommodation of a rural population scattered through the adjacent hamlets of an agricultural district. The building consists of a nave and chancel with a high-pitched roof. It is built of brick, but the window casings and mullions are of stone, as also the cappings of the buttresses, with a stringing of black bricks. The style is the Early Decorated, with simple detail. The edifice will seat about 230 persons, and has been erected at an expense of 900*l.* The architect is Mr. R. Evans, of Nottingham, and the builder Mr. Wm. Evans, of Ellastone. The east window, presented by E. S. Chandos Pole, jun. esq. is by Mr. Wailes, of Newcastle. The centre compartment has a figure of our Saviour as the Good Shepherd, and the other lights presenting respectively the Rejoicing Shepherd returning with the lost Sheep, and the Sower of the Seed. The west window, presented by the Rev. C. Cameron, is also filled with stained glass, presenting the principal incidents of our Lord's life upon earth. A decorated border has been painted by Mr. Cautrill, of Derby, round the east window. The ceiling of the chancel is painted blue with gold stars. The architect presented the last-named decoration; and the cost of the other decorations will be defrayed by the Rev. H. J. Feilden, of Langley.

PROVINCIAL NEWS.

Southend (Essex).—The foundation-stone of a new town was laid at Southend, on the 3rd inst. by Mr. D. R. Scratton, the lord of the manor, in the presence of a large number of the inhabitants and visitors. It was with the view of meeting a great want of accommodation on the part of visitors and intending residents, and increasing the traffic on the Tilbury line, that Sir S. M. Peto and Messrs. Brassey and Betts determined some time ago to erect here an entirely new town. The site selected comprises about forty acres on the heights or cliffs, 70 feet above the sea, to the east of the pier, and immediately facing Sheerness. It is proposed to erect here about 300 houses of simple design, consisting of plain brick, with white Suffolk brick dressings or ornamentations. The houses will consist of four distinct classes, suitable for all ranks. They will be built in blocks, divided into terraces of eight or twelve each. These squares or terraces will be about 280 feet by 300. Fronting the first-class houses will be constructed a grand parade, nearly a mile in length and 150 feet in width. The slopes will be lopped of their irregularities, and planted with evergreens, flowers, &c. and be interspersed with walks. A road will also be constructed at the bottom of the slopes, along the margin of the sea. One hundred houses will be ready for habitation next season. A quarter of a million will be required to complete the project. The occupiers of the houses will be provided with railway season-tickets at a very small cost. The designs have been prepared by Messrs. Banks and Barry; and the contractors are Messrs. Lucas, Brothers. Upwards of 100 men are now at work, under Mr. J. Stevens, one of their managers; Mr. W. Mitchell, clerk of the works.

Naase.—The board of guardians here have accepted the tenders of Messrs. Evans, Brothers, at the sum of 10,663*l.* for the erection of a new

workhouse, on the understanding that the Poor Law Board authorize the guardians to borrow a further sum of 4,000*l.* required to carry out the plans. At the meeting deciding on this course the architect, Mr. Richards, remarked, that a smaller house in Gloucestershire cost 55,600*l.*; and that the Swansea house would be the cheapest in the kingdom if it could be built for the sum named.

Cardiff.—Cumberland Bridge is a new erection over the Glamorganshire Canal, in St. Mary-street in this town, now permanently open for traffic. It is of Newbridge stone, abutments and wings, with cast-iron arched girders and wrought-iron open parapets, terminating with lamp pillars. The masonry in proximity with the ironwork is of tooled ashlar. The roadway is carried by Newbridge landings resting on the flanges of girders, which is an innovation in this district, as a cheap substitute for cast-iron plates. The total width of roadway will be 60 feet, of which 15 feet are appropriated to footpaths. The span varies from 19 feet in the centre portion (the site of the old bridge) to 24 feet, and 29 feet at the face girders, and both abutments are asked at different angles and in different directions. The bridge is from the designs of Mr. Waring, the surveyor to the Local Board of Health. Mr. Waring had in the ironwork the advice of a friend and former pupil of the late Mr. Robert Stephenson (Mr. F. M. Young, of Leeds). Mr. W. V. Edwards, of Swindon, was the contractor.

Chester.—Any pedestrian, says the *Chester Chronicle*, when strolling round from the Grosvenor Bridge to the old Dee Bridge, cannot fail to notice the vast improvements effected in Hand-bridge, by the erection of numerous neat and comfortable houses for the accommodation of artisans and the better class of working-people. The Marquis of Westminster has for the past two years been carrying on such erections to a great extent, and the population of the locality has become proportionately increased. His lordship has not forgotten to make provision for the religious and educational requirements of the neighbourhood: opposite a new street formed at the back of the Eaton-road, he has pulled down two houses, and is about to erect a schoolroom, with houses for master and mistress, the schoolroom to be used on Sunday as a chapel of ease. The playground and site of the buildings will occupy half an acre of land, and the cost will amount to something like 1,600*l.* Mr. Wiggner is the contractor.

STAINED GLASS.

Field Dalling Church.—This church has recently undergone various improvements. The most conspicuous is the stained glass. The east window is to the memory of the Rev. William Upjohn, M.A. who was fifty-one years incumbent of the parish. This window is, like the chancel itself, of decorated character, and consists of three lights, surmounted with tracery. The former is constructed of foliage on ruby and blue grounds, which by its intertwining forms three major and six minor panels, the former constituting the central ones, which are filled thus:—In the centre is the Crucifixion of our Lord; the two others represent, the one the Parable of the Sower; the other Ruth Gleaning. Vine branches form the border. The minor panels contain symbols;—the Pelican in her Piety, the Holy Lamb, and the Attributes of the Holy Evangelists, the whole being enclosed by borders. Others occur, which are contained in the panels of the tracery, and in the midst of the foliage which is continued there. The westernmost window, south of the chancel, is also filled with stained glass, as a memorial to the father of the rev. incumbent: its architectural character is the same. The subjects, three in number, are taken from our Lord's description of the Good Samaritan, viz.,—Pouring Oil into His Wounds; setting Him on His own Beast; leaving Him in the Care of the Host. These rest on pedestals, with scrolls containing texts, and are surmounted by tabernacle work, which is resolved into foliage. A brass plate at the foot of the window contains the dedication. Mr. Warrington, of London, is the artist of these works, and he has commenced the restoration of the ancient glass still remaining in this church. Two other windows are ordered by private individuals, which will complete the windows of the chancel.

Edlington Church.—A memorial window has just been placed in the chancel of the parish church of Edlington, near Doncaster, by the Rev. J. F. W. Woodyear. It consists of two lights,

in which are represented the Baptism of our Lord, and the Last Supper. The ground of the window is composed of a mosaic of various colours, deep blue and ruby predominating. Both above and below the subjects are introduced scrolls, entwining a ruby jewelled cross, in panels upon a blue ground. In the central space in the tracery is introduced the emblem of the Trinity. The other spaces are filled with suitable glass. The work has been executed by Messrs. Ward & Co. of London.

St. Gregory's, Bedale.—The restoration of the chancel of the parish church of St. Gregory, Bedale, has just been completed, by the addition of the last of three small windows, in stained glass, being placed on the south side, in memory of the late Mrs. Monson, by her husband. The subject is the Resurrection. The first or eastern light consists of a group of four figures, viz. the Angel's Declaration at the Sepulchre to the Three Women who had wine to anoint the Body of Jesus: the second or western light, is the Recognition of Our Saviour by Mary Magdalene, on His Appearance to her after His Resurrection. The borders and tracery are entwined by foliage, and the background is of a ruby colour. The work is the production of Mr. Wailes, of Newcastle-on-Tyne.

Carlisle Cathedral.—A pamphlet has just been published by Mr. Sloan, of this city, says the *Carlisle Journal*, explaining, in the form of a letter to the Dean, the delay that has taken place in the erection of the Paley Memorial Window. About two years ago this project was set a-going, mainly through Mr. Sloan, and the promises of subscriptions were so numerous as to induce that gentleman to procure a design from Messrs. Ballantine, of Edinburgh. That design was submitted to the Dean and Chapter, who objected to the oil-painting style instead of the low relief. Mr. Sloan intimated that that objection could easily be removed, but begged to be informed whether any other objection was entertained. No satisfactory reply was obtained, but at length it was intimated that the matter might be facilitated if the execution of the design were entrusted to Mr. Hardman instead of to Mr. Ballantine. Mr. Sloan expressed his unwillingness to comply, but in a letter dated 17th August, and addressed to Mr. Purday, he pointed out the course he was willing to adopt. A month having elapsed, Mr. Sloan deems it necessary in his own justification to publish a statement of the circumstances.

Larbert Parish Church.—A summons of reduction, count, reckoning, and payment (says the *North British Mail*), was lately raised in the Court of Session, in which it was stated that the late Joseph Dawson, manager of the Carron Company, had conspired with his uncle, Henry Stainton, to defraud the company to an enormous amount, in evidence of which were adduced very plain spoken letters from Dawson, and also the fact that Stainton's executors have already disgorged the sum of 220,000*l.* In connection herewith, please read the following paragraph from a local paper:—"A Memorial of the late Joseph Dawson, esq.—A stained glass window, bearing the delineation of the transfiguration of our Saviour, has been presented to Larbert Parish Church by Henry Dawson, esq. Liverpool, as a memorial of his brother, the late Joseph Dawson, esq. manager of Carron Works. The window is fixed at the east end of the church, immediately behind the pulpit. In the centre of the group is a representation of our Saviour; on his right Moses, with the tables of the law; on his left Elias: at the feet of the Saviour is John, the beloved disciple, kneeling: below Elias is Peter; and at the feet of Moses, which completes the group, is a representation of James, the brother of John."

ARCHITECTURE AND CONSTRUCTION AT UNIVERSITY COLLEGE.

PROFESSOR DONALDSON'S courses on architecture and construction commenced on the 18th inst. and now is the time, for those who would, to enter. The subject is treated of in four separate courses, under two heads—Architecture as a Fine Art, and Architecture as a Science. Under the first we have "division of architecture into styles, either of countries or periods: subdivision of styles; as in classical architecture, the orders: mouldings in Greek and Roman architecture contrasted: composition of plans: styles of architecture, Egyptian, Greek, Roman, Byzantine, Norman, Pointed, Ogival, Revival, Italian; illustrated by numerous drawings: observations on the most distinguished architects; on the best works on architecture." Under the head of Science: "materials used in

construction, with practical experiments: timber framing for roofs, cupolas, floors, scaffolding, shoring, &c.: dry rot: stones converted into lime by calcination, and admixture with other substances for mortars; pozzolana; trass; plaster, aluminous cements, concrete: construction: foundations: walls of brick or stone, in mortar or cement: arches and vaults of halls, churches: damp, its prevention and cure, &c.: stone, slate, or tile roofs: application of metals, as bronze, copper, lead, zinc: manufacture of glass." The courses are open to all comers willing to subscribe, and the advantages to be derived are so obvious as scarcely to need recommendation on our part.*

COST AND SUPPLY OF GAS.

IN 1846 I drew attention in your columns to the state of the supply of gas by the London companies: since that period several new companies have been brought into existence, and the price of gas reduced from 7*s.* to 4*s.* and 6*d.*

This reduction of price will be seen not only to have benefited the consumer, but also the company; for upon reference to the share-lists it will be seen that the Equitable Company's 50*l.* share was worth from 25*l.* to 30*l.*; the 49*l.* of the Phoenix was worth from 27*l.* to 29*l.*; the 50*l.* of the London was worth from 7*l.* to 9*l.*; and they are now quoted respectively at 52*l.* to 54*l.*, 62*l.* to 64*l.*, 30*l.* to 32*l.* per share.

Since I last wrote to you a system has been introduced called the "districting," and which is of so great an advantage to the company that they ought in common fairness to reduce the price of gas to the lowest possible remunerating price, especially with the well-arrived-at fact that the lower the price the higher the dividend, as the profits depend more upon the consumption than the price. By this system of districting I hold that gas ought to be supplied at 3*s.* 6*d.* per 1,000 cubic feet, and pay 10 per cent. upon the outlay.

The cost of gas, including delivery, leakage, &c. should not exceed 2*s.* 6*d.* per 1,000 cubic feet, leaving 1*s.* per 1,000 cubic feet for dividend. This has been well ascertained, and can be proved by incontrovertible evidence.

I may perhaps be met with the case of the Great Central Gas Company, and Mr. Croll's evidence before the arbitration. Well, I will only say that the Commercial Gas Company, whose works are in the same locality, are not only able to sell gas at 4*s.* per 1,000, but are also able to pay dividends both on their own capital and also on that of the late British Gas Company, which capital, so far as the Commercial Company are concerned, may be considered as nearly sunk. Why, then, I may be asked, the difference between the two? I most unhesitatingly reply—first, that the Commercial light the district contiguous to the works, whilst the Central have to convey their gas upwards of two miles before they supply consumers; secondly, in the difference of the management.

The result of considerable practical experience, gained in London and the provinces, has convinced me that the consumers require for their security a fixed standard of quality, certainly not less than twelve sperm candles; a maximum price—not to exceed 4*s.*; and the question of dividend should be made dependent on the price—the lower the price, the higher the dividend,—as I do not see why good management should be punished, which is the result of a fixed maximum dividend.

I have lately had the opportunity of examining the accounts of a company, and they bear so strongly upon what I have written and argued for the last fifteen years, that I cannot do better than conclude this letter with extracts from them.

The company is situated in a small but thriving agricultural town: the capital is 10,000*l.* upon which a gross profit of 12 per cent. is made:—

Date.	Price.	Consumption.	Income.
1844	8 <i>s.</i> 6 <i>d.</i>	1,510,330	22,654 9 11
1846	12 0	1,810,350	1,131 12 4
1850	10 0	2,311,350	1,155 13 5
1851	8 4	3,215,550	1,339 16 6
1852	7 6	3,554,400	1,371 3 3
1854	6 8	4,147,450	1,382 0 8
1858	5 0	8,900,450	2,240 4 5

By this statement it will be seen that, although the gas is now sold at one-third the price, the income is nearly doubled; and whilst at the 15*s.*

* Mr. Donaldson's announced volume, "Architectural Nomenclature, or Architectural Medals of Classic Antiquity," is published (Day & Son, Gate-street, Lincoln's Inn-fields), and will receive attention at our hands in due course.

only 1,519,350 cubic feet were required, 8,960,450 are now. In the one case, a very large sum would be required to pay the dividends; in the other, a comparatively small one. CARBON.

THE HEALTH OF WEST ISLINGTON.

THE mortality caused by scarlatina and diphtheria still continues in this district. In the last report but one of the Registrar-General seven deaths are reported to have been caused by the former of these complaints, and three by the latter. Last week the deaths from scarlatina were seven in the sub-west district of Islington alone. Diarrhoea of a very serious form is prevalent to a great extent. The health of this neighbourhood ought to be good but for the sanitary defects which exist. During the past hot summer the numerous cow-yards have been most offensive. In the north-west portion of Islington numbers of pigs are kept, and may be seen boldly prowling in the streets. The drainage in parts is imperfect. In many instances, in decent-looking premises, dustbins are either not provided or are without covering, and the dustmen are by no means regular in their attendance. The loss of life which has occurred here for some time past, and the danger which threatens the public health, ought to cause the health officers of the district to use vigorous measures to remove objectionable matters. A house-to-house visitation of this suburb would do much good, particularly if the sanitary changes which are needed were promptly carried out. AN INHABITANT.

ADULTERATED LINSEED OIL.

CAN any of your numerous correspondents inform me what manufacturers are doing to linseed oil? and also of a ready test for telling the genuine article?

It appears a stock of abominable stuff, under the name, has found its way into the market. It looks clear and bright, but is wanting in its hardening qualities, and is altogether unfit for any decorative purposes. It is a great injustice to all concerned, when we are induced to spread a spurious article over work, as it only makes a nuisance wherever it touches, and must be entirely removed, or at least done over again. Some of my work that has been done for months is still soft and gummy. Z. K.

FACTORY HOMES.

I beg to thank you for the notice of my project of Factory Homes, which appears in last week's *Builder*. Like most projectors, I think very highly of my scheme, and am therefore very much pleased to see it commended by a practical philanthropist, and the commendation inserted in such a work as the *Builder*.

If the principle that the workpeople should be taken to the Factory could be established, instead of a Factory being placed where the population was densest and poorest, I feel certain that great advantages, commercial, physical, moral, and intellectual, would ensue, not the least of which would be, that well-arranged handsome buildings, for work or residence, would be placed in such situations as combined natural and artificial facilities and requisites for manufacturing processes, with such conditions as would ensure the health and happiness of the workpeople. WM. WOOD.

THE POSITION OF PURLINS.

MAY I address you on a very common practice in many parts of the country, especially in this neighbourhood (Burslem), of fixing the purlins of a roof vertically instead of fixing them square to the slope of the roof, with the belief that the latter mode is wrong in principle, though generally adopted by our leading architects, engineers, and builders, both in this country and on the continent. I believe the authority of your Journal would do much to correct the improper fixing of purlins, as it appears to be almost the only publication on construction consulted by many in the country intrusted with building matters. I have heard an engineer, and first-rate mathematician, argue that the vertical position of a purlin is the correct one, as the weight of the roof-covering produces a vertical strain on the purlins. I have also heard a London architect, well known in the profession, express a doubt of the correct position for fixing a purlin; and I know of a large public building, covering under the directions of a country architect, where the purlins are fixed vertically, under the idea of its being the correct position for fixing them.

The weight of a roof-covering, no doubt, produces a vertical strain on the purlins, while the pressure from wind with no less doubt produces a strain perpendicular to the outside slope of a roof, as may be shown by Prop. ix. of Emerson's "Mechanics;" and as the latter strain may be taken at about four times the strain produced by the weight of the roof-covering, it seems, I think, evident that the purlins should be fixed in such a position as is best adapted to resist the greater strain, which cannot be a vertical one, as four-fifths of the whole pressure would then strain the purlin diagonally.

I will also say a word on the construction of 4½-inch brick walls, as party, division, and external end walls of buildings two and three stories in height, without any kind of bond, which are very common in this immediate neighbourhood; and I know of a case where an architect even corbelled out a 14-inch chimney-breast from a 4½-inch wall, and who seemed to insist that its standing was a proof of its being secure: I presume, it must, though without his knowledge, be carried on the ends of the floor-joists.

A Building Act would be a very great boon in this part of the country, if it were only to give a professional man some authority for building better than the too common practice, and at the same time secure him against the charge of extravagance in endeavouring to carry out a more creditable style of building. THOS. MEYER.

AN "INVENTIONS" MART WANTED.

A WRITER, recently, in a newspaper, urged the necessity of a "manufacturers' mart" upon the principle of the "corn" mart in Mark-lane, where samples of all kinds of manufactured goods might be seen, and which would be very advantageous. Another "mart" would seem to be equally necessary. The inventive are often of humble position and means, and unable to place their designed improvements before the world and the eyes of capitalists. Even the comparatively trifling expense of "provisional registration," and the loss of time and additional payment of an agent to effect the same, cannot, in very many cases, be afforded. For want of such public advertisements many useful and valuable inventions are not only lost to the world, but the gifted and clear-seeing inventors reap no reward for their brain-work. It is, indeed, a notable and painful truth that very rarely do the results, when successful, of their creative power ever reach their pockets; their chief reward being an empty fame and notoriety, when their course of life-time poverty has been worked out. From a just sense of their right to be rewarded for their mental work the majority reserve the knowledge within them, and they pass from the scene of life without making them known. It is suggested that in such a "mart" as now proposed the means for bringing capitalists and inventors usefully together might be afforded.

INVENTIVE.

THE FIRE AWARD NUISANCE.

A DOMESTIC FLUE CASE.

SIR,—A few weeks since, while burning refuse and litter in a small attic flue, we had the honour of being visited by the turncock and a sweep (by cards only, as they were not admitted), and two fire-engines, which my wife, in her simplicity, took for patent ploughs. The hubbub over, I concluded all had passed, and left town. On return I learnt that one or two rather suspicious characters had hinted about a reward, and at length I receive a *quasi* summons, ominously headed, "Metropolitan Police District.—To Wit.—Take Notice," &c.—ordering me to appear on a certain day, and show cause why I should not pay fire claim (never received), dated from assistant overseer's office. Determined not to be intimidated and imposed upon, with great inconvenience I attend, with witnesses, and after considerable delay in the precincts of a court crowded with the refuse of the district, I am told the fire cases are adjourned to the following week. This, sir, has been repeated *thrice*; and although under engagement to leave town ten days ago, am coolly told that if I do not attend, my doom to pay is certain. I expostulate. The reply is—We cannot help it—press of business—the age of the venerable magistrates (both near, or over eighty, and one recruiting at sea-side), and consequent slow progress of cases, has caused a sort of London-bridge stoppage in the court business; and that the system of fire-wards is the most iniquitous law remaining on our statute-book. I am told an attempt was made to revise the awards some years since, in one of Sir Benjamin Hall's valuable metropolitan bills,

but it was too late. Can nothing be done to remedy so flagrant an evil, increased by the very imperfect manner in which flues are now swept by imperfect machines? The public at large call for redress. A FRIEND TO JUSTICE.

TONBRIDGE SCHOOL CHAPEL.

THE rapidly improving Grammar School at Tonbridge, in Kent, founded in the reign of Edward VI., owes its existence to the munificence of Sir Andrew Judd, citizen and skinner, who filled with distinction the office of Lord Mayor of London in times of no ordinary difficulty and trial. By his will, dated 1558, Sir Andrew, having erected the Free Grammar School at Tonbridge, bequeathed "to the Master and Wardens of the Craft or Mystery of Skinners, in the City of London, all that hiscroft of pastures with appurtenances, called the Sandhills, situate and being on the back side of Holborn, in the parish of St. Pancras, Middlesex," together with various messuages; directing that the rents, revenues, and profits, should be employed and bestowed in the maintenance of the said school. Originally the number of boarders was limited: the master was allowed to take twelve, and the usher six; the stipend or salary being 20*l.* and 8*l.* respectively: at present the master is allowed sixty, and the usher forty; while the emoluments are proportionately increased, and the total number of scholars is 175. There are three exhibitions of 100*l.* per annum, each tenable for four years at either University. At the expiration of the leases on the Sand-hill property, the school will not only be freed from all debts and incumbrances, but will become one of the richest foundations in the kingdom.

A chapel has been erected mainly through the instrumentality of the present head-master, the Rev. J. T. Weldon, D.C.L. the funds having been contributed by the scholars and friends of the school. The building received the sanction of the Governors in January last; and, in May, the foundation-stone was laid by the Lord Bishop of Ripon: since this time the building has rapidly progressed, and was, on Tuesday, October 25th, opened by his Grace the Archbishop of Canterbury, visitor. The chapel is of the Geometrical period of Gothic Architecture, faced externally with local sandstone, the dressings being fairly worked, the remainder of course axe-work. The roof internally is boarded and decorated with ribs and bosses, and divided into six bays by arched ribs springing from polished Devonshire marble shafts, with carved and foliated caps and bases. The paving is laid with Minton's tiles in pattern. The west end is lighted with a pair of two-light windows, and the east by a handsome window of five lights. The clear internal dimensions are 75 feet in length, and 25 feet in breadth, besides an organ chamber and vestry on the north side. The seats are arranged parallel to the sides in three tiers, and will accommodate 200 scholars. Messrs. Wadmore & Baker, of Great St. Helen's, London, are the architects; and Mr. J. J. Pett, of Tonbridge, is the builder. The cost of the chapel, when completed, will be under 2,000*l.*

ESSAYS BY WORKING MEN AND WOMEN ON SOCIAL SCIENCE.

IN reply to an offer of certain prizes by Mr. Cassell for essays by working men and women, 548 papers were sent in. Lord Brougham distributed the prizes at the meeting in connection with the Bradford Mechanics' Institution, held recently. The following is a list of the successful competitors:—

- 1st. *Self-education*.—The first prize of 5*l.* is awarded to the essay bearing the motto of "Upwards and Outwards." The writer is William Glazier, carpenter. King Henry's Walk, Ball's Pond, Islington. The second prize, of 3*l.*, to the essay bearing the motto "L'Ouvrier," H. C. Edwards, gun engraver, Wilson-street, Birmingham. The third prize of 2*l.* to Janet Hamilton, the wife of a shoemaker, Langham, Court-street, Scotland.
- 2nd. *Sanitary Reform: How far can Working Men and Working Women promote Sanitary Reform without the Aid of Municipal or Parliamentary Regulations?*—The first prize of 5*l.* is awarded to the essay bearing the motto "Clio." Writer, James Walker, biscuit-baker, Carr & Co.'s works, Carlisle. The second prize of 2*l.* 10*s.* to "Hope On, Hope Ever." John Plummer, factory operative, Kettering.
- 3rd. *The Advantages of Sunday as a Day of Rest to Working Men*.—The first prize of 5*l.* is awarded to James Dunn, plumber, 4, Walford street, Old St. Pancras. The second prize of 2*l.* to R. Oswald Wylie, gardener, Dundee. A writer, signed "Omega," David McBurnie, dyer, 4, Leds-rod, Bradford, has been deemed ineligible by the adjudicators, for, though once an operative, he is now a contributor to the press. Mr. Cassell, however, has a recognition of his very able papers on Sunday and on Mechanics' Institutes, awards to him the sum of 5*l.*
- 4th. *Paternal Headship*.—The first prize of 5*l.* "Love and Chastity," Thomas Gammage, boot-closer, Spital-hill,

Reford, Nottinghamshire. The second prize of 2l. 10s. "Vespera," Louisa Bell, sempstress, 67, Murray-street, Hoxton. The third prize of 2l. to "Tento," T. H. Stanley, shoemaker, 2l. 10s. to "Voice from Sledge Hammer."

5th. *Physical Education*—The first prize of 5l. to Andrew Wyntess, carpet-weaver, Brownie's Brae, College-street, Aberdeen. The second prize of 2l. 10s. to Daniel C. Bates, china painter, Great Brunswick-street, London. 6th. *Temperance*—The first prize of 5l. to James Dunn, plumber, Walford-street, Old Pancras-road, London. The second prize of 2l. 10s. to "Sledge Hammer," James Thomas, Eliza Stark, ship-smith's wife, 427, Lower High-street, Everton, Liverpool.

7th. *Induced Marriages*—The prize of 5l. is awarded to "Vespera," Louisa Bell, sempstress, widow of an operative.

8th. *Mechanics' Institutions: their Aim and Object, and what is required to make them more popular*—Upon this topic there are two writers whom the adjudicators, Lord Brougham and Lord John Russell, deem of equal merit. Instead of making any selection between the two, it has been determined to divide the prizes between them, and thus 2l. will be given to "Seuena," James Thomas, clothier cutter, 27, Reimann-row, Stepney; and 2l. to James Walker, baker, Carlisle.

9th. *Courtesy*—How far can Working Men promote Courtesy?—Miss Fitzroy Kelly has not been able, through indisposition and absence from home, to send in her decision.

10th. *Labour and Relaxation*—The first prize of 5l. to Edmund G. T. Hartwell, shipwright, Plymouth. The second prize of 2l. 10s. to Elizabeth Morey, 19, High-street, Newcastle-upon-Tyne, the daughter of a working man, and whose brothers are operatives. H. J. Forrest, formerly compositor, 3, Bechem-place, 3, Bechem, stands in a similar position to David McNeill, and is, therefore, deemed ineligible. His papers on labour and relaxation, as well as upon sanitary reform, are deemed very desirable. The sum of 5l. is awarded to H. J. Forrest, by Mr. John Cassell, for the writing of these essays.

BULHAM, KENT.

THE steeple of the old church is now undergoing repair, and it is worth remarking the interest felt by the inhabitants and the travellers passing by at the manner adopted by the workmen employed, in strengthening the main structure by the introduction of ties, the removal of the old vane, and the raising and fixing of a new vane by ropes and pulleys, regulating the ascent and descent of the workmen in baskets somewhat resembling an easy chair. It is about thirty-five years since the vane now removed was fixed. A visit to this interesting locality might repay the trouble, as we are told that some important alteration, perhaps to be called restoration, is now going on at the old palace.

COMPETITIONS.

Lyncombe and Widcombe Cemetery.—Sir: I have another competition abuse to complain of, which, I hope, you will expose to the eyes of your valuable paper. Enclosed is the advertisement of a burial board for plans, &c. I wrote to the clerk, requesting he would be good enough to forward me a plan of site and particulars, and received in reply the enclosed letter. The matter speaks for itself, and requires no explanation from me; but surely some effort should be made to stop such an abuse, and to prevent its forming a dangerous precedent. I therefore solicit the expression of public opinion on the matter, and shall from that decide whether to resist the payment of the demand or not.

W. J. GREEN.

ASTLEY ABBOTTS CHURCH.

Sir,—The restorations of this church have been so extensively canvassed in Shropshire and Leicestershire that they might by this time have been forgotten, but in the year 1858 I was agreeably surprised by receiving a reading the structures of some apparently local observer upon further alterations: then on the 22nd, Mr. Arthur W. Blomfield replies to this anonymous writer, and makes some observations which I am bound to comment upon; for though the incumbent's brother undertook to design, he has throughout depended upon me, who have had the execution of the work, to correct whatever required improvement. Having been fully educated as an architect, and having extensively practised as such, mine is the responsibility, and Mr. B. will wish me to set the public right where he has been misled.

Mr. Blomfield is wrong in saying that the work of 1858 and 1859 "consisted in re-building the south wall of the nave, and in the addition of a porch and bell-turret at the west end."

It consisted of a porch of rather large dimensions on the south side, a south front to the nave, a three-bell steeple, about 70 feet from the rock on which it is built to the nave; and besides these a west front, and many other minor things in the body of the church.

"Without wishing to express any opinion as to what had been already done," Mr. B. has made a *détour* to proclaim that "the old walls are of rubble; but the new work is of squared masonry, and unlike anything suggested by the original or by any village church in its neighbourhood; and the whole is of such costly character," &c. Now much of the old work was pulled down on the south side of the "square masonry," but the old work was not only the "square masonry," but the "Decorated" style, for it was in this style; but I humbly confess that it did not suggest the character, for it was so mean and ugly that I am not sufficiently initiated in *ecclesiastical* style to offer in the *Builder's* Academy what a family of churches had the same architect, variation in architecture, and not "neighbourhood" similarity, was

"I beg to enclose you a plan and particulars of Lyncombe and Widcombe and St. James's Cemetery, agreeably to your letter this day received. Messrs. C. & I charge for the plan 1s. 7s. which you will please kindly remit to, yours, &c."

the rule. Now for the costliness. When this church and many others of the district were built, the neighbourhood must have been extremely poor, if we may judge from the poverty of the materials used. And what is this costliness on which Mr. B. lays his principal stress?

Why, the work is just as costly as the village churches throughout the country are not uncommonly found to be, and, in corroboration of this, I confront Mr. B. with the following fact:—The west front, the steeple, the porch, and the south front, cost (exclusive of the stone in the tower for the common use of the hammer) 1600l. 10s. 6d., which stone was found in the parish, —yes, the whole of these, cost under 616l. 10s. The old Norman walls we have preserved where it was practicable to do so, but the roof is Jacobean, not Norman, and the present plan of adopting its low pitch for a new roof certainly escaped my calculation. Except the small item of Barnack stone for the dressings in 1859, there is nothing to which Mr. B.'s labour of expression, "such costly," &c. can in any way apply; and what has it all to do with the woodwork, for which Mr. B. has been called in, when the pitch of the new roof is the only thing in question? As I read "Looker-on," there is nothing offensive to any one; the parties who have the management are referred to with a regret expressed at an oversight, which oversight it would be unreasonable to suppose any but the non-professional parties to be charged with.

R. W. JOHNSON.

THE WESTMINSTER BELL.

A SOLILOQUY OVERHEARD IN THE CLOCK-TOWER BY AN OWL.

"The Times" "lower" me! me, who have set at naught The Board of Works,—me, who ne'er waste a thought On Parliament itself, as I sit in my solitude! A prius! I might hope to lower this bell. Write, pray, ye critics! be ye great or small, Ho-tie or friendly, I defy you all. Who e'er knew me by name, or tongue dimly said? Have I not shown in art, profession, trade, Experts are fools, their boasts but sounding brass? Where's the assailed I've not proved an ass? Who architecture taught me?—what if all agree? Who pass'd his proud professors from their stools? Who found but blunders in this "dream in stone?" Who proved Sir Charles a blockhead? I alone. And but for me, who could we have fared hence, Gods! what a church my Doncaster had shamed! I can for clients gain a desperate cause: I can raise questions e'en on Nature's laws. Nature may err,—for such is Nature's fate. Two bells I founded—and two bells were crack'd: Proud, to my cost, may be disproved e'er long, Who then but Nature can be in the wrong? Beuold my clock, ye critics!—let them quote who fall, My art's proud triumph and "the trade's" despair. Abash'd astonishers! this marvel view— False are your times—alone I mark the true. Hark! your clocks differ—what if all agree? With Heaven's own motion—what are suns to me? I did not make them—they're but works divine: No perturbation mars a work of mine. "Nas omnia omnes"—let them quote who fall, I own no impotence: I can do all. What if Lord John perform some wondrous feat, "Cut for the stone," I command the Chaucer fleet? What is Lord John? But mine my genius scope, I'll purify the Thames—reform the Pope. Ring the last opera on this Bell-tower's chimneys: Out-Spurgeon Spurgeon,—and we to down the Times. The *Times* lover me! I view with scorn intense Its false reports—its leader's insolence. The press, the public,—all the world may rave: The world's a liar,—I'll a fool, half knave. Safe in my skill, in sad sensation strong, Little reck I what blockhead thinks me wrong. "The time is out of joint." Though a nought into But wrath, and scorn; by Jove! I'll set it right. Bell-Song.

THE STRIKE, IN THE POLICE COURTS.

INTIMIDATING WORKMEN.

At Clerkenwell, on the 24th, William Perham, one of the delegates of the masons' committee, appeared before Mr. Corrie, in answer to a summons which charged him "that he did, on the 1st of October, in the parish of Clerkenwell, unlawfully, by threats and intimidation, and by molesting and obstructing William Jocelyn and others, being workmen hired and employed in their trade and business by Messrs. Paper & Son, endeavour to force the said William Jocelyn and others to depart from their hiring and employment, contrary to the statute," &c.—Mr. Mullins appeared for the prosecution, and Mr. Roberts for the defence. The court was crowded by workmen and others interested in the question of the strike; and, when the case was called on, Mr. Roberts said he had to make an application for the postponement of the summons. He had before been engaged for the working classes in questions of this sort, and he had been telegraphed for to attend this case, and did not arrive in town until Saturday night at ten, when he saw the parties at his hotel. From what he was then informed it appeared that twenty men arrived from Plymouth on the 1st of October; and, on the night of that day, these men came in contact with the defendants, who were spoken to. The question was whether that was a molestation or an obstruction. Some of these men remained in London, but the larger portion went back to Plymouth by the persuasion of the persons whom they met, and those that remained were persuaded by the employers. These men had remained in London had no hope would seek the truth, and therefore it was necessary that the men who had gone back should be brought up to witness. He found that no train went through to Plymouth on a Sunday, but the men were sent for and would arrive in town to-morrow morning. It was under these circumstances that he had to ask the case to be adjourned until to-morrow. Mr. Mullins said that the strike committee had sent pickets down to Plymouth to pick up evidence, but they did not know who their witnesses would be. He could not attend to-morrow or any day, and he had, as on two of the days, no had similar cases to attend to. He had no objection to the case being adjourned until Monday next.—Mr. Corrie, in adjourning the case until that day, said that it was better it should be so, in order that not a shadow of suspicion could be raised.

At Westminster, William Port and William Ward appeared on remand before Mr. Paynter, the latter on bail, charged with using unlawful and threatening language towards Frederick Wood, whereby he apprehended bodily danger. The prisoners are associated with the society men who meet at the Paviors' Arms.—Mr. Mullins attended on the part of the Messrs. Trollope and the Association of Master Builders and Mr. Lewis, jun. was engaged for the prisoners. After hearing evidence, Mr. Paynter committed the prisoners to take their trial at the Central Criminal Court, on the charge of conspiracy. They were held to bail, each in 40l. and two sureties of 20l. each.

Books Received.

The Architect's and Mechanic's Journal. New York: Hartill. London: Baillière. No. I. Oct. 1859.

WE welcome warmly the appearance of a periodical devoted to architecture and construction in America, and which, if we may judge from the first number, will be conducted in a manner befitting its object. It is of 4to. size, containing twenty-six pages, irrespective of advertisements, and is illustrated. The engravings, which are inferior at present to those to which English readers are nowadays accustomed, include a view of the Gallery of Art, now in course of erection, in the City of Washington, Messrs. Renwick & Associates, architects, and a view of American House, Boston, from a photograph made directly on the block, by which the cost of drawing is saved. We have before now urged the desirability of effecting this arrangement, and shown the difficulties that are in the way. To what extent Messrs. Waters & Tilton have succeeded in obviating these, the specimen before us does not enable us to say.

We learn from the number that the American Institute of Architects are about to attempt to diffuse a more general knowledge of architecture by a series of popular lectures. The following is the list:—

The Introductory Lecture: the Architecture of our Time and Country—its Condition and Needs. By R. M. Upjohn, of New York; or Charles Balcock.

On Church Architecture: the Value of Precedent, and the Modifications rendered necessary by modern Usages. By L. Edilitz, or Henry Dudley, both of New York.

On Public Civil Architecture: Expressions of Nationality, or of State and Municipal Dignity, how embodied in it. By Thomas U. Walter; or J. Renwick, jun. of New York.

On Domestic City Architecture: the Necessities of To-Day, how they affect it, and how high Art should make itself felt in it. By A. Gillman, of Boston; or J. C. Wells, of New York.

On Domestic Country Architecture. By C. Vaux, of New York; or R. M. Upjohn.

On Monumental Architecture: how Appropriate Sentiment should be expressed by Form, and the urgent Necessity of such Expression in Memorial Structures. By J. W. Mould, of New York; or H. Van Brunt, of Philadelphia.

"The lectures are to be delivered, so that each one shall have reference to subjects—treated in a specific manner—which the public can appreciate, and feel directly interested in."

Private Bill Legislation and the Standing Orders of both Houses of Parliament. By S. B. Brinslow, Esq. of the Inner Temple, Barrister-at-law. Second edition, revised. London: Knight & Co. Fleet-street. 1859.

IN the preface to this volume the author states that it occurred to him, some time ago, that an edition of the "Standing Orders," pointing out their origin and subsequent alterations, might be valuable to any one investigating the somewhat neglected subject of the rise and progress of private bill legislation, and might also be practically useful, not only to members selected to serve on committees, but to solicitors, engineers, surveyors, and other persons annually engaged in the promotion of private bills. He had begun to write this plan when it was suggested to him that the value and utility of the work would be greatly increased if he gave, in a connected form, a detailed account of the steps necessary to be taken by the promoters and opponents of private bills, and of the practice of both Houses respecting them.

The purpose of the volume may be understood from this statement; and its utility may be gathered from the fact that, although the preface to the first edition is dated so recently as 1st March, 1859, a second edition is already called for. This edition has been revised to the end of the session of 1859.

A Handy Book of Villa Architecture: being a Series of Designs for Villa Residences in various Styles. By C. Wickes, Architect, Author of "The Spire and Towers of England." Thompson & Co. 111, Strand. 1859.

This work, to which we drew attention on the appearance of the first part, has now taken the shape of an elegant quarto volume, containing five designs set forth in thirty plates. Mr. Wickes gives also a skeleton specification and estimate with each, ranging from 1,125*l.* to 3,625*l.* The plans are very well arranged; and the whole may be regarded as decidedly a Handy Book. Two of the designs are Gothicked; three of them are Italian.

The author announces that, in consequence of the success which has attended his present endeavour, he contemplates publishing shortly a second series, of corresponding size and price. In these it would be desirable, as no attempt is made in the present volume, to show the introduction of such approved new modes of construction,—warming, ventilating, and decoration,—as may be available. There are numerous questions in respect of improved house-building that need settlement.

A Manual for Friendly Societies. By Charles Hardwick, P.G.M. of Manchester Unity of Odd Fellows. Routledge & Co. Farringdon-street. London. 1859.

This very useful manual treats of the history, present position, and social importance of friendly societies, including Oddfellows and other affiliated provident institutions of the working classes, comprising the gradual development of the science of vital statistics; a popular exposition of the financial laws necessary to insure future stability and the method of ascertaining the true value of the assets and liabilities; a refutation of several popular objections; and suggestions for the equitable adjustment of past error and for the future development and expansion of these societies.

The public importance of such a manual will be conceded, when it is recollected that the number of members comprising the friendly societies of Great Britain is computed to be above three millions.

We have so recently treated of friendly societies, ancient guilds, and unions, that all we need now do is to call attention to this manual, which ought to be in the hands of all members and patrons of friendly societies. Were they to study well such a treatise, there would probably be fewer instances of ruinous catastrophes amongst them, such as that which has just occurred to the poor bricklayers of Manchester, the secretary of whose Sick and Burial Society has been allowed to embezzle no less than 1,400*l.* of the society's funds, and to make his escape therewith doubtless out of the country at his leisure.

Examples of Building Construction, intended as an Aide Memoire for the Professional Man and the Operative. By HENRY LAXTON. (No. 50.) 19, Arundel-street, Strand.

THE present number completes the second volume of Mr. Laxton's very useful work. It includes details of bay-window to master's house, Leeds Grammar School, Mr. E. M. Barry, architect; details of turret door and stairs, and also of windows in organ-loft of tower, Brighton new church, with details of panelling and gable crosses; Mr. H. Kendall, architect. In previous numbers other details of these two buildings were given. The drawing of bay-window at Leeds shows usefully the manner in which the shutters are arranged, always a difficulty in large bay-windows. No. 48 gives details of Osmaston Manor, Derbyshire, Mr. I. H. Stevens, architect. Every office should have the book.

VARIORUM.

THE current number of the *London Review* contains a curious article entitled "The Natural History of Architecture," wherein Mr. Fergusson's "Handbook" is attacked, especially as to the order and arrangement adopted, with more bitterness than the premises seem to warrant or explain. The reviewer attributes to him a desire to sink "out of sight the Celtic people of these islands," and thus rhapsodises:—

"Whatever such a course might be in governments or politicians, the meddling of writers upon art or science is the last impertinence. Of these the proper spheres are the beautiful and the true; and where these interests are tampered with for policy or vulgar commerce, or a still more vile and vulgar condescension to rabble prejudice, the author ought to forfeit all authority and even respect."

One of the objects of the article is to show "that the Gothic architecture is a destruction;" the other, that the Celtic race are to be looked to as the coming men,—the organizers of the final period:—

"The Celts did not stop, like the Teutons and other races, from exhaustion, but from interruption. They were modifying the Roman architecture in France, as Mr. Fergusson attests, when overrun by the Goths. It was, again, their taste and method that gave, in the same country, the Gothic disorder, the semblance of an order, for this form, as is readily proved by the same architect, proceeded to both Germans and English from France. Yet, while thus gratifying the angular taste of their masters, and trying to grace it with the minute monkish filigree-work which they could relish, the French maintained, against the spire, their own tower, either round or otherwise, and in the apses, whether double or single, some circularity. In the south, where less controlled, they reached a form quite peculiar. Mr. Fergusson well observes, that while the Goths must have continued to build the roof of stone from mere mechanical imitation, since they covered it outside with a real roof of wood; and while the Greeks had done before them exactly the reverse, made the false roof of wood and the outer one of stone; the Celts of Aquitaine avoided both the 'sham' and 'superfluity,' and built their roofs and domes of single, circular, and shapely masonry; and, he says, their architecture was the perfection of that feature. He further adds, that 'the Irish and the Scotch had attempted the same with boldness, till they were overruled by Gothic influence.' Why, therefore, should not the intelligence of the Goths of the present day overrule this misrule of their Medieval ancestors, and suffer or encourage those fair commencements to proceed?"

The writer sneers more than once at "the artist-grade of intellect," and the "artist's brain," "a brain not supposed to be the most cohesive possible." With more time and space than we have at present at disposal, it might not be difficult to raise a reasonable doubt as to his qualification to pronounce in this respect.

Miscellaneous.

CHURCHES IN ISLINGTON.—The foundation stone of another of the ten churches proposed to be built in Islington was laid on Friday last by Mr. Robert Hanbury, M.P. The church is dedicated to St. Thomas. The site is in the Hemingford-road, a few doors from Copenhagen-street. The contractor, Mr. Dove, is bound by a clause to finish it by June next. Already nearly 200 sittings are engaged.

ASSESSMENT OF THE GREAT WESTERN RAILWAY.—The long-pending dispute between the Great Western Railway Company and the local authorities of Paddington has been brought to an amicable adjustment. When the subject was before the Paddington Vestry reports were presented, showing an extraordinary discrepancy between the rateable value put upon the line by Mr. Penfold and others employed on behalf of the parish, and the surveyors employed by the company; the former maintaining that the rateable value of the property in the parish of Paddington was over 30,000*l.*, whilst the latter only estimated its rateable value at 14,000*l.* A communication was recently received from Mr. C. A. Sanders, the secretary of the Great Western Company, stating officially that, in order to settle the dispute, the directors would submit to an assessment of the line and property of the Great Western Company in the parish of Paddington at 20,000*l.* per annum. A resolution accepting this offer was carried with but three dissentients.

NORFOLK COUNTY SURVEYORSHIP.—The Norfolk county surveyorship, vacant by the retirement of Mr. J. Brown, was filled up on Thursday. The salary attached to the office will in future be 300*l.* per annum, with permission to engage in private practice, and, of course, there was considerable competition for the appointment, the following thirty-five gentlemen appearing as candidates: Messrs. Aicken, Barnes, B-mes, Brown, Buckler, Cooper, Crewe, Darhen, Dixon, Dobbin, Ellis, Etheredge, Gomm, Goodchild, Harris, Hopkins, Holland, Jeckell, McLandeshorrough, Lancefield, Milbourn, Mitchell, Penrice, Phipson, Penning, Pickering, Plews, Ponslon, Robinson, Snaw, Sheppard, Smith, Walker, Warburton, and Wardle. Many of these gentlemen are practising in London, and a few in the north of England. The attendance of the magistracy, in whom the appointment is vested, was very numerous, and the proceedings, which excited much interest, occupied a good deal of time. The voting was first for five out of the thirty-five candidates, then for two out of five, and finally for one out of two. The result was as follows:—

	1st Div.	2nd Div.	3rd Div.	Votes.	Votes.	Votes.
For Mr. Phipson (Ipswich) ..	47	47	55			
For Mr. Ellis (Norwich) ..	36	30	29			
For Mr. Brown (Norwich) ..	23	20	—			
For Mr. Buckler (Oxford) ..	20	15	—			
For Mr. Etheredge (Starston) ..	20	27	—			

Mr. Phipson was accordingly declared elected.

MODERN PAINTINGS IN THE CITY.—Those who go to see the new decoration of the Royal Exchange may as well step over the way to Messrs. Leggett's gallery, in 'Change-alley, and look at Mr. Flaton's collection of paintings. They will find some nice specimens of the work of Frith, Miss Mitrie, Faed, David Roberts, Poole, Linnell, F. R. Pickersgill (particularly No. 73), Solomon, Hook, and others.

THE MUSEUM OF INDIAN INDUSTRY.—The annual distribution of prizes to the students of the Department of Science and Art in connection with this Institution took place on Thursday last, in the presence of a numerous and influential assembly. Sir Robert Kane delivered an address, in which he gave an account of the establishment's progress and the present state of the Institution. The Lord lieutenant then distributed the prizes, and addressed the assembly.

NOTTINGHAM RAGGED SCHOOLS.—These schools have been opened by the Earl of Shaftesbury. The exterior of the buildings is of varied coloured bricks: the roof is laid in colours of a geometric pattern. At the entrance of each school is a wooden porch. One of the school-rooms is 45 feet long by 20 feet wide. There are two class-rooms to each school. The two school-rooms may be thrown into one room for lectures, meetings, &c. The upper portion of the interior walls is coloured French grey, with a margin of brown, 3 feet high from floor. Attention has been paid to light and ventilation. The style adopted in these buildings is Modernized Chromatic Byzantine. The architect was Mr. C. H. W. Edwards, and Mr. J. Carrington, of Nottingham, the contractor.

THE "GREAT GLOBE."—Always meeting the times, a lecture is given here every day and evening on the Arctic Regions and the fate of the Franklin Expedition, by which those who desire it may obtain in half an hour, more clear ideas of what has been done in respect of a North-West Passage, the motives which prompted the search, and of the site of the recent discovery of relics, than by a day's reading. Dioramas without end, illustrating China, Japan, the Rhine, India, and the war in Italy, afford plenty of additional amusement for the shilling. Efficient exponents of such dioramas, by the way, appear to be less easily obtainable than might be supposed.

LADY ILLUSTRATORS. COCKAYNE HATLEY.—We have had before us an interesting volume descriptive of the Church of Cockayne Hatley, in Bedfordshire, a fourteenth-century building (it would seem), containing a considerable amount of carved woodwork of later date, in the shape of stalls, pulpit, and other fittings. The stalls formed part, originally, of the Abbey de l'Aine, near Charleroi, and were carved in 1689. The pulpit came from a church at Antwerp, and is dated 1559. The manor belongs to the family of Cust. The drawings in the book in question are by the daughter of the Hon. and Rev. N. Cust, and other ladies of the family. Each page of letter-press is surrounded by a border, cleverly formed from carving in the church, and there are various views and details nicely lithographed as well as drawn by the fair artists.

COAL DUES AND CITY IMPROVEMENTS.—According to the Chamberlain, the total amount received for coal dues to the 5th of January, 1859, allowing for drawback in accordance with 13 & 14 Vict. c. 146, was 131,650*l.* 15*s.* 4*d.* The duty on wine amounted to 1,708*l.* 11*s.* the annual charge on the revenues of the Corporation for public purposes produced 11,500*l.*; the duty on the admission to the freedom, 271*l.*; duty on the binding of apprentices, 34*l.* 2*s.* 6*d.*; and profits of aqueducts, 174*l.* 16*s.* 3*d.* The total of these dues, still allowing the drawback of 14,052*l.* 18*s.* amounts to 148,339*l.* 5*s.* 1*d.* These moneys are in the custody of the Chamberlain, for the "London-bridge Approaches Fund," which, in reality, is appointed for effecting various metropolitan improvements. Money has been borrowed on these dues to pay for various new streets, &c.

APPLICATION OF THE ATMOSPHERIC PRINCIPLE.—We understand that a company is formed (under an Act passed last session), of which the Marquis of Chandos, chairman of the London and North-Western, and Capt. Huish, the late able manager of that Company, are respectively the chairman and deputy-chairman, for the purpose of laying down tubes from the Post-office to Euston-square Station, for the rapid transmission of the mails. A post-office parcel it is calculated may be transmitted from the Post-office to Euston-square, through these tubes, by means of the application of atmospheric pressure, in three or four minutes. It is also to be extended to all parts of London. On a small scale this plan is already in use in some parts of the metropolis.—*Heraclitus.*

THE NOTTINGHAM SURVEYORSHIP.—We understand that there were fifty-two candidates in all for this office, the eight alluded to last week having been those first selected: these were,—Messrs. Charles Beale, Newcastle; James Clark, Walsall; James Fenna, Leek; John S. Ferguson, Nottingham; Richard Hughes, Bolton; M. Ogle Tarbotton, Wakefield; and Thomas C. Thornburn, of Derby.

THE BERLIN WATERWORKS.—On 17th October, the new covered reservoir at the premises of the (English) Berlin Waterworks Company (Mr. Gill, engineer), was opened in the presence of several of the Ministers of State, and others. The reservoir is of brick, in cement—vaulted, and about 170 feet long by 60 feet wide, and 11 feet high, and capable of containing about 625,000 gallons.

METAL WORKERS' TRADE-BOOKS.—The recent mention in our pages of the trade-books of two firms has brought us several others; amongst them one from Messrs. Johnston, Brothers, of Holborn, which may be usefully consulted. We have had occasion to mention their work before now, some of which of very good character has been recently added to the exhibition of building materials and processes now open in Conduit-street. Some loose sheets of designs for gas standards and altar railing (signed W. G. Smith) which accompany the pamphlet, display skill in combination.

SIXTEENTH ALMANACKS.—Among the earliest of the cheap almanacks for 1860, are "Casell's Illustrated Almanack" (Casell & Co. London), and "Thorley's Farmers' Almanack" (Thorley, Newgate-street). The former has numerous engravings, and gives a pretty full chronicle of events for 1859, with obituary, information for emigrants, and other useful matter. Thorley's comprises a sort of treatise on horses and other cattle, a full list of fairs and markets, much that relates to seed time and harvest, and so on; and, although a prominent motive of Mr. Thorley in publishing such an almanack is, doubtless, the sale of his well-advertised "food for cattle," still there is really a good deal of useful matter contained in this almanack, as well as in Casell's.

Gas.—A new company is being formed at Southampton to produce gas 10 per cent. below present prices. It is intended, says the *Hampshire Independent*, to expend 30,000*l.* in the construction of works, and a site has been secured. A Gas Consumers' Association at Manchester is still being persisted in, notwithstanding the partial giving way of the corporation as to price. Gas at 3*s.* 9*d.* as in Liverpool, is the object in view. It is proposed to form gasworks at Worsboroughdale, at a cost of 2,500*l.*—The directors of the Ayr Gas Company have intimated to the inhabitants that, in consequence of a recently-discovered improvement in the manufacture of gas, whereby the cost of production is lessened, and desirous that consumers may get the immediate benefit thereof, they have resolved to reduce the price from 6*s.* 8*d.* to 6*s.* 10*d.* per 1,000.

NEW BRICK-MAKING MACHINE.—A new invention, by Mr. Joseph Eccles, is in operation at the New Patent Brick and Tile Works, Mill Hill, Blackburn, where half a million bricks per week are about to be made. The crude clay is brought by waggons, and "tipped" into a "hopper," from which it passes between a pair of rollers about three-fourths of an inch apart, which deliver it to another pair of rollers about one-fourth of an inch apart. These rollers work the clay and crush the small stones, and the lower pair force the clay into a horizontal cylinder, in which it is pugged, or worked, by blades carried by a rotating shaft in the axis of the cylinder. These blades, as in the common pug-mill, propel the clay to one end of the cylinder, where it is delivered at each side through dies giving the shape required. The delivery of the material through the dies at the sides of the cylinder is produced intermittently by a peculiarly shaped arm, rotating with the shaft carrying the blades; and every time it goes round, a delivery of material is made at the moulding orifice on each side of the cylinder alternately, giving time between each delivery to cut the moulded material into lengths by the well-known frame. The machinery goes on without intermission. The machine will mould at the rate, at least, of one perforated brick per second; but 4,000 bricks in ten hours are as usual as can be conveniently removed and carried away from the delivering orifices. By means of the improved drying sheds, bricks or tiles can be fully dried ready for the kiln in 24 hours, irrespective of the state of the weather. By heated pipes, and currents of air from centrifugal fans, the bricks so dried are said to be free from cracks and other defects.

MORE ATROCIOUS OUTRAGES AT SHEFFIELD.—During last week two very atrocious outrages, attributed to trade disputes, have been perpetrated at Sheffield. Mr. James Robinson, an extensive brick manufacturer, was the object of one of the outrages. A small stone bottle, filled with powder, hob-nails, and fragments of glass, and having a lighted fuse attached, was thrown into one of his bed-rooms at three o'clock on Wednesday morning. Fortunately, owing to the violence with which it was thrown, the bottle broke, scattering the contents before the powder ignited, and consequently no serious damage resulted. During the last two years Mr. Robinson has had a large quantity of unburnt bricks destroyed, a pig killed, a donkey poisoned, and a valuable cow stabbed. All these outrages he attributes to his persisting in employing non-union as well as union men. The victim of the other outrage is a saw-grinder named Helliwell, not connected with the saw-grinders' union. Some powder was placed under his glazing wheel, and, being ignited by sparks caused in glazing, exploded, seriously burning his face and arms. The saw-grinders' union, through their secretary, repudiated the latter outrage, and offer a reward of 10*l.* for information as to the perpetrator.

THE HOOSAC TUNNEL IN STATE OF MASSACHUSETTS, U.S.—The contractors, Messrs. Haupt & Co. are pushing the work forward with energy. They have been materially delayed during the season by strikes among the workmen, and their progress has not been satisfactory to themselves, but they have demonstrated the feasibility of the enterprise, and that it may be completed within a reasonable time. The work of tunnelling has thus far been done entirely by hand labour. By this laborious process holes are drilled in the rock, into which powder is inserted and the rock blasted out. A heading is first made, that is, a shaft, about one-third of the dimensions of the tunnel, is driven forward at the top of the tunnel. The heading has been pushed forward 300 feet further than the finished portion of the tunnel. The work has been pushed forward on the east side a distance of nearly 1,600 feet from the mouth of the tunnel. The tunnel is fourteen feet wide and eighteen feet high. The whole distance to be excavated is 24,500 feet. The tunnel is 1,700 feet beneath the summit of the mountain. Besides the work which has been done on the eastern side of the mountain, the tunnel has been excavated for a distance of 500 feet on the west side. With hand labour, the work could not probably be accomplished in less than ten years. But it is the intention of the contractors to apply machinery to the tunnel—not the complicated rock-cutting machines heretofore experimented with, but drills driven by compressed air.

EDUCATION AND THE CHURCH.—At a recent meeting of the Canterbury Diocesan Association, the Archbishop of Canterbury referred to the fact that in consequence of the early age at which children left school, they were but little benefited by the instruction which they received. It was perfectly clear that they read very imperfectly, and wrote scarcely any at all. He had been astonished to learn, from a very high authority, that amongst the labouring classes only one-third of the men and women who came to the church to be married were able to sign their own name. "It certainly was not very easy now to find a child who could not read or write, but he suggested that constant occupation in the fields, and little opportunity in making any progress in that which they have already acquired, rendered learning literally a dead letter. He quite concurred in the importance of keeping up the evening schools, but he confessed that he thought it a task upon the clergy to expect them to give up their time of an evening, and perhaps walk half a mile through wet lanes on a cold night, to attend an evening school. Everything seemed to depend upon keeping up the influence which the teacher possessed over the minds of the pupils." Both in town and in rural districts the good which has been done by the vigorous superintendence of the schools by the clergy is evident. A regular attendance on their part ensures care on the part of the teachers, and has also an excellent effect upon the scholars. The visits of the clergy to the houses of the poor and industrious classes has been a means of inducing many to send their children to school who would not have thought of doing so. The duties which occupy the time of an earnest clergyman are numerous, but it is necessary to remember in how many instances an amount of harm, which will require long labour to obviate, has been done by ministers of the Church of England isolating themselves from the masses of the people.

RAILWAY WORKMEN.—The *Courier du Havre* states that a project is under consideration for removing to 15 leagues from Paris all the great workshops of the railways. This would necessitate the removal of a great number of workmen from Paris, and reduce rents in the districts occupied by working men: it would be possible for the companies, as they could sell the ground which they now occupy for a much larger sum than the purchase of new sites and the construction of new workshops in the country would cost.

"WASTE HEAT USED UP AND SMOKE CONSUMED ON ECONOMICAL PRINCIPLES."—Under this heading, on 27th June, 1857, we drew favourable attention to the patents of Mr. Johnson Hands, of Epsom, as a promising mode of carrying out a suggestion long before made in the *Builder*, that waste heat, as of kilns, should be turned to account. We are glad to find that our opinion of these patents is being justified by the extension of their use not only in this country, but on the Continent. The *Journal des Mines*, in speaking of them, says, "Mr. Hands not only burns the smoke, and so effects a saving of fuel, but he obtains another result, which is this,—the articles dried by this process never break in the kiln, for the heat is evenly diffused over the drying-room, which is perfectly shut up, and free from draughts: the combustion of the smoke creates so strong a draught in the heated passages, that openings are made in them, through which the vapours proceeding from the pottery are carried off. In some works that we visited in England, especially those at Farnham, where Mr. Hands's system is in operation, we saw three kilns, one of which could hold 30,000 bricks, and the others 20,000 each."

TENDERS.

For the erection of a new Congregational Chapel at Wandsworth, Surrey. Mr. James G. Stapleton, junior, architect.—

	Carease.	Finishings.	Total.
Dymond	£2,212 15 0	£1,990 10 0	£4,339 5 0
Ellis	1,955 0 0	1,855 0 0	3,850 0 0
Todd	1,984 0 0	958 0 0	2,982 0 0
Gates	1,980 0 0	950 0 0	2,930 0 0
Wheeler	1,912 0 0	917 0 0	2,839 0 0
Thompson	1,951 0 0	891 0 0	2,754 0 0
Hocken	1,917 0 0	822 0 0	2,739 0 0
Batterbury	1,929 0 0	897 0 0	2,689 0 0
Tarrant	1,865 0 0	824 0 0	2,610 0 0
Sherren	1,781 11 0	810 4 0	2,571 15 0
Jackson & Shaw	1,700 0 0	800 0 0	2,500 0 0
Wim'g'er, junr	1,710 0 0	774 0 0	2,493 0 0
Porter	1,755 0 0	729 0 0	2,484 0 0
Rudkin, junr	1,730 0 0	690 0 0	2,450 0 0
Ro & Stanger	1,630 0 0	765 0 0	2,395 0 0
Davidson	1,760 0 0	664 0 0	2,364 0 0
Adams (accepted)	1,585 0 0	700 0 0	2,285 0 0

For new schools at Finchley, for the Rev. T. R. White.

Mr. E. Roberts, architect. Quantities supplied —	
Holland & Hannen	£5,852 0 0
L'Anson	5,784 0 0
Piowman, Finchley	5,450 0 0
Myers	5,239 0 0
Dove (accepted)	4,945 0 0

For the erection of a house in Aldgate, High-street, for Mrs. E. Kirby. Messrs. Shea & Toner, architects.

Quantities supplied —	
Ashby & Sons	£1,197 0 0
Brass	1,163 0 0
Puer	1,150 0 0
D. King	1,151 0 0
Corder	1,097 0 0

Accepted for villa residence on Lansdowne, Bath. Mr. C. J. Phipps, architect:—

Blatwell & Ambrose, for excavator's and mason's work	£744 13 0
Roper, for carpenter's and joiner's work	408 0 0
Lucas, for slater's and plasterer's work	150 0 0
Foot, for plumber's work	80 10 0
Nott & Moore, for glazier's work	41 0 0
Young, for smith's work	68 15 0

Total (exclusive of painting)

For altering and repairing the new premises of the General Credit Company, Goswell-street. Mr. John Belcher, architect:—

Coleman (Brothers)	£595 0 0
Jackson & Shaw	505 0 0
Browne & Robinson	395 0 0
Clements	351 10 0
Fox	327 0 0

For new police station and magistrates' room at Daventry, Northamptonshire. Mr. Milne (county surveyor), architect:—

Station. Magistrates' Room.	
Parker	£1,390 0 0
Ireson	1,051 0 0
Adams	1,015 0 0
Gee (accepted)	975 12 6

For alterations to the Star, Exeter, for Messrs. Hughes and Carter. Mr. Westlake, architect:—

Backmore	£325 10 0
J. Sturford	318 0 0
C. Manly	299 0 0
J. Kenhole	295 0 0
W. Moore	252 10 0
J. Fryere & Co. (accepted)	241 0 0

A QUANTITY of Second-hand PEBB
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The Builder.

VOL. XVII.—No. 874.

Lunatic Asylums; and the Treatment of the Insane.

THE care and treatment of lunatics is a subject to which, as regards the provision and the arrangement and construction of asylums, considerable attention has been given in these pages; and the subject continues to demand the consideration of architects. Additional county asylums are yet called for, or institutions auxiliary to them; very few indeed of the boroughs have provided asylums; there is no asylum for lunatics from the military service; and the necessity for institutions specially

adapted to the insane of the middle classes, is each year more generally perceived and admitted. The attention, also, which is being given to the subject, is producing many changes in the principles of arrangement and construction of buildings for asylums, and in their fittings. In the last session of Parliament, Mr. Tite continued his exertions, which had been interrupted by the dissolution, for full inquiry into the operation of the laws and regulations for the care of lunatics; and the committee, of which he had procured the appointment, sat to the end of the session. The evidence then taken has just appeared, and is now before us, along with that which had been taken by the previous committee in the earlier part of the year. The report at the close of the last session merely recommends the re-appointment of the committee in the session now ensuing; but amongst the evidence in both the blue books, may be found useful information, for example, as to the cubic space which should be provided in dormitories; the proportion which should be observed, of single rooms and wards relatively to one another; the question of large or moderate-sized asylums, and other points; but at the same time, greater contrariety of opinion on one matter which has been lately under consideration—the desirableness of the retention of lunatics in workhouses—than is quite satisfactory. This latter question had been taken up by the Commissioners in Lunacy at the date, 31st March, 1858, of their twelfth report, which was noticed in our last year's volume.* That branch of the subject, however, was so extensive, that it was necessary to issue a supplementary report upon it. This latter report embodies the results of visits to all the workhouses in England and Wales (which buildings, it seems, were, in 1858, 655 in number), and the main conclusion in it is, that to remedy many of the evils adverted to in the report would be impracticable, so long as insane patients are detained in workhouses, whether mixed with other inmates or placed in distinct wards—since the construction and management of workhouses present "insurmountable obstacles to the proper treatment of the disease of insanity." Therefore, to secure for the insane poor, in the opinion of

the commissioners improperly retained in workhouses, due care and treatment elsewhere, large provision of some kind, additional to that in county and borough asylums as existing, would be required. More recently there has been printed the thirteenth report of the commissioners, dated 31st March last. So that, altogether, with the report of last year from the Commissioners of Inquiry into the state of the Lunatic Asylums in Ireland, which entered minutely into the arrangements adopted in that part of the kingdom; and a report somewhat earlier, from the commission, appointed in 1855, relating to Scotland, which gives similar particulars; and a report published in April last, the first annual one by the General Board of Commissioners in Lunacy for Scotland, there is no lack of the usual bulk at least, of the matter, out of which now those who need to study the subject of lunatic asylum architecture and construction, will have to pick the data for future plans and designs. The subject, requiring of architects as we once before said, not merely technical knowledge of construction, but some study of the medical treatment of insanity, is one which is eminently changeable, or we should rather say progressive. Judging only from evidence which is before us in the parliamentary papers mentioned, it is clear that the principle of entire disuse of mechanical restraint is being extended to the abandonment even of many provisions and contrivances which were thought necessary in the asylums built first, subsequently to the adoption of that principle,—provisions which hardly could have been deemed coercive in their intention, but which acting painlessly, or only on the mind of the patient, it might once have been thought needless as well as difficult to dispense with. We allude to the now growing disuse of refractory wards, distinguished as such, and fitted accordingly with tiled floors or similar contrivances, and to the lessened importance of padded rooms as a feature, as also to the disuse of seclusion as a substitute for restraint; in short, to the gradual introduction of a system in which the agents employed may be wholly those of the social, and moral, or mentally soothing character,—allowing such importance as is necessary to any treatment by medicine, obviously required in many cases, and regarding which, in more extended application, we are aware there are well-supported theories. Viewing, however, the full extent of the principle established as it seems to be necessary we should view it, records of the different steps which are taken in the provision of asylums, and of the leading features of the progress with which architects have to be concerned, or which are exemplified in these institutions, will appear to our readers important and interesting. On a future opportunity we may yet be able to effect that which a progressive subject from time to time needs, and to post up the then arrived at conclusions or requisites severally, to be provided in planning and constructing the buildings for institutions of the different kinds.

If we consider that the lunatic asylum formerly, in its building-plan, and its system of management, was to be classed with prisons, and if we assume that the tendency now is to bring it in both particulars to be classed with institutions or buildings, domestic or residential, of the first order, we shall have the chief fact of the progress made. The only exception to be allowed to this comprehensive statement of the change, is that which may be comprised in the one object of the institutions, namely, the cure of insanity; and which object, though principle of treatment may not differ, in the opinion of the commissioners alone requires the buildings of the expensive construction of the county asylums recently erected. For a considerable number of lunatics, those at the same time incurable and harmless, provision, whilst required largely beyond what there is at present, might be made by buildings under the same official staff as the asylums and in the vicinity thereof, but buildings which would be more economical in the first instance and in their management;

whilst in these latter, patients in process of cure might be domiciled temporarily, and thus be better prepared for their entrance into the world without. Stringent measures to prevent the detention of insane persons in workhouses, the commissioners think, have become absolutely necessary. One motive of parish authorities in not placing such patients in asylums is, no doubt, that of economy; another is the insufficiency of the asylums, in accommodation, or number; but it is thought the difference of the expense between asylum and workhouse would be found slight in amount, were there the same method of accounts. The buildings auxiliary to the existing asylums, substituted for the workhouse provision, which would be preferred to enlargement of each main building of the asylums, it is considered, need not cost much more than half the outlay on the first erected building; and no other effectual remedy, say the commissioners, is to be found for the urgently pressing evils. They hold in the language of their report, and evidence before the committees, that such asylums as those of the county of Middlesex, were originally built far too large for the supervision which is necessary to their assumed object, that of effecting cures: the additions now being made to them, they sanctioned most unwillingly; and they dispute the idea that there is greater economy in increased size. Saying that the adoption of their system with the harmless and incurable class of patients, would render unnecessary such great amount of expensive building accommodation as has been, or at least that which still is required; and that auxiliary buildings would bear the proportion of cost as stated, to ordinary asylums, they add that the establishment of officers and attendants would also be on a more economical scale. The cost of such buildings, says Mr. Lutwidge, would not be much more than 40*l.* or 50*l.* a head, whereas for asylums the cost is from 100*l.* to 150*l.* a head. Really, they have been executed in some cases for less. The workhouses in England have cost from 8*l.* or 20*l.* a head up to 38*l.* a head, including all fittings. It is necessary to state that to these views, and to the grounds on which they are based, the visiting justices of Middlesex were opposed; whilst some officials connected with the Poor-Law Board, seem equally disinclined to admit the advantage of putting an end to the system of providing for a certain proportion of the harmless class of lunatics in workhouses. The justices of Middlesex view their asylums as having been originally provided for residence of pauper lunatics, as well as for curative treatment; and that, being so devoted, the large proportion of harmless patients renders the duties of superintendence more effectual, than from the very limited number of the medical staff, at Colney Hatch at least, might be supposed. We cannot, however, but attach more weight to the arguments of the commissioners against the practice of adding wings and stories to buildings which are already large,—and, as generally, to the reduction of original advantages of site and ground, and of the plan,—and equally on the other hand, to those against the provision for lunatics in places where they must be exposed to a system which, if right for the ordinary inmates of workhouses, is the reverse of that which should be deemed necessary in the treatment of lunacy.

It is apparent that a considerable increase had taken place last year in the number of lunatics in these places, workhouses, not designed for the reception of inmates of the class. A large proportion of these lunatics, it is true, are the idiotic or the imbecile; but during late years, forms of insanity of more acute and dangerous character have been met with. Amongst cases are those of persons reduced to the condition of pauperism by their disease. All of these lunatics require better diet, clothing, and bedding, better nursing and superintendence, and more healthful exercise than any workhouse whatsoever affords. The workhouse system is designed for the merely indigent; and in it are comprised particular conditions of diet, task-work, and confinement, which are thought necessary to

* Vol. xvi. page 597.

prevent abuse. But for the insane, not only are these conditions unnecessary, but they are detrimental, as they are unjust. The inadequate means of out-door exercise, and the prison-like character of the yards that are substituted, are especially unsuited to the case of the insane. The rules, besides those devised for economy, are intended to check disorderly conduct, rather than to soothe and allay excitement. A large proportion of the metropolitan workhouses are "of great size, old, badly constructed, and placed in the midst of dense populations." The weak-minded and insane patients are here crowded into small rooms, perhaps in an attic or a basement, and are sometimes associated with the worst characters. Seclusion and mechanical restraint would seem to follow of necessity. About a tenth of the workhouses in England and Wales have separate lunatic and idiot wards. The separate wards, however, are regarded by the commissioners as even more objectionable than the intermixture of inmates,—having regard to the mode of government. And such wards themselves in old workhouses are exceedingly defective. The rooms are crowded, and the bed-rooms are used also as day-room; the ventilation is imperfect, and the yards are small and surrounded by high walls. There is no classification; that is to say, "there is no separation where the association is injurious; and no association where such would be beneficial." Even where there are day-rooms, these are often gloomy and destitute of comforts. In the best of the cases there is the want of the continued superintendence of a resident physician, and the assistance of qualified attendants; and the contrivances to prevent escape or accident, are the repeated substitutes. There is an obvious determination on the part of guardians, say the commissioners, to consider such wards as have been spoken of, as lunatic asylums,—though they are asylums only without any of the advantages for treatment and the safeguard against abuse. An impression prevails that if a patient remains quiet, no more is required; but this "is an error pregnant with the most serious evils." The melancholic and taciturn especially, enfeebled by privation, remain suffering until the malady becomes confirmed and incurable. "For cases like these, a workhouse is the most unfit, and the asylum the most proper place; and the error of considering manifestations of violence, excitement, or dangerous propensities, as the only or principal reasons for removing a patient from a workhouse to an asylum, cannot be too widely denounced." Other patients sink into the lowest state of mental and bodily degradation, through the want of attention in workhouses. The violence, or the propensities which seem to make the cases hopeless, are corrected or controlled in asylums. Protection, under the system, to idiotic or weak-minded women, is especially wanting.

We cannot follow the whole of the statements and evidence in the Report and Appendix, which seem to prove the truth of the positions. Deficient diet in place of the ample amount required by the insane, appears to be common in workhouses; restraint is practised, and seclusion in one instance was extended to the use of the "dead-house" for the purpose. The defects as to space, of the London workhouses and those of some other towns, are particularly described. In the Clerkenwell workhouse, when visited, the lunatic wards were found at the top of the house, rendering it impracticable for infirm patients to reach the small yard below, which was long and narrow, and bounded each side of its length by high buildings, yet was the only place allotted for the exercise of 511 paupers. The Wapping workhouse (Green-bank), close to the Docks, was similarly surrounded by lofty structures; and the workhouses of the Holborn Union, St. Giles's; St. George-the-Martyr, Southwark; St. Martin's, and St. Marylebone, corresponded. Yet—"nothing more powerfully operates to promote tranquillity than the habit of extensive exercise." In its absence, a patient may commit acts of violence; and some of these have been looked upon as acts of responsible persons, and been followed by committal to prison. The use of the workhouses as asylums appears to be contrary to the Lunatic Asylums Act, 1853. Nevertheless, and though even the workhouses having separate wards are shown to be unsuitable places for the insane, the practice of using such receptacles is interesting; so that the "evasion of the statutory provisions for placing patients under early treatment, and thus promoting their recovery, is one of the most fertile causes of the increase of lunatic paupers throughout the country. It is this that mainly tends to fill our county asylums with hopeless chronic cases, and is most

directly responsible for the heavy and permanent burdens upon the parish rates."

A fertile cause, however, of insanity in this country, mentioned in the evidence before one of the committees, is drunkenness. The evidence of Lord Shaftesbury, which extended to great length, and is throughout of that value which might be expected from his exertions on the commission since its embodiment, as well as for other benevolent objects, gives the results of an investigation made by him into the prevalence of this cause. Admitting the growth of improved habits, he believes it will not be disputed by any one with the least knowledge of the disease, "that one-half, and perhaps more, of the cases of insanity that prevail amongst the poorer class arises from their habits of intoxication." The superintendents of almost all the asylums in England, public and private, and the conductors of asylums in America, concurred, that if the people could be brought to moderate habits—that is to say, merely temperate, not "teetotal" habits—at least one-half of the cases might be got rid of, and a large proportion of the lunatic asylums might be shut up. This estimate, it must be understood, does not include the cases, probably larger in number, of those persons who, falling short of the point of absolute insanity, are impaired in understanding and perceptions. In Scotland, there are said to be establishments solely for those who have brought on insanity by intemperance. Lord Shaftesbury, after accumulating evidence upon evidence, quotes the assertion of Esquirol, celebrated for his researches into the statistics of madness; that "this cause [intemperance] gives rise to one-half of the cases of insanity that occur in Great Britain," with Dr. Prichard's note thereon, that "this fact, although startling, is confirmed by many instances. It was found that in an asylum at Liverpool, to which 495 patients had been admitted, not less than 257 had become insane from intemperance. It is confirmed as a scientific fact, by statements of American physicians almost without exception." Other causes of course are recognized; and amongst the number is the increasingly active life which is led, and the state of nervous excitement induced—as from such causes as the increased power of locomotion. But, pregnant of matter for thought are these statements, added to the extent of what is now known of cause of crime.

It appears that the number of insane persons in county and borough asylums of England and Wales, was, on the 1st of January last, 15,812 persons. To these should be added the number 1,558 in what are called hospitals, the number 5,074 in licensed houses, and the number 137 in the Royal Naval Hospital, making the total number comprised in the commissioners' summary in an appendix, as 22,911 lunatics as compared with 22,013 at the same date in 1858. Lord Shaftesbury himself, in his evidence as printed, gave some of these amounts some hundreds higher. To whatever the numbers may be, should be added the figures for the lunatics in workhouses, say 7,686, and those with their friends, or as single patients, by which the grand total, according to Lord Shaftesbury, on the 1st of January, 1858, was 35,597 in England and Wales. We must just mention that the report from Scotland makes the total there 5,718 persons.

Of the asylums which were in course of erection at the date in 1858, there had been opened on the 31st of March last, asylums for Durham, Cambridge, and Northumberland; and others are in progress, besides additions. There are five or six counties in which the law has not been complied with. The want of public accommodation renders almost necessary the existence for paupers, of licensed houses. Great inconvenience has been experienced in the county of Middlesex, especially in the case of Hanwell.

The buildings now reported upon as occupied by the paupers of the counties are thirty-six in number; but of these, three belong to the county of Lancaster, two to Middlesex, and two to Yorkshire. In some cases it will be recollected, the same asylum serves for two or more counties, or perhaps for a county and a borough. The number of boroughs named, however, as having distinct asylums, is still only four, namely, Birmingham, Bristol, Havering-west, and Hull; though it will be seen shortly that steps have been taken which will add to this number. The additions to existing county asylums are, in several cases, considerable. A motion in April last, for the enlargement of the Surrey asylum, to provide for 700 additional patients, at a cost of 58,000*l.* was opposed by Mr. Briscoe, a member of the Committee of the House of Commons, on

the ground that the medical men and Lord Shaftesbury, who had given evidence, agreed that the largest asylum should not contain more than 600 patients, and that many medical men thought there should not be more than 250 or 300. The motion, however, was carried by a small majority. To enlargement without adequate land, the commissioners have recorded the strongest objections.

The asylum for the county of Durham is at Sedgfield, about eleven miles from Durham. It was opened on the 13th of April, 1858, and was estimated to contain 312 patients. "The cost of erection of the asylum was 31,480*l.* namely, land, fifty-two acres, 4,000*l.*; and buildings and fittings, 27,480*l.*; the total average cost per patient being thus about 100*l.* It has three stories, and two separate blocks of two stories each, in connection respectively with the workshops and laundry, and containing day-rooms on the ground, and associated dormitories on the upper floor. The Report continues:—

"In the centre of the main building, the principal approach to which is from the north, are the superintendent's residence and the general dining-hall, over which is the chapel. The male and female patients occupy respectively the western and eastern divisions of the asylum. The second floor of the main building is occupied only at night. According to the original design there were on the second floor in each division three dormitories opening into a passage towards the north. Upon further consideration the partition walls were omitted, and the upper story on each side was converted into a large dormitory containing fifty beds, and warmed by open fires. The several wards are heated by open fires only. The dining-hall and chapel are warmed by hot-water apparatus."

The sleeping-rooms are visited once in every two hours, to see that patients are comfortable and clean, and to remove any noisy patients from associated dormitories to single rooms. Accurate memoranda are kept at every round, and clean bedding and linen are supplied immediately, where necessary. Out of 150 patients, those who chiefly require such attention do not average more than three in each of the two divisions.

"The ventilation of the single sleeping-rooms is effected, amongst other means, by flues near the ceiling, in the internal walls, passing into large flues in the roof in connection with towers, one at each end of the building. The extraction of foul air is promoted by a hot-water cistern in each tower, which also supplies the baths. As respects the associated dormitories above mentioned, there are openings into the roof. There are no associated dormitories on the middle floors."

There is not in the asylum any instrument of mechanical restraint, and there are no rooms especially appropriated to the purpose of seclusion.

"The floors of all the corridors and rooms are boarded. The woodwork throughout is simply varnished, and has a clean and neat appearance. All parts of the asylum are lighted with gas."

Some of the sewerage arrangements are not described as satisfactory.

The United Asylum for the county and borough of Cambridge and the Isle of Ely was opened on the 2nd of November, 1858. It is in the parish of Falsbourn, about 3½ miles from Cambridge, on a site commanding extensive views. The land consists of about 57 acres, and the building is designed to accommodate 250 patients. The cost is not stated. The Asylum for Northumberland does not appear to have been visited since it was opened, as there is no further mention of it by the commissioners. The new Asylum for the counties of Bedfordshire, Hertfordshire, and Huntingdonshire, it is expected will be fit for occupation in the beginning of next year. Considerable progress has been made with the asylum for Cumberland and Westmorland, of which we gave an account with illustrations last year; and it is expected to be complete in October, 1860. The new Asylum for the county of Sussex is nearly completed. The new Asylum for the city of Bristol, at Stapleton, is noticed as likely to be completed at the end of this year.

Reverting to the matter of additions, it may be remarked that these have been required to most of the asylums; indeed, the question of provision still needed, and the best means of affording it, as we have shown, has become the important feature in the Commissioners' Report. A conflict between the demands in one direction, and the limitations of size, plan, and ground, by which such additions would often be destructive of original merits of the building and site, is going on; and unless the commissioners have dwelt more than is necessary upon several points, the manner in which additions are made, elsewhere than in Middlesex, must be regretted. The chief deficiency of accommodation in the provinces seems to be felt in the populous county of Lancashire. As to Middlesex, the additions at Hanwell were interrupted towards the close of last year, owing to default of the contractor; and inconvenience as regards some of the patients, and excessive crowding in

the workhouses and licensed houses of the metropolitan district, were occasioned by the delay. The new third story, however, at the time referred to, had been roofed in. The new wards at Colney Hatch, to accommodate 600 more patients, were found roofed in, in September 1858. But during the operations, the roofs of the two central wings, covering three wards on the male side, and three on the female side, were discovered to be defective, and required removal; so that no immediate increase in the accommodation was possible, and as many as 458 patients since a previous visit had been refused admission. Although the new wards are good in internal arrangements, the commissioners have to record the opinion that the additions have a more detrimental effect upon the older portions of the building, even than they had anticipated when the plans were first submitted to them. They say:—

"The lofty new wing for female patients at the western extremity of the asylum overshadows and renders gloomy the yards on either side of it, and by some oversight the roof of the new block on the south has been so constructed as entirely to obstruct all view of the country in that direction; whilst the new spur on the east still further encloses the airing courts, which were before open and cheerful, and indeed the best belonging to the asylum."

The resources of the institution, however, have been improved by the formation of walks and roads over the whole of the land. In Lancashire, the three asylums have for some time crowded; so that Boards of Guardians have been induced to build extensive wards in workhouses, for their insane poor. Additions for 200 patients to the West Derby Asylum, at Rainhill, are about being made, at an estimated cost of 7,300*l.* on the inexpensive plan suggested by the commissioners. Additions for a similar number, to the Chester County Asylum, on the same principle, are also in hand, to cost 8,500*l.* with a separate kitchen, &c.; being at the rate of 42*l.* 10*s.* per head. A new building for about 1-0 female patients has been added to the Devon Asylum. As we learn from another source, it has cost less than 4,000*l.* including fitting, and levelling and alteration of boundaries. Extensive alterations and additions have been going on for some years at Gloucester, and alterations in the female wards have been made in the asylum for Kent. New buildings have been completed at the Norfolk County Asylum, to afford additional accommodation for sixty men and eighty women. Alterations which had been in progress at the Oxford Asylum, were nearly completed at the date of the Report. The sewage there, is turned to account in irrigation, the soil being sandy; and to what was recently unreclaimed land, has lately produced abundance of vegetables for consumption in the establishment, and roots for sale. The situation of the chapel over the kitchen is objected to, from the liability to closeness in the summer months. Two wings, for 134 patients, a new chapel, new offices, and sundry alterations have been completed at the Salop and Montgomery Counties Asylum. "Here, as in other asylums," it is remarked, "every step taken to remove bars, wirework, and other indications of restraint, has been followed by a corresponding improvement in the conduct of the inmates." In the Somerset Asylum, the system adopted of placing a number of patients to sleep in large dormitories continued to work satisfactorily. The dormitory in the male division continued, at the time of the visit, seventy-six beds. Additions to the asylum for the county of Stafford were proposed last year, and the plans submitted would have effected this by adding a fourth story to the wings, and building two stories of single rooms over the No. 7 Ward on each side of the house; but as it appeared that advantage had not been taken of the vacant space in the wide galleries on the upper stories, which could readily be converted into dormitories, the commissioners advised that the single rooms proposed should alone be carried into effect, and at the same time discontinued any material increase in the number of patients, considering the circumscribed nature of the land. The admission, in most cases of additions to the buildings, of the necessity for increase in the land attached to an asylum, is satisfactory, and may be set against the tardy acceptance of the suggestions as to detached buildings. The demand for further accommodation at Stafford is described as urgent. Our information above given, as to the proposed enlargement in the Surrey Asylum, at Wandsworth, appears to be of a later date than that in the Report; but it may be well to note that the asylum contained, in December last, 950 patients, and that the commissioners then deprecated an enlargement by which 1,500 patients would have had only the same extent of ground which had not been considered too large for 500, and which would be

further abridged by the abstraction of eight acres for the new buildings. In the asylum for the county of Wilts, the accommodation has been extended by buildings connected with the laundry; and the great economy from the course advised appears to have been made manifest. Buildings for the extension of the asylum of the West Riding of Yorkshire are now in progress, though with too small a quantity of land for the increase, the asylum, at the last visit, having contained 851 patients. The details of arrangement and management in this asylum have been defective; and the mortality has been large in consequence. An infirmary on each side the house is needed.

In the boroughs, the Birmingham asylum is requiring extension,—at an estimated cost of 10,000*l.* to raise the total accommodation to 500 patients, of whom 108 would be provided with separate sleeping-rooms. In the first plans made, it was proposed to add blocks three stories high, to each of the six wings; but as these wings are already too near to one another, separate blocks were suggested as well as additional land. The plans have been modified, not in the way advised, but so that no addition will be made to the central wing; and the additions to the extremities of the other five wings will offer less obstruction to the sun and air. The existing St. Peter's Hospital, at Bristol, will shortly give place to the new asylum we have mentioned. The asylum at Haverford-west, formerly a prison, repeatedly adverted upon, continues in a most disgraceful state; and in a minor degree there are defects in the asylum at Hull. The provision of an asylum for the City of London has been the subject of frequent communications and discussions. A right was supposed to exist for the maintenance of the lunatics at the expense of the Bethlehem and Bridewell hospitals. The unsuitability of the Bethlehem Hospital premises does not seem to have had weight. A site near Dartford has been approved of, but no plans have been submitted; and, though we believe an agreement has been entered into relative to the purchase of thirty-two acres, possession of the ground cannot be obtained before quite the end of this year. The number of patients to be provided for is 300. The State-Criminals' Asylum, for 500 inmates, is in progress at Broadmoor, a mile to the east of the Wellington College. The commissioners say it will be ready in the ensuing year, though a later date is referred to in evidence by Colonel Sir Joshua Jebb. Prisoners will be removed there from Bethlehem, Fisherton, and other places. The ground is 290 acres.

Considerable attention of course is given in the last report of the commissioners, to the subject of licensed houses and single patients, that which induced the proceedings promoted by Mr. Tite. Evidence in too many cases, of a system of treatment different to that in the pauper asylums, of which the accounts, on the contrary, are on the whole so favourable, is disclosed; and one of the Parliamentary committees obtained from Lord Shaftesbury his matured opinion regarding the influence of the love of gain as nearly always unfavourable to the patient, and regarding the public institutions which should exist and offer to the rich and the middle classes advantages now obtainable by paupers almost exclusively. The example which Lord Shaftesbury would follow would be that of Scotland, in which institutions called Chartered Asylums have existed for some years, and have been productive of the greatest benefit. Similar to them are the few "hospitals" in England. The condition of the insane generally, in Scotland, indeed, is very lamentable. Striking a line from Aberdeen to Glasgow, through Perth, there was in 1857, absolutely no provision in the northern and north-western counties, except a few cells in the basement of the infirmary at Inverness, and a pauper institution at Elgin for forty-six patients. We must, however, pause, without going into the particulars of the treatment in Scotland or Ireland, and without having exhausted the immediate subject, or the documentary matter relating to England and Wales. We have shown how inestimable is the work which has been done, and the concern which architects have in the measures still to be effected; and we must wait for another opportunity to complete our account of these means and agencies for the treatment of insanity, which are structural or architectural, and have been provided; or others, details, which experience may show should enter into the design of the asylum buildings, or the institutions yet required.

HUDDESFIELD.—The foundation-stone of a new mechanics' institution has been laid, by the Countess of Ripon, at Huddersfield.

THE CHAPTER-HOUSE, WESTMINSTER.

WITHIN the last few weeks, a large quantity of ancient records, which, during several centuries, have been gathered together in the venerable Chapter-house at Westminster, have been removed to the new Record-office in Fetter-lane, and the doors have been fastened up with massive iron bars and ponderous locks. During the time that this interesting portion of Westminster Abbey was occupied by the custodians of the records, and a few occasional visitors who might be seen poring over the dim manuscripts,—at that time, by making application, the curions were permitted to have access to this most unfit repository for ancient documents. Now, however, the place is deserted, and it is, notwithstanding its interest, sealed, like the office of the "Pix," against those interested in English antiquities. It appears that although the far-famed Doomsday-book of the Conqueror's time and other important matters have been removed, there still remain a number of records of no great value, for which, it is said, room cannot be conveniently found in the new house.

This will surprise many; for, although the intended wings have not yet been raised, there is a vast extent of building erected which must, with systematic management, afford room for an immense quantity of manuscripts. If, however, this space is not sufficient to enable those engaged to clear the chapel at the Tower, and the Chapter-house at Westminster, of their contents, it is clear that, considering the constant increase of the documents deposited in Fetter-lane, both the wings and body of the new Record-office will, in the course of a few years, be insufficient for their purpose: at any rate, exertions should be made to clear the Norman Chapel, and the Chapter-house at Westminster.

The chapter-houses of most of our cathedrals are master-pieces of skill, and that of Westminster is not an exception to this rule. Of the enriched entrance from the cloister, an engraving has been given in our pages. Matthew of Westminster, says that the Chapter-house was erected in the reign of Henry III. In the centre of the Chapter-house, a clustered pillar of beautiful proportions is still standing, and reaches to the temporary wooden roof.

In its original state the Chapter-house has been a spacious and lofty building on an octagonal plan, the roof vaulting from the centre pier, supported in the angles on massive piers. The interior is now fitted up with the most unpleasant-looking wooden presses. At a certain height there is a wooden flooring, on which more presses are placed.

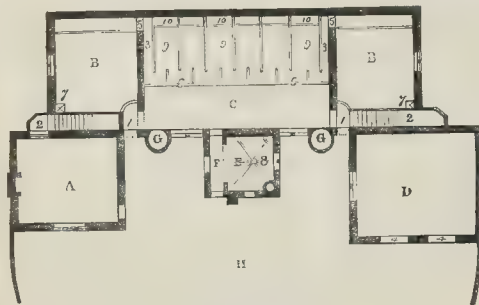
On looking through some spaces which have fortunately been left, it is seen that an arcade of pillars and interlaced arches passes round the Chapter-house. The wall has been elaborately painted and gilt. Here are representations of angels receiving the good and faithful into the celestial regions, and rewarding them with crowns. Some of the wings are partly expanded, and on the feathers are texts from Scripture, closely written. So far as can be seen these works of ancient art are in good preservation. On lifting up certain portions of the wooden boards which cover the original floor, it is seen that the old pavement is covered with heraldic and other tiles, of excellent pattern. In all the sides of the octagon, except where the Chapter-house abuts upon the south transept of the Abbey, there have been very large trefoil windows; but few traces of these are now left, and the once open spaces have been filled up with brickwork. On entering the building from the cloisters, a flight of steps leads up to the great arched entrance of the Chapter-house. This is of an exquisite form, and most elaborately decorated. This beautiful piece of architecture is, however, nearly blocked up by the wooden staircase leading to the floor and cases already mentioned.

Authorities considered to be good have attributed the damage done to this building to the troubled times of the Commonwealth. It however appears, that the greatest amount of harm was done about the year 1705, when the state and preservation of the public records became a greater object of attention than they had hitherto been. The House of Lords, in an address to Queen Anne, voted the 4th March, 1705, requested, among other things, that she would give directions to put the Chapter-house into complete repair. In consequence of this Sir Christopher Wren was requested to superintend the work. Sir Christopher Wren declined to put galleries round this interior; and it appears that the old ground floor was standing as lately as 1740. Thos. Ripley,

DESIGN FOR A STABLE.—MR. W. CROSLAND, ARCHITECT.



Elevation.



Ground plan.



Stall with false bottom

Will. Kent, and Will. Gill, surveyors, reported that the building was so ruinous that it would be better to remove it, and put up a new one. Another surveyor was added; and it appears that the groined roof was removed, and the present flat wooden one substituted for its graceful form. The repairs, which probably included the filling of the windows with brickwork and the erection of the battlements surrounding the top of the exterior, cost over 600*l*.

It is not very usual for the chapter-houses of the cathedrals and abbeys of England to be taken from the charge of the Church authorities. It appears, however, in this instance, that as early as the year 1377 the Chapter-house at Westminster was devoted to State purposes. In this year the Commons House of Parliament held its meeting here, and the Crown having undertaken the necessary repairs, it continued to be used for this purpose till the year 1547, when Edward VI. granted the Chapel of St. Stephen's for the meeting of the Commons. After this the building was used as a receptacle for the records. In Queen Elizabeth's reign the interior was fitted up for the reception of the records of the "four treasures of the Exchequer."

In the absence of a chapter-house in which the synods of the Church could meet, it appears that the ancient chapel of St. Catherine, which formerly stood on the east side of the little cloisters, was used for this purpose; and it is recorded that in this place, in an assembly of the churchmen, Henry III., laying his right hand upon the Holy Gospel, took a solemn oath to maintain the rights and privileges of the Church; and the archbishops and all the bishops who were present, holding lighted candles in their hands, anathematized and excommunicated every one who should dare to violate them: the candles were then extinguished and cast smoking on the ground, the archbishop using some terrible words against offenders. The convocations of the clergy and meetings of the chapter have of late years been held in the Jerusalem Chamber.

Dismantled and injured as the Chapter-house has been, there would be much which would have

a very high interest, and be also instructive if the wooden casing were removed; we should then see how desirable it would be to restore this important portion of Westminster Abbey. It has been estimated that the cost would not be far short of 10,000*l*. It seems that a great part of the damage was caused when the Chapter-house was in the charge of the Government: something should therefore be done by the public exchequer to repair the evil. Nothing, however, can be proposed until the place is cleared, and the public allowed to judge of the beauty of the general proportions of the old work which remains. The crypt immediately below the Chapter-house, a view of which we gave some time ago, has much to interest, and should be made accessible.

STABLES, AND HORSES.

EVERY architect engaged in the construction of stables, particularly if practically unacquainted with the arrangements which are essentially necessary to the comfort and well-being of horses, must have experienced the want of some guide to furnish him with the knowledge required. A book has been recently published, called "The Gentleman's Stable Manual,"* which, although mainly devoted to the management of the horse and cure of its diseases, contains, in the first thirty pages, much information of the kind in question. It treats, for example, upon the proper construction of the stable, such as its size, height, width, mode of lighting, width of stalls, width of doorways, kind of doors, and how to fix them; how the stalls of the stable should be set, and the slope which should be given them; how drained; the use of false bottoms to stalls; hay-racks; mangers, their form and size; width of gangway. It further contains observations on the ventilation of stables; corn-chambers; loose boxes, their size and modes of construction; saddle and harness rooms; coach-

house; boiler-house; porch; manure dépôts, and water-tanks.

The work also contains a ground-plan and elevation of a stable, by Mr. W. Crossland, architect, of Halifax, and this we are enabled to transfer to our pages. The description given of the plan will serve to lead us more into detail on two or three points treated of by Mr. Haycock. Following his suggestions, then, excepting where we express dissent, a stable, to be well placed, should be built upon rising ground; with the front to the south, and the inmates facing the north. If possible, have the heads of the horses due north. Have the windows a good size, both in width and height. Many, not aware of the great importance of light, and its influence upon the health of animals, have their stables nearly dark. This is a great mistake; for light is as essential to the continued health and vigour of animals as it is to vegetation. On this account a north aspect for the stable should be avoided if it be possible. The number of windows necessary will, of course, depend upon the size of the stable: as a general rule, however, there should be one good-sized window for every three stalls. Again, the stable should not be closely surrounded with large trees: they impede the light and the air, and in addition they afford shelter to flies and annoying insects, and also, by their foliage, they attract much moisture, which constantly tends to keep the building and the surrounding air damp and unhealthy.

As to the height and width of the stable within, 11 feet of height is quite sufficient. A greater height is objectionable on account of the chilliness it might occasion; while, if lower to any considerable extent, it would be dark, and perhaps might prove unhealthy. In width (or from front wall to back wall), it should not be less than 22 feet. Many speak of 18 feet as being sufficient, but experience shows that 18 feet is too narrow.

He would have the doorways 7 feet high, and about 4 feet 6 inches in width. The doors should either be made to slide, or—what perhaps is better—should be made in two halves, and the hinges fixed on the outside; that is, if it be not

* The Gentleman's Stable Manual; or, a Treatise on the Construction of the Stable; also, on the Feeding and Grooming of Horses; on the Hygienic Treatment of the Sick Horse, &c. By W. Haycock, M.R.C.V.S. London: Routledge, Warren, & Routledge. 1859.

within the control of the Metropolitan Building Act. The doors of all loose boxes should be suspended so as to open on the outside.

The door jambs should be rounded at the edges, to prevent a horse, when going into the stable, or when coming out, from injuring the hips, should he make a rush, or become alarmed during the act.

Stalls, where space of ground will allow, should be 6 feet in width; but certainly not less than 5 feet 8 or 9 inches. As to height, 7 feet 6 inches, at the highest part, is abundantly sufficient for the largest-sized horse, and about 6 feet at the lowest end.

A common practice, with many, is to have the stall-post to proceed from the ground up to the ceiling. This is objectionable on two grounds: it looks ugly; and a large-sized horse, placed in the stall, and made to turn quickly round, would be very liable to strike his head against it, and possibly damage an eye, or knock out a tooth.

The stall partitions should consist of boards 4 or 5 inches in width, and about 2½ inches thick. They should not be tongued and grooved, but simply fitted close and compact to one another. The length of the stall partitions, from the back of the manger to where the boards join the stall-post (that is to say, the length of the stalls from the hay-rack to the heel-post behind), should be 9 feet.

Our author inclines to the old arrangement of hay-rack and manger, with some alterations, and does not recommend a water-trough. On these points, in a letter to us commenting on one of his reviews, he says,—

"Water-troughs, filled with water close to horses' heads, are a great nuisance, and I never recommend them. Hay-seeds and straws of hay fall into them, and the horses are always slobbering in the water, and in a very short time the fluid becomes so disgusting that the horses will not look at it. It is a very nice thing in idea to always let your horse have water beside him, but I never knew any one who allowed such things to remain in his stable more than twelve months. Fault has been found with me by one reviewer for recommending the old style of rack and manger. He says that the low racks are better, and horses do not waste near so much hay as with the old racks. Now, I will tell you why I recommend the old form of hay-rack. I have had several cases where horses have been severely injured in consequence of their getting their fore feet fast in the low rack: in one case a horse, that cost the owner 100*l.*, was so lamed and the ligaments of the fetlock joint were so much torn and lacerated, that the animal was never worth 10*l.* afterwards. For these reasons (and I think they are good ones) I recommend the old form of hay-rack."

The author inclines to recommend the use of false bottoms in stalls, and gives very full particulars for their arrangement. The false bottom is constructed entirely of strong timber, of the form represented in the engraving. Its base consists of four pieces of strong timber, or sleepers; each piece at least four inches square, and about one foot longer than the length of the stall. The four pieces of timber are arranged as in the engraving, viz. one piece within, and on each side of the stall, close to its woodwork; and one piece on each side of the urine channel (that is, the channel passing down the middle of the stall). Running across these sleepers, or in the opposite direction, are boards of the same length as the stall is wide. These boards must be four inches in width, and not less than two inches in thickness. They are to be fixed firmly down to the sleepers by means of screws, and placed half an inch apart from one another.

We confess to no great predilection in favour of these false bottoms. They will of course require to be lifted from their position at least twice a week to prevent the accumulation of impurities, and the serious evils which would otherwise follow; and the difficulty of ensuring this is great. Moreover, the state of dampness which they maintain would seem to be undesirable.

Mr. Haycock wisely dwells at some length on the necessity for a regular and copious supply of pure air in stables, and recommends the following mode of ventilating amongst others:—

"Make an opening ten inches square through the wall in front of the heads of the inmates. Make it behind the woodwork dividing the hay racks from one another, or immediately behind where the divisions of the stalls commence. One opening in the position named, and of the size specified, will be sufficient to afford air for a single horse. To modify the current, and prevent the entrance of foreign bodies from without, place

an iron grate against the outside of the opening. Where it is impracticable to cut through in the manner directed, the difficulty may be obviated by carrying tubes made of iron or wood through the roof, taking care to cover the upper opening of the tube with perforated caps. A corresponding number of openings of the same size are next to be made through the wall behind the horses. These openings must be cut within a few inches of the ground, and protected by grates fixed on the outside, as directed above. Each opening must terminate in a square tube, placed within the stable. Each tube must be five feet high, having an upright position, and secured to the wall by means of holdfasts. They should be five or six inches square, having three sides of wood, the fourth being formed by the wall against which they are fixed. On the top of every tube, fix a thick plate of zinc, well perforated with small holes."

Mr. Haycock says there is no surer indication, in a general way, of a badly ventilated stable than the fact that in it "*scarlatina readily supervenes upon catarrh.*" He speaks of this, doubtless correctly, as a common occurrence; scarlatina following catarrh because of the want of sanitary arrangements in the stable! Some of our medical friends will try to make us believe that some other horse suffering with scarlatina must have communicated it. We should have been glad to find our author pronouncing positively against the use of living-rooms over the stables. Experience has shown us that it is most hurtful to the occupants. He contents himself with pointing out that care should be taken in such cases to provide an entrance to the rooms quite separate from the stable, and that the floor should be double. We have ourselves a very strong adverse opinion on the arrangement.

We must not now carry the subject further. Mr. Haycock lays down the proposition that horses, like human beings, have advanced in civilization; old diseases to which they were liable have disappeared, and new ones have come into existence. To meet this "advanced state of civilization," which, oddly as it may sound, is scarcely to be denied, changes are required in the modes pursued with horses, whether in the practice of the veterinary art or the housing and tending of them; and architects will do well to fit themselves to play their part in effecting the improvements wanted.

REFERENCES.

- H. Yard of stable.
- A. Saddle and harness room. This room has not a direct communication with any part of the stable.
- D. Coach-house.
- F. E. Porch of stable. F is the way leading out of the porch into the stable; E, the wash-house, provided with boiler, &c.
- C. Gangway of stable.
- B. B. Loose boxes, situate at each end of the stable. These boxes can be entered either within or from without the stable.
- G. G. Towers where hay is supposed to be let down from the chamber above. By a proper arrangement, these towers may be planned to act as ventilators to the stable.—See elevation.
1. Way out of the yard and stable into B. B. loose boxes.
2. Stairs leading to chambers above the stable. The stairs on the left side of the plan have no direct communication with the stable. The entrance to this flight of stairs is behind the harness room, A. The entrance to the stairs on the right side of plan is within the stable. These stairs are supposed to lead to the granary and hay-loft.
6. Drain of stable.
9. 9. Stalls of stable.
10. 10. Space between back wall of stable and hay-rack.
3. 3. Passages leading out of stable to behind loose boxes.
5. 5. Door ways leading to space behind loose boxes.

OPENING MEETING OF THE ARCHITECTURAL ASSOCIATION.

THE opening meeting of this Association for the new session was held on Friday evening, the 28th ult., at 9, Conduit-street. Mr. J. W. Penfold (vice-president) occupied the chair.

The names of the following new members were announced:—Mr. W. Powell, Mr. W. Oakley, Mr. G. S. Dawson, Mr. E. A. Sly, Mr. H. Todé, and Mr. Salway.

Mr. Herring (honorary secretary) read the report of the committee on the proceedings of the last session. It congratulated the members upon their removal to the new building in Conduit-street, and upon the general success which had attended their proceedings during the past year. Regard being had to the importance of encouraging the class of design, it was intended to award a premium for the best series of sketches produced by members of that class. It was further proposed to offer a prize for the best essay contributed during each session on a selected subject. The subject chosen for the present session was

"Street Architecture: its proper Treatment;" and it was hoped by these means to arouse a generous spirit of emulation, and at the same time to infuse additional vigour into their proceedings. The report concluded by stating that the committee looked forward with more than usual interest to the working of another session. The spread of architectural knowledge, and a marked improvement in the public taste, demanded, from a society like that of the Architectural Association, greater exertion and greater unity.

Mr. Billings, in moving the adoption of the report, said it indicated the steady progress of the Association. There were one or two principles which he considered of great interest in connection with this subject. One of these was the extension of architectural knowledge and ability among architects, for he felt assured that the time had arrived when they must take their stand upon that principle. They were gradually emerging from mechanical rules, and were becoming artists; and without art he trusted no architect would ever be able to get a living. He was glad to find the Association taking up the subject of prizes, for he believed that competition in that way would bring out much of the talent of the rising generation. A lad of fifteen knew more now than a man of five-and-twenty some years ago; and he had no hesitation in saying, that since the Mediaeval age no such rapid strides had been made in the knowledge of architecture as those which we beheld at present. He was glad to see so much attention being paid to street architecture, for our private buildings were rapidly becoming superior to our public ones. Our churches, for instance, unlike those of continental cities, were getting below the line of the houses; and our public buildings, which ought to form as it were the nose on the face of our streets, were falling away from the landscape, so that we should soon have no nose at all. It had been said that every building should denote by its appearance the purpose for which it was intended. This might be all very well as far as churches or theatres were concerned, but he thought the principle did not apply in the case of street architecture.

Mr. C. F. Hayward seconded the motion, and it was carried *nem. con.*

The Chairman then read an inaugural address, as follows:—

Once more, gentlemen, it devolves on me, as the organ of our committee, to offer our congratulations at the commencement of another session, and according to custom to occupy a few minutes in directing your attention to some of the topics which suggest themselves on these occasions.

The past must ever be the teacher of the present; and, with your permission, therefore, I propose just to give a parting glance at such few note-worthy occurrences as may have attracted our attention during the year, and which, to some extent, have been alluded to in the report you have just heard read.

In matters architectural we slowly but surely progress; and, year after year, we have to chronicle the completion of some works of importance. In the metropolis alone, among those of the year we may mention two or three theatres, of which the Adelphi deserves special notice; some public buildings, and many good specimens of street architecture in our insurance offices and mercantile establishments; several churches, among which we may point to St. Margaret's, as a splendid specimen of ecclesiastical decoration; and last, though by no means least, in the effect it is likely to have on our profession, the building in which we are now assembled, carried out under the superintendence of two of the oldest members of this Association.

In the country we may add to our list the new Museum at Oxford, and public buildings and churches in many of our principal towns, particularly noting the church at Doncaster, besides several large works carried on by Government, such as the hospital at Netley, and extensive barracks at Aldershot and other places; and while on the subject of Government works, I may pause for a moment to ask why it is considered requisite that so many of these matters should be carried out by engineer officers, and so few by architects, who are surely capable of doing as well, as has been often proved in competitions and on other occasions. In fact, we know that a great part of the real work is done by assistants and draughtsmen, who have for the most part been regularly educated in the profession; and it would certainly seem rather the province of a civil architect than of a military engineer to carry out such buildings as hospitals or barracks, where what I may call domestic con-

venience is of so much importance in connection with economy of construction.

Among the works which indirectly exercise a considerable influence on our profession, should be mentioned those that propose to afford a greater facility of access from one part of the metropolis to the other, such as the new streets in South-west and elsewhere, the new Westminster bridge, the Charing-cross, the Metropolitan, and the Victoria Station railways, as also the works in connection with the main drainage.

Competitions, too, have had their fair share in the events of the year. The Manchester Assize Courts, Spurgeon's Tabernacle, and other intended buildings have called for the display of considerable talent, while Englishmen have carried off prizes in competition for a theatre at Rio Janeiro.

The Foreign Office question still drags its slow length along. I took occasion to remark last year that the battle of the styles seemed likely to be prolonged and doubtful in its issue, and so it has proved. The last phase of the affair is reported to be that Mr. Scott, who has been appointed to carry out the work, is to erect an Italian building on his Gothic plan; and yet it is still doubtful if we shall ever see how successfully he can cope with this difficulty. In fact, the several abettors of the rival styles seem determined to fight it out to the death, and the admirers of English architecture claim for it such unlimited power of adaptability, to all places and all circumstances, that it may be, after all, that we shall get a Classic building with a Gothic interior. Much has been said about a certain deputa- tion which waited on the Premier to express their opinion on the style that should be adopted, the one side stigmatising it as an unprofessional and unfriendly proceeding, the other deprecating any inference of a personal nature, and protesting that everything was done in praise-worthy anxiety for the public benefit. It strikes me, however, that the object of the deputation, to be good for anything, ought to have been entirely of a personal character. Granting Classic to be the most appropriate for the purpose, as contended for by the deputation, surely the nation has a right to request that the work be carried out by the most skilful man in that particular branch, and not by one whose known predilections, and for the most part his practice lie in an entirely opposite direction. We all cheerfully subscribe to Mr. Scott's general capability, but the process seems somewhat analogous to that of a man going to an eminent homoeopathic physician and persisting on being treated for his disease allopathically. He may get cured, no doubt, and his friend, while protesting against his responsibility, may be glad to take his fee; but one would think it had been much more satisfactory to have applied at once to a physician who had made that course his particular study. And, therefore, while my own predilection is decidedly in favour of the Gothic view of the question, and I desire to give the deputation all the credit for not wishing to deprive Mr. Scott of the job—I think, they would have done the state more service, and acquired greater credit for themselves, if, in handing in a presentation copy of Weale's Rudimentary Treatise on Architecture, they had advanced their own opinions as to the particular style, and suggested that either by competition or some other mode the best man for the purpose should be selected and called in; at the same time expressing their conviction that if, Mr. Scott were retained, he should be allowed to carry out what he considered the best adapted for the requirements; so that, while the whole responsibility of any failure or dissatisfaction hereafter would rest with him alone, he might, if fairly entitled to it, secure for himself all the honour of a successful issue.

One occurrence has taken place since we last met, which has shed a gloom on most of our undertakings, more especially as regards the metropolis—I mean the unfortunate disagreement between the masters and men in the building trade. I scarcely think this the proper place for discussing the merits, or rather the demerits, of the strike and lock-out; as the question has in so many places been settled; but I should hardly be right in neglecting the opportunity for a passing allusion to a subject which, in its effects on labour and capital, and increased cost of building, is calculated so nearly to affect ourselves in a professional point of view.

We are none of us bricklayers or labourers, and many of us are annoyed by great measure our interests, as well as our feelings and prejudices, are enlisted on the side of capital; and it is therefore, perhaps, difficult for us to look on with an impartial eye:

still we cannot but think, when we hear so much, on the one side, of the rights of labour and the duty of capital, that great as are the responsibilities of capital and its liability to abuse, its privileges and rights must be somewhat in proportion, and that its possessors are perfectly justified in taking measures for its protection against the effects of tyranny and extortion, from whatever quarter they may come.

One of the early manifestoes issued by the Conference, alluding to the workmen, says,—"The disposal of their own industry is a sacred and indisputable right. This right they have exercised, and they have done no more. The men have said to their employers, 'We conscientiously consider our time and labour worth, 5s. 6d. per working day of nine hours: this we will leave you a fair profit, and we will not sell it to you at the rate of ten hours for 5s. 6d.' The masters having refused to purchase the men's time and labour at these terms, the latter have declined to sell any more of their labour and time at the rate of 5s. 6d. per ten hours" (this, by the way, seems virtually to abandon the nine-hours movement, and make the strike a mere question of wage); but the manifesto goes on—"The men have also, as they have a legal right to do, advised their fellow-workmen to take the same course; * * * for refusing to sell their labour for less than they believe it is worth, for exercising a right more sacred and indisputable in our country and in our time than in any other, they have been overwhelmed with abuse, and charged with conspiracy." "This," says Mr. Potter (by order of the Conference), "is the workmen's case, the simple and unvarnished truth." It may be so; but is it the whole truth, and nothing but the truth? It would not have been better for the workmen, and more candid to the public, if in manipulating their case the Conference had given a little nearer to the truth? Then perhaps would have appeared on the surface those finer lines and markings which are of no less importance in rightly estimating the value and beauty of the material, than those of a coarser nature, which first catch the unpractised eye in looking on at the unvarnished simplicity of its natural state. For, passing by the fallacious principle shadowed forth, that the wages of the workmen should be regulated by the profits of the capitalists, leaving the workman in many instances, I fear, but poorly off; let us consider for a moment the advice supposed to have been given, by those workmen who had struck, to their fellows, and assuming they believed the wages were too low and the hours too long, and were desirous also of taking the same course of ceasing to work for these wages,—what was the meaning of a notice issued to the effect that the workman of any firm striking without permission would not be entitled to the allowance? By order of the Conference, thus compelling men to work for wages they consider too low, and obliging them to contribute from their already inadequate source for the maintenance of those who might as well be at work as they. Again: as to the way it was attempted to attack the masters in detail, and thus compel them indirectly to contribute to their own discomfiture. However legal the right may be, surely it is neither sacred nor indisputable; it is certainly tyrannical and un-English; and we cannot wonder at the masters having combined in an attempt to strike at the root of the whole system. It would be well if the relations of masters and workmen could be clearly defined on a broad and liberal basis; but it is just these very so-called indisputable rights we hear so much about that are the real cause of the dispute. Suppose a doctor, in the exercise of his indisputable rights, refused to attend a patient without payment of a large fee, and the patient in the exercise of the same privilege refuse to employ him: the patient dies, the country perhaps suffers an irreparable loss, or a family is deprived of its chief mainstay. Surely some one must be to blame; but has not each had his right? May we not find a solution to the question in the fact, that each sacred and indisputable right is invariably accompanied by a corresponding duty, equally sacred and indisputable, from which it is inseparable, and without which it cannot exist at all. And is not this the case with the builders and their workmen, one which in its very nature and circumstances cannot be adjusted on the bare rights of the respective parties without some compromise or mutual confidence?

We all know how difficult it is clearly to mark out our line of duty and strictly to adhere to it, and the danger of being led away from the right, and the almost inevitable certainty of their being wrong on both sides. Each party has tried its

strength sufficiently to make it obvious that its rights cannot with impunity be encroached on; and I hope the time has now arrived when (by the withdrawal of the declaration on the part of the masters, and the expurgation by the societies of all those offensive and vicious by-laws which interfere with the workman in the free and unfettered disposal of his own industry) we may see operations resumed, and a healthier tone of feeling called into existence. There ought, doubtless, to be a greater reciprocity of confidence between masters and men; and I, for one, should consider it a calamity greatly to be deplored if either party were obliged to succumb to the superior obstinacy or power of endurance of the other.

And now, turning from matters of more public interest, I should like to say a word or two about ourselves. We have been congratulating each other and everybody else almost, I dare say, *ad nauseam*, on the prospect of our coming to this building, and on our having come at last, and having repeated the history of how we got here, so often, that I think it is unnecessary to say any more on the subject; and I will take it for granted we have done the best we could. But on the opening of this, the first session in the new building, it would seem proper for me to state what are my own impressions of the aim and object of our association, both for the sake of recalling them to the mind of our own members, and of giving some reason to those who have not yet joined us why we appear before the public at all.

It will, doubtless, be generally conceded that there should be some body—perhaps a corporate one—of an influential character, and composed of men of standing and experience, who could represent officially the profession at large, and who would be in a position to take such steps as might be thought desirable for the interests of the general body; and to my own mind "The Institute of British Architects" seems to be the only one in the position among ourselves capable of so acting; its efficiency and the value of its representative element might, no doubt, be considerably increased; but I wish to avoid any discussion on what goes forward in "another place;" and I only mention the subject in order to correct an impression which occasionally gets abroad, that the Architectural Association is a society of young men aspiring to guide the profession by a policy in direct antagonism to the Institute. Nothing can be more erroneous than the supposition. Those who are acquainted with us know that our intention and object are to afford certain facilities for study to the younger members, and to be the means of communication between the profession and all those interested in architecture and its kindred pursuits, and that our present constitution is based on the most free and liberal principles: we have no "bones," and no tickets of admission are required to our discussions, which are open to everybody; our members, who comprise several Fellows and Associates of the Institute, besides independent members of the profession, students and amateurs, have equal rights, and each one, without distinction, is allowed not only to take part in discussion at the ordinary meetings, to vote for officers and on the general business of the society, but also is eligible to become a member of the managing committee; and therefore any idea that we are in a position to set ourselves up to dictate to the profession at large is founded on fallacious premises. What we claim for our Association, and what, to a great extent we believe to have been carried out, is that, by its class of design, the papers which are read at the ordinary meetings, and by other means, it affords greater facilities for self-education and the acquisition of information to its members than are to be met with elsewhere; that it is the collector and exponent of the views and opinions principally of the younger members of the profession, and of those among the public who take an interest in the progress and welfare of our art; that the committee do their best in bringing into notice these opinions; and, as far as they can give them practical effect, some of our experiments have met with signal success, while other principles enunciated have, we must confess, signally failed in practice. Some may be because they were radically wrong in theory; others, perhaps, because the time has not yet arrived for them to be appreciated; but we are not discouraged in this. We look upon our failures as being almost as useful in their way as our successes. We have a continual accession of new and younger members, and we are sure that if there is anything good in our theories, they will soon be revived, and with improved applications of them will

ultimately be brought to bear for the general benefit.

The foundation of our association itself was the result of a series of experiments. Various forms of constitution were tried, until at length the one was decided on which has now for years in principle remained intact. We all of course need reform, and I hope that from time to time, as necessity or occasion require, modifications will be introduced to extend our usefulness as far as possible; but I do trust that our main distinguishing feature—that of treating all our members on an equality—will never be interfered with; for I believe that a society founded on similar principles to our own is a natural consequence of the present state of public opinion and education; and though, like all other societies, we have had our periodical depressions and elevations, I think I now see before us a useful future. And I would most strongly urge on our younger friends of the profession the advantage of such a society as we claim to be; for, besides affording them opportunities for study in our class of design, and the expression of their own opinions on all subjects, the more we increase our number of members the better shall we be able to express the views of the whole body, and the greater will be the chance of seeing them carried out in a practical manner. Thus, then, gentlemen, I have feebly endeavoured to touch upon two or three subjects which I think may be considered somewhat interesting, as well as important. Each of them fairly deserves a paper to itself; but I have chosen rather to treat of them in this way that we may have the opportunity of hearing the opinions and having the advice of those friends who are here to-night. I will, therefore, leave the subjects in your hands, feeling sure that we shall all work together cheerfully for the objects we have in view, looking back on what we have done but as an earnest of what we have to do, and remembering always that, if our progress is slow, it but marks the necessity of greater exertion on our part, without which no success toward the seeking was ever attained.

Mr. Edward Hall observed that street architecture, the New Foreign Office, and the strike, all of which had been referred to in the very excellent address of Mr. Penfold were in themselves sufficient for several nights' discussion. It seemed to him that the latter subject had been very much misunderstood by a portion of the press and the public. With regard to style as involved in the New Foreign Office, he was of opinion that the deputation to Lord Palmerston was a very proper proceeding, and he did not think it was to be considered either as a reflection upon any particular branch of the profession, or to have originated in any private feeling. He certainly would have been glad to have seen the parties at interests involved in the late premeditated design for the New Foreign Office represented on that occasion, but he was of opinion that the object of the deputation was a good one. He believed that other styles as well as Gothic might be made the expression of good art in architecture, but it seemed to him to be of importance that they should choose a style which would be the soonest appreciated by the public, and which should become the style of the day; for, without public appreciation, they could achieve no real success. It appeared to him that in the Foreign Office, the deputation was not called on to fall to be struck by the fact that our style, whatever it might be, was not Gothic. All who studied architecture in a catholic spirit, must feel that good art was capable of being expressed in the architecture of our ordinary streets. He would be sorry to be considered an opponent to Gothic architecture; for, whatever might be the style of the future, it would be largely indebted to the style of the past. The Association, who were at the opening session they were met to inaugurate, it afforded him great pleasure to witness its success. He considered that the profession was deeply indebted to it, and he hoped it would go on progressing in usefulness to its members, and in elevation of their art.

Mr. Kerr also expressed the gratification he felt at the progress which the Association had made, and at the favorable prospects before it. He did not wish to refer to the question of the deputation to Lord Palmerston of the subject of the new Foreign Office, and he should, therefore, dismiss the matter by saying that very few of the gentlemen present, whatever might be their impressions, were aware of the pressing circumstances under which the deputation went before the Prime Minister. Not that there was anything to conceal, but there were several other projects of the Association, which were not for the deputation to bring their minds to a certain course of action. There was a certain duty which they saw before them, and it was difficult for them to know how to perform it, and, therefore, their motives might have been misunderstood. With regard to the strike, he thought the more the architects kept out of that, the more metaphysical question the better. But with respect to the position of our prospects of the Association, they might all speak more freely. When he saw so large a number of young men assembled that night, it reminded him of the temple he had maintained in the other room, that the Architectural Association, which was established essentially an institution of young men. It had been established by young men, and, with a few exceptions, they had been its main stay. The education of young men for the position of an architect was the object of the Association, and was a very important one. It was necessary to convert the present desultory system of education into a scientific and systematic course of instruction. It was considered that this latter desideratum might be accomplished by a society of mutual instruction. The scheme was a sure indication of educational progress, and he regarded the prosperity of the Architectural Association

for so many years as a sign that architectural education required a guild of young men to help each other to mutual improvement. The reading of papers was a valuable means of imparting information, as it did the class of design was also an important aid in the process of self culture. He hoped that feature in the Association would be supported, for many of the sketches exhibited on the screen that evening, although not showy, were remarkably good and highly creditable to the class of students. He was glad to see that a prize was to be awarded for the best series of sketches, but he would be glad to know what it was to consist of, whether books, and, if so, to what amount. Mr. Penfold said that the prize was to be in books, but that the committee had not yet decided the amount.

Mr. Kerr, in continuation, observed that, in his opinion, the free hand drawing of sculptural subjects would materially contribute to the development of the student's power; and, as he would be glad to see a prize given for the best drawing of that description, he would be happy, either in conjunction with another or alone, to be at the expense of such prizes. Referring to the lecture of the present day, he thought it was a mistake to decry "the hasty style of the nineteenth century." To his thinking it presented a higher development of intellect than that which had ever been before, and he could not subscribe to the opinion that it was in the barbarous condition in which it was represented to be. On the contrary, he believed that the time would come when it would be recognized. With regard to the styles which students ought to follow, there were two which formed the divisions of the subject—the Picturesque and the Classical; the latter not precisely the Greek or the Roman, but that of which the Greek and the Roman formed the historical examples. For his part, he was free to admit that he was not a person of very picturesque mind. His sympathies were mostly with classical compositions, although he was not in-sensitive to the beauties of the picturesque. The style of architecture, he thought, was only in London, but all over the country, was marvellous, and he believed the time was not very far distant when that progress would be appreciated by the public. In his opinion, the progress of the art was great, and he would not pay attention to the canons of Ruskin or Denison, or the class of amateur writers upon art, but to go for their opinions to men who had passed their lives in the profession, whose eye was great, and who had attained a position which nothing but a profound knowledge of art and attachment to art could have given them.

Mr. Billings admitted that he was an admirer of the picturesque, and was glad to exhibit himself as such. He was prepared to vindicate picturesque architecture as that which was most suitable to the climate in which we lived. Classical buildings were, no doubt, appropriate in the countries in which they were first raised; in Italy and Greece, the air was warm and the atmosphere pure; but Classical buildings would not do in a climate where the alternations of heat and cold were so sudden as in our own. In warm climates, the roof was flat, but here, where the roofs must be constructed so as to throw off the snow, the same style of architecture could not be adopted. The Classical was the style for shade, therefore it was that the buildings were built in the vertical style. With regard to the strike which had been referred to in the address of Mr. Penfold, it appeared to him that between masters and men there was one universal law which never could be got rid of, and that was the question of supply and demand. For his part he could not understand what the men meant by striking; but he would say, "Let them strike if they like, but labour is free; but, in the end, the law of demand and supply will set matters right." On a late occasion he found his men striking the laurel tree in old oak in the morning, and when he asked what it was they were doing, they said they were "working." His reply was, "Then I will thank you not to worship at the expense of my employer." Depend on it that, when there was an excess of work, wages would rise of themselves, and that, when work was slack, wages would fall. He hoped, therefore, that the strike would be allowed to settle itself, for, as sure as the sun rose, when the demand came, wages would rise, and there would be no more strikes. Then, with regard to the Nine Hours movement, he confessed he could not see that the demand was based on any fair and intelligible principle. Everybody would be glad to work only nine hours if it could be; but how was it to be done? For his own part, he often found that he had his work to begin when other people had finished, but he could not help it. But, if nine hours were considered a reasonable time, where would the money stop? For the next application might be for eight hours, and then for seven hours, until at length people would be coming for wages without doing any work at all. With reference to the deputation to Lord Palmerston, he regarded it as all "hush," but he confessed he had learned with astonishment that Mr. Scott was making a design for a New Foreign Office in the Italian style, in opposition to the gentlemen who had competed for the prize and had won it. It showed that the age of patronage had not gone by, and he trusted, for the honour of the profession of which they were all members, that the report was untrue.

Mr. C. H. Smith observed that it might be useful in the civilisation of styles to ascertain what governed style in bygone time. The Greeks had marble quarries close to their ports, and the Romans had the quarries by which they could raise great blocks of stone—so also in Rome; and it was but reasonable to suppose that the facility for procuring and working the stone had an important bearing upon the style of architecture in these countries. But, in England and other countries in the north of Europe, the roads were in former times so bad, that it would have been impossible to carry any large blocks of stone to the stony quarries, which put the chances of the roads to be raised. Not a very long time ago, the roads between Portsmouth and Windsor were so bad, that the journey occupied two days; and it was upon record, that a prince of the blood who had been twice used in his life, and making his way along the high road, and that, his time had been for the road stones of the Hampshire peasantry, the probability is that the vehicle could not have got out at all. In stony quarries, the quarries had been evidently built of the materials found on the spot. Rickle Abbey, or Rickle Abbey, in Yorkshire, was a case in point, as the church was built so close to the quarry as that the stone was raised for the purpose of using it later. In other places where the facilities of getting stone were few, it was often the case to build in the manner in which every part of the building was based upon the process of building, until even the fine debris were broken up and ground into powder to make cement.

On thanks being voted to the President, he said the Association was much indebted to Mr. Kerr for his liberal proposal to assist in the foundation of a prize for the best drawing from sculptural subjects. As Mr. Kerr had stated that he would be glad to be associated with some member of the Association in this object, he (Mr. Penfold) would be very happy to join him.

MASTERS AND WORKMEN.

A PLAN to prevent antagonistic feeling between employers and employed, resulting in thatbane to all—strikes and lock-outs—is thus proposed by a correspondent under the signature of "Vincit Omnia Veritas." The plan, he says, has been tried and with considerable success.

In recognition of meritorious services, considered with reference either to conduct or skill in the employed, a boon is given of a premium above his wages, progressively increasing in amount for a specified period, afterwards continued at the maximum during continuance of service, the scale of premium being at the rate of one penny per week per month per pound of wages, as illustrated in the following example:—A, receiving 17. weekly wages, has placed to his credit at the end of the first four weeks, or lunar month, the sum of 4d.; at the end of the second month, 8d. (in addition); and so on to the thirtieth month, when the premium reaches its maximum. The employed paid in money only a moiety of the amount placed to his credit at the termination of each year, the weekly amounts being regularly paid over to responsible trusts, the other moiety being invested for the benefit of his family at his death, in a policy of insurance under special arrangements. For a service of less duration than a year, the whole amount of premium to credit is paid in money with a document of value to the employed. Facilities are likewise given for securing provision in case of sickness or casualty, and for rendering assistance to approved benefit societies which already exist, or may hereafter be established. Casual acts of misconduct receive salutory checks on the credited boon.

A union of interests is thus cemented between employer and employed, which acquires force with the progress of time: the master will find he is better served, and the working classes will be more contented, satisfied with their position, and by the reflection that with their industry and prudence there is reared up for their families a barrier to destitution and want, the spectre that now haunts the future of too many, whom neglect and improvidence consign to the lean charity of parochial aid.

The present strike, adds our correspondent, seeks to obtain eleven per cent. without any return to employers. The system carried out and publicly offered gives 12½ per cent. when it is merited, with some, if not a contra, equivalent to the employer. The dogma of paying all men alike is of course ignored. Let every encouragement be given to skill, perseverance, and attentiveness in all employed in every position in life; and on no account should more hours be paid for than worked: it is better to give a higher rate per day than to act falsely in paying for any one day of the week for less number of hours than another, and as it is desirable for work to cease earlier one day than another, let half a day only be worked on Saturday, say for the building trades from 6.0 to 11.30; for business of food, clothing, or other essentials or necessities of life, to close between two and eight o'clock; and all of those callings to have their relaxation on the Monday until ten, or from that to two. By this arrangement labour would be encouraged; the system will prove a national good, and may be applied throughout the Government, the army and navy, every office and works, making all to have an interest in the promotion of national and general well-being.

ALL SOULS' CHURCH, HALEY-HILL, HALIFAX.

IMPROVEMENTS IN THE TOWN.

ON Wednesday, the Church of All Souls, Haley-Hill, built and endowed by the munificence of Edward Akray, esq., merchant and worsted manufacturer, was consecrated. The foundation-stone was laid on April 25, 1856, and the edifice has been erected from the designs of Mr. G. G. Scott, and is one of his best works.

The putting in of the foundations was attended with great trouble and difficulty, in consequence of some old mines for conveying water being met with: these had to be carefully preserved, so as not to obstruct the course of the water, and the ground had consequently to be excavated round them to their full depth. The tower foundations

are very massive, being 13 feet wide at the base and carried up from a depth of 20 feet. They are wholly composed of large landings of rag, some of which weigh as much as seven tons. All the other foundations have, at the bottom, two courses of rag-landings. Minion or calcined clay was mixed with the lime and sand, as it was found to have the effect of quickly setting and hardening the mortar. Some idea of the extent may be obtained from the fact that there are 2050 cubic yards of foundations.

The period of the style selected by the Architect for All Souls' Church is that of the latter quarter of the 13th century.

The plan of the church is cruciform: it comprises nave with aisles terminated eastward by transepts, and chancel with chapels on the north and south sides. The tower and spire are at the north-west angle, and there is a vestry or sacristy at the north-east corner. The length of the nave is 87 feet 6 inches, the width 54 feet: the length of the transepts is 22 feet 6 inches, the width 18 feet 9 inches: the length of the chapels is 15 feet, the width 17 feet: the length of the chancel is 37 feet 6 inches, the width 24 feet 3 inches: the height from the floor of the nave to the ridge of the roof is 65 feet. The nave is divided from its aisles and from the transepts by a bold arcade of five bays on either side, supported by piers quadruple on plan, with moulded bases and carved capitals. The mouldings of the arches are very bold, and in the spandrels are medallions with sculpture.

Above the nave is a clerestory of fifteen lights, which has a continuous arcade internally, supported on shafts of Derbyshire marble. The division of each bay above the nave arcade is marked by a pier, with a group of shafts projected from the clerestory, the central ones of which, carried by carved stone corbels, support the principal trusses of the roof. The piers abutting against the tower and transepts being wider, two trusses are introduced, which are supported on shafts of Aberdeen granite, with carved capitals and continuous cornices. The arcing against the tower has openings into the inner ringing chamber.

The easternmost bays of the nave arcade open into the transepts which have no clerestory. Their arches, extending the whole width of the transepts, spring from a higher level, and are carried up to within a short distance of the stone cornice supporting the nave roof. These arches are carried by clustered shafts of polished granite supported by carved stone corbels.

The nave is separated from the chancel by a richly-sculptured plinth or low wall of alabaster, surmounted by a dwarf screen of ornamental iron-work.

The chancel is approached from the nave through a bold moulded archway springing from the same level as that of the transept arches, but extending higher. It is supported on a pier of clustered shafts, having richly-carved capitals and moulded bases. On the north side of the chancel arch is the pulpit. On the north and south sides of the chancel are chapels extending half its length, and opening into it through double archways, each supported by a circular granite pier. The capitals of these piers are richly-carved, and support arches contained under a comprising arch. In the spandrels are medallions containing sculpture. The double archways are filled with highly ornamental screens of wrought iron, surmounted by gas lights. The chapels have also each an arch opening westward into the transepts.

On each side of the Sacramentum is a rich wall arcade, supported on Italian marble shafts with highly enriched capitals which carry foliated arches. The spandrels of these arches are elaborately carved. Three of the panels on the south side are deeply recessed, and form the sedilia. A marble credence-table is built into the wall.

The church is entered from the west of the nave, through a deeply-recessed doorway, the tympanum being filled with sculpture. The westernmost bay of the south aisle is occupied by a noble porch, having internally an arcade of three arches, two of which are penetrated with narrow single-light trefoil-headed windows. It has deeply recessed and highly-enriched doorways, with carved capitals and mouldings. The porch has a continuous stone vault, supported on moulded ribs. On the north side of the church is a small priest's doorway, entering into the transept. All the doors are of solid oak, with ornamental iron-work.

The baptistery is formed under the tower: it opens into the nave and north aisle through two arches of massive character. That opening into the nave is a double arch, the outer arch being a

continuation of the nave arcade, the inner being formed in the tower wall proper. The baptistery is groined in stone, the groining being supported upon granite shafts, with carved capitals and moulded bases. The centre of the groining is perforated with a well, through which the bells are hoisted.

The height of the tower and spire, from the pavement line to the highest point, is 236 feet.

The tower is of four stages, and has octagonal pinnacles at its angles. It has a bold parapet with deep carved cornice and corbelling, which supports small foliated arches. Under these the bases of the pinnacles have detached shafts at the angles, with carved capitals and cornice. The belfry stage has double windows of two lights each, which will remain open. The belfry and ringing chamber are gained by a circular staircase, forming the thickness of the wall and buttresses at the north-east corner of the church.

The tower is surmounted by a spire, having three heights of windows or openings with gable heads: bold rolls run up the angles which are intersected by horizontal mouldings. These divide the spire into five stages, and have between them bands of sunk scalloped work.

From a carved finial, which finishes the top of the spire, rises the vane. It has a stem of wrought iron, with a copper cross and weather-cock, and measures 11 feet 6 inches to the platinum point on the cock's back. It is fastened by a coupling screw to a rod of iron 30 feet long, and 1½ inch in diameter, which is attached to a cross beam of oak, built into the spire. A lightning conductor, of patent copper coil, ½ inch in diameter, descends from the platinum point.

The church, as at present arranged, will accommodate about 800 persons. The seats are of wainscot: they are open, with moulded and carved ends. The fronts of the seats facing the chancel have elaborate carving of rich geometrical tracery. The chancel stalls and clergy seats are also very richly ornamented with carved decoration.

It may be interesting to add a general summary of the materials used in the construction of the sacred edifice. It required 400,000 feet of magnesian limestone for the dressings, quoins, &c. This stone has been brought a distance of upwards of fifty miles, by rail and horse conveyance, from Steely quarries, near Workop, in Nottinghamshire, the property of the Duke of Newcastle, and is the same limestone of which Doncaster church has been rebuilt. The quarry was one of the first and best that was opened for the new Houses of Parliament, and only abandoned on account of beds of stone being too thin for the Government purpose. 12,500 superficial feet of ashlar, 8 inches on the bed, have been required to face the internal walls of the church. This stone has been brought from the quarries of Kingby and its neighbourhood. 22,000 superficial feet of quarry-dressed wall-stones, from quarries in the neighbourhood of Halifax, have been used to face the work outside. In the intermediate spaces, between the quoins and dressings, 20,000 cubic yards of rubble walling, composed of rag backings and lime, have been used in filling up solid the body of the walls throughout; 6,000 cubic feet of local stone from the adjoining quarries, for general purposes; 270 tons of lime; 1,000 tons of sand; 11,000 yards of green slate from the Westmoreland quarries; 6,000 cubic feet of pitch pine; under 14,000 superficial feet of boarding; 700 cubic feet of English oak; 110 logs of Memel wainscot; 8 tons of wrought and cast iron; 15 cwt. of copper in dowels; 2,000 feet of glass; 20 tons of lead, &c.

The flooring is of Minton's tiles. The church is heated upon a plan suggested by Mr. Akroyd, and carried out under the superintendence of the clerk of works, from plans made by him. The pipes and boiler were laid down by Mr. Ebenezer Thornton, of Huddersfield. The boiler is a three-flue saddle boiler, patented by Mr. Thornton. There is no chimney, as the smoke from the boiler has been ingeniously led into the main flue of the works of James Akroyd and Son, which passes close to the church.

Between the chancel and the nave is a rich alabaster plinth, on which is erected a screen of hammered iron, designed after examples of early French metal-work. The gates are composed of rich scrolls of wrought iron, of the same conventional type as the screens, but, for convenience of passage, are worked flat. The screens dividing chancel from chancel aisles are elaborately wrought and banded to the marble shafts: from the centre of each are groups of gas-lights rising out of lobes of crystals.

The carved stone-work in the church is very elaborate. The whole has been carried out under

the superintendence of Mr. J. Birnie Philip, of London.

The chancel offers some very beautiful specimens of carving. Throughout the work foliated ornament of a natural character has been adhered to, and the maple, ivy, thorn, columbine, marsh-mallow, and other leaves peculiar to the climate, are severally represented.

The reredos is of alabaster, and is in two stages. The capitals to the piers are treated by an intermixture of the conventional and natural types; and all label terminations, both internally and externally, have alternately heads and foliage introduced, those of the nave arcing being figures of angels carrying scrolls.

Over the double arches opening from the choir into the north and south chapels are two groups of sculpture in medallions: in that on the south side is represented an angelic choir, with musical instruments; and in that on the north, angels singing. The space below is filled up with foliage. Between the nave arches are also medallions of sculpture.

The transepts have eight niches, and the east end four, filled with figures 5 feet high, of the Twelve Apostles.

The pulpit is of Caen stone, octagonal in form, and has one side elongated to the stone hand-rail of the staircase: it is supported upon an octagonal shaft of Devonshire marble, with base and carved capital of Caen stone. Small arches surround it with green and Italian marble shafts, and highly enriched spandrels of carved foliage.

The font is of serpentine marble, from the works of the Lizard Serpentine Marble Company: it stands upon a pedestal of polished Aberdeen granite in two tiers of steps.

Painted decorations have been carried out on an extensive scale, under the superintendence of Messrs. Clayton & Bell. The roofs throughout the church are richly decorated, and on the walls are several large compositions. The windows are filled with stained glass by the same artists, and by Messrs. Hardman & Co.; and the organ is from the manufactory of Messrs. Forster & Andrews, of Hull.

The total cost of this munificent offering on the part of a worsted manufacturer will probably be little short of 20,000*l*.

In addition to Mr. Akroyd's new church, many important works are now being proceeded with, or have recently been completed, in Halifax. Foremost among these may be mentioned two entirely new streets, taken through the heart of the old town. On the sites opened out by these have already been erected the new Mechanics' Hall, the Halifax Joint-Stock Bank, and the new Swan Hotel; also warehouse buildings, and a large number of other business premises, the whole of handsome design, in the Italian styles of architecture, and erected (with the exception of the Mechanics' Hall) at the sole cost of John Crossley, Esq. of Halifax; and all from the designs and under the supervision of Messrs. Lockwood and Mawson, architects, of Bradford. These streets take the form of the letter T. At the intersection of the two lines a handsome Town Hall is projected, from the designs of Sir Charles Barry; and on Monday last the corporation authorized the immediate commencement of this important undertaking.

Among recent works may be named the park at Halifax, laid out in excellent taste from the designs of Sir Joseph Paxton, and presented, with characteristic liberality, to the people of Halifax, by Frank Crossley, Esq. M.P.; also the new congregational church, one of the best buildings belonging to this body, completed about a year ago, in the Decorated style, from the designs of Mr. Joseph James, of London. The public baths are also recently completed, immediately adjoining the people's park, under the superintendence of the borough engineer, after plans had been obtained in public competition!

Among works of a more private nature, completed recently, may be enumerated the really handsome mansions erected by the three partners of the leading business firm in Halifax—Messrs. John Crossley & Sons, and which have been completed from the plans respectively of Mr. Smith (Parnell and Smith), of London; Messrs. Lockwood and Mawson; and of Sir Joseph Paxton and Mr. Stokes, of London.

Perhaps no town of its size has added to the number of its important buildings so rapidly as the good old town of Halifax; and when we add that the parish church is undergoing restoration, and that the railway station is creditable to the railway company and their engineer, it will be seen that a visit to this place will not be thrown away.



ALL SOULS' CHURCH, HALIFAX, YORKSHIRE.—MR. G. G. SCOTT, A.R.A. ARCHITECT.

GENERAL REVIEW OF ARCHITECTURAL MATTERS.

LIVERPOOL ARCHITECTURAL SOCIETY.

The following is the address delivered to the Liverpool Architectural and Archaeological Society, at the opening of their twelfth session, October 19th, by Mr. H. P. Horner, president, mentioned in our last.

The opening of another session of our society calls me, as the occupant for a time of this chair, to the pleasing duty of greeting you in a brief address on our resuming the occupations and discussions to which our evenings here are devoted.

Many of us, in the interval since our last meeting, have probably been led by travel or study into new paths of thought and interest, of architectural, antiquarian, or other special characters, and are thus fitted to add, by their communications, new vigour and life to our proceedings.

Some, perhaps, among our younger members, have in this interval emerged from the state of pupillage into the graver responsibilities of more advanced professional life, and feel it, I hope, incumbent on them to promote the more earnestly the growth of knowledge and the spread of interest in the engrossing, and, if worthily pursued, elevating occupation to which they have devoted themselves. Let us all in our various spheres resolve to render due help towards our common objects of association, and our twelfth session shall not fail at least to equal in the worth of its fruits any which have preceded it.

In taking leave of you in the spring, I ventured to express a hope that our combined cultivation of architectural knowledge might be resumed under better auspices for its prospects, as essentially an art of peace, than at that time existed or promised. We may rejoice that to a great extent this hope is realized, and that though political distractions still convulse those countries in which once the arts most eminently flourished, still the sword of European war is for the present sheathed, and our own country freed from all apparent hazard of being involved in those dire collisions among civilized nations which are as inimical to the progress of the arts as in their actual course at least, they are to the welfare and happiness of mankind. May this more happy state of things be prolonged and extended, and may the rest afforded from the late warlike aspect of our continent be wisely used by our own nation and others for the promotion of that science, and the cultivation of those arts which are the best handmaids of true religion, in the civilization and improvement of our race.

In looking at the points on which passing or recently past events bear with most interest on our special pursuits, none seems so prominent as that which has been called *The Battle of the Styles*. In the Cabinet, in Parliament, in the public prints, in the architectural profession, and among the general public the combat has been and still is waged; and the great field of contest is the space of ground between St. James's-park and Parliament-street, to be devoted to the purposes of new government offices. The arguments advanced are as numerous and varied as the antagonists; and while fitness, association, combination, grouping, progress in art, light, comfort, convenience, and economy are weapons of aggression or defence on either side, a large proportion of those engaged—and some, too, in very high places—express their opinions with not much more definiteness or precision than he who wrote,—

"I do not like thee, Doctor Fell—
The reason why I cannot tell,—
But this I know, and know full well,
I do not like thee, Doctor Fell."

In simple terms, an immense amount of prejudice has place in this contest on both sides of the question; and for entering with any strong feeling of interest into it there is one great difficulty in coming to an unbiased decision. It is very delicate ground for an architect to tread upon at present, and some may feel that those eminent members of the profession who combined in a strong expression of concurrence with the dictum of the prime minister were stepping farther than can be sympathized with by men who wish the matter decided upon its merits, and by the community rather than by the profession.

I think, myself, that the expression of an honest conviction in the manner in this case adopted is not open to serious objection, although in one light it may appear as a combination in the profession against one of its most distinguished members; still, as bearing on a question of really national moment, the private is lost sight of in the public bearing of the proceeding. None can

fail, I think, to feel with the enthusiastic, consistent, and laborious artist whose design is for the time the gage of battle, and whatever view may be taken of the steps by which, under change of Government, the commission came into his hands, all will likewise feel that all that talent and energy could accomplish would be devoted to render the work, in its special style, worthy of the country and of the occasion. Still the question is not one of persons or of feelings, but of art and utility; and, to arrive at any fair conclusion, an endeavour must be made to free the mind from all trammels of the influence of eminent names, or considerations of private interest, that the question may be fairly put—What style is artistically, practically, and nationally the most suitable for the intended building? Each of these heads will include many points for discussion, and if not wearisome to you I will touch on a few of them; and should you think it worth while, I hope no conventional courtesy may stand in the way of your departing from the commonly-observed rule of avoiding discussion upon your President's address.

Upon the question of artistic fitness—these bear the considerations of locality, as relates to the buildings with which a new one must be grouped; of site, as to the degree in which any style will be satisfactorily displayed; of association, as with ancient or modern institutions, secular or higher purposes, business or academic uses, openness or seclusion; and among many more, last, but not least, absolute relative beauty. As respects the question of locality, we may maintain, with Sheridan's critic, that there is much to be said on both sides. The Abbey, and the New Palace, the great architectural features of the neighbourhood, are in different phases of the style proposed by the selected architect. Whitehall, the Treasury Buildings, and other minor ones, are of the opposing horizontal character;—what shall be sought for contrast or uniformity? The former is most conducive to impressions of life and vigour, the latter of dignity. But liveliness may degenerate into levity, uniformity into monotony, dignity into pomposity.

The preponderance of the great existing features of the spot is certainly towards the pointed and vertical in style; and there being no building of the contrasted horizontal manner at all equal in note or distinction to those first named, it seems to me that artistic effect in this respect will be best attained by supplying this apparent deficiency, and placing in combined view with the Abbey and Palace towers, a stately and imposing pile of well-chosen and carefully-studied horizontal character. The front to the park will indeed be seen grouped only with buildings of the same lineal tendency; but the vastly superior scale of the proposed building to any which can there compete with it must, in my opinion, give it such pre-eminence that the question of style can be here but a minor consideration.

The question as to site is in part disposed of by what has been just said; but in some respects it separates itself from the more general one of locality, and particularly as relates to the flatness—or the contrary—of the ground to be built upon. Here the weight of argument seems in favour of a vertical style, as the site is practically a level one, and the ground in the neighbourhood rises in some directions above it. In such a position we know that a building of vertical character has the better effect, and where an abbey, as at Fountains or Kirkstall, rises with dignity and grandeur from its low secluded platform, an Italian palace or Grecian temple would appear sunk and lost. The distinct horizontal features of an Italian or Greek design, however, would preserve their vigour of effect on what must, on two sides at least, prove, in comparison with the height of the building, narrow streets; and the park front, before mentioned as that where vertical contrast might, but for the superior mass of the new building, seem most needful, having nearly a western aspect, there cannot, as regards effect of light and shade, be much advanced, I think, in preference for either style above the other. That the principal fronts can in either style be made effective within the range of view that they would command there can be no doubt; and in treating any style, one who is a master of it will see to it that his main features from a distance and his details on a near approach shall command each the measure of interest and prominence that they respectively claim as elements of effect. One reason that should be mentioned in fairness for preferring, artistically, vertical to horizontal styles in this country seems to me, that in our humid atmosphere and smoky towns the weather-stains combine with and assist the effect of the former,

while they jar with the latter and their sunny associations.

Upon the ground of mental association, men will advance opinions as opposite as are their social or political maxims and views. Some will look back with pride to our historical progress, and wish to associate the new structure with memories of our rise in the scale of nations—with the continental victories of the fourteenth century—with the academic foundations and palatial grandeur of the fifteenth and sixteenth, and feel little comparative pleasure in regarding us as the great commercial and colonising nation of the eighteenth and nineteenth centuries. Another, holding our modern advances in far more honour than our past history, would associate all with the present; and if a style could be originated embodying in itself the ideas conveyed by the words "ships, colonies, and commerce," that should be the one selected. This is ground on which personal habit, feeling, and opinion have far greater influence than any arguments derived from external facts, and it is hard to name anything which can be likely to move a mind whose preferences are so founded. What strikes myself on this topic is, that our present position, habits, and requirements are so much more nearly allied to those of the Italian republics in the days of their prosperity, than to those in which our abbies, colleges, and all but lost palaces were raised,—that some style assimilating to those which arose under the circumstances of these republics, seems to me far more appropriate for the actual abode of our executive government than any which derives its interest from associations with an age and with habits so remote from our own as those prevalent under our Edwards and Henries. That our seat of legislature should be allied in idea with that earlier age in which its germ first took root, is another question; and the parliamentary and executive functions are so distinct, that any argument applied to one by no means necessarily affects the other.

But in the case of the foreign-office, the design under discussion seems almost excluded from the ground of national association of any kind, belonging, as it certainly does, to the style of southern Europe rather than any other; nor can I think myself that anything is gained by this exotic choice. And this brings me to the final question in the artistic view of the matter, namely, the comparative merits in point of beauty of the two proposed styles.

It seems impossible, I confess, for the reason just given—I mean the peculiar phase of style selected—to put this question on the general merits of Gothic and Classical architecture; and should we even do so, the question, like that of association, will become all but endless as regards the varieties of opinion among those who might have to decide. I believe there is a much more general appeal to human sympathies, for some reason which I cannot define, in the vertical than the horizontal styles; but I confess that I think, in the choice in this instance made, the architect has fallen off from the character of style which would afford him the best ground of competition with the finest classical designs. The vices, as I must call them of the selected style, are not evaded or subdued to any great extent in the design as I have seen it engraved, but a bold desire evinced to put it in its essentials on its trial on English ground; and I think many supporters must have been lost through this selection.

Features there are in the design reminding us of the Mediæval buildings of western Europe; but, to my eye, the design comprises a good deal more of the Stones of Venice than I should wish, notwithstanding the security we have in the talent of the author, to see settled in the streets of London.

It is not my purpose to discourse at length on the practical questions connected with this subject. As to cost of execution, there is probably little choice to be made, and so John Bull may be satisfied on one material point with him. And the questions of light and access seem also well balanced; but, for practical business, it seems to me that, with modern habits to consult, the complete carrying out of such a style of building for such a purpose may be questionable. Simplicity is most consonant with the routine work of a public office, and simplicity in plan and general treatment is more allied to horizontal than vertical composition. I do not know how far this argument can be safely urged; but I believe many would feel a difficulty in pursuing the necessary duties of such an office in a building so remote in character from that of the prevalent style of our domestic buildings, especially in towns. The national part of the question is in great part con-

tained in the power of association, and, as I have said on that head, is, in my opinion, much weakened by the adoption of so decidedly foreign a phase of the pointed style. The Tudor is essentially English, so is the Lancet style in its peculiar development. The Geometrical is more general in its bearings, though in the form it took among us before merging in the curvilinear—as, for instance, in Tintern Abbey—I think it is also essentially English. All of these might have been considered in the claims of style for the building proposed, but all seem to have been discarded, and, unless something in the detailed treatment which does not appear in the general design, should have been intended to bring the work within the pale of English Gothic, there is but little which I think an Englishman, as such, would desire to have ever before him in a national edifice.

I have thus far ventured to enter into the critical question before us, because I think much suppression of free opinion and much prejudiced comment exist in connection with it. I would not, were it even possible, detract in the smallest degree from the high repute most worthily accorded to the author of the design; but the question is a national one, and as such free for discussion; and so much false criticism has gone forth upon it on both sides, that I desired to show, if I might, how it seemed to me it could be really fairly dealt with. My judgment may be greatly in error, but thus the matter presents itself to me.

Another question of the day, at once a national and architectural one, is that of the suspension of building operations in consequence of the metropolitan strike. Though this happily has not extended, so far as I know, to the provinces, it is a matter of national moment, involving as it does an important principle, and connected as it is with the works in hand by the great contractors of London. The evils attendant on it are beyond calculation; and I cannot myself but feel that they are the more to be regretted, as a spirit of conciliation on either side would appear all that is wanted to bring the matter to a close. The number of workmen out of work is diminishing, but the leaders and chief participants in the movement remain obstinate, and the masters seem little more inclined to be moderate in their requirements for a renewal of engagements. The workmen must ultimately be the sufferers. The contest of capital with labour tells against both, but always most against the workmen. Babbage, in his able work on the Economy of Manufactures, has some very apposite observations on combinations of men against masters, a few of which I should wish to quote to you; they are alike applicable to manufactures and to the building trade, though the illustrations with which he enforces them are drawn from the former. He shows that when, to guard against the effect of a possible strike, the masters establish a reserve fund—a reserve of material, or charge a percentage on contracts—the effect is equivalent to so much capital withdrawn from the employment of labour to the direct injury of the workman. Babbage, a very high authority on such a point, says (p. 292): “The effects arising from combinations amongst workmen are almost always injurious to the parties themselves. There are numerous instances in which the public suffer by increased price at the moment, but are ultimately gainers from the permanent reduction which results; whilst, on the other hand, the improvements which are often made in machinery in consequence of ‘a strike’ amongst the workmen, most frequently do injury, of greater or less duration, to that particular class which gave rise to them. As the injury to the men and to their families is almost always more serious than that which affects their employers, it is of the utmost importance to the comfort and happiness of the former class that they should themselves entertain sound views upon this question.” After giving some striking instances in support of this view, he says (p. 293): “Every circumstance which tends to limit the demand is injurious to the workmen; because the wider the demand the less it is exposed to fluctuation,”—and (p. 299) “that combinations are, while they last, productive of serious inconveniences to the workmen themselves, is admitted by all parties; and it is equally true that, in many cases, a successful result does not leave them in so good a condition as they were in before the strike. The little capital they possessed, which ought to have been hoarded with care for days of illness or distress, is exhausted.”—“With many workmen, unfortunately, during such periods, habits of idleness are formed which it is very difficult to eradicate; and in all those engaged in such transactions, the kinder feelings of the heart are

chilled, and passions are called into action which are permanently injurious to the happiness of the individual, and destructive of those sentiments of confidence which it is equally the interest of the master manufacturer and of his workman to maintain.

At the recent meeting of the National Association for the Advancement of Social Science, Lord Brougham made some observations on this subject well worthy of attention, and which fully support the opinion of ultimate injury to the workmen which I have just read. (The president then read from the *Builder*, No. 871, p. 674, an extract from Lord Brougham's address at Bradford, bearing on the question of strikes; but as we so recently published it, it is unnecessary to repeat it.) It is much to be hoped that this question will be seriously taken up by the Legislature, and some means adopted which, while securing to every workman a free market for his labour, will secure both workmen and masters from the injurious, and sometimes ruinous effects, of such combinations. There must be something wrong, and it does not at all consist in the evil influence of the mischievous promoters of such steps among the workmen themselves; the mutual confidence which once existed between the employer and the employed bids fair to be lost amongst us, and with it one of the greatest stimulants to honesty and perseverance—the prospect of permanent employment among workmen. The immediate claim in which the present strike originated—that of ten hours' wages for nine hours' work—I do not enter into. It is palpably false and absurd, and, as has been clearly shown, must, if successful, cause a rise of 10 per cent. in the cost of production and of the necessities of life.

Resuming more agreeable topics, I may notice the increasing number of buildings in our own town of an externally architectural character; some are the productions of long-established practitioners, but some, from time to time, appear from the designs of those but lately in our students' class. The town is greatly enriched in aspect by these accessions to its architectural embellishments, and it is only to be regretted that they should be so much confined for the most part to the great centre of business. The outskirts of the town, except by the occasional addition of a place of worship or a school, spread out in endless repetition of small houses, with numberless bow windows, each looking into its neighbour, and each adding its quota to the wearisome monotony of the general effect. As regards the business buildings just alluded to, it is to myself a cause of regret that the utilitarian spirit which pervades our community leaves so little scope for the development of architectural character internally in proportion to the external. Would it not be well for all who feel the really artistic character of our profession to aim as much as may be at conquering this, and even at some little sacrifice of outward adornment to endeavour to secure a greater measure of architectural consistency, and save these buildings from partaking, as without this they may seem to do, of the pretentious, self-obtruding, puffing character of the day? I know the difficulty in many cases, but it is worth trying for, as all will acknowledge the disagreeable impression caused by passing from an ornate, highly-finished outer face to a bald interior.

Another local question worthy consideration is, I think, that of improving the style of our ordinary fences to inclosures of ornamental ground. When not of iron (and then they are frequently of the most inartistic character), they are too frequently the merest paling, and in neighbourhoods too where finish might be reasonably looked for. One of the senior members of our society some time ago called attention to the variety and ingenuity of design in ordinary wooden fences displayed by the architects of Northern Europe. We might worthily emulate them in this, and save from monotony, and often from sheer ugliness, suburban roads, rendered in other respects agreeable by their shrubberies or ornamental woods. Another point in which utilitarian instincts seem in danger of invading our art is in respect of our roofs, many of which are treated as if the building, being brought up to the square, the form of its covering was a matter subject only to economical considerations. This is a great error surely, as the sky-line of a building is no mean element in its characteristic effect, nor need any material departures, according to my own experience, be made from the most economical form to ensure a due measure of this clemency of effect.

I address of course chiefly the younger members

of our profession, but feeling myself how much the consideration of simple relative cost influences design, I should wish for you as for myself that we should endeavour so consistently to distribute the funds at our command over all the parts of a building, that, without poverty of aspect anywhere, uniformity of treatment may secure architectural effect. One of the most striking buildings recently completed in this county and neighbourhood is the Roman Catholic church at Lancaster, by our member, Mr. Paley. He is to be congratulated, I think, on a very successful and original treatment of his subject, and on contributing, in the tower and spire especially, one of the happiest modern architectural features to the embellishment of our northern counties.

An important accession has been, in my opinion, gained to our architectural knowledge in the development by Mr. Lloyd of a consistent and very refined rule of proportion discovered in the structure of the Parthenon, and explained in a paper read by him before the Institute of British Architects. Most of my hearers will have read this paper, I doubt not, as published in our architectural periodicals, and I will not further dwell on it than to say that it seems to open the way to what has been long desired—a field for original treatment of Grecian architecture, where it can be fitly used, and a release from the monotony of constantly repeated imitations of the details of the Parthenon and Erechtheum, without much reference to their general proportions. I heartily commend the subject to the study of our younger and more leisurely members.

I have long thought that a large field lay open for the exercise of very original design in the use of the great Roman feature, the arch, in conjunction with graceful mouldings founded like the Greek on the conic sections. Italian combinations of feature would suggest themselves in such a mode of design, and I believe very happy effects might result.

An apparently exceedingly simple mode of obtaining any variety of these sections by means of light lately occurred to me, which I hope further to pursue, and this led me again to think of the subject I have named; and it is a matter of some surprise that so very few instances of such a combination of characteristics as I have hinted at should be found among the designs of English architects. Among the German artists they are not uncommon.

Not much of antiquarian interest in this country has been developed, so far as I can learn, during our recess. The Roman remains at Wroxeter still excite attention, but seem rather to disappoint the expectations at first entertained on their discovery. The Roman villa at Carisbrooke has been thoroughly opened, and it is proposed to roof it, a step indispensable to its preservation.

The care bestowed in this country on most of what we retain of antiquity forms a happy contrast to some others, where, as was some time ago mentioned, the finest Roman remains are ruthlessly destroyed for the mere value of the material. A work allied to some of those executed under Roman rule has just been inaugurated by her Majesty the Queen in Scotland—that for supplying the important city of Glasgow with water. The result seems highly creditable to the energy and skill of the projectors and their engineer.

With the rapid growth of population and spread of building in England, it behoves all who have influence or opportunity to exert themselves in the cause of antiquarian conservation; and I trust when, as it is to be hoped early, the spacious museum rapidly advancing to completion in our town is opened to the public, a good portion of room will be devoted to national and local antiquities.

In the kindred profession of engineering, our country has to lament the recent loss of two very distinguished men, and both bearing names honoured in a previous generation. It is difficult to over-estimate the deprivation to practical science of two such men as Stephenson and Brunel, and without instituting comparisons which, so soon after their departure from this life can scarcely be fitly made, we may say that, for boldly meeting and overcoming the great physical difficulties with which, in their high professional walk, it was their constant lot to combat, we must look far and wide before we can name any who have so greatly contributed to the arts of civilization, and the promotion of human intercourse and traffic.

In our own profession I am happy to believe that no eminent name has been lost to us since we last met here, and long may it remain so; but let us all remember that life is short, and that we each, in a professional as well as in a moral sense,

have our work to do; and let us endeavour that, in an honourable, humanizing, and useful pursuit, the members of the Liverpool Architectural and Archaeological Society shall not in future, more than in time past, be behind their fellows, or their association fall short of its original and declared aim.

ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

A SPECIAL general meeting of subscribers was held, on Wednesday last, at the rooms of the Institute of Architects, Conduit-street, to consider the recommendation of the committee, to close the operations and accounts of the Association, and to take such steps with reference to such recommendation as the meeting should deem expedient. The resolution referred to was passed on the 9th of August last, and was to the following effect:—

"That this committee, having well considered all the circumstances of the Association, namely the resignation of the honorary secretary, the delay which must necessarily take place in the distribution of the photographs chosen, the inaccuracies which will arise in carrying out the orders of the Association by some of the photographers, and the variety in the execution of the prints which render it impossible to furnish to subscribers the time and to which they may desire to have, though the committee have been well supported in their efforts by the influx of subscribers, are of opinion that it is expedient to close the operations and accounts of the Association."

Since this resolution was passed some regret has been expressed at the proposal to discontinue the operations of the Association, and several gentlemen have come forward and expressed their readiness to act in the management.

Mr. P'Anson having been called to the chair.

Mr. Lightly (the honorary secretary) read the minutes of the last meeting which were confirmed.

The Chairman said he thought it was a pity after the society had been organized with so much pains, and had attained a certain measure of success, that it should be suddenly dissolved. There might, no doubt, be some defects (inseparable from the formation of a young society), to amend, and some modifications to make, but he confessed he saw no good reason why the association, from which many of the members derived considerable advantage in their profession should be abruptly terminated. He did not apprehend there would be any difficulty in going on, as he was informed that some of the gentlemen who formerly acted as the committee, were willing to act again; and that Mr. Hesketh, their former honorary secretary, although no longer able to discharge the functions of secretary, was still willing to give his assistance on the committee.

In reply to an inquiry.

Mr. Lightly stated that, among the members of the committee who agreed in the resolution, were Messrs. Nelson, Cockerell, Wood, and Hesketh.

Mr. Edmeston expressed a hope that as some of those gentlemen who agreed in the recommendation for dissolving the association were present, he hoped they would state what were the nature of the difficulties which had induced them to arrive at that conclusion. It was true that Mr. Hesketh had announced, that in consequence of living out of town, it would be impossible for him to continue to discharge the duties of secretary; but as other members might not be unwilling to share the labours of the secretary's department, it did not appear that there were any such insurmountable difficulties in the way as to warrant the recommendation to stop the association altogether.

Mr. Nelson said that he was one of those who signed the recommendation, but that he had been more influenced by the opinion of others whom he believed more competent to judge than by his own.

Mr. F. P. Cockerell observed that he believed Mr. Hesketh had been mainly induced to give up the secretaryship from the circumstance that the Association had in fact outgrown its original design, and had become analogous to a trading concern; in fact, Mr. Hesketh had received abusive letters, such as might have been written to a tradesman, complaining of delay and disappointment in regard to the photographs, which it was impossible to send either precisely similar to those exhibited, or as quickly as might be desired. No gentleman would expose himself to be treated as if he were a dealer in photographs.

Mr. Edmeston said that the cases to which Mr. Cockerell referred could not have been very numerous. He had been informed that a thousand subscribers had expressed their satisfaction at the operations of the Association.

Mr. F. P. Cockerell.—Yes, but there were a great many grumblers who regarded the Society as a trading concern, which it is not.

A Subscriber inquired why a paid secretary should not be appointed.

Mr. Cockerell said he apprehended the funds of the Society would not admit of the expense.

Mr. Hesketh said he should have had no objection to act as honorary secretary if there had been any one to perform the more active and onerous duties of the office.

Mr. Lightly then read the balance-sheet of the Society, which showed liabilities (certain and contingent) of 128*l.* and assets to the amount of 80*l.* with property worth 300*l.*

Mr. Wichcord said, that while it was impossible to suppose that any honorary secretary would expose himself to the annoyances of which Mr. Hesketh complained, still that some means might be devised to prevent the Association falling to the ground. He agreed with the chairman in thinking that it would be a sad pity to lose the fruits of all their early efforts, and to be deprived of the means of obtaining those valuable photographs which could not be obtained without great cost by any other means. He begged to suggest whether four or five gentlemen might not be associated with the committee of the Association, with the view of ascertaining whether some scheme could not be adopted to carry on the society.

On the motion of Mr. Wichcord, seconded by Mr. Edmeston, the following resolution was unanimously agreed to:—

"That in the opinion of this meeting it is not desirable that the Architectural Photographic Association should be dissolved; that a committee of gentlemen be appointed by this meeting, to confer with the committee of the Association, with the view of proposing a scheme for continuing its labours."

The following gentlemen were then appointed the committee:—The Chairman, Mr. Lightly, Mr. James, Mr. Norton, Mr. George Morgan, and Mr. Edmeston.

A vote of thanks to Mr. P'Anson for presiding terminated the proceedings.

THE PROPOSED GARRISON HOSPITAL AT WOOLWICH.

In the *Builder* of 3rd of September it was mentioned that it is intended to erect a garrison hospital at Woolwich for 650 beds, and the opportunity was taken of suggesting that for such a work there is a much greater choice of sites than may, at first sight, be expected in a locality which has lately been so much encroached on by new buildings. Of the four sites suggested an opinion was offered that to three there could be no sanitary objections whatever. The objections that might be made to the fourth were careful to specify, because it seemed likely to be selected, for reasons that are not sanitary. In the very general remarks which, at that stage of the business, could alone be ventured on, those charged with the duty of selection were credited with that amount of common sense and discrimination that would enable them to avoid gross blunders, and the considerations discussed had reference to the simple and elementary points which all persons, not connected with the War Office, are agreed in thinking to be those which should guide in such a matter. It would seem that the writer was too sanguine in thinking that recent discussions have thrown any new light on the official mind.

In the military intelligence of the daily papers it has been lately announced that "it has been decided to erect the new garrison military hospital at Woolwich on a most eligible site near Dundas-terrace. The new hospital will be erected on Government land, now used by the gentlemen cadets for practical instruction in engineering and fortification."

Now the objection to this site can be stated in one sentence, and it is a final and insuperable objection. It is this: the ground specified is one abrupt side of a narrow valley which is quite closed at one extremity, and not quite open at the other. One would think that that is enough; that a piece of ground on which there cannot possibly be any circulation of air is not the spot on which to locate 650 sick men; but there is a fact of experience which may serve to illustrate the objection in a striking way. Some years ago, when the want of a certain class of private houses was first felt in the neighbourhood, a row of very convenient tenements was built on the spot; but, in spite of several advantages, they have never taken, and building speculation has deserted them for higher and airier districts. Some feeble attempts have been made to build again in the valley, but they have been very feeble, and it seems to have been finally abandoned to its natural stagnation and to

the very suitable purpose which the gentlemen cadets have been carrying out. The largest regimental hospital in the empire is now to be built on it.

One would like very much to know by what process, peculiar to officialism, such a blunder as this comes to be perpetrated. Still more interesting and very useful would it be, if by a survey of this and all similar blunders we could generalize the great law of official blundering. Meantime it is only necessary to remember the Netley Hospital history, to be able to guess pretty accurately what will be the history of this Woolwich one. In that case, with the exception of a protest made early, and with no uncertain sound, by the *Builder*, things had advanced so far before the error of situation was discovered, that the progress of the work could not but influence subsequent decision when it came to be considered whether or not Netley should be abandoned altogether. After a certain progress had been made, there was abundance of criticism, and the usual sequence of committees and commissions; but these, like everything else in that strange historical episode which people call the Crimean War, of which Netley was a closely connected part, were all "too late." The very same process seems likely to be repeated now, with this difference—and that will constitute the specially comical part of the business—that Mr. Sidney Herbert, who was the assailant in the case of Netley, must needs change sides in the present instance; and that, to do so, he will be under the necessity of performing the by no means agreeable operation of eating very many of his own words.

CWM.

THE BLACKBURN WORKHOUSE COMPETITION.

MR. JOHN WITHERS, C.E. and Mr. W. Stones, builder, having been instructed to examine the two plans which had been sent in for the new workhouse, recommended the adoption of the design marked "A Step in Advance," considering it much superior in its general arrangements, and in more strict conformity with the instructions, than the design marked "Progress with Economy." The estimated cost of the building, as given by "A Step in Advance," is said to be as follows:—Excavating and masons' work, 6,600*l.*; carpenters and joiners' work, 3,500*l.*; flagging and slaters' work, 750*l.*; plumbing and glaziers' work, 800*l.*; plastering, &c. 300*l.*; iron and smith work, 600*l.*; painting, &c. 135*l.*; total, 12,685*l.* The referees were, however, of opinion that it would require every care and economy to erect the design, with the conveniences provided, for the estimated sum of 12,685*l.* Mr. Stones and Mr. Withers minutely pointed out to the committee their reasons for adopting the design "A Step in Advance;" but Mr. Stones stated that his estimated cost of the erection from that design was at least 14,534*l.* while the cost of erecting it from that of "Progress with Economy," though estimated by Mr. Withers at 13,500*l.* he considered could not be less than 20,413*l.*

On Wednesday in last week, a meeting of the Building Committee was held, when the chairman read the bills of Messrs. Withers & Stones for examining the plans of the proposed new workhouse. Each account amounted to 52*l.* 10*s.* The committee sanctioned the payment of the same, subject to the approval of the general Board. The chairman then read a letter from the competitor, "Progress in Economy," in which the writer said, "We took every care in estimating the value of the several branches of the works, and we were, and are yet, quite satisfied that the building could be erected for the sum of 13,500*l.* . . . We should have considered it a gross breach of faith on our part had we furnished you with plans to cost 20,413*l.* We enclose a copy of our detailed estimate:—Mason and excavator, 6,720*l.*; carpenter and joiner, 4,010*l.*; flagger and slater, 1,100*l.*; plumber and glazier, 1,010*l.*; plasterer and painter, 560*l.*; ironwork, 100*l.*; total, 13,500*l.*" After a long discussion, says the *Preston Guardian*, in reporting the proceedings, and a minute examination of the two plans, it was resolved, "That the Board of Guardians be recommended to adopt the plan bearing the motto 'A Step in Advance,' as recommended by Messrs. Stones & Withers." The *Guardian* gives an abstract of the second (extended) report on the two plans submitted to Messrs. Withers & Stones, from which the following passage may be quoted:—"The design 'Step in Advance' is accompanied by a lengthy general description, specification, and drawings. In preparing the drawings, it has been sought to provide the accommodation for 700 paupers strictly in accordance with the stipulations enumerated in

your 'Instructions to Architects,' every one class named in the 'Instructions' has been provided with day-room and dormitory space sufficient for the precise number named, and no more. In providing light and ventilation for the main building we have considered the desirableness of direct light being provided to the central corridors. It is due to the *Builder* to acknowledge that our attention was specially directed to the matter by the remarks therein on the Blackburn Workhouse competition. We have ourselves noticed in some workhouses the improvement which would have been secured by a timely attention to the importance of direct light into corridors necessarily of great length. We hope our design secures this completely."

DRINKING-FOUNTAIN MOVEMENT.

Sheffield.—The design for the fountain about to be erected by Mr. Nadin, in Moorfields, has been adopted, and its erection will be immediately proceeded with. The designer and contractor is Mr. Edwin Smith, of Sheffield. The style will be Elizabethan, and height about 15 feet. Darley-dale stone will form the general structure, with a base of Greenmoor stone. The bowls will be of Sicilian marble, and the tablet of Aberdeen granite. It will cost about 50*l*. The open space formed by the junction of Gibraltar-street, Shales Moor, Allen-street, and Bowling Green-street, according to the local *Independent*, is the spot on which it will be erected.

Camden Town.—A fountain has been erected here at the joint expense of the inhabitants and of the Public Drinking Fountains Association. The site selected is the Camden Broadway, at the entrance of the road leading to the Camden-road-villas and the New Cattle Market. The fountain, which stands in the centre of the Broadway, is described as 16 feet in height, of monumental form, in the Norman style of architecture, composed chiefly of "Mansfield stone," the roof, or upper portion, in which the cistern is contained, being supported on four pillars of polished red granite. The drinking-fountain faces the main road on the south, and is approached by a series of steps, the water springing from a lion's mouth. The water passes through a grating immediately under the cup and through a tube supplying, on the northern side, a tank, to be appropriated for the use of dogs, sheep, &c. The design is by Messrs. Bell and Clayton, and the sculpture is by Mr. Farmer. This site is the first selected by the association out of the sixteen which have been appropriated to their use for the erection of drinking-fountains by the vestry of St. Pancras. The cost of the erection has been about 100*l*.

Inscriptions for Fountains.—A tract has been issued by the Rev. B. Richings, M.A. Vicar of Manchester, Warwickshire, in which the author offers various inscriptions, partly original and partly from scriptural and other sources. Some are in prose, and others in verse. In drawing the attention of those interested, however, to this tract, we cannot help saying that scriptural quotations in such a case ought to be very discreetly used. Allusions, for example, to the "living waters," cannot be conceived to apply to drinking-fountains, although the inspired writers reversed the figure of speech by describing the Saviour as a fountain of living waters. Some of the inscriptions which have been put up, with the best intentions, are little short of blasphemous puns.

WITHDRAWAL OF THE STRIKE AT MESSRS. TROLLOPE'S BY THE MASONS.

Str.—You will oblige the operative masons of London by giving insertion to the following resolution, as carried by the masons at a general meeting, held at Wilson's Assembly-rooms, Stangate, on Monday, October 21:—

"Resolved,—That this meeting deem it expedient, in the present state of the nine-hours movement, to abandon the strike at the Messrs. Trollope & Sons, upon the understanding that the Master Builders' Association unconditionally withdraw the 'document' from the whole of the building trades."

And also wish to correct a misrepresentation made by Mr. Potter, secretary to the Conference of the Operative Building Trades, at a meeting held at Shaftesbury Hall, Aldersgate-street, by the trades' delegates, on the 1st instant. That gentleman stated that the masons had renewed negotiations with the employers, which did not appear to be manly or honourable; that if the employers would withdraw the "declaration," they would withdraw from the strike at Messrs. Trollope's. We cannot see how the dishonourable

and unmanly proceeding can be imputed to us. We believe that the object of the nine-hours strike at Messrs. Trollope's is virtually lost at the present moment, and it would be the height of folly upon our part to contend longer with that employer. Let Mr. Potter and the Conference think what they may, we, as an organized body, and acknowledged as such by architects and builders, will not silently put up with the imputation of base conduct or unworthy motives from Mr. Potter.—By order of the committee,

WILLIAM PERHAM, Secretary.

November 2.

VENTILATION OF PUBLIC PLACES OF ASSEMBLY.

I WOULD call the attention of architects to one of the plans for ventilating mines, viz. by revolving fans to suck out the foul air, and suggest whether they could not be introduced into the space between the ceilings and the roofs of our places of worship and assembly. I believe that models of the various kinds of fans can be seen gratis at the Museum of Practical Geology, Jermyn-street, where the best could be selected, and any clockmaker could arrange a simple apparatus to keep it going for an hour or two at a time. The clockwork should be placed between the ceiling and the roof, and a circular tube be fixed above the ceiling, to contain the fan. The clockwork might be wound up from below like a Dutch clock, by pulling up the weight by a cord passing through the ceiling. I would suggest that where there are hollow iron pillars to support galleries, fresh air might be introduced through them, say at a height of 6 feet, in addition to flues in the walls and gratings in the aisles.

G. H. L.

* * Such an arrangement to produce a current has been patented more than once.

ASTLEY ABBOTTS CHURCH.

Sir,—I am sorry that my remarks on the letter of "Looker-on" should have given offence to any one; but they were not written hastily, nor without a knowledge of the present state of Astley Church, and an idea (such as may be gained from drawings and photographs) of its original appearance, or of the nature of any alteration or modification in the statement of facts then given.

It will be observed that, in quoting my words, Mr. Johnson omits the word "and" before "bell-turret," thus makes me describe the porch, as well as the bell-turret, to be at the west end. This, I need scarcely say, I did not intend to do.

I may add, that although informed that the credit of the admirable execution of the work was due to Mr. Johnson, I was certainly not aware that he combined the profession of an architect with the business of a builder, nor that he was in any way responsible for the design, which I supposed to be altogether the work of an amateur.

ARTHUR W. BLOMFIELD.

* * With this correspondence in our pages must end.

INTIMIDATION OF WORKMEN.

At Chichester, on Monday, William Perham, stated to be one of the trade delegates, and secretary to the masons' committee, appeared in answer to an adjourned summons, which charged him with having, on the 1st day of October, in the parish of Clerkenwell, unlawfully, by threats and intimidation, and by molesting and obstructing William Jocelyn and others, their being workmen hired as employed in their trade and business by Messrs. Piper and Son, endeavoured to force the said William Jocelyn and others to depart from their labour and employment, contrary to the statute, &c.

Mr. Rich and Mullens attended for the prosecution, and Mr. Roberts for the defence. Mr. Mullens said he appeared in support of the summons, which was withdrawn last week, and which was taken out under the provisions of the Act 6 George 4, cap. 139, sec. 8. The words of the section were as follows:—"And be it further enacted, that if any person shall, by violence to the person or property, or by threats and intimidation, or by molesting, or in any way obstruct, or hinder, or prevent, or endeavour to prevent, any journeyman, manufacturer, workman, or other person, not being hired or employed, from hiring himself, or from accepting work or employment from, any person or persons, or any person shall use or attempt to use any violence to the person or property of another," &c.

Charles Robt. In, 37, Luard street, Caledonian-road, said:—I am in the service of Messrs. Piper, of Bishopsgate-street. In the month of September last I went into Devonshire to engage men for my employer. I engaged Wm. Jocelyn and nearly twenty other men. There was a verbal contract between me and the other men. The contract was that I should give them six months' work at 5*s*. 6*d*. per day for the best men, and not less than 5*s*. for the others. They assented to that agreement, and came to London on the 1st of October. I arrived on that night about half-past nine at the Paddington station. I there saw a man whom I afterwards saw with the defendant at Little Britain. I saw that man speak to some of the men I brought up, and that man followed in a cab after us to Little Britain. I took these men into the Swan and Heron-shed, and gave them refreshment. I stayed with them until about eleven. When we were about to leave the defendant made his appearance. I know the defendant well, as he formerly worked for Messrs. Piper. When he came to the house another followed him. The defendant

came in at the front door, and said, "Those men are my men, and I shall take them away to the Sun." He put his hands across the door, and said he would take them to the Sun and provide beds for them, and sent them back to the country. The Sun, I understand, is a house where the masons' committee meet. I said, "These are not your men, but are employed to work for Messrs. Piper." He continued to stand in the doorway, and I said, "Do you intend to stand there against them?" He said, "No, you can pass, but the men I am going to take away."

I passed out. The defendant then put himself in a position before the door. I called to the men to come out, I being outside. Jocelyn said, being one of our party, "Let me come forward and I will soon push him on one side." The defendant then stood on one side, and all the men came out. There was a cab standing there, with the man whom I saw at Paddington. The men and I, when we got out, went along Duke street, and thence into Long lane. As we were going the defendant told the cabman to follow wherever we went, and the cabman did so, the defendant and the other man walking with my men. The defendant afterwards said, "He has come up to turn us out. You know me, my name is Perham. I have been out of work these eight weeks, and it these men go to work we shall call them 'blacks,' and when we go to work we shall strike against them." There were seventeen men in all whom I provided lodgings for, and they were to go to work on Monday, the 3rd. I went for them, and found only four, the rest being all gone.

Cross-examined.—I was sent by Devonshire by the Messrs. Piper. When I got there I called a meeting by placard. I held a meeting on the Friday, but the first meeting was on Tuesday. I was asked many questions, but if I had been asked if a document was signed, I should have said "No." I told them there was no strike. I did not tell them there was a document or no document.

William Jocelyn, a mason, of 8, James-street, Commercial-road, said:—Above the end of September I was engaged by the last witness to come up to town for six months certain, at 5*s*. 6*d*. per day. When we came to town we went to a public-house, about eleven o'clock, and then saw the defendant come in. When we were coming out he said, "All you men belong to me," and put his hands on each side of the door. When we came out we were followed by the defendant and a cab, and when we went into a beer-shop the defendant said, "All must come along with me. We should have plenty to eat and drink and money to go back, and if we went to work we should be termed 'blacks,' and when they had won the strike they would strike against us."

We said we had no document, and if we went to work we should be kept 200 men out of employ. I told him that every man might please himself. I should go to work for a rightly understood that I had to sign no document. Since then I have had a handwriting from Mr. Piper to show that I have not signed the document.

Cross-examined.—I was told that I was to sign no document, and the declaration has not been put to me, or to other men. I heard of the piece of paper. I do not know that there is such a declaration, and we are free to go and come when we please, and am quite sure of anything about the document, although I spoke about it at Plymouth.

Mr. Roberts, who attended for the defence, said, in the course of his address, it was a pity to count the laws that the defendant had broken. The defendant had neither been guilty of threats, molestation, intimidation, nor obstruction, and what he had done could not be considered by the Act of Parliament. Such conduct as that imputed to his client was such as should not be decided by magisterial jurisdiction, but should be entertained by an action at civil law. There were a score of men brought up by the house from Tavistock and Plymouth, fully cognizant of the odious document, which had been presented to their view in every new-paper, and on almost every vacant wall. They had asked Mr. Robt. In if there was any document to bind them, and were answered, "There is no document whatever." They were then brought to London. They were to go in under a paper or a document of some kind, and they were wished by the defendant and his counsel, that they must read that document which was about to be imposed upon them, and that in a manner which was unjust. To some extent this was, no doubt, successful. They did what every man might do, and they took the advantage of returning to their employment. There was no offence committed in this act of inducement, and there was no power given for a criminal judgment, or at all to bring it within magisterial jurisdiction. He would now allude to the circumstance of Mr. Robt. In's calling the attention of the first policeman he met, and saying he had been insulted, and wished to give the defendant in charge. The constable replied, unless he saw him insulted he could not receive such a charge. The reply was that he could not say he was insulted, but he was subject to great nuisance. There was no doubt it was a great nuisance, but that was no molestation or obstruction. The few words that had transpired were undoubtedly a nuisance under the circumstances.

The case was then adjourned. At the next hearing, Thomas Denner, mason, said Robt. In when at Tavistock stated there was no strike or document.

James Walker said the same thing. John Salter said,—"I was at the Sun, Mason-street, on the Sunday. I was engaged to wait upon the masons, in conjunction with the defendant. Mr. Piper was present, and we discussed the question of the 'document,' with a view to put an end to the strike. There were several loss of time and money wasted in this manner likely to lead to a happy termination. The deposition met the masters at the Freemasons' Tavern, and it was after the 1st of October. Mr. Piper, at these meetings, did not make any complaint of the defendant having suppressed his name. He said he would be proud for Perham and me to work for him again."

Mr. Corrie said,—"After a careful consideration of the evidence in this case, I cannot help expressing my regret at the great loss of time and money wasted in this unfortunate affair, and that the matter was not settled; but as the case is placed before me, so must I dispose of it. The first question, therefore, to which I shall refer is as to the use of the particular words said to be used by the defendants were so used when the men came up from Tavistock, and whether such words came within the construction of the Act of Parliament. As to the matter of fact of the words being used, one witness gave them: "If you go to work you will be called 'blacks,'"

and there will be a strike against you all over London." These may not be exactly the same words used, but the substance is the same. The question, therefore, is, Did these words pass?

The foreman says they did, and I see no reason why he, as a respectable man, should commit perjury. I must, therefore, conclude that the words were said. There was no anger, but a discussion took place, with the view to an amicable termination. This does not weigh much in my mind to my conclusion. It amounts to nothing, nor can I see why it is to be taken into consideration. The use of the great question now comes, did the defendant directly or indirectly intimidate by saying, if they went to work they would be called "blacks"? I am sorry to say that the answer must be in the affirmative. Now is this an offence under the Act of Parliament? I will make a general observation in connection with what was stated in the defence yesterday. Mr. Roberts stated that the Act was passed to protect a man against another. It was also passed to protect masters against the intimidation of the men: there is a case in point. In this case it is a public question, for the public undoubtedly suffer. As I sit in this court, I have seen that the public suffer, for I have been compelled to send a man to the House of Correction for not supporting his wife and family. That man could have gone to work if he pleased, but he feared, and the consequence was sent to gaol. In prison he had to be supported at the public expense, so that the public are deeply interested in the question. It is an offence against the majesty of the law. The words meant to threaten within the meaning of the Act of Parliament, which runs thus:—"And be it further enacted, that if any person shall, by violence to the person or property, or by threats and intimidation, or by molestation or in any way obstructing another, force or endeavour to force any journeyman, or other person, not being a master, to accept of any wages, hiring, employment, or work, or to return his work for the same shall be finished, or prevent or endeavour to prevent any journeyman, manufacturer, workman, or other person, not being a master, from accepting of any wages, or from accepting work or employment from any person or persons, or if any person shall use or employ violence to the person or property of another, every person so offending, whether or not he is a master, shall, being convicted thereof, shall and may be imprisoned and kept to hard labour for any term not exceeding three calendar months." This is the part. If you have engaged yourselves with the Messrs. Piper, we shall succeed eventually, and then you will be turned out, and you will not then be able to get work. I believe and am of opinion that upon the meaning of those words there can be no reasonable doubt that it amounts to an offence under the Act. It had been said that no threat or intimidation had been used, but the use of express words of intimidation was not necessary. Green, the delegate from London, had stated that the society had been at the defendant's house, and that if the prosecutors discharged a man because he was a member of their association, they could stop the supplies, and they would not have a single hand upon their works. That might be construed as a threat even by a man of strong nerve. This is a far more serious point than the use of personal violence, for personal violence, when opposed to a strong and vigorous man, might be equally met; but it would require a man with higher nerves to counteract such words when he found that they were calculated to take the bread out of his mouth, and deprive his family of support. This was an offence that came within the meaning of the Act of Parliament, and thus the most serious that could be held out. Having arrived at this conclusion, it now becomes my duty to consider the amount of punishment to be inflicted. Having regard to the appeal which Mr. Roberts made yesterday in his defence, that I should temper judgment with mercy, I shall not inflict upon the defendant the punishment and degradation of hard labour, for degradation it would be. It is my duty, however, to prevent such attempts at combination, and inflict a punishment adequate to meet so serious an offence; but in so doing, as I have said, I shall not have recourse to hard labour. The sentence of the Court will be, that the defendant be imprisoned for two months for the threats used by him.

Mr. Roberts said he should appeal at the ensuing quarter sessions.

Mr. Erie then ordered the defendant to enter into securities for his attendance at the sessions—viz. two sureties in the sum of 10*l.* each.

The necessary bail being put in, the defendant left the court with his friends.

PROCEEDINGS UNDER THE BUILDING ACT.

PUBLIC BUILDINGS.

At the Wandsworth Police Court, Mr. George Myers, builder, was summoned before Mr. Ingham by Mr. Alfred James Hiscocks, the district surveyor of Wandsworth and Putney, to show cause why he refused to pay the sum of 4*l.* 17*s.* 6*d.* the amount of fees due to him for the building of the Royal Patriotic Asylum on Wandsworth Common.

Mr. Myers did not attend, but the case was met by Mr. Rhode Hawkins, the architect of the Royal Commissioners of the Patriotic Fund, who stated that the contractor for the erection of the building was indemnified from the district surveyor's fees, and the question therefore rested between him (Mr. Hawkins) and the complainant.

Mr. Hiscocks said the issue between them was as to the meaning of the words "public buildings" in the Act.

Mr. Ingham inquired the nature of the Patriotic building.

Mr. Hiscocks said it was for the maintenance of soldiers' and sailors' children. He would also mention that the Act specified that no fee for one building should exceed 10*l.*

A plan was introduced, and Mr. Hiscocks said it would be for his worship to say whether an aggregate number of buildings were to be considered as one building.

He then referred to the hall, which was used as a chapel, and a dining-hall, which he charged as one building.

Mr. Ingham then asked if there was any internal communication.

Mr. Hiscocks replied in the affirmative.

Mr. Ingham said it clearly formed part of one building. He thought that if these buildings formed part of one grand design, they must be considered as one building.

Mr. Hiscocks said that opinion would refer to a building for the housekeeper's use. He had been led to suppose by Mr. Hawkins that it was a distinct building, and he had allowed a wooden staircase to be erected. It will were

to be considered one building then he should require a stone staircase according to the Act of Parliament.

Mr. Ingham was clearly of opinion that the housekeeper's apartments formed part of one building.

Mr. Hiscocks next referred to some attached buildings used as a larder, dairy, &c. which had no internal communications.

Mr. Hawkins contended that these buildings were the necessary adjuncts to the rest of the building, and said they could not be entered without first entering the gates.

The whole was surrounded by a wall.

Mr. Ingham said if these buildings formed one common design, they must be considered as one building. He then dismissed the summons, and said he was afraid Mr. Hawkins would have to substitute a stone staircase for the wooden construction.

Mr. Hawkins said that would be attended to.

Books Received.

A Manual of the Steam-engine and other prime Movers. By W. J. M. RANKINE, C.E. F.R.S. &c. London and Glasgow: Griffin & Co. 1859.

THIS is one of a series of similar works by a well-known author, now in course of issue by the publishers to the University of Glasgow, in which university Mr. Rankine is the regius professor of civil engineering and mechanics. The purpose of the present work, as indicated in its title, is to explain the scientific principles of the action of "prime movers," or machines for obtaining motive power, and to show how these principles are to be applied to practical questions. Prefixed is a brief historical sketch, relating chiefly to the steam-engine, the only prime mover whose history is known. The work will no doubt become a standard one, and it is well printed, in a clear type, upon good paper, and illustrated by numerous diagrams.

On the Arming of Levies, in the Hundred of Wirral, County of Chester; and the Introduction of Small Fire-arms, as Weapons of War, in place of Bows and Arrows. By JOSEPH MAYER, F.R.S. &c. Liverpool. 1859.

MR. MAYER's name is familiar to our archaeological readers, by most of whom he is, doubtless, held in pleasant remembrance. The present pamphlet appears to be based upon a paper read by Mr. Mayer to an Archaeological Society. The subject comprises an account of the arms used for defence by the inhabitants of Cheshire prior to and during the reign of Elizabeth, the details being drawn from documents in Mr. Mayer's own possession. At a time when "arms" are unfortunately not a mere subject of archaeological interest to the community at large, Mr. Mayer's able paper cannot but prove specially interesting to others besides our archaeological readers. It is illustrated by engravings of weapons, from the bow and cross-bow to the musket and rifle. Mr. Mayer has done good service in his time.

VARIORUM.

"Elements of Mensuration," by the Rev. John Hunter, M.A. formerly vice-principal of the National Society's Training College at Battersea (Longman and Co. publishers), is a little ninepenny volume, forming one of the excellent school series edited by the Rev. G. R. Gleig, M.A. chaplain-general to her Majesty's forces. It is characterized by a peculiarity of arrangement made for the purpose of promoting the intelligent and expeditious progress of the pupil towards deeper and ulterior studies of a kindred order.—No. 43 of "The Popular Lecturer," a twopenny publication, issued by Kent & Co. and E. Pitman, of Paternoster-row, and edited by Mr. H. Pitman, of the *Manchester Courier*, contains a reprint of the Prince Consort's address to the British Association at Aberdeen; a paper on clocks, &c. titled "What time is it?" by Mr. W. H. Bailey; and one on "Music for the People," by the Rev. Dr. Hook. This is a useful little serial, and a cheap one.

Miscellaneous.

SCHILLER FESTIVAL AT THE CRYSTAL PALACE.—On the 10th of November there will be a great gathering at the Crystal Palace, in celebration of the centenary of the poet, Friedrich Schiller. There will be grand orchestral and other musical arrangements on a scale suited to the vast dimensions of the Palace. A feature of the performance of November 10th will be the musical execution of the *Cantata*. But one of the principal attractions will be an entirely novel to most Englishmen, though one characteristic and popular with the Germans. This is a grand torchlight procession, along the upper terraces and in the garden, accompanied by a display of the fountains and the illumination of the Schiller statue on the upper terrace.

THE FRANKLIN RELICS AT THE UNITED SERVICE INSTITUTION, SCOTLAND YARD.—Tickets of admission to the public to view these interesting relics will be issued this week for Monday, Tuesday, and Saturday next week and the weeks following, in limited numbers, as the accommodation that can be furnished by the Institution is inadequate to meet a large number of visitors. The tickets are to be obtained from Stanford, Charing-cross; Graves, Pall-mall; Mitchell, Charing-cross; Parker, West Strand; Potter, Poultry; and Byfield, Charing-cross.

ACCIDENTS.—The chemical works just erected at Flint, by Messrs. Hunt & Co. Glasgow, have been completely destroyed. The high chimney was blown down, and the works entirely razed to the ground. The men threw themselves into the river, and saved their lives by floating on pieces of wood.—A large chimney in course of erection, for Messrs. John Davy & Son, at Mold-green, Huddersfield, fell last week. The chimney was 18 feet at the base, and was reared 41 yards, towards the S2 it was proposed to erect it. The fall is attributed to a slip of the inner portion of the work, which caused the exterior to bulge out. The damage is estimated at about 400*l.*

THE SUCCESSORS OF EMINENT MEN.—It is remarkable, in many instances, how soon the line of descent of men of great genius has been cut off. We have no male descendants of William Shakespeare, Milton, Sir Walter Scott, or Lord Byron. Sir Isaac Newton left no heir. The male branch of Sir Christopher Wren's family is extinct, and the female line nearly so. The races of Sir Joshua Reynolds, Dr. Johnson, Oliver Goldsmith, Telford, and Brindley, have ceased to exist; and a hundred other famous names might be mentioned to show to what a great extent this fact may be considered as a natural law. We had recently another illustration of this, when the grave closed upon the only son of George Stephenson without leaving any direct successor.

PLATE GLASS.—At the vaults now being made at Hackin's-hey, Dale-street, Liverpool, for Messrs. Robinson & Preston, there is one of the largest sheets of plate-glass ever used in Liverpool in the new front. The window is surmounted by a half-circular frame, and to accommodate this a separate plate has been used for the upper portion. The plate below measures 145½ inches by 82½ inches; that above, 125 inches by 42½ inches. The total superficies is 126 feet 8 inches, whilst the thickness is three-eighths of an inch. It was supplied by Messrs. Whithy and Williams, glass merchants. Two large plates of glass are also to be seen in the new front of the *Abbey* office, Castle-street; each window, of large size, being formed from one plate of glass. These plates are indicative of the enterprise thrown into the glass manufacture since the repeal of the duty on glass.

VIEW OF THE NEW MUSEUM, OXFORD.—Mr. J. H. Le Keux has just now completed a view of the exterior of the University Museum (J. H. Parker, Oxford), which is to form the heading of the Oxford Almanac for 1860. Our readers know the building pretty well. But this is certainly the most complete view of the exterior that has yet been engraved. The carving, not yet done, is introduced from the original designs, where it is intended to be put, especially round the lower windows of the west front, which gives both height and width to them. The flat faces of the entrance archway, and on the various stories of the centre tower or gateway are to be sculptured. At present the capitals, corbels, and drippings stand in block, for want of money. The view shows the laboratory and the detached residence of the keeper, Professor Phillips. A little more light would have improved the effect, but it is, nevertheless, a very interesting print.

DRAINAGE OF WINCHESTER AND SALISBURY.—Salisbury, says the *Wiltshire Independent*, is a place which the opponents of sanitary improvement exultingly point to, as having been ruined by being drained. That there were some mistakes made at Salisbury cannot be denied; they were forced into their works by the General Board of Health, in consequence of the high rate of mortality. The drainage works at Salisbury cost about 1*l.* per head on the population, and that is about the rate which every man at all competent to form an opinion has stated would be the cost in Winchester. We have reason, however, adds the *Independent*, to believe that if Winchester were put under the Local Government Act, and the drainage executed under the exclusive supervision of the town council, the whole might be done well for an annual rate of 10*d.* in the pound. At Salisbury the public health has been much improved, and the effects are most satisfactory in every point of view, so far as health is concerned.

VALUE OF BUILDING LAND IN LIVERPOOL.—Recently, some premises immediately opposite the Town-hall, in Liverpool, containing about 1,600 square yards, were sold by public auction on behalf of the corporation, for a term of seventy-five years. The reserve bid was 50,000*l.*; but it was run up to 60,150*l.* at which price Mr. Picton bought them. The buyer has made over the site to Mr. William Brown, late M.P. for South Lancashire, the donor of the Public Library building, and is preparing plans to cover it with commercial buildings. The site of Mr. Cockerell's building (the Liverpool and London Insurance), which is the counterpart of that now spoken of, on the opposite side of the Town-hall, cost 56*l.* 10*s.* per square yard. The present purchase cost 37*l.* 5*s.* the square yard; but there are difficulties in the site which did not exist in the other case.

BERNINI.—On the ancient bridge of St. Angelo, at Rome, there are several statues by Bernini and his pupils: that of the angel with the cross is said to be his own work. They were erected in 1688, under Pope Clement IX. Louis XIV. hearing of his fame invited Bernini to come to Paris, and paid him royal honours by sending the state carriages to the frontier of Italy to meet him and conduct him to the capital. This celebrated sculptor, who thus honoured France with his presence for eight months, received on his arrival a present of 50,000 crowns, with a salary of 2,000 crowns per annum, and 500 for his son. The equestrian statue of the king, at Versailles, is the work of his hands.

DEFENCES OF THE COUNTRY.—Sir: I wonder you do not devote more of your space to the defences of the country. Our fathers destroyed instead of keeping up our country's defences, because in those days the inhabitants were not sufficiently advanced in free and liberal principles to prevent the strongholds being abused either by the upper or the lower classes for keeping back freedom instead of protecting it from foreign invasion. We are now so far advanced and enlightened that we have not those fears, and being now internally so secure of freedom, let us immediately see to securing it from external attacks. The more freedom is attained, perfected, and enjoyed by us, the more we become the envy and hatred of other nations who are resisting freedom, and the more liable are we to differ with and to be attacked by them. How, then, can any lover of freedom wish to see us at present defencesless? I trust most will subscribe to this. He who, either from design or carelessness, throws uselessly temptations in the way of the weak and unwary, thereby drawing them into vice they would not and could not have committed without it, most assuredly largely shares the guilt of the fallen through such temptation.—CONSTANT READER.

TAR AND MARL AS DEODORIZERS.—A Mons. Burdel has sent in to the Academie des Sciences at Paris a communication on a deodorizing compound by MM. Corne and Demeaux. M. Dumas having in a previous sitting remarked that, if it be admitted that the emanations of tar ozonize the air, the compound in question owed its efficacy to its prompt combustion of miasmatic effluvia by means of the ozonized oxygen it contains. M. Burdel has endeavoured to test the truth of this remark by experiment. In the cleansing of a canal a quantity of very fetid mud was thrown out, in the presence of which Schenbein's ozonometer revealed no trace of ozone. M. Burdel had this mud mixed up with a compound of marl and tar, when the fetid odour immediately disappeared, and the ozonometer marked seven degrees after the lapse of twelve hours. M. Burdel intends to continue his experiments, with a view to apply this discovery to the deodorization of rivers and marshy districts.

TO WIND UP THE WESTMINSTER CLOCK BY THE MOTION OF THE TIDE.—I would suggest that the Westminster Palace clock might be wound up by the action of the tide, as follows:—A conveniently-sized float or vessel, weighted to sufficient power, might be placed in a reservoir or tank at the foot of the tower, communicating with the river by a pipe or conduit, causing the water in the tank and the float to rise or fall with the tide. By attaching a chain or rope from this float to a pulley properly fitted with a ratchet-wheel and spring fixed on the winding machinery (the pulley running loose upon the spindle), on the falling of the tide the float would sink with it, and cause the chain fixed to it to move the pulley and ratchet-wheel, thereby winding the clock with the descent of the tide. A counter-weight would be required on the opposite side of the pulley, to rewind the slack chain as the float rises with the tide. The machinery could be arranged to operate at every tide or at stated periods.—M. S.

A LAST CHANCE FOR "BIG BEN."—The *Journal du Loiret* announces that M. Chambon, a mechanic, residing at Montargis, has discovered a means of soldering cracked bells, and restoring their original clearness of sound.

HAMPSHIRE HISTORY.—With reference to a paragraph in this journal touching the want of an archaeological association for Hampshire, which has had an extended circulation, we are asked to mention that a general history of the county is in course of preparation by Mr. B. B. Woodward, B.A. and that the first part is on the eve of publication.

THE TEMPLE AND THE TEMPLE GARDENS.—The show of Chrysanthemums in the two Temple Gardens, as well as the Temple Church, are now open to the public (free) every day. There is an extraordinary collection of pompones in the garden of the Middle Temple.

WOOLWICH.—Tenders will be received during the present month for the erection of two new wings at the Royal Military Academy, for the accommodation of an additional number of gentlemen cadets, a sum of 35,000*l.* having been granted for that purpose. It has also been decided to erect at Woolwich a new General Military Hospital, on a site near Dundas-terrace, the Army Sanitary Commission being of opinion that the present Royal Ordnance Hospital is unfit for the purposes for which it is intended. An article on this subject will be found on another page.

THE BREAKWATER AND PIER-HEADS AT PORTLAND.—The damage caused by the heavy seas in the first of the recent storms on the great temporary timber support of the Portland breakwater will, it seems, entail a serious loss to the contractor, and will also, it is feared, suspend the quarrying operations in the convict quarries, where the material is obtained for the making of the breakwater. The greatest damage sustained is about 600 yards from the shore, in the vicinity of the first pier-head. At this point an immense gap of about 200 feet in length has been made in the support, the timber from which has been thrown on the beach in all directions. The granite pier-heads and sea-walls sustained no injury, although such was the force of the waves that the spray at times flew to an altitude of 150 feet above the masonry. In the vicinity of the second pier-head the damage sustained is very great. Much damage, it appears, has also been done to the breakwater at Holyhead.

THE ESSEX ARCHAEOLOGICAL SOCIETY.—The general meeting of this increasing society was held at Saffron Walden on the 20th ult. when there was a good muster of members and friends. The walls of the museum lecture-hall were hung with rubbings of brasses from Essex churches, &c. Lord Braybrooke, the President, occupied the chair. The report congratulated the members on the continued and increasing prosperity of the society. After the election of office-bearers, &c. Mr. Joshua Clarke read a paper on the name of the town of Saffron Walden, once celebrated for its manufacture of saffron; after which the Rev. T. S. Griffinhoofe read a paper by the Rev. J. H. Sperling, on the churches of north-west Essex. The rubbings on the walls of the Walden Museum were then described by Mr. Joseph Clarke, one of the trustees, who spoke of a curious circumstance relating to an inscription on a large stone on Tory Hill, or Sleigh Grain, i.e. "The Hill of the Sun," in Ireland, which for fifty years had puzzled the most eminent antiquaries, and gave rise to a very learned paper in the "Archæologia," as having some mystical meaning, and the stone being laid across two others, somewhat like a cromlech, the conclusion came to was that it was a dedication to the sun, when lately it was accidentally discovered by a celebrated archaeologist that the gentleman who copied the inscription originally had placed it upside down, and when reversed it read plainly the name of the individual in whose memory it was placed.—E. COND, 1731. Mr. Clarke also exhibited a plan of the maze as it existed on the common at Saffron Walden, Essex, in colours. The cursus, commonly called the maze, tradition says, was a small copy of a larger one that previously existed, although not more than 100 feet through one way and 130 the other, the continuous path through it in its windings amounts to about a mile in length; it has been recent about every twenty-five years, and now requires renovating. It is very similar to Robin Hood's race near Nottingham, though a better one. In 1699 the corporation books state that 15*s.* were paid for re-cutting the maze. The meeting afterwards adjourned to the castle, and to Audley House, where Lord Braybrooke entertained the visitors. A dinner in the evening, at the Rose and Crown, concluded the day's proceedings.

GLASGOW.—Sir Joseph Paxton, at the meeting of the Glasgow Town-council, recently, stated that, having come down to lay out and arrange the South-side Park, he had gone over the grounds, and had an idea in his mind, as yet only half developed, by which he would make this park one of the finest in Britain. A rate of assessment for parks and galleries of 2*d.* per pound on rental was fixed at same meeting.

HERTFORD ARCHÆOLOGICAL AND ARCHAEOLOGICAL SOCIETY.—A general meeting of this society was held at the Town-hall, Hertford, on Monday before last: Professor Donaldson, V.P. in the chair. There was a large attendance of the clergy, gentry, and inhabitants of the town and neighbourhood. The Chairman opened the meeting by a brief account of the proceedings of several English Archæological Societies since last meeting of the society. Mr. J. Evans, F.S.A. read a paper "On the Coins found upon and near the Site of Ancient Verulam;" and the Rev. J. L. Pettit, one "On the Architecture of the South of Europe," illustrated by the exhibition of numerous drawings of churches, temples, and edifices in Italy, Sicily, France, Spain, and Greece, which he had personally visited.

FIRE AT THE PALAIS DE LUXEMBOURG, PARIS.—On Thursday in last week, a fire took place in the Palace of the Senate (Palais de Luxembourg), Paris. The *Salle des Séances* was completely destroyed. Four persons were dangerously injured. The galleries, however, the museum, library, throne-room, archives, historical apartments, &c. were all saved. The damage is estimated from 400,000 francs to 500,000 francs. It is feared that the paintings of Abel de Pujol and Vauclenet must be entirely destroyed. The statues of Colbert, Malesherbes, D'Aguesseau, and Molé, are not injured. The gallery of paintings is not touched. The fire was first discovered by the sentinels stationed near the garden, who saw smoke and flames bursting out from the cupola which surmounts the hall. The fire rapidly extended to the woodwork which supported the cupola. Parts of the dome then began to fall, and in a short time the whole of the ceiling was borne down into the *salle* below. The large lustre, which is of immense weight, fell with a tremendous crash, and broke through the flooring of the hall was ornamented with paintings by Abel de Pujol. The entire hall is a mass of ruins. An investigation has been ordered to ascertain the exact cause of the conflagration.

PUBLIC SEATS.—Allow me a small space in your columns to recommend the placing of seats on the sides of the public footpaths in the outskirts of towns and villages, for the accommodation of invalids, aged and infirm people, and others taking their daily walks. Deal planks, the edges bound with iron hoops, fixed on stout oak posts, firmly fastened in the ground, would form substantial seats, inexpensive, yet calculated to last for many years; and in these times when fountains are erected for the refreshment of thirsty passengers and even dogs, and when the comfort and convenience of mankind appear to be considered more than formerly, I have reason to hope that this suggestion may be carried into effect.—Z.

STATUE FOR WREN.—Sir: It must be regretted by every good man who considers the subject, that London neglects to raise a suitable public monument to the memory of Sir Christopher Wren. Envious, evil, and penurious men stir over any suggestion of this kind by subtly stating that he has erected monuments enough for himself. Such assertions carry with them the idea that Wren was a proud and ostentatious man, and conspicuously placed his name on all his works. This is far from the truth. A monument, designed expressly to Wren's honour, and to the encouragement of after architects, ought to be immediately raised. The absence of it is a greater disgrace to the profession of architects than to others.

NORWICH.

TENDERS.

For additions at Oak-hill, East Barnet, for Mr. H. W. Mason; Mr. Henry Currey, architect:—

Nicholson	£1,140 0 0
Norris	1,397 0 0
Fish	1,395 0 0
Higgs	1,815 0 0
Downs	1,290 0 0
Colls & Co. (accepted)	1,290 0 0

For works at Nos. 2 and 3, Cheapside; Mr. James Coe, architect:—

Greenwood	£475 0 0
Ekster	330 0 0
Colls & Co.	380 0 0
Lefevre	367 0 0
Guyatt	349 0 0
Turner	247 0 0

The Builder.

VOL. XVII.—No. 875.

The Architectural Medals of Classic Antiquity.



PROFESSOR DONALDSON'S name is of itself an earnest of excellence for any work connected with the advancement of the art or science with which it may be associated. An intimate knowledge of the history of the great nations of antiquity, in all that relates to social and artistic position, a profound appreciation of the styles of classic architecture, the result of much travel and more study, a practical knowledge of construction, and a facility of description that has found an ample employment in a vast amount of writing upon scientific subjects, qualify him in an eminent degree for the performance of such a task as he has just achieved. Although the Professor modestly disclaims a pretension to profound acquaintance with the strict science of numismatics, yet such want, if indeed it exist, is amply redeemed by qualifications more

essential to the faithful discharge of his self-imposed duty; a capacity for research, and classical attainments.

The work just placed before the public,* if not suggested by it, yet responds to a suggestion issued by the Royal Institute of British Architects, in 1836, to travellers and correspondents, as to the sources of information existing in ancient coins and medals, for the restoration of such ancient buildings as may be represented upon their reverses. To convey, therefore, to his professional brethren "an impression of the rich treasury of reference which medals offer, and to explain some of the peculiarities relating to them which have been variously described by different writers, who, from want of the technical knowledge of the art, have misunderstood some of the features which the experience of the architect could alone rightly interpret," has been the aim of the author.

How valuable this species of record becomes, when the object it represents has dis-

appeared, we need not here insist. To the mere antiquary the greater the obliteration the greater may be the interest awakened by these valuable memorials; but to the architect their state of preservation is of essential importance, and the aphorism applicable to the tattered banner, "*Quanto è più lacera, tanto è più bella*," must be reversed. The science of numismatics, and the subject of coins, called in Greek, ἀγύριον, χρῆμα, and νόμισμα, and in Latin, *aes*, *pecunia*, *moneta*, *nummus*, and *numisma*, are a study of no small difficulty, and have exercised the abilities of many learned men. Gold, silver, and copper, either separately or in combination, have ever formed the leading metals in their composition, though iron, tin, and even lead, have been sometimes employed. The assertion of Erizzo that all the ancient coins which have come down to us are mere medals, and were never current money, is no longer entertained; but the question as to what class of medals, if any, was not included in the currency, and how it should be distinguished from the coins that were, is fully discussed by Eckhel, who has laid down certain criteria for the purpose. A continuous series, similar in weight, stamp, and workmanship; or a multitude of specimens of the same coins from different places; or when the stamp expresses weight or denomination;—these he considers to show real money. These tests are answered by the general series of copper, silver, and gold Roman and Greek coins. On the other hand he considers those to be medals, and not coins, which are of extraordinary size, such as the celebrated gold medals of Lysimachus, many of the Roman empire, and some silver ones, occurring only under the later emperors. The question of the copper or bronze medals is more difficult to decide by this test on account of the large size of the ancient copper money of Rome. It is, however, now generally admitted that medals were the current coin of the day, although some of them, as the medallions, for instance, may be assumed to have been struck on special occasions to record an event, for the purpose of distribution as a largess, or for private presentation.

The volume before us contains, for the first time, in a complete and regular series, a representation of the reverses of the most important of those medals and coins of ancient Greece and Rome that illustrate the architectural monuments of those countries and their dependencies; each being accompanied with a full critical description, and, when necessary, a long and learned dissertation upon points of doubt and difficulty. A mere medallic history of any particular country or dynasty being no part of his plan, the author does not even arrange them chronologically, but classifies them according to the uses and destination of the buildings and monuments represented. Thus he divides them into five distinct classes: comprising *Sacred*, including Temples, Altars, Tabernacles, *Edifices*, and Funereal Edifices, such as those connected with the apotheosis of the Roman emperors; *Monumental*, as Rostral or Sculptured Columns, Votive and Triumphal Arches, Trophies; *Of Public Utility*, as the Forum, Basilica, Macellum, Thermen,

Villa Publica, Bridges; *Of Public Games*, as the Theatres, Stadia, Circi, Amphitheatres; *City Gates*, Cities, Camps, Harbours, Ports, Pharos.

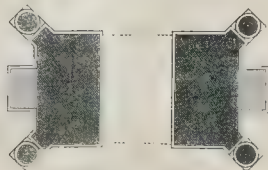
The next novelty in the work is that the drawings are not meant to illustrate any individual specimen as existing in any particular collection, but rather to convey the type of the series in question; the best preserved portions of many specimens, in many instances, having been accurately copied before a satisfactory representation of the relief in question could be elicited, owing to the imperfect condition of the coins available. To ensure accuracy, the author first drew these details to a greatly enlarged scale, so that no point might by possibility be overlooked, and the reduction of these, by photography, has preserved these minutiae of detail without departing from the accuracy of the original drawings.

The ancient artists were unable to execute their architectural dies with the minuteness of the modern, but their practice would appear to have arisen as much from a love of conventionality as from inability,—a desire to express the spirit rather than adhere to the letter. Objections have been raised to this substitution of conventionality for real resemblance as a diminution of their value as records; but these objections are combated by the author, who is convinced of the general fidelity of their representations. "I know no occasion," says he, "where the façade of a temple is given, in which a temple of a hexastyle portico is represented with a front of eight or ten columns, or, *vice versa*, an octastyle or tetrastyle by six; where the Corinthian is shown for the Greek Doric order, or the Ionic, or the reverse. In fact, I am led to believe that the ancients adhered with remarkable fidelity to the leading features of the original, and that we may rely, from well-known examples, upon the truthfulness of their authority."

One thing is certain: nicety of detail was in no case observed, and relative proportion not taken into account; on the other hand, identification was the principal object in view, and to ensure this, exaggeration of the salient parts of the representation was freely indulged in. Nor must we deny that this latitude of delineation was, in many cases, productive of imposing artistic effects, for any one contemplating the drawing (plate 3) of the Temple of Jupiter Capitolinus, at Rome, with its rich entablature, its lofty tympanum, filled with sculptured gods and goddesses, inclosed within an inclined cornice, bearing a continuous and rich scroll ornament, and surmounted by groups of warriors in the biga, and large eagles as acroteria, whilst between the columns of the portico are seen the imposing statue of Capitoline Jove himself in the central, and those of Juno and Minerva in the lateral cells; any one, we say, contemplating this drawing, cannot but admire the nobility of expression that characterizes it as contrasted with the cold, sculptureless, spiritless productions which the rules of modern adaptation and small means too often impose upon us. At the same time the defects of ancient art are patent to the world, and the attempts at perspective



Bas Relief in the British Museum, Twenty Collection.



The Arch of Nero.

* "Architectura Numismatica; or, Architectural Medals of Classic Antiquity. Illustrated and explained by comparison with the monuments and the descriptions of ancient authors. 100 Lithographs and Woodcuts." By T. L. Donaldson, Ph. D. Architect, &c. London: Day & Son, Gate-street, Lincoln's-inn-fields. 1859. The work is printed by Messrs. Cox & Wyman, and is a beautiful specimen of typography.

displayed upon some of those performances are not a little ludicrous. More puzzling still are such forms as are shown upon the medals to Astarte at Byblus, or to Cybele, or that to Astarte at Tripolis, wherein the only satisfactory explanation must be that three external sides of a quadrangular building are attempted to be shown in one perspective view! In some, a part of a building is given for a whole, as in the Macellum of Augustus, and in the Villa Publica; in others, as in that of the Samian Juno and Ephesian Diana, a small tetrastyle façade may possibly represent the baldachin or canopy inclosing the statue of the goddesses, but cannot possibly be mistaken for the temples of those deities, which were among the noblest and largest of those of Asia Minor. But the numismatist is nothing daunted by these or greater difficulties, and in the very conventionalities that perplex and mislead the uninitiated discovers the shortest and surest road to the unravelling the secrets of the past. One more objection to this system of wide conventionalism is urged in the fact of the same temple, on coins of different epochs, showing various treatment of details. "But this is no valid objection," says the author, "for it is well known that the buildings themselves from time to time were altered; that they received a variety of treatment when restored from fire, from the incidents of political tumults, or the decay of time; and that the temples of Capitoline Jove and Vesta, the Coliseum, the Basilica Emilia, and other monuments, differed in subsequent periods from the original more or less."

A chapter upon the various modes of representing architectural forms and details on antique coins, with a page of illustration of them, forms a useful introduction to the work. Great fidelity is claimed for the plates, but the only question is whether the contrast between the ground and the relief is not too strong, and whether a finely drawn and delicately shaded outline would not have better answered the purpose of representing those metallic sculptures. The process of Collas and of Bates has spoilt us for any other, albeit that process was not always felicitous in architectural subjects.

From the series of ninety-two medallions and coins dating from B.C. 140 to A.D. 312, contained in the handsome volume before us, we are enabled to form a parallel between ancient and modern art, as regards the pictorial as well as the architectural, and in both the love of symbolism, that was the ruling principle of the one, as contrasted with the desire for scenic effect which is the grand object of the other, is equally apparent. The Acropolis and Theatre of Bacchus at Athens, the Temple of Flavia Neapolis in Syria, and the Ports of Claudius and Trajan at Ostia, may typify the one, and the stirring scenes of the Napoleonic series and landscapes of a later production the other.

But to return to the main object of the work the explanation of the architectural subjects upon these medals by comparison with the monuments they represent—the descriptions appended to each subject will be found to comprise, in the aggregate, a fund of learning and research. The two specimens from Athens are ever of high interest, as the only medallion architectural records of that city, and the observations of modern travellers seem unanimous in identifying the cavern shown upon the face of the rock of the Acropolis with the Cave of Pan, described by Pausanias and immortalized by Euripides.

The first of the Roman series is the Temple of Jupiter Capitolinus upon the reverse of a coin of Vespasian. Of the form of this we have before spoken, but its site forms the subject, in conjunction with that of the Arx, of the well-known dispute between the Italian and German topographers upon the respective positions of those important localities; Niebuhr and his followers, Bunsen, Bekker, and Preller, holding that this temple was situated upon the south-west summit of the Capitoline Hill, whilst the Italian theory, propounded by Nardini in the last century, and supported by the late Canina and Nibbi, with the concurrence of certain distinguished German scholars, such as the late Braun and Götting, assigns to it the north-east summit. Arguments of this kind,

however, form no part of Professor Donaldson's work. The original temple founded by Tarquinius Priscus, and described by Plutarch, having been destroyed in the civil wars, it was rebuilt by Sulla, and consecrated by Catulus, after his death. This second edifice was destroyed in the Vitellian tumults, and the temple was once more rebuilt from its foundation by Vespasian, which last is the one represented on the coin, which is, of bronze, 1 $\frac{1}{2}$ inch in diameter* (M. 11), from the French cabinet. A discrepancy upon a coin mentioned by Eckhel, corroborated by a bas-relief on the walls of the staircase of the Palazzo dei Conservatori, is accounted for by the author, who conceives it refers to another temple of the same dedication.

The illustration of the Temple of Artemis (Diana), at Ephesus, is peculiarly interesting, as relating to one of the most renowned buildings of antiquity; and being, moreover, the only authority left to set at rest the conflicting descriptions of Pliny and Vitruvius. It is from a medal of M. A. Gordianus, one of a series of the same type with some slight modifications, containing on the reverse the legend, ΕΡΕΚΤΩΝ ΤΗ ΝΕΩΚΟΡΩΝ, and displays a handsome octastyle Ionic portico; within the centre intercolumniation of which (as usual in these medals widened for the purpose) is seen the goddess, with all the characteristics of the Ephesian variety of the deity. The discrepancies in the accounts of Pliny and Vitruvius relating to this temple, afford the author an opportunity to display his thorough knowledge of his authorities, which he has not neglected to avail himself of, and also his own excellent judgment, which is as follows:—"In such conflicting circumstances one naturally recurs to an impartial witness; and what can be a more trustworthy one than the present medal, which is octastyle, and thus confirms the judgment of Vitruvius; and there is no other medal of the Ephesian Artemiseion extant." A list of the architectural medals of Ephesus, enumerated by Mr. Akerman before the Numismatic Society in 1841, and of some of those which represent the small temples of Diana in Rome or Italy, concludes this excellent summary.

A selection from the medals of Emesa, Byblus, Tripolis, and other towns on the Syrian coast, elicit some highly interesting remarks from Professor Donaldson on the prevailing custom of numismatists, of calling all columnar edifices on the reverses of medals, indiscriminately, temples. "But I am led to believe," says he, "that these columnar representations may be divided into two classes: the temples, and the tabernacles of temples. The first display the elevation of the temple with its portico, and occasionally various accompaniments, as sculptures and surrounding porticoes and courts. The second class being intended to represent rather the divinity than the building, have a delineation of the god, and the tabernacle, canopy, or baldachino, under which the statue stood; thus displaying a part of the temple for the whole." He then instances the portable temple of the Jews in their wanderings, the sanctuary of the Holy of Holies, and that of the Egyptians, where the idol or animal-god was kept. An additional argument is found in the Roman habit of giving a richer decoration to the end of the temple behind the statue, as in those of Venus at Rome, and Baalbec and Palmyra, and a still more apposite one in the form of the Roman Catholic ciborium, a tradition of old Rome, of which two special instances may be cited in the magnificent one of Sta. Sophia at Constantinople, destroyed, and that of St. Peter's at Rome, existing. "In studying the representations of columnar edifices on coins, they seem to indicate that some of them were actually meant for temples; and others, the canopy, ciborium, or baldachino, which was intended to add to the importance and dignity of the god." In the temple of Jupiter at Emisa (plate 19) not only the front of the edifice, but also the canopy in question over the statue of the god, is shown. The wood-cut on the previous page from a bas-relief in the

* This alludes throughout to the scale laid down by Mommsen.

Townley Collection in the British Museum, evidently represents a composition of the kind. It is the group of Bacchus and Silenus, under a canopy, which, by the position of the angular pilasters, evidently stands clear of the surrounding building, and thus justifies the supposition that such medals as those of Astarte at Byblus, Cybele, Juno of Samos, Mercury, and Diana (plates 20, 21, 22, 24, 25), and all of the class, indicate the shrines or adicules in the temples, but not the temples themselves.

The tabernacles of Astarte at Byblus, and of Cybele, both present that remarkable configuration upon the medals to which we before alluded, and which can only be explained by the notion that three sides are intended to be represented at once. The first of these clearly expresses the arched end of the tabernacle, of two columns, and the two sides or flanks of three each. The latter is far more obscurely drawn, but seems intended to show the two ends and flank. The author has composed a probable plan of each; that of the latter is shown on the previous page. Beneath this canopy Cybele sits; a lion on each side of her. Attys, with the Phrygian cap, stands outside, clothed with chlamys, holding with his right hand a pastoral stick, and in the other a Pan's pipe. This explanation by the author of what has been hitherto a mystery, is a step in the science of numismatics.

The medals of Perinthus, Smyrna, Pergamus, Ephesus, and Cyzicus, being of the class called Neokor, furnish the Professor with the material for another learned chapter upon a subject which had been but partially investigated, until taken up by Krause in his treatise, entitled "NEOKOPON, Civitates Neocorae sive Aedituæ." This word occurs on many hundred medals, and in a few inscriptions, and literally means, as its derivation (Νεὸς templum, κοπιῶ purgo) implies, a temple cleaner or sweeper. "But, architecturally considered, Neokopon embraces a large topic of deep interest, ultimately carrying with it the erection or endowment of a city, by a community, or by a union of states. This honorific title of superintendence and guardianship of the sacred fane and its treasures, as also of the rites, ceremonies, festivals, games, college of priests (flamines), and communities connected therewith, was accompanied by great power, dignity, and honour." Space will not permit us to enter further into this most interesting subject; but the perusal of the lucid account of the author will show how the system of consecration of each emperor after his decease (a custom which obtained especially amongst the towns of Asia Minor) gradually assumed that form, in which we find certain favoured cities endowed with such privileges as entitled them to the honourable distinction of NEOKOPON. In brief, however, the term signifies "the temple and divine worship paid to a Roman emperor, and the attendant festivals connected with that privilege, the care and celebration of which were conferred as a special grace and favour on certain cities, communities, or provinces; or that the place on whose coin it occurs, had been invested with the privilege of erecting a temple, &c. and providing the fitting priests, games, &c. in honour of the Roman emperor, whose name and titles appear on the obverse."

The subject of Triumphal Arches is represented by those of Postumus, Claudius, Nero, Domitian, Trajan, and Augustus, and is preceded by an introductory chapter of great merit. From Romulus to Vespasian there were no less than 130 triumphs, although not decreed unless at least 5,000 of the enemy were slain, to be verified on oath by the general. The triumphs were of two kinds: in the principal one the general passed in procession in a chariot through the city; in the secondary one he passed through the city in procession either on foot or on horseback, or with his troops proceeded to the Temple of Jupiter Latiaris, on the Alban Mount. The chariot was round, in the form of a castle, and in the earlier periods drawn by white horses. Pompey or Camillus was the first to substitute elephants; Heliogabalus introduced tigers and lions, to imitate the triumphs of Bacchus and Mars; and Aurelian was drawn by stags.

Triumphal arches are supposed to be of Ro-

man origin, as we have no instance of such in Greece before the Roman dominion. Fabrizzi, in his "Roma," enlarges upon the subject, and considers that probably the arch of Romulus was of brick. Even now some are of stone, as that of Gallienus at Rome; but of course the most important are of marble, as those of Septimius Severus and Constantine. "The Romans seem to have used the utmost license in regard to the decorations of these monuments, which, as being mere objects of show rather than of use, might admit of some caprice, and not be bound down to the severe canons of the art." Thus did the Composite order originate, as an opportunity for enrichment, and the Pedestal and the Attic find a peculiar use that has served as a type to this day.

At the head of this chapter Mr. Donaldson gives the accompanying plan of the Arch of Nero, deduced from a view on a medal in the British Museum; and, in consideration of his book to-day and his good works before, we allow him to pass through it, and decree him a triumph.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

OPENING MEETING.

The opening meeting of the members of the Institute, for the session of 1859-60, was held on Monday evening last, in their new premises, Conduit-street.

The chair was taken by the Right Hon. Earl de Grey, K.G. president.

There were about 220 members and visitors present, including Messrs. Cockerell, Hussey, T. H. Lewis, J. H. Stevens, Romieu, C. C. Nelson, G. Valliamy, Ashton, G. Morgan, E. Francis, Tite, Hakewill, Ferrey, Mair, Thomson, Garling, Papworth, J. Clarke, Brandon, S. Smirke, Godwin, Kerr, Horace Jones, Edmondson, Legg, Burnell, Colling, E. Nash, Morant, Houle, W. Slater, Fowler, jun., Sibley, C. H. Smith, E. W. Cooke, E. T. Parrie, E. W. Brayley, Abraham, M. Nelson, F. P. Cockerell, J. Turner, T. H. Wyatt, M. D. Wyatt, S. Godwin, John Billing, Mylne, T. L. Donaldson, Cates, Rickman, H. Field, Stride, E. C. Robins, Christopher, Hayward, G. Fogg, T. D. Dighton, T. J. Pettigrew, C. R. Weld, H. S. Pownall, &c. &c.

The minutes of the last meeting having been confirmed, the following gentlemen were proposed for Fellows:—Messrs. George Edmund Street, Edwin Nash, William Allen Boulnois, William Slater, J. Peacock, G. Mayhew, James Ferguson, Messrs. C. J. Knight and Frederick Judge were elected Associates.

Several donations were announced, including a three-quarter-length portrait of the noble president by certain members of the Institute, and a pair of portraits (Kit-Kat size) of the Brothers Adams (?) from Mr. C. Manby. It was also announced that the sum of 258*l.* had been received on account of the removal fund. Thanks having been voted,—

The president observed that the routine business which had just been disposed of showed that the society was going on, and in healthy operation. He was happy to say that he had now the pride and pleasure of presiding for the first time in a place in which the society could honestly say that it had a *locus standi* of its own. They had, it was true, a lodging for many years elsewhere, but they were liable to be turned out at any moment, for although they might have paid their rent punctually enough, others in the same house might not have been so regular, and it was within the limit of possibility that they might have been ejected without being able to help themselves. They had now, however, a local habitation of their own, altogether independent of those below them, and of the Architectural Union Company. They were, it was true, tenants in some sense of that company, but there was a community of interests between them, and there was no reason why they should not go on together for many years to come. For his own part, he felt it was impossible for him not to take a deep interest in an institution with which he had been connected for four-and-twenty years. He was first asked to become president in the year 1834 or 1835, and although he had no particular pretension to the honour, either by reason of his knowledge of architecture or otherwise, still he felt he might possibly be useful, and therefore had consented to accept office. Since that time he had been their president, and the only qualification he could boast of was, that he wished them well, and had endeavoured to do his duty without fear, favour,

or affection. The annual office of president had in his case been a permanent one, and under such circumstances he felt bound to say that he felt deeply the honour which the society had conferred upon him. He was happy to say that the association had continued to prosper. When it met in King-street, Covent-garden, in May, 1834, it consisted of thirteen members only. Another institution, having similar objects in regard (the promotion of their common art), and with which his Royal Highness the Duke of Sussex was connected, subsequently joined them; and, from the small beginning of thirteen members, they had gone on increasing, until the Royal Institute of British Architects now consisted of 134 fellows, 139 associates, 132 honorary fellows, 80 corresponding members, and many contributing members, making the total number of persons connected with the Institute in an immediate or remote degree, 416. They had, unfortunately, lost in the course of the last year four excellent, and important members; but it was satisfactory to find, that while death had removed that number, applications had been made on behalf of fourteen other gentlemen, which was a proof that the society was making progress. That progress had been gradual, but steady. When in King-street, Covent-garden, they had a very splendid donation from Sir John Soane, in 1836 they were able to give their first medal to a most active and zealous member (Mr. Godwin) whom he was now glad to see among the vice-presidents; and in 1837 they were enabled to remove to better premises in Grosvenor-street. In the year 1839 their respected member Professor Donaldson received a prize, which indicated not only the talent and worth of the gentleman who received it, but also testified to the power and usefulness of the body which conferred it. They subsequently obtained a concession from her Majesty to grant a medal for architecture, the first of which was awarded to his friend Mr. Cockerell, who, he was glad to see, was alive and well to enjoy it. The Institute had now taken another step, and he trusted it would long remain in its new building and occupy the proud position which it had held for so many years. Before resuming his seat, he wished to remind the meeting of the debt of obligation which it owed to those members who from time to time had contributed their talents to the furtherance of their common profession. The noble earl having stated the gratification which it would afford him at all times to lend his assistance to promote the noble art in which they were engaged, concluded by calling upon Mr. Tite, vice-president, to deliver his address upon the present condition and future prospects of architecture.

Mr. Tite, M.P. then delivered the inaugural address, "On the present Condition and future Prospects of Architecture," which we give *in extenso*.

The address having been warmly applauded, The President said,—After the enthusiasm which has just been elicited, I think I ought not to add another word, except to move a cordial vote of thanks to our friend Mr. Tite, for his valuable, instructive, important, and interesting address.

The vote having been carried by acclamation, Professor Donaldson observed that, if the noble earl in the chair had reason to congratulate himself that, after a presidency of four-and-twenty years, he had been enabled to meet the Institute that night under such auspicious circumstances, how much more might not those gentlemen congratulate themselves upon their judgment and discrimination, who had elected as their president a most distinguished nobleman, so well acquainted with their art, and who had taken so deep an interest in their progress and success. The society owed his lordship a deep debt of gratitude for much of the success which had attended its operation, and the high position which it held in the public estimation and in that of all Europe was to be attributed in great part to the warm and untiring interest which he had manifested in its behalf. He (Mr. Donaldson) might therefore say that it was fortunate for the Society that it had not changed its president for so many years. It was also fortunate for it to have among its members a gentleman who, like Mr. Tite, could bring so much good sense, experience, and sound criticism, to bear upon the architecture of the last half-century, and was able to instruct and gratify his hearers with a dissertation upon the subject, which, although an hour and a half long, no one wished to have shortened by a single moment. As Mr. Tite had, in the course of his address, examined the architecture of so many countries, and as the subject was one upon which some considerable diversity of opinion might be expected, it

would be impossible on the present occasion to take any discussion on the paper. Moreover, it was desirable that a little time should be given for reflection, so that the important topics treated of might be considered in a spirit befitted their magnitude and interest, and in order that those who had the privilege of hearing the address that evening might not be carried away too much by the grace of language and emphasis with which Mr. Tite's admirable paper had been delivered.

Mr. Tite said he begged to have the pleasure of seconding the vote of thanks to Earl de Grey, and he did so with the more gratification, as he felt persuaded that the Society never could have attained to its present position had it not been for the great interest which the noble earl had taken in its welfare, and for the uniform kindness with which he had assisted its early efforts. He wished it was in his power to say more, but his voice was entirely exhausted.

Earl de Grey.—My voice is not exhausted, and I can therefore express my acknowledgments for your kind vote of thanks. I believe it is of very great advantage to the art in which you are all interested, that there should be this admixture of persons—professional and non-professional—to meet and encourage each other. I am not, as I before stated, an architect, but I confess I have an honest interest in the promotion of the particular branch of art which architects study; and I do not think that the circumstance of my being non-professional is at all to be deplored, because it may so happen that a person in my circumstances can have it in his power to do what a professional man could not do, for this reason—that no one can accuse him of having any personal interest to serve. It was with these feelings that I joined the Institute twenty-four years ago, and I can only tell you that, as long as I have any connection with you, I will endeavour to promote the interest of your art to the utmost of my ability. This meeting will now be adjourned; but, before dissolving it, I wish to make an announcement which I am sure you will hear with pleasure, that at our next meeting, on the 21st instant, the paper of the evening will be read by Mr. Gilbert Scott, on Westminster Abbey.

It was then arranged that the discussion on the present condition and future prospects of architecture should be taken on that day month, and the proceedings terminated.

MR. TITE'S ADDRESS ON THE PROGRESS AND THE PRESENT STATE OF ARCHITECTURE.

I HAVE been requested, on the present occasion, which I consider one of the most auspicious in the history of the Institute of British Architects, to deliver the opening address.

I have said that the occasion is auspicious. And it is so, because we meet, for the first time, in a place of our own, and one subject to our own management, and our own position in the world of art; and in a certain sense, our own. The very notable result has been brought about by the exertions of a worthy minority of our number, amongst whom we are proud to acknowledge the lordships of the most liberal. Still, however, and many exertions, we may at length congratulate ourselves on being "sui juris," and that difficulty overcome, we may now steadily prosecute our professed object in promoting the improvement of the noble art with all convenient and suitable aid, and a view to any necessity for future change or further consideration.

Under these circumstances I have been asked to address you. I was unwilling, at first, to undertake this duty, for many reasons, the main one however being, that I could not but feel that there were many men amongst my colleagues, younger, less employed than myself, and more able to discuss the topics which will naturally occur on an occasion like the present, and, as, however, my professional career has nearly closed, and my experience has been gathered from a period of nearly half a century, I considered that I ought not to shrink from the acceptance of so honourable a proposal, and to do my best to do justice to it, because, under the circumstances I could speak with the greater freedom, and from the other I might admit all my shortcomings, still be able to produce something of use, or at least of interest, to the art to which I am so much attached, and to which I am so much indebted. Having said this much, I come at once to the consideration of the subjects which I have announced as the matter of this discourse, namely, "The Progress and Present State of Architecture, and its Future Prospects." In other words, to discuss what has been done in England, and in Europe in this particular art, since the last time we met, and what we are likely to do hereafter.

In examining these questions, I must bespeak both your patience and your attention, for the subject, because the subject is so extensive that, notwithstanding every possible condensation, I must necessarily occupy a good deal of your time, and also your ears, as because I may have occasion to say things which may not be equally agreeable to all. On the latter point, however, I need hardly assure you, that it is the furthest from my intention to prove to anybody by any unkindness, or to presume at all occasionally on my experience in the profession.

With these views, let me say then that I propose in this good deal to state very shortly the history of the Institute, to notice what has been done in England and in the Continent within about the period limited by its existence; to notice some of the most recent criticisms; and then to add a few remarks on what we may expect will be done

during the last twenty years in my own country. The varying phases of taste to be found in much of the same order in our own metropolis; and I could suggest many parallels in the works of my own countrymen. I am satisfied, however, to be able to add, that in England Gothic architecture has been applied with a more learning and taste, instead of so devoted an attachment as the French have shown to what would be in our country the architecture of Elizabeth and James I. and that the same attachment has shown a tendency to over-ornamentation, still it has never fallen into the platitudes and littleness of the new Parisian thoroughfares.

The phases of the history of architecture in the neighbouring countries to France appear to confirm many of these opinions as to the modifying causes of the external character of the arts of any particular nation. In Belgium, for instance, although the outward form of the civilization of the capital itself presents but a very pale reflex of some of the vagaries of French taste; and although, on the contrary, the study of the national archeology has been carried on with a rare degree of skill and conscientious appreciation; the merits of the Medieval arts; yet neither the influence of fashion in the one case, nor, so to speak, of national self-worship in the other, has prevailed so far as to induce the Belgians as a nation to resign their spirit of local independence in all things. It is true that some of the results of this local independence have been far from being aesthetically pleasant; and the new church of the Queen Leopold may fairly be cited as a specimen of pastrical rubbish; but the same criticism, *de la Constitution* is equally open to criticism. But the Galerie St. Hubert, the new Rue Léopold, the new buildings of Antwerp, Liege, Malines, &c. all alike have their own local character. Indeed, it is possible for those who are acquainted with the past history of these provinces, to discover even the relics of their former independence in all things. It is true that to identify the influence of the Spanish rule, in the excessively ornate, misplaced, and heavy style of ornamentation which is still retained. The essential characteristic of the Belgian architecture, however, is its almost communal, except in Brussels, and in some of the Walloon Towns near the French frontier; but even there, thus remaining communal, the Belgian architecture of the present period is not so much a revival of Medieval or modern Italian art, than from its own great artists of the dawn of the Renaissance. The Belgian people, it is precisely what its priests have chosen to make it; and as the style of the beginning of the sixteenth and seventeenth centuries, which more distinctly typify the period of priestly influence, still retain their hold on the passions of the country. The churches most recently erected are usually of the later Renaissance style: neither Medieval nor strictly Classical architecture is received in the country. At present, the most decided traces of the existence of such a tendency is to be found in the style of architecture adopted at Gand and at Antwerp, and in this respect those towns offer to the student of architecture a degree of interest (both ancient and modern, he observed) which no other nation in the world can give. The best recent Belgian architecture consists in this, namely, that whilst its authors seem to have remained at peace with the teachings of other times, they still represent the feelings and instincts of the nation in the most vital interests, and its most striking mode of external expression.

Very much of the influence of the same principles may be traced to exist in Holland, for, of late years, the buildings erected there have been marked by the local tastes, and the mixture of reverence for classical studies which has so long prevailed in the Low Countries. The nature of the foundations, and the very limited range in the choice of materials at the command of the Dutch architects, no doubt, have exercised considerable influence upon their modes of thought. Perhaps, also, the peculiar political organization of Holland, which is in fact a Federal Republic under a centralized administration, and the singular state of sleepy isolation from the political and intellectual movement of the rest of Europe, which has retarded the material prosperity of the Dutch, and likewise have influenced the state of its architecture. The climate of Holland has also no doubt operated on the style of its buildings, for a situation which is forcibly prevented from seeking its pleasures in the open air, and which is confined to the interior of the facilities of taste to its internal comforts. It is as this as may, the Dutch architecture of late years is strikingly devoid of character in its treatment of the external of buildings, and the little of novelty which can be discovered in this respect is principally borrowed from the teachings of the Westphalian school. The Zeemanshuis of Amsterdam, the Gasthuis of Rotterdam, the new churches of Rotterdam and Purmerend, and the very contemptible railway station of the Hollandsche Spoorweg at Rotterdam, are illustrations of the Germanic influence, which has also extended to the domestic architecture of the provinces of Friesland and Groningen especially. In the Post Kantoor of Amsterdam, the clubhouses of the societies Arti et Amicitie of Amsterdam, and the Yacht-Club of Rotterdam, the new town of Rotterdam, &c. the French influence has been retained, and very awkward imitations of ashlar construction have been executed by the use of wooden beams, planks, and cement and plaster. Some of the rare Medieval buildings of Holland have also been retained, and likewise have been retained at Rotterdam, the cathedral of Utrecht, the tower of St. James's Church at the Hague—though it may be observed *in passing*, that the latter building can hardly be called such, which appears to be a mistake. The new works, unfortunately, have been conducted with a very slight knowledge of the principles of the architecture of the periods in which they were erected, and they illustrate such a total want of architectural education, that architectural studies are not conducted in Holland on any very scientifically-organized principles. The other considerations to which I have referred are principally that the Nieuwe Kerk at Amsterdam, and in Holland as a distinct profession, but is practised indifferently by engineers, builders, or ship-builders; and, until within a very few years, Holland was utterly devoid of such a public architectural question, which is the day. Of late, however, M. Aberkand Thym, and the Amsterdam Society for the Improvement of Architecture, have produced some works which lead us to hope for a revival of the national architecture, and for the abandonment of the awkward imitations of the tastes of other nations which now so offend the educated artist who may travel in Holland.

As to the Westphalian provinces, they have made wonderful strides in all the phases of material civilization

since the Peace of 1815, and they have eliminated an aesthetical expression of their internal thoughts which must command every serious reflection. The Düsseldorf school of painting, for instance, under Achenbach, Schadow, Hildebrand, Lessing, Sohn, and Bendemann, has earned for itself a foremost place in the annals of its country's history; whilst the architecture, called into existence by the amazing development of the commercial and manufacturing industry of this favoured region has advanced nearly *pari passu*,—perhaps, however, with less of a local character for the influence of the Munich and of the Berlin schools has manifestly been felt at Düsseldorf and Cologne. Throughout Germany, in fact, the pre-eminence of the frameless of classical, Italian, or French architectural taste has been made with a species of passion; and architects, equally with metaphysicians, poets, romance-writers, and politicians, have striven to discover and represent the anatomy of their own nation. The study of German Mediaevalism has been conducted with quite as much enthusiasm as the analogous movement in our own country, and Müller, Semper, Rosenkranz, and others, have laboured as effectually as our archeologists have done, to diffuse a knowledge of the former changes of their favourite art. It has happened that the great impetus given to the commercial and industrial prosperity of the Westphalian provinces produced its direct action upon the taste for indigenous forms of art had established itself in public estimation, and thus it has also happened that nearly all the new factories and buildings on the banks of the Rhine, or of the Ruhr, and other rivers of the Low Countries, have been built in a style of architecture which is mainly inspired by the study of the Middle Ages. It is, perhaps, worthy of more than casual remark that the phase of Gothic architecture, which has been most popular with our German neighbours is the one called by themselves "Römische Baustyl," and the majority of the ecclesiastical buildings lately erected in the Westphalian provinces exhibit in this style of architecture the most striking features have, however, been designed upon rather more eclectic principles, and the Spitzbogenstil, as exemplified in the Marienberg Schloss, or the Gürzenich of Cologne, has been applied with a more eclectic spirit, and a peculiar modification of revived Medieval art which has been imitated in Holland and in Belgium; and it has renewed another of the hidden links of sympathy still existing between the two tribes. The taste for indigenous forms of art, which has been so generally adopted, and of gables, to insert unmeaning ornaments, has found numerous imitators in both Holland and Belgium; it may be, with the greater readiness, because the former State's masters of the Low Countries are themselves exceedingly addicted to this very illogical practice of breaking pinnacles.

In this addition of our review it is necessary to call your particular attention to the manner in which the restoration of the cathedral of Cologne is being conducted. The original designs have been fortunately preserved; and they are, to the infinite praise of all parties concerned, being strictly adhered to, even whilst the parties employed have eschewed a mere Chinese spirit of imitation. In the restoration of the church of St. Ouen, at Rouen, the same good taste was not displayed, and consequently the original symbolic design of the west front of that church has been destroyed, together with the beauty of its proportions.

In continuing our notices of the architecture of foreign countries, I fear that Italy must be passed over in silence, except as regards Savoy, of which I shall say a word hereafter. But of the modern architecture of Italy—the latest example that has come under my notice is the great and costly but most wretched and feeble church of St. Carlo Borromeo, in Milan. This is a votive church which was erected after the first invasion of the cholera, from the designs of an architect named Amati. It is a Rotunda, like the Pantheon at Rome, apparently also of the same diameter, and generally agreeing with that building in its details. It stands at some slight distance from the Corso, forming the end of a small square, the sides of which are the Palazzo del Senato, the Palazzo below and three stories of public offices above. Apart from the admirable material used in the construction of this church (the granite of Baveno), there is absolutely nothing to admire in its architecture, and the dome appears externally to be much flattened; and the extent of it is diminished by its being placed at the end of a very narrow atrium. It is a very bad copy of the Pantheon foolishly applied.

In Milan, however, a most successful attempt has been made to revive the manufacture and use of architectural decorations in Terra-Cotta. As you are all aware, constructions in this material were very common in the north of Italy; and, in the Certosa of Pavia, much of the external decoration is executed in this substance. The cloisters in particular exhibit a remarkable instance of the success and durability of this mode of decoration. In the Corso, at Milan, and in one of the great streets leading from the theatre, two architectural elevations of extent, and in one instance of considerable variety, have been executed in Terra-Cotta by Boni & Co. I call your attention to this revival of an ancient and effective material, because it appears to me that considerable variety and beauty might be given to the external elevation of many of our own domestic edifices by the use of this mode of decoration, which is at once effective, durable, and economical.

I am unable to suggest anything more in connection with the architecture of Germany. The last twenty years, excepting to advert with satisfaction to the architectural and architectural works of our late distinguished correspondent and honorary fellow the Commander Casina, though a few architectural sketches of architectural work executed by that most distinguished and accomplished man. His death soon after his visit to England is a circumstance of the deepest regret to all of us, for in our domestic architecture he was a true and a generous and accomplished friend and cicero, and an architectural one of its most distinguished and successful student.

I am afraid it is not possible to advert particularly to the architecture of Germany; and this is the less necessary, because it is better known by modern architects than that of most other countries. The perfect illustrations given by the publication of the *Monatsschrift*, and the regular publication of the "Baue Zeitung," by our associate Förster of Vienna, informs us of everything that is going forward in that nation connected with our art. The German architects have not been so different in Gothic architecture. The church in the

suburb Au, at Munich, notwithstanding its superb painted glass, and its generally satisfactory proportions, is a poor imitation of that style, and the monument erected at Berlin is something worse. The church now being built at Vienna, by Ferstl, the Votiv Kirche,* will be an excellent specimen of German Gothic, and shows vast improvement in knowledge. Whilst the Votivkirche, which had just been finished when I was last in Vienna, was in a sort of thread-paper Burgundian or Lombardian style of the worst sort.

Before concluding these remarks on the state of architecture in foreign countries, it may be as well to add a few words on what are observed in those which are less frequently visited with the intention of seeking from them lessons in the history of art. Thus, in the Republic of Geneva and in Savoy, the architecture which has until lately prevailed has been almost the same as that adopted in the south Burgundian provinces of France; but within a few years both the Germanic and the Italian influences have made themselves distinctly felt. In the Piedmontese dominions of the kings of Sardinia, as might naturally have been expected, the Italian element has exclusively prevailed; and it is to be observed that this has prevailed in the form it assumed about the sixteenth and seventeenth centuries, rather than in the form of the eighteenth. In Turin itself, however, the style of street architecture adopted in the new quarters, has been copied from the buildings of the Rue De Rivoli, in Paris, without much modification; and the great public works have almost always been designed in the style of the French engineers, and the case of the bridge over the Dora Riparia, and in the railway works.

In the north of Spain the character of both civil and ecclesiastical architecture has been modified by the very peculiar architecture of the interior of the peninsula, and Granite, and an inferior kind of brick-earth, are alone in command: it must be added that the population, though surrounded by all the natural elements of wealth, is so miserably poor, that there is little chance of any artistic excellence. It follows, from these circumstances, that architecture, as a distinct art, does not exist in these provinces now; and, as in Holland, builders and engineers have replaced architects to the serious injury of the local taste.

The United States afford greater promise for the future of art than neglected and misgoverned Spain; but very little has been done to the rescue of the development of art amongst our Transatlantic brethren. I only propose to call attention to the fact that in the towns of Boston, New York, and Philadelphia, near which both granite and marble of superior quality are quarried, at comparatively speaking little cost, the style of architecture which seemed to be most generally adopted, some twenty years ago, was mainly based upon the Grecian Trabeated style. In fact, the clear bright atmosphere of the American climate rendered the purity of line of the Grecian architecture peculiarly appropriate to surrounding natural conditions; whilst the great transverse strength of the materials, and their somewhat ignominious character, more than pecuniarily fitted for the horizontal, and, as Mr. Ruskin would probably say, ignoble, construction of the Hellenes. The materials which any particular neighbourhood can furnish have indeed, a material influence on the style of architecture which may prevail therein; and it is a fact that merits far more attention than it has hitherto received from writers on the history of art.

Now to consider very briefly the question raised by the commencement of this part of our subject, I must say that I cannot discover, in the prevalent architectural tastes of the countries I have referred to, any traces of what may be called permanent aesthetic principles. The faith, or the fashion, of the day is all-powerful; but tomorrow may change the whole aspect of the art of architecture,—and this must continue to be the case so long as mankind feel in these matters, rather than reason upon them.

The simultaneous revival of the study of Medieval art in all the leading nations of Europe appears to me to be connected with the great political and moral revolution of the first portion of this century. The Renaissance, or the revival of classical studies, was in fact synchronous with the introduction of the spirit of analytical philosophy, which has since branched out into the study of the synthetic principles which had prevailed during the Dark Ages, as it was long the fashion to call the previous period. Now the excessive development of the ideas of Rousseau, and the sensualistic philosophy of the seventeenth century, to the advantage of the Helvetius and Condorcet; and to the sneering infidelity of Voltaire and Gibbon, as well as to the wild political theories of Rousseau and the French Humanitarian School. The fearful havoc made by the attempt to carry into effect the theories of these wholesale teachers of doubt, in all matters of faith or of social organization, at the French Revolution, naturally produced a revulsion in men's minds; and society was led, in its utter lassitude from the struggle against all forms of belief, to cast itself without reserve upon the principles of authority which had been renounced at day a cost of blood and treasure. With the return to the moral principles of former times, the taste for the characteristic arts of those times also returned; and modern society began even to consider that there was a necessary connection between the archaic expression of the buildings and the hearty belief of the men who erected them; forgetting, the while, that, unless civilization be entirely destroyed, the human mind cannot retract all its steps, but that the revival of extinct phases of art in their original purity is utterly impossible. Be this as it may, the revival of the love for Medieval art coincided with the appearance of the romantic literature in England, France, and Germany; and it is to be observed that the success of this movement has been strikingly proportioned, in those countries, to the intensity of the national feeling that manifested itself, and gone away from its proper place during the last two or three centuries. Perhaps also the same different manner in which the clergy of Spain, Italy, Belgium, and even France, have participated in this movement, may be attributed to the fact that, to the former, the semi-classical style of the Renaissance is not so necessarily typical of the revolt from the principles of authority as it is in the latter. There is, to the Jesuit, for instance, who contemplates the magnificence, or at least the splendour, of St. Carlo Borromeo, at Antwerp, or the Jesuit churches in Turin, Rome, and elsewhere, no necessary

* This design was the result of a competition. Sixty-two plans were sent in. There were one chief prize of 1,000 ducats, and eight others of 1,000 guilder each. Thirteen designs were chosen by a committee of architects, and the final decision was made by Ludwig, King of Bavaria.

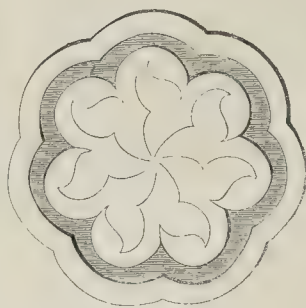
ARCHITECTURAL DETAILS IN JERUSALEM AND NAZARETH.

In the ancient Mohammedan quarter of the city of Jerusalem there is a deserted bazaar or arcade; a long dark vista, lofty and beautifully vaulted, leading to one of the entrances to the harem. The shops here, which were once filled with stores of Oriental merchandize, are now literally dust-holes—the receptacles of the refuse and rubbish of the district. Where busy buyers and sellers should be seen, scarcely a human being is visible; and though the arcade is very wide, yet the accumulation of decayed vegetables and skeletons is so great that there is but a narrow foot-path left.

Yet here may be found some of the choicest specimens of Christian and Saracenic decoration in Jerusalem; beautiful little archways with dog-tooth or zigzag mouldings, twisted and plaited columns, &c. &c.

The circular design at the top of this page occurs over the door of a house in this deserted district: it is about 10 inches in diameter, and projects 2 inches from the surface of the stone wall.

At the end of the arcade I lingered to look into the mosque inclosure or harem. I stood under a fine Moresque archway, called the "Bab el Kattanni," or "Gate of the Cotton Merchants," sup-



posed by Scripture topographers to be the site of the gate which was called "Beautiful."

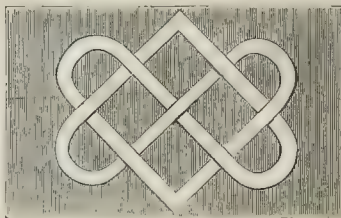
I looked up at the fretted and emblazoned vault, chequered with sunlight and shadow, and would gladly have sketched it, but the Turkish sentries looked impatient and restless, so I turned away from the forbidden ground, and traversing

the lonely and narrow streets on the right, I reached the "Bab el Sils-elah," or "Gate of the Chain," the principal entrance to the harem. It is a double gate, with twisted marble columns and deep mouldings: opposite to it is an exquisite little fountain, over which is a frieze, carved in marble, of wheel and chain-like ornament: a portion of it is given on this page. It is nearly a foot in breadth.

The view of the mosque from this spot is very good, and the rows of arches and the picturesque groups of devotees and little shrines and cupolas form an enchanting picture.

The next sketch is a little device formed of one unbroken line, carefully interlaced. It occurs on one of the wooden rafters within the Mosque el Aksa. These rafters are covered with curious and graceful designs of this character. They have exactly the appearance of marquetric work, and it was only after examination with an opera-glass, that I concluded that the effect was produced by paint. The ornament is of a yellowish white colour on a brown ground.

Of all the gates of the City of Jerusalem the "Bab el Amoud," or "Gate of the Column," commonly called the "Damascus Gate," is the most beautiful, and presents quite an imposing appear-

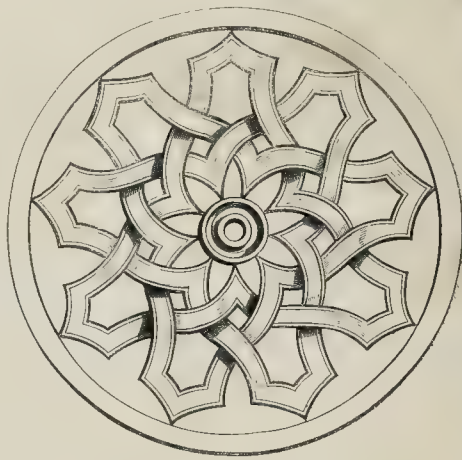
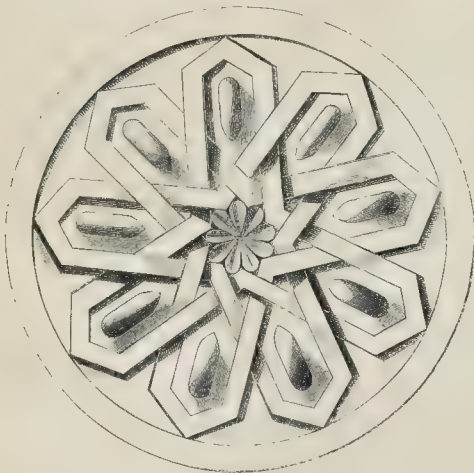


ance, with its battlements and noble turrets. There are many curiously carved marble bosses and pateras on this gate: two of these will be found on this page. Some of the bosses are much more elaborate, the interlacing designs being carved on hemispherical surfaces.

Marble columns, apparently very ancient, are here and there built transversely into the city walls (especially the north and east walls), and the projecting sections of the columns are sometimes left plain or ornamented only with a simple fillet, but more frequently they are enriched.

The prevailing principle of the designs is an ornamental triangular figure, thrice repeated, and carefully interlaced, forming a sort of star of nine points, of geometrical precision.

The examples given are about 1 foot in diameter, and they project about 3 inches from



the wall, the decoration being not more than an inch in relief. I never met with a repetition of a design.

The fertile invention of the Oriental designer has given an ever-changing and playful beauty to the intersecting lines and geometrical figures,

and though imitation of nature is strictly avoided, there seems to be no want of varieties: conventional rosettes are seen here and there, but in no instance a faithful copy of a flower. The execution of these designs is excellent: the carvings are in good preservation, and in all probability

will long remain so, as the marble is very fine and durable. I sketched these and many others in 1856, and had the pleasure of re-examining them early in the present year.*

MARY ELIZA ROGERS.

* To be continued.

MEDIEVAL DOMESTIC ARCHITECTURE.—Fifteenth and Sixteenth Centuries.

*Layer Marney, Essex.**House at Wingham, Kent.**Norrington House, Wiltshire.**George Inn, Glastonbury, Somersetshire.*

EXAMPLES OF MEDIEVAL DOMESTIC ARCHITECTURE IN ENGLAND.

The second part of Mr. Parker's recently published "Account of Domestic Architecture in England from Richard II. to Henry VIII."* contains an account of the existing remains of the fifteenth and early part of the sixteenth century, with numerous illustrations. We are enabled to make our account of the book more complete with the accompanying engravings from it of Medieval structures in Essex, Kent, Wiltshire, and Somersetshire.

Layer Marney House was built, about 1530, by Sir Henry Marney, captain of the guard to Henry VIII. and is a fine example of the brick mansions of that period, with many of the details of moulded brick, and the surface ornamented with diagonal lines of dark glazed bricks and flints. The most perfect part is the gatehouse, a square tower with octagonal corner-turrets 70 feet high, and divided into eight stories: this is engraved in Britton's "Architectural Antiquities," vol. i. Some of the buildings which surrounded the quadrangular court also remain tolerably perfect: in the upper floor of this is a long dormitory, with the open timber roof of the period. Some of the rooms

have also good panels of carved oak, and a rich plaster cornice.

Wingham has several timber and half-timber houses of the fifteenth and sixteenth centuries, and one of the fourteenth is elsewhere described in the book. The process of building a timber-house in many parts of the country was by forming a skeleton or frame of wood, the intervals of which were afterwards filled up either with brick, or with unburnt clay, or with lath and plaster. Such houses are often called half-timber houses. The mixture of brick and timber is more usual in the eastern counties, Norfolk, Suffolk, and Essex, and ornamental work of terra-cotta is sometimes in-

* Oxford and London: J. H. and J. Parker. 1859.

† See p. 674, ante.

roduced in the panels. In Cheshire and Lancashire the interiors are usually of plaster, which is whitewashed, while the timbers are painted black, and these are often called black and white houses.

The statute of 37th Henry VIII. c. 6, A.D. 1545, recites, among certain novel outrages, "the secret burnynge of frames of timber prepared and made by the owners thereof redy to be sett up and edified for houses."

Norrington House is a tolerably perfect manor-house of the fifteenth century, with the hall and porch perfect. The hall windows are good two-light Perpendicular, with transoms, and the doorway of the porch has a fine set of mouldings with shafts and deep hollows. There is a small room over the porch, as at Chalfield.

Glastonbury, Somersetshire, is full of domestic antiquities. The Abbott's Kitchen there appears just now to be a favourite object for imitation.

The George Inn, of which we give an illustration, originally destined for the accommodation of pilgrims, is the best piece of domestic work in Glastonbury not immediately connected with the buildings of the abbey. The street front is one splendid mass of panelling, pierced, where necessary, for windows. The centre is occupied by a four-centred gateway: to the right a bay-window in three stages rises the whole height of the house: the part above and on the other side of the gateway is panelled and pierced without any projection. There is a sort of turret at each side of the house, and a pillar and bracket for the support of the old sign. The number of rooms inside is pretty well marked by the external windows: some of the oriels have flat rear-arches from shafts with round capitals. The upper rooms are still approached by the original newel staircase. Under part of the house is a flat barrel vault, with ribs. It was built by Abbot Schored, in the time of Edward IV.

Mr. Parker's book must take its place in every library.

PAUPER MANAGEMENT AND EDUCATION.

ALTHOUGH the visits of the poor-law inspectors to workhouses are not generally relished by boards of guardians, there is no doubt that they lead in many instances to good. With ideas confined to particular localities; with a general wish in most instances to save expense, and from other considerations, the boards of parishes are often apt to take such views of affairs that in attempting to save, they at times unintentionally add to the general expenditure. The poor-law inspectors having the opportunity of observation over large districts, also the assistance of extensive statistical and other information, are likely to look at the subject in a broad manner, and to be capable of affording excellent advice. From the report of Mr. Farnell, the poor-law inspector, to the board of guardians of Clerkenwell parish, we glean a few notes which will be read with interest.

In connection with this district, it appears that when the inspector first came here the number of paupers was 1,979. In November the number was 1,641, this being a reduction of 338. Throughout the metropolis there has been a general reduction of the amount of pauperism, with the exception of Greenwich, and this exception is attributed to the circumstance of the relieving officer being new in his duties. Throughout the metropolis there were 1,556 poor people less on the books than there were last year. It is estimated that no pauper can be kept on an average for less than 5*l.* a year in-door and out-door. (Throughout England and Wales the decrease of paupers is 31,165 in the last year.) After remarking on the large proportion of aged persons who found shelter in the Clerkenwell workhouse, and suggesting that in cases where it can be wisely done the children of paupers should be compelled to support them,—the out-door able-bodied paupers, chiefly widows, had 401 children,—the inspector urged that care should be taken as regards their education: he mentioned that the children of paupers receiving out-door relief in the metropolis amounted to the enormous number of 30,000: the number of children receiving out-door relief throughout England was 298,000.

The inspector said that the present system of pauper education was most faulty; that the children were only taught to read and write; they were not instructed in labour and the means of getting their bread by honest industry. It was quite true that there was neither room nor opportunity for imparting such a description of education in the great metropolis. As far as he was concerned, he had introduced into all the detached district schools the largest possible amount

of industrial training. Mental cultivation was, therefore, restricted to about three hours per day, or eighteen hours per week. Such a mode of teaching was more wholesome to the minds of children than their being crammed all day with books. They would imbibe more knowledge from three hours' per day mental tuition, the rest of the time being devoted to play, labour, and other industrious training, than if they were kept at books all day. Children so educated, he found to be the quickest. We have since had other evidence to the same effect.

The introduction of music into pauper schools had produced a most excellent effect. The demand for instruments and the means of instruction was extraordinary, and it was found that three months' training of apt boys made them sufficiently effective musicians to enter the army or navy, where they were apprenticed until they were twenty-one years of age. The bands were better paid and taken care of than the regular soldiers. It might therefore be considered that those who entered the army and navy in this way were tolerably safe for life. The use of rigged poles, &c. had also been tried as a means of getting pauper children into the naval and merchant service; but that had not proved so successful as the music.

At the Foundling Hospital experience has shown that the use of wind instruments is not only a means of strengthening the lungs of the boys, but that those forming the infant bands are more forward in the classes and general education than those who are not practised in music. When drawing is made a regular branch of school education, it will be found to be the means of assisting other studies. It is said by the directors of some schools which are expected to rear mechanics and other workers, "What is the use of drawing, they will never want it; it is useless to waste time in such studies; they should not have their attention misdirected by such new-fangled notions; what can be the use of teaching drawing to the children in workhouse and in other schools for the children of the poor?" This (and we form the opinion after long and very careful observation and inquiry) is a mistaken idea, for the more fully the minds of children are trained, and the more completely their bodies are formed by gymnastic and other exercises, and a fair amount of proper feeding, the better they are fitted to fight the battle of life, and consequently the less liable they are to become again an expense to the ratepayers in after years. In some counties of England education is more attended to than in others, and it has been found that school learning has caused the peasantry to be better farmers and better men. Looking at drawing as an important aid in education, we hope that even in workhouse schools its utility may be tested by its general introduction.

THE NORTHERN PARTS OF LONDON.

NEAR the Angel, in Islington, there are several courts, densely populated, which have been lately much improved; and it is satisfactory to notice that in some of these places the small and insufficient water-pipes have been taken up, and larger ones substituted. The pipes in course of removal were not of greater diameter than those laid for the supply of an ordinary dwelling, and yet had been provided for the supply of fifteen houses: as a sure consequence, during the short time that the water was turned on, the large population of the court could not obtain sufficient. This will be remedied by the alteration which is going forward. At present there is no cistern or other receptacle for the use of the tenants. In some houses the most provident have a small cask in their bed-rooms: the evil of this is evident. It will be a great advantage to all neighbourhoods of this description, when a proper supply of water during both the day and night, and on *Sundays*, can be had independently of the turncock.

On suggesting such a thing in these places, the certain reply is that a brass tap would not remain for many hours without being carried away to the rag-shop. This is a sad condition of things, but it should urge us to try all chances of improvement. Besides, there would not be much difficulty in making taps of less tempting metal. One court that we entered swarmed with children, and yet, said an intelligent costermonger, "there are Church of England schools, Roman Catholic schools, Presbyterian and other schools close at hand. You sanitary gentlemen have done much good here during the last few years, and we will get better in time; but you would be helping the people if you would look at Union-court, Chapel-

street, which I believe is in Clerkenwell parish: the water is turned on here now on the *Sundays*." On reaching the court named, we found, although there were sixteen or seventeen dwellings, the water was supplied in the same way as it was lately in the court just mentioned. There is, however, a pump so situated that its water cannot be pure. On *Sundays* the water is not turned on, so that for forty-eight hours the inhabitants have to depend on the well; and even on other days, so insufficient is the pipe supply, that the pump is much used. The pavement above the well is broken; and, when the adjoining siak is stopped, the refuse water forms a pool over the well. In rainy weather the water floods this part, and it is evident that the whole surface of the central area is covered with the refuse thrown out. In fact, we were told that the costermongers often buried stale fish and other offal just below the ground. All these pollutions will find their way to the well, and render it a source of danger. One of the men here asserted that if the well were opened, from 3 to 4 feet of slime and filth would be found. In nearly all these neighbourhoods complaints are made of the neglect of the scavengers, who will not remove the dust without the payment of "beer money." It is not always convenient for the poor to pay this tax, and in consequence they are left unattended to. As we have before said, voluntary contributions are the chief payment the dustmen receive. In many districts, the two men who are engaged have only 6*d.* for collecting each cart-load and taking it to a distant depot. The fault is in the system, and should be remedied.

Large numbers of houses are being built in Islington, and the increase in the value of land there is remarkable. Recently, at the ceremony of laying the foundation stone of a new church there, the Rev. D. Wilson, the vicar, remarked that during thirty years' connection he had seen no less than seventeen churches built in Islington. Referring to the increase in the value of property, he said that twenty years ago Mr. Thornhill offered him a piece of ground for nothing, provided he would build a church upon it, and in addition, that he would give 300*l.* in aid of building it, because it would improve his property, and now they were obliged to give 2,000*l.* for that which twenty years ago they were offered 300*l.* to accept. At that time, however, the land was in the midst of fields: now it is covered with houses, and densely populated.

Unfortunately, the materials which would enable us to compare the present and past sanitary condition of parts of the metropolis and its suburbs are slight and imperfect. There is, however, much valuable information in the parish registers, &c. which would show to what a great extent life has been saved by the improvements which have been made from time to time. It would be very useful to arrange the materials which are at hand in an available form; but this would be a labour of time. We will just glance at the register of a suburban district, which will show that the suburbs of the metropolis have been places of great danger.

So thinly was the parish of Stoke Newington populated formerly, that in each of the years 1569, 1571, and 1583, there was only one child registered in the parish. There were no marriages in 1566, 1567, 1569, 1584, and 1589, nor from the 20th of July, 1617, until the 1st January, 1618-19, between which the registrar has written in the parish books, "a long vacation!" These figures show how very small the population must have been at this time, and yet the number of burials recorded in 1562 and 1564 was six and five. In 1568 there was a plague, and then there were thirteen burials. There was only one burial in 1576, none in 1579, one in 1585, and none in 1588. In 1592, the year preceding a plague, there were eighteen deaths: in 1593, a plague year, there were thirty-four burials registered in Stoke Newington: in the following year, 1594, there were thirteen deaths.

In 1602 the deaths were eleven, but in the plague year of 1603 the number of burials in this small population was sixty-five. At least one-fourth of the population were swept away in this outlying neighbourhood.

In 1624 the number of burials was fifteen: in 1625 there were fifty-two burials, forty through the plague: their names are marked in the parish register with a red cross. In the next year, 1626, the deaths were ten. We learn from these notes that before the attack of the plague there was generally an increased number of deaths: the same may be noted respecting cholera.

In 1663, the year of the Great Plague of London, there were only fifteen burials registered. In 1666, twenty-four deaths are entered; but it

appears that the list for that year is inaccurate (as was probably that of the year before), for the minutes of the vestry, dated 1666, state that the churchwardens and overseers had been at "great cost and trouble by reason of the sad visitation late in that parish; that the plague was very fatal at Stoke Newington;" and it is very probable that many persons were buried in the fields and other places, and could not on that account be entered in the register.

In 1793, 128 years after the most recent of the above dates, there were only 200 houses: in 1801, the houses were increased to 221. In 1820, the number of houses was estimated at about 370.

In 1801, the population was 1,462: in 1811 it had almost doubled—it had grown to 2,119.

In 1820, the poor-rate amounted to 37. 19s. 5d. In 1792, the poor-rate was 9d. in the pound. In 1819 it was 1,689. 8s. 9d. or at the rate of 3s. 9d. in the pound.

Great misery must have been experienced by the paupers in old times: in 1756 they were farmed for 100l. per annum.

In 1773 they were farmed by contract, at a cost, for feeding, clothing, lodging, and medicine (except in cases of lunacy and one other disorder), for 6d. per day each.

In 1820 the poor were still farmed, but at the advanced charge of 6s. per week.

Stoke Newington was part of the ancient forest of Middlesex, the memory of which fact is preserved by the Saxon *stoc*, -wood.

ADULTERATION OF LINSEED OIL.

WHAT the manufacturers are now doing (as "Z.K." inquires) with linseed oil is, probably, only what they have always done—that is, the higher class of them,—vending it genuine; some of the inferior and some of the intermediate agents, and "boilers," playing tricks with it. But the high-class manufacturers themselves are, at present, passing through an ordeal of perplexity by reason of the shifted and shifting sources, and the variableness in the quality of the seed itself—elements of uncertainty that have sprung up as a sequence to the war with Russia, when—the Baltic ports being closed—there was poured, and has since continued to be poured, into the English market, seed from other and comparatively new sources; as, for instance, from Bombay and other of our Indian dependencies. It is no longer the produce chiefly of the colder climate of Russia, but that also of climates almost tropical, that now finds its way into the British market. And this makes all the difference; and, when closely inquired into, affords a sufficient explanation of any unusual appearances or actions of the existing raw oil, when compared with what these have been found to be some few years ago, when the oil is placed in the hands of, for example, the decorative painter, to be treated and applied after his usual fashion. The linseed of the warmer climates grows and is unavoidably mixed with a variety of other oleaginous seeds that are unknown in the localities of the colder climate of the Baltic. These interpolated seeds are readily detected and identified among the linseed; and the properties of each, as an oil-yielding seed, and the exact quality of its oil, are perfectly understood. The greater number of these interpolating seeds yield oils that, contrary to that from the linseed, are non-drying—that is, they do not pass from a fluid to a solid state on, and by reason of, a mere exposure to atmospheric air. It follows that the oil expressed from this mixture of seeds is itself a mixture of oils, some drying ones, and some non-drying. The result of the exposure of such a mixture to the action of atmospheric air, in order that it may dry, is, that the linseed oil present does dry, but associated with it is a proportion of other oils that do not dry. Thus the linseed oil present, when solidified, envelopes particles, or globules of oil still fluid, and remaining fluid. Hence a paint so compounded remains soft comparatively, and never properly hardens or solidifies. It is the same thing as would follow when, if with a pound of ordinary paint, compounded of some pigment and of ordinary linseed oil, there should be mixed a few ounces of hog's lard oil. The linseed oil would solidify, binding together the solid particles of the pigment and enveloping the lard oil; but the lard oil would remain fluid, and the result be a softish mass—the very contrary of the perfectly solidified and hardened mass requisite to the character of a good paint.

But this is not all the evil that follows, in its application in paint-work, upon the use of an oil, the produce of these mixed seeds. The series of changes that result in the solidification of the linseed oil leaves it fixed in that condition; that

is, unchangeable thereafter for at least some very considerable length of time. But these other oils so associated with it do not, within the same time and under the same external influences, assume any fixed or permanent condition. On the contrary, they remain fluid, subject to the action of certain contingent and external influences; that is, to reactions with the pigments they are in contact with, and with atmospheric air and moisture. In other words, they pass, and continue to pass, for some length of time, through a series of chemical changes, yielding certain acids (those almost indefinable or mythical organic things that modern chymistry pretends to identify and gives names to) along with glycerine and other compounds that are developed—thrown out and off; or, in more popular language, these oils "ferment," and the paint compounded of them "sweats."

The result, to a decorative painter, of these after reactions in his work, is the very quint-essence of dissatisfaction. After a few days or weeks, or it may be months, the *recherché* paint decorations of some lady's *bonheur* exhibit unmistakable evidences of a commotion within them of some kind or other. Efflorescences, decolorations, changed (faded or deepened) tints, appear here and there in patches, perpetually reminding the fair inhabitant of this sanctuary of the existence of such things in this world as cutaneous diseases. The flat (stippled or turped) changes to an egg-gloss; the full gloss to a dead flat in fantastic streaks here and there as capricious in their forms as the watering of a piece of *moiré antique*. The mauve-coloured panels of the duchess's carriage pass into a gloomy purple; the blue into green; the yellow into brown. The paint decorations on the walls and roof of the dining-room of the club look as if all the fumes and vapours from the cookery—the products of some thousand dinners—have been impinged and condensed upon them. The outside is little better. The half indurated paint has yielded to the assaults of the last alternations of sun and shower, and is full of ruts and little rivulets, which the philosophers seek to explain as the result of the action upon the white lead or the white zinc of an imaginary quantity of ammonia in the atmosphere of this big city; but the true explanation of which lies at hand much nearer. At length, that unfortunate victim—the decorator is sent for, and requested to remodel both his decorative work and his account; and, doubtless, many a house decorator and carriage painter and others in London, can point to deluge pages in their ledgers that tell tales of how once they got hold of linseed oil full of fats or of non-drying oils imported into it (though it may be unknowingly and unintentionally simply through the character of the original seed).

So far it is assumed that the painter uses this impure mixed seed oil in its *raw* state, employing along with it, as usual, turpentine for his flattened work, and drying materials in other cases. But if, instead of using it *raw*, he should proceed to *boil* this impure oil, then the evils of its employment in paint-work are added to still further, for the application of the high temperature used in this practice of boiling linseed oil to make it dry (a practice which is one of those antiquated absurdities that ought to have been expunged from the statute-book of chymical operations some two hundred years ago), generates, in the fats and non-drying oils, empyreumatic compounds most injurious both to the colour and stability of paint-work. The compounds, moreover, that are formed between and under the action of the elements of the fats and non-drying oils, and the elements of the driers employed, are also injuriously different from those produced with pure linseed oil—considerations that serve still further to explain the peculiar appearances now so prevalent and much complained of.

Besides this non-intentional or incidental adulteration arising from this mixture of seeds, there are other adulterations that have, unfortunately, not so unavoidable and natural an origin. These culpable adulterations will be found generally to consist of *common resin* added to and dissolved in the oil; of its mixture with *resin oil*; or with some cheap fats or non-drying oils. The effects on paint-work of the surreptitious addition of fats or non-drying oils are, of course, the same as those just described when similar non-drying oils have found their way into the oil through the original seeds.

The effects, when common resin has been added, are, that the paint may be dry apparently, but the slightest warmth softens it, and it becomes "lacky." The resin (solid and hardish at ordinary temperatures) yields to the warmth even of the hand, and adheres to it, or to one's dress if resting

against such point. The writer is acquainted with the circumstances of a chapel in one of our provincial towns that had the misfortune to pass through the infliction of an oil of this character. The first Sunday morning, after an interval of a month spent in re-decoration, witnessed the destruction of more silk dresses and of West of England cloth coats than will be readily forgotten, and the necessity for clearing off this sticking, plaster paint and for re-painting arose solely from the fact of the linseed oil having been adulterated with a quantity of common resin.

The effects of resin oil are still worse: remaining fluid, it obviates the final and proper hardening of the paint; whilst it passes through a series of chymical changes ending in the appearance of efflorescent patches, in the disintegration of the body of the paint, and in changing the tints of the more delicate pigments. Of course, besides this newer source of error there are others that have always existed, and of which the empirical handling of materials to form and act as driers or the using of materials altogether improper to act as such, however handled, is the most fruitful. This later, and, as it proves, even more general source of error has only imparted an additional element of disturbance, to perplex, inconvenience, and sometimes ruin. It is but proper to state here that the above is mainly a *résumé* of some papers on the treatment of linseed oil, its trade adulterations and other cognate topics, by Mr. Christopher Binks, laid before the Society of Arts, and mentioned in this journal at the time. It is to be regretted that this gentleman has not yet given to the public his promised treatise upon the abstract chymistry of the dozing oils.

The testing of linseed oil, in order to determine its purity, or the contrary, or the exact nature of any adulterations, is by no means an easy or simple operation. The principles of the methods in ordinary use are the following:—

Every fixed fluid oil, when pure, has its own proper and invariable specific gravity, and this specific gravity is sufficiently distinctive in each case to enable a practised and skilful operator, from this test alone, to determine the kind of oil he is dealing with when that oil is pure.

Instruments are constructed on the model of the ordinary hydrometer, and called (not very scientifically) "Olimeters." At one extremity of their range is placed sperm oil—the lightest; and at the other, linseed—the heaviest. This instrument, however, though useful for certain broad indications for trade purposes, is wholly unfit to determine the quality of a mixed or impure oil, either as regards the *relative proportions* or the *kind* of each oil in any such mixture. Other indicators are required with such a compound oil for determining either the kind or the qualities of each constituent.

When linseed oil is adulterated either with common resin or with resin oil, the testing a small quantity of it in a porcelain cup will throw out the unmistakable scent of either of these. Even the one-thousandth part of resin oil can be detected in this way. But when the adulteration consists of fats or of non-drying oils that have no very distinctive scent, then this test fails, and the experimenter is compelled to resort to another test, the one most commonly employed, viz. the evidences developed, chiefly peculiar changes of colour, on application to the oil of sulphuric acid. A drop or two of the oil is placed upon a white surface, a porcelain plate or dish, and the centre of these few drops is touched with the point of a glass rod carrying a single drop of the sulphuric acid. To a practised eye the reactions that follow between the acid and the oil develop colours, concentric rings of various kinds and shades of colour, sufficiently distinctive to indicate the character of the oil or of the mixture—its purity or the contrary, and the nature of any adulterations. Sulphuric acid thus added to linseed oil gives one kind of coloured rings; with resin dissolved in the oil it gives another kind; with resin oil a different kind; and, when added to the fats and other oils, colours or shades of colours, and other appearances, are developed that are specific and distinctive of each. The kinds of those appearances—the exact mode of operating, and the strength of the acid, &c. are given in some of the chemical books; but the changes and their minute differences are such as can scarcely be described in writing. They must be studied, rehearsed, and practised, to enable this method to fulfil its intentions, but which it can still be made to do with remarkable accuracy.

It is to be confessed, however, that the whole

* See also the Journal of the Society of Arts, Vol. V. Nos. 211, 212, and 213.

of this testing question is in an exceedingly unsatisfactory position. For the general public, unfamiliar with delicate chemical manipulations, even this sulphuric acid method is unavailable. Few better subjects than this exist for the exercise of chemical and mechanical ingenuity; for he who shall adjust an unerring operation, or set of operations, or contrive an accurate instrument for determining the character of an oil, or of a mixture of oils, will have conferred a vast benefit upon both the public and himself.

But the more immediately important question yet remains. Assuming the explanations given above to be the true ones of these more frequent and recent perplexities—the uncertainty as to the quality and the properties of the linseed oil now in the market,—what then is the remedy? Obviously it lies in one of these directions:—to extract the oil from the genuine seed only; to make genuine the seed now sent into the market in this mixed state, by some mechanical method of separating the real from the spurious seeds; and the differences in their several shapes and sizes would seem to indicate this to be but a trifling problem for the mechanical ingenuity of this age; or, to take the oil as it comes from the mixed seed, and then, by some chemical appliances, eliminate and separate the non-drying from the drying constituents; or so treat the drying one that its rate and power of drying shall be such as to overcome or make nugatory the contrary property of the others. And, finally, are there any methods now extant that can fulfil these latter conditions? or have we yet to seek for the solution of this most important chemical problem?

CONSECRATION OF MR. GEORGE CUBITT'S CHURCH AT DORKING.

THE consecration, by the Bishop of Winchester, of the new church at Rammore Common, built at the sole cost of Mr. George Cubitt, and dedicated to St. Barnabas, took place on the 31st ult. (All Saints-day).

The edifice is situated near the south-east corner of the Common, and in the parish of Great Bookham, three miles from the mother church. A new parish for it will be constituted under Lord Blandford's Act. Not long since there were completed, in the same neighbourhood, a parsonage and schools. The site is an elevated one, being close to Denbies. Mr. Scott was the architect.

The style adopted is the Early Geometrical. The plan is cruciform. There are no aisles to any part of the building, and the roofs are consequently all in one span, and all are, as usual, open, to show the construction. The chancel roof is of teak, and consists entirely of rafters framed each into a trefoil form: the remaining roofs are of pitch pine; the whole varnished. The walling throughout is of a substantial character, the depth of its recesses and windows contributing greatly to the general architectural effect. The external filling in is of unbroken flint set in white mortar; the quoins and bandings, which are liberally interspersed, are of Bath stone.

At the outset of the undertaking considerable difficulty was experienced in effecting a secure foundation; indeed, after the works were commenced, it became advisable to change the position of the foundation some little distance eastward; thus, though operations were begun in the early part of June last year, the first stone was not laid till the 18th of September, nearly four months afterwards.

Internally, the whole of the walls are ashlined, and in some portions freestone is introduced to vary the monotony of colour.

The seating throughout the nave and transepts is of open oak benches. Against the north pier of the chancel arch is the pulpit; in plan, a portion of an octagon, the principal faces being constructed of red Mansfield stone: in four of these faces are medallions of the Evangelists, carved in alabaster quatrefoils, and the remaining side is occupied by a marble shaft, placed against it, and which penetrates the cornice, for the purpose of supporting the book-rest. The lower members of the pulpit are formed of a variety of choice marbles, including several shafts of "French Green," which, with their foliated capitals, support the bulk of the pulpit. The plinth and subplinth are of granite and marble.

Four grand arches, rising at the main intersection, carry the lofty central steeple. The arches have shafted jambs and arch mouldings divided by carved stone capitals. The foliation here, as elsewhere, is conventional, founded on natural types. The chancel is approached by three steps. The altar rail consists of a series of moulded trefoiled arches, spanning from small shafts, with

caps, bands, and bases. The whole internal area of the building is paved with encaustic tiles.

The east wall is pierced with three lancet windows of equal size and height, over which is a quatrefoil window of vesica form. The whole of these have been fitted with stained glass. The vesica window represents Our Lord in Majesty, and the three below contain a series of Scripture subjects, viz. in the north window, The Nativity and The Baptism; in the centre window, The Crucifixion; and in the south, The Entombment and The Resurrection. The mouldings to these windows are deeply cut, and the jambs are further enriched by clusters of shafts in the purest Devonshire red marble. The reredos below occupies the full width of the chancel. It is of alabaster throughout, and every portion is richly ornamented. The whole length of the north and south walls of the chancel are arcaded, the divisions being shown by serpentine shafts. The arches above are cinquefoil cusped, the spaces behind being either occupied by two-light windows, or by the organ pipes, or left quite plain.

The steeple, both within and without, constitutes the most striking feature in the building. It rises from the four arches of the main intersection, as already mentioned, but this square plan is quickly converted into an octagon by means of squinches. Against each of the eight angles thus acquired is fixed a corbel shaft of Aberdeen granite, whose foliated capitals are carried all round the octagon to serve as an enriched string; as well as forming the springers of the moulded groin-ribs, which, converging gracefully above, are blended in a central ring, which is covered in with an oak trap-door enriched with iron-work. The filling in of the groining is in courses alternately of freestone and clunch. The wall faces of this stage are filled in with coupled arcades on Peterhead granite shafts, and having above each a large circle. Some of these arcades are only panels, but others are pierced, and in them has been introduced some coloured glass by Messrs. Powell, imparting a glowing tone to the ordinary hue of the walls. Above this stage is the ringing floor, which succeeds the belfry, which contains eight bells; and, lastly, the tapering void of the spire itself. This internal arrangement is a key to the external, of which it will be enough to state that the octagonal outline is preserved throughout, and that the total height from ground line to summit is 154 feet.

The works have to the commencement of the foundations to the completion of the building, been carried out by Mr. Dines, of Grosvenor-road, Piccadilly; and amongst others who have been concerned in the subordinate departments may be named Mr. Farmer, who undertook the carving; and Mr. Walker, who built the organ. The east window (a gift from the Rev. Charles and Mrs. Parker) was by Mr. Crace; and the peal of eight bells (the gift of Mrs. Cubitt, sen.) by Messrs. Mears. The schools were built for Miss Cubitt.

THOUGHTS ON THE STRIKE.

THIS internecine conflict has now endured for so long a time, and its effects have become so baneful to the public at large, that the whole frame of society feels appalled at the horrors it has inflicted. Masters or employers have suffered by discontinuance of their business; the owners of property by loss of rental, or the wanton and wasteful spoliation of tenements; but worst of all, the families of the poor misguided dupes of fiction, overcome by privation, have withered, and, in too many instances, fallen a prey to famine!

Those who have no interests at stake feel shocked at the unfinished state of buildings which stand, as it were, in skeleton, yawning in every part of the metropolis; but those who feel for the labouring classes are wholly confounded at the aspect of affairs, now that the winter cometh. As an old employer of labour in every department, whether in the field, on the road, on the scaffold, or in the trenches, the sympathies of the writer are, and always have been, on the side of workmen, and perhaps somewhat warped in their favour; and he cannot regard otherwise than with feelings of dread the issue of the conflict, whether it be decided in favour of the employers or the employed.

Whatever the result may be, it cannot leave behind feelings or sentiments of improved unity. The passions of an entire class of the population are excited by interested agitators; and so far has this policy been extended that, in every town throughout the land, and in every manufacturing district where labour associates in community, subscriptions have been raised, as if on the plea of

sustaining the oppressed against the oppressor; and the crafty and well-organized agitators of revolt have striven, with a steadiness and perseverance worthy of a better cause, to band and enlist the sons of toil in every department of labour. Proclaiming that their cause is as righteous as that of their opponents is iniquitous, they began at the commencement with a claim for the reduction of the hours of labour; and, having been resisted in the attempt at combination, were met by the master builders, who decided that such claim could be opposed in no other way than by unity of purpose; for organization of self-preservation made it imperative upon the employers to defend each other against a conspiracy so widely spread and so cunningly devised: they issued the *document*, and then the attacking party, suddenly taking up a new position, denounce this measure of self-defence, and make it the basis of a general revolt. The unemployed and half-starving turn-outs are exhorted to hold steadfast: they are promised support, if not wages, in their culpable idleness; and the funds collected from operatives, raised to support them in sickness or other misfortunes and eventualities of life, are appropriated to the sustenance of the revolt!

This, had the leaders gone no farther, was sufficiently reprehensible; but, as if to show that no principle of right nor regard to law should restrain them, they have dared to sanction members of their own executive body to travel the country in order to enlist all artisans, mechanics, and labourers, and to levy subscriptions and further appropriations of money funded for other and more benevolent objects. But not content with violating the sacred rights of the unfortunate to eleemosynary funds, they have further outraged all law by following up all recusant members: they have incurred considerable expense by dodging parties of men who had accepted employment, and have been so regardless of the liberty of the subject as to threaten these men that they should be marked as "blacks," and be otherwise subject to the censure, if not the violence, of the whole class of unionists!

Amongst many cases of intimidation brought before the bench, a recent one fully justifies the conclusion herein drawn; but to that case, as it is deferred on appeal, reference cannot be made, further than to say, that if such an outrage against social law as is therein detailed be proven, the heaviest punishment which the law of the land admits of should be awarded against the delinquent.

The poor, and perhaps ill-informed, dupes of factions and designing men ought not to be the victims of illegal conspiracies, when the fabricators of the mischief are caught in *flagrant delicto*. It may fairly be argued that no man would renounce his employment, and hang upon the miserable dole dealt out weekly by the Executive Committee, unless he thought he was right; and that, by his sacrifice of weekly earnings, he was serving his fellow-sufferers; and, possibly, that he himself might be thereafter benefited. But the fact is, and the writer can adduce proofs of it, that there are many of the turn-outs—expert mechanics and workmen, and valued by their employers—who totally disapprove of the strike, who consider its object and purposes inequitable, and yet they dare not oppose themselves nor their opinions to the behests of their brethren in associations: the terrors of being made "blacks," nay, the dread of violence, restrains them; and, despite their own convictions and the entreaties of their innocent and suffering wives and families, they too persist and refuse employment, and, in some cases, the liberal offers of employers to reimburse part of their lost time!

To unite, to coalesce for the establishment of benefit societies, is laudable: to combine for the purpose of protection against the encroachment of employers, or even to advance the interests of their own body, is not inconsistent with the laws and usages established in England from time immemorial: it is legitimate. But to arrogate the power of restraint upon the free action of a fellow-labourer, or of any man, is repugnant to every principle of law, of justice, and of religion: they have a perfect right to persuade, but none to constrain.

There exists now throughout the whole range of the land—that is, amongst the better classes—(as that expression is commonly understood) a feeling of terror and of awe, lest the differences between the luctant parties may not engender animosities too deeply rooted to die out with the question in dispute,—lest a war of classes should emanate from a strife got up in folly and carried on in a spirit of wickedness.

The new Turkish baths at Lincoln-place, Dublin, are approaching completion, and will form a novel building, the Eastern architectural characteristics being carried out. The principal façade is about 186 feet in length, with a two-story and projecting main entrance in the centre, surmounted by an ogee dome, and a tall chimney with ornamental termination rising behind same. The exterior is in Portland cement, executed with its elaborate fretwork, minarets, finials, half-moon openings, pilasters, &c. in workmanlike manner by Messrs. Hogan & Son, plasterers. Interiorly the arrangements comprise the requisite apartments for carrying out the principle, viz. the Divan, the Frigidarium, the Tepidarium, &c. &c. Mr. Barker, of Cork, is the designer, and we believe, the pro-

meter; Mr. Dwyer the clerk of works. A number of workmen from Cork are engaged on the building. A similar class of structure, but on a more extended scale is being erected at Gray, and both bid fair to eclipse anything of the kind in the United Kingdom.

The Roman Catholic Church of St. Augustine, Galway, has been consecrated. It consists of nave, aisles, chancel, and side chapels; aisles being separated from nave by seven equilateral arches springing from octagonal piers of polished marble, with moulded capitals. The chancel has a three-light traceried window, the nave a triple lancet, and the clerestory single lights. The chancel arch is supported on four pillars of green veined marble with capitals of Carrara. The roof is of open timber work, framed, stained, and varnished. Inside the entrance is a stoup of black marble, designed by Mr. Clare, of Galway; but, as we understand, only intended for a temporary purpose. Mr. M. B. Moran is the architect, the clergymen of the community being the builders.

The portico and bell-tower of the church of St. Nicholas, Francis-street, Dublin, are now completed, and have been erected from plans furnished by Mr. John Bourke, architect. Mr. John Brady is the builder.

The Ballast Board have advertised for proposals to erect workshops and other buildings at the North-wall Graving-dock, Dublin.

A commemoration window, erected in honour of the late Rev. Thos. Byrne, has been placed in the R. C. church of St. Mary, Star of the Sea, Irish-town, Dublin. Messrs. Casey, brothers, were the artists.

Mr. O. C. Edwards has been appointed engineer-in-chief of the Cork and Youghal Railway, in the place of the late Mr. Brunel.

The water supply of Dublin continues to occupy much attention, and the two members of the corporation, Mr. Codd and Dr. Gray, to whom the various projects were referred for final decision, have recommended "the abandonment of the third and last plan unanimously adopted by that body," and negatived the Rippure project completely. What the ultimate result may be, it will, even after so much argument, be difficult to say.

In the Irish metropolis, building of a commercial nature chiefly is brisk. The new mart in Grafton-street is being completed; Mr. Carroll, architect; Mr. Meade, builder. Messrs. Fergusson & Co. in the same street, are removing to new premises preparing for them; Mr. Lyons, architect; Mr. Meighan, builder. Messrs. Marsh & Co., of Sackville-street, are engaged in rebuilding their premises under the direction of Mr. M'Curdy, architect. The Royal Banking Company's new offices in Foster-place are being finished; Mr. Geoghegan, architect; Mr. Wm. Crowe, builder; and the new Kildare-street Club-house is built to level of first floor, and will form a most conspicuous feature, with its frontage of 134 feet towards Kildare-street, and 63 feet towards Leinster-street, the chief thoroughfare of the two. It will have a red brick front in the Byzantine style, with an elaborately enriched main cornice, dressing-strings, &c. of Portland and lime stones, and a projecting oriel commanding extensive views at either side; Messrs. Deane & Woodward, architects; Messrs. Cockburn & Sons, builders. Expenditure about 21,000*l*.

For the proposed Ulster Hall at Belfast, thirty-eight competitors have, it is said, sent in drawings, and there is much emulation manifested. Objections have been raised to the proposed building, as per instructions, being too small for that important town. A new school-house, two stories high, and with two fronts, white brick dressings, &c. is being built in connection with May-street Church.

THE SEWAGE AND THE SOIL.

MR. MECH, of Tiptree, writes to the *Times* reurging a very important subject of consideration.—"I consider it a public duty," he remarks, "to direct attention to a danger of great magnitude which threatens British agriculture, and through it the nation at large. I mean the gradual, but sure exhaustion of the soil of Great Britain by our new sanitary arrangements, which permit the excrements (really the food) of 15,000,000 people, who inhabit our towns and cities, to flow wastefully into our rivers. The continuance of this suicidal practice must ultimately result in great calamities to our nation." He quotes Baron Liebig on the subject. Speaking of the Romans, who also had their sewers and wasted their human excreta, this celebrated chemist says:—"All these rules had, as history tells us, only a temporary effect: they

hastened the decay of Roman agriculture, and the small farmer ultimately found that he had exhausted all his expedients to keep his fields fruitful, &c.; and, as the history of the three first centuries of our era informs us, there ensued a condition of the population the most calamitous and frightful into which a nation can fall. It is true that many causes co-operated in producing this result, but assuredly one of these was the exhaustion of the soil by the spoliation system of agriculture then pursued." Thus the question, how shall we manage to apply our sewage to our soil?—a question to which we have long and often drawn attention—is one of great political and national, as well as social, importance. The Chinese, as Liebig remarks, in one of these quotations, have for 3,000 years kept their soil in a remunerative state by close attention to this subject; while, by neglecting it, the Anglo-Saxon race in 100 years have literally exhausted the finest tracts of the old States of America. It is clear and obvious, and we have again and again said, that the great works now in progress in the metropolis will not settle the question at issue as it ought to be settled, even *quoad* the metropolis; and the sooner some definite ideas are struck out as to the further disposal of the sewage for behoof of the land the better. An example might thus be set to provincial towns and a general benefit accrue to the country at large.

STAINED GLASS.

Lincoln Cathedral.—The great west window is to be filled with painted glass by Messrs. Sutton, who are amateur workers in the art of glass staining. The first instalment has been placed. The tracery of the window and the top part of the centre light are as yet the only portions which have been fitted with coloured glass. The tracery, says the *Lincolnshire Chronicle*, is filled with glass exceeding in depth of tone and harmony of colour the glass in the great east window. The design of the tracery lights consists of urn, vases, &c. The top of the centre light is a canopy, beneath which is a scriptural figure.

All Saints', Maidstone.—Workmen have for some weeks past been engaged, under the superintendence of Mr. Blandford, of Maidstone, architect, in filling in the windows of the chancel aisles and south aisle of this church with stained glass. On removing the old glass for this purpose, it was found that the stone mullions and shafts were so decayed that it would be necessary to put in new stonework, which has been done at a considerable expense by the donors of the windows. The execution of the designs has been entrusted to Mr. Wailes. The first of the series is the east window, of three compartments, in the north aisle of chancel, which illustrates the Annunciation to the Shepherds. The next which follows in order is the south window, of five compartments, in the south aisle of the chancel, the whole of which is devoted to a representation of the Nativity of our Lord. In continuation of the history of our Lord is the east window, of three compartments, in the south aisle of the chancel. The subject illustrated here is the Adoration of the Magi. The next series of windows are those in the south aisle of the church. The first in order is the easternmost, of four compartments. The first two of these contain the Angel appearing to Cornelius while in the act of devotion. The other two openings represent Peter baptizing Cornelius. The dove immediately above symbolizes the descent of the Holy Ghost upon all present. The window adjoining this, also of four compartments, contains a history of the good Samaritans, in four subjects. The westernmost window, of four compartments, of the south aisle, finishes the series. It is foliated, and represents two subjects. The first is the good Shepherd, typical of our Saviour. The next is the Guardian Angel protecting youth in his Christian course against all snares and temptations, while lions, tigers, and serpents lie before him.

Salisbury Cathedral.—A stained glass window has been placed in the eastern transept of Salisbury Cathedral. At the foot of it is the following inscription:—"Sacred to the memory of the officers, non-commissioned officers, and privates of the 62nd or Wiltshire Regiment, who fell in the service of their country in the Crimean War in 1854 and 1855. This window is erected by their surviving comrades." The window, which is by Messrs. O'Connor, of London, is placed by the side of one which was erected as a memorial to the officers and privates of the same regiment who fell in the Suttlej campaign, in the

gallant attack on the Sikh batteries at Ferozeshah, December 21st, 1845.

Hampton Church, Evesham.—A new east window has been added to this church. It is in three lights, with Perpendicular tracery, and was erected during the past summer through the liberality of Henry Workman, esq., as a memorial or thank-offering for the successful completion of what has been the crowning work of that gentleman's life—namely, the construction of the new bridge over the Avon at Evesham, which was accomplished by him in face of great difficulties. Mr. Workman gave a *carte blanche* to the house of Messrs. Ward & Co. of London, to produce a window which should be the best of its kind, to commemorate this event. Its three principal subjects are—1. The Nativity of Christ; the Virgin and Child, with Shepherds, animals with the manger, and angels above, bearing the announcement of "Peace on earth and good will to man." 2. The Baptism of our Lord. 3. The Ascension (in the centre light). In the tracery above are four angels with musical instruments and scrolls, "Hallelujah," and the monograms of our Lord. Beneath the central subject is a panel containing a representation of the new bridge, and also the arms of the borough and of the donor, and the whole is accompanied by the following inscription:—"A Thank-offering erected by Henry Workman, of this parish, who, while Mayor of the borough of Evesham during five successive years, was permitted to be mainly instrumental in the removal of the dilapidated and dangerous old bridge, and the construction of the present new bridge over the river Avon, in the said borough, June, 1859. 'Commit thy works unto the Lord, and thy thoughts shall be established.' Prov. cvi. 3."

CHURCH-BUILDING NEWS.*

Rotherfield Greys (Oxfordshire).—St. Paul's Church, Highmore, in the parish of Rotherfield Greys, was consecrated on the 16th ult. It is a simple building, in the Early Decorated style, consisting of a nave and chancel, with a vestry. The walls are built with unfaced flints, and Bath stone windows, angles, &c. The roofs are framed open, showing the stained deal, are plastered between, and are covered externally with old tiles, the ridges being topped with ornamental cresting. All the windows of the chancel are filled with stained glass. The artists were Messrs. O'Connor, of London. The east window, presented by G. A. Smith, Esq., contains figures of Faith, Hope, and Charity, with an emblem of the Trinity in the upper part. The three side windows contain figures of the favoured Apostles, St. Peter, St. James, and St. John. Two of these were presented by Miss Elwes, of Highmore Hall; the other was contributed, at their own desire, by Messrs. O'Connor and the architect, Mr. Joseph Morris, of Reading, as their joint gift. The contracts (amounting to nearly 3,000*l*) were taken by Mr. Robert Owtwaite, of Henley-on-Thames; the masons' work being done by Messrs. Wheeler & Sons, of Reading.

Barkham.—The chief stone of St. James's Church, Barkham, has been laid by Mrs. Clive, assisted by the architects, Messrs. Clacy & Son, of Reading, and the contractor, Mr. Hollis, of Wokingham.

Stourbridge.—The site fixed for the new church, to be erected here, has been taken possession of by the builder, and the getting out of the foundations commenced. The architect is Mr. Street; the builder, Mr. Anchorite, of Kidderminster. The extreme length of the building is to be 120 feet, the extreme width 60 feet, and the height 55 feet. The church will be in the Early Decorated style.

Bristol.—The foundation-stone of the new church for the parish of St. James was laid on the 27th ultimo: the site is in Union-street. The edifice, when completed, will be 104 feet in length with an average width of 26 feet, which will give 700 sittings, one-third of them free. The chancel will be short, and the floor tiled, the length up to it being about 80 feet. There are to be two galleries, with a turret staircase leading to them from St. James's Back. The style, according to the plans, is Early Decorated; and the edifice will be built of Pennant stone, with freestone dressings, the sum of 2,000*l*. to cover all expense. Messrs. Popes & Bindon are the architects, and the contractor is Mr. D. Davis. The glass required is to be presented by J. Wesley Hall, Esq.

Cardiff.—The new cemetery for Cardiff has been consecrated. It is situated at the Weddall,

* Some of the matter in this article has been several weeks in type.

one mile and a half from Cardiff. The ground extends over 90 acres. The boundary between the consecrated and unconsecrated portions is formed by a carriage drive of the width of 12 feet, bordered on either side by horse-chestnut and lime trees. The principal entrance is from the Weddell-road, by three archways enclosed by iron gates. The chapels and vestries, which are connected so as to form one group, are situated in this part of the ground. Porte cochères, or covered ways, forming porch to each chapel, are provided for the hearers to draw up, and the central portion of the group is formed by a tower and spire of a total height of 102 feet from the ground to the top of the vane. The chapels are of exactly the same proportions and style, but differ somewhat in details: they are each 40 feet by 20 feet interior dimensions, and will each accommodate 150 persons. The roofs are open to view, and of deal stained, the spaces between the rafters tinted blue, the principal ribs terminating on freestone corbels carved. A traceried freestone window occupies each end of the chapel. The lodge adjoining the main entrance contains accommodation for the keeper of the cemetery, and is in the same style as the chapels. A chapel for the Roman Catholics has been erected in that part of the ground adjoining Placca-lane, and a separate entrance has been formed for their exclusive use. This chapel is in the same style, but of smaller dimensions than the others. The whole of the buildings have been erected in the Gothic style of the early part of the fourteenth century, and are from the designs and superintendence of Mr. R. G. Thomas, architect, in conjunction with Mr. T. Waring, the engineer to the local Board of Health, who laid out and superintended the approaches, roads, and drainage, and other parts of the works. The drainage of the cemetery will eventually be connected with the town drainage of Cardiff. The whole of the works are being carried out by Mr. Alfred Chambers, of Cardiff, in one contract. Mr. John Palmer is the clerk of the works; and the planting and forming of flower-beds, &c. is being done by Mr. Matthews, of Cardiff.

Aberaron.—The new church here has been consecrated. It is in the Gothic style. The architects were Messrs. Pritchard and Seddon; and the contractor, Mr. T. Williams, Cardiff, who, it is said, is likely to be a loser to a considerable extent by the undertaking.

Leaton (Shrewsbury).—The new church erected at Leaton, according to the *Shrewsbury Chronicle*, has been consecrated to the Holy Trinity. The cost of the church has been upwards of 3,000*l.* exclusive of timber and furniture. The parsonage immediately adjoins the churchyard, and cost about 1,600*l.* Both the church and house, which were erected by Mr. Cartwright, of Shrewsbury, are from the designs of Mr. Pountney Smith, of Leaton, near Ellesmere. The former is in the early English style. The building consists of a nave chapel, north aisle, and three small chapels. The walls are of Grimsill stone, in ashlar work. Open fittings are provided for some 200 persons. All the fittings are of English oak, unvarnished. The roof is also of oak.

Hanley.—The foundation-stone of the Potteries New Mechanics' Institution and Working Men's Reading Room has been laid by the Mayor of Hanley, who gives 500*l.* towards the new building on condition of its containing a large reading-room capable of accommodating 150 or 200 persons. The new building will cover an area of nearly 800 square yards, and will be reared by Mr. Matthews, of Hanley, from designs by Mr. Scrivenor, architect, of the same place. The estimated cost of the edifice is about 2,700*l.*

Walsall.—The new Wesleyan chapel in Ablewell-street has been opened. The edifice has been constructed from plans drawn by the Messrs. Horton, of Wednesbury. It is 85 feet by 58 feet in the clear of the walls, and 32 feet high from floor to ceiling. The body of the chapel is lighted from the ceiling by two circular lights, containing a number of jets, beneath an enamelled dome. Beneath the galleries are suspended gas pendants, in bronzed and relieved work, with thistle motifs. The front elevation is of brick, with Bath stone facings, with main cornices to parapet and pediment. The building is constructed to seat 1,700 persons.

Lancaster.—The Roman Catholic church of St. Peter, Lancaster, has been consecrated and opened. The edifice stands to the westward of the schools. The church, presbytery, schools, and convent, form a group of buildings covering nearly two acres of ground. The building consists of nave, 32 feet wide between the pillars and 114 feet long, 47 feet to the square of the roof, and 74 feet to the apex.

The side aisles are 90 feet long, and 12 feet broad; north and south transept, 23 feet wide, and projecting 10 feet beyond the aisle walls. The total width of nave and aisles is 60 feet. The chancel is the same width as the nave, and 41 feet long, and terminates with a semi-octagonal arrangement, having a lofty three-light window in each face. On the south side a somewhat peculiar arrangement has been required in order to connect the convent chapel with the chancel. The Lady Chapel, 28 feet 6 inches by 12 feet 6 inches, is placed on the north side of the chancel, opening by three arches into the chancel and north transept, filled in by an ornamental screen of wood or stone. The tower, with the spire rising to a height of 240 feet above the ground, is placed at the west end of the north aisle, and opens into the church with a lofty arch towards the nave. Parallel with the south aisle, and occupying the same length, are placed the Whiteside and Conlston Chantry chapels and three confessionals, the former opening into the aisles by two arches, the roof being groined in stone, and each chapel lighted by two two-light windows arranged above the flat roof of the cloister. The chancel, separated by a lofty arch, 54 feet high, from the nave, is the same height as the nave without any break in the roof outside, the ridge forming one unbroken line the entire length of the church. The presbytery is placed on the south side of the church. The general style adopted is the Geometric. The church will accommodate 600 people in benches in the nave alone, leaving the transepts and north and south aisles unoccupied, except by chairs, as occasion may require. It is built of the white stone of the neighbourhood. The windows are filled with stained glass by Hardman. The three eastern windows represent—the centre one, the Ascension; that on the left, St. Peter standing in the Gateway of Heaven, and St. Peter receiving the Keys; and on the right, St. Paul taken to the third Heaven, and his Conversion on the Way to Damascus. The four small clerestory windows of the chancel have the keys of the patron saint, interlaced with foliage and pattern work. The lady-chapel windows represent, in the east window, a figure of the Virgin Mary and child Jesus, surmounted by angels bearing censers; the side windows,—the Visitation and Presentation in the Temple. The chapel of St. James and John has represented the Beheading of St. James, and St. Ann teaching the Virgin, St. John in Patmos, St. Catherine, virgin and martyr. Chapel of St. Thomas,—St. Thomas Apostle, and St. Thomas of Canterbury meeting the four knights in his cathedral, and his martyrdom. The groined ceiling of the chancel is decorated in gold and colours, by Mr. Early: at present it is the only portion so decorated, except the ceilings of lady chapel, St. Charles's chapel, and a small portion of the aisle roof over the baptistry. The high altar and lady chapel altar have been executed by Mr. Sterling, of Liverpool, and are composed of various coloured marbles. "The Agony in the Garden," by Mr. Lane, of Birmingham, forms the subject of the chapel of St. James and John; and a "Pieta," or dead Christ, by Mr. E. Gelfowski, of Liverpool, in the chapel of St. Thomas. The contractors were, Messrs. J. Duckett, of Preston, mason; R. Wilkinson, of Lancaster, carpenter; J. Cross, of Lancaster,

slater and plasterer; T. Dickinson, of Lancaster, plumber and glazier; J. Shrigley, of Lancaster, painter. The architect was Mr. E. G. Paley, of Lancaster.

Liverpool.—The new church of St. Mary, in Finch-street, is now almost finished. The edifice measures in the interior 65 feet by 43. The style is Gothic, and the material brick: the exterior is red, with bands of blue and white drawn along the front. The windows are glazed with Hartley's patent small quarry lights, bound together by lead, and a stained glass centre is being placed in each, presented by Mr. Forrest, of Lime-street. The roof is open, and supported by iron columns with ornamental caps. The pulpit is approached by a continuous staircase, and, on the north of the communion floor, there is a screen enclosing the minister's vestry. The church is surmounted by a bell turret formed in Wrexham stone. It will be lighted by gas brackets projecting from the gallery. The seats are all plain and open, stained light oak, and varnished. It is calculated to accommodate 800 persons. Messrs. J. & J. Hay are the architects, and the work has been executed by Mr. James Pooley.—The new Roman Catholic Church of Holy Cross, commenced in the early part of the year for the "Conceptionists Fathers," is now almost roof-high. It comprises a church and presbytery, which stand together, isolated from other houses by three streets. The entire building is erected with a thin green stone, with dressings of a reddish hue. Both buildings are taken for something under 5,000*l.* by Mr. Hugh Yates, the builder of the corporation. The design is by Mr. Welby Pugin.

Ecceles (near Manchester).—A new Congregational Chapel and Schools are being erected at Eccles. The design was selected in a limited competition, and is in the Decorated Gothic style, the architects being Messrs. Poulton and Woodman, of Reading. Its principal external features consist in a lofty tower and spire. In the front gable is introduced a large four-light traceried window, surmounted with ventilating lights and enriched finials. The side windows are of two lights, and cusped. The walls will be of Yorkshire Parr-point stone; and the dressings, of Hollington stone. The schools and class-rooms are situated immediately in the rear of the chapel; a spiral staircase turret giving access to them. The plan shows the formation of an entrance-porch under the tower and staircases, from the same to the children's galleries, which are to be small angle galleries, arranged so as not to intercept the internal view of the large window. The roof will be open-timbered, and the principals decorated with cusplings, &c., carved stone corbels and columns supporting them. The building will be heated by hot water. The organ is proposed to be situated in an apse at the extreme end of the chapel, immediately in front of which is the pulpit and communion rail. Vestries for ministers and deacon are also provided on either side of the apse. The accommodation is for about 700 persons, and the plan is capable of extension by means of future transepts, if required. The contract is for about 3,000*l.* and is being executed by Mr. Penk, of Manchester, under the superintendence of the architects.

SALES OF ESTATES IN ENGLAND AND IRELAND.

The following is a return of the sales of estates in London, at the Auction Mart and Garraway's, with the sales in the Landed Estates Court, Dublin, for two years, ending September, 1859.

MONTH.	LONDON SALES.			LONDON SALES.			DUBLIN SALES.	
	From Oct. 1857, to Sept. 1858 (inclusive).			From Oct. 1858, to Sept. 1859 (inclusive).			From Oct. '57, to Sept. '58.	to Sept. '59.
	Sold.	Bought in.	Total.	Sold.	Bought in.	Total.	Sold.	Sold.
October	90,924	159,935	250,859	119,750	164,000	283,750	48,310	56,148
November	75,793	123,780	199,573	220,312	255,579	475,891	499,325	719,450
December	63,941	918,689	982,630	*227,378	51,399	281,008	340,160	188,315
January	13,467	55,569	71,834	73,627	132,105	205,732	81,476	20,400
February	101,394	49,857	150,451	118,807	117,870	236,677	66,870	96,070
March	107,350	181,038	288,388	235,048	159,470	394,518	85,880	1,335
April	210,179	280,448	490,627	135,644	1,113,562	1,249,206	60,510	18,485
May	395,995	436,455	835,150	358,927	414,365	773,492	377,812	128,997
June	66,382	909,724	1,015,106	405,328	505,798	1,031,126	371,323	212,948
July	107,710	1,319,265	1,426,975	537,898	514,799	1,052,697	95,844	68,943
August	306,219	698,132	1,004,351	306,419	792,434	1,098,853	—	—
September	134,511	368,835	503,346	125,375	165,730	292,105	—	—
	2,803,683	4,906,438	7,770,141	3,231,712	3,388,933	6,620,645	1,927,731	1,481,571

* In the month of December, 1858, two large sales occurred at the Mart of estates in Northumberland, amounting together to 4,423,000*l.* This accounts for so large an amount in December, 1858, compared with December, 1857.

The above table is given in the *Estates Gazette*. Last year the total amount of estates offered for sale exceeded the present year by about 1,150,000*l.* but the sales this year have, in proportion, exceeded those of last year, viz. 3,231,712*l.* were sold out of 6,620,645*l.* whereas last season the sales amounted to 2,803,683*l.* out of 7,770,141*l.* This year nearly

half the estates have found purchasers, while only about one-third of the property offered for sale last season was really sold. Taking the average of the two years, it would appear that estates to the value of seven millions are annually put up for sale by auction in London alone, nearly half of which are disposed of.

Books Received.

Handbook of Geological Terms and Geology. By DAVID PAGE, F.G.S. Blackwood & Sons, Edinburgh and London. 1859.

In a science so full of "hard words and forbidding technicalities" as geology has become, there was much need for a good handbook, and the present volume forms the nucleus of a dictionary of terms that, in future editions, will, doubtless, be much more perfect and complete than the first edition, which, however, contains a large collection of useful geological matter, easily accessible and ready of reference. "The general reader," remarks the author, "will ordinarily find the information he requires in the first and second sentences of a definition under each alphabetical head: what follows is addressed more especially to the professional inquirer,—to the student, miner, engineer, architect, agriculturist, and others, who may have occasion to deal with geological facts, and yet who might not be inclined to turn up half a dozen volumes, or go through a course of geological readings, for an explanation of the term in question." Such a work cannot but be useful to our professional and other readers.

VARIORUM.

"Not a Strike, but a Feud! with Suggestions for its immediate Termination" (Johnson, 60, St. Martin's-lane), is a pamphlet of fifteen pages, wherein the author, as he says, "kicks about" in every direction. He maintains that the present strike "is a Chartist and Socialist manoeuvre, not to elevate the workman, but to create a commercial crisis, and bring down the employer to the level of the employed." He advises the masters, nevertheless, to treat the men with prompt indulgence: "Let the masters," he says, "with true superiority and a magnanimity they can well afford, search the men out, and tell them they will trust them; that they must henceforth be faithful to one another; that they, the masters, are willing to burn the Declaration, which has now served its purpose, and to release those who have taken it, and thus unite in again securing the approbation and confidence of the public. Trade will then flow rapidly back into its old channel; and, during the coming winter, the mistakes of the past will only be remembered as having unhappily created an amount of misery for the relief of which society will make it a duty to use a diligent and willing effort."

"The Stereoscopic Cabinet" is a monthly packet of three pictures for the Stereoscope, edited and published by Mr. Lovell Reeves. The first issue consists of Group of Muses from the British Museum, the Deck of the Yacht *Maraquitta*, and the South Porch of St. Owen, Ronen, the last a very delicate and effective photograph.

"The *Universal Review*," a well-conducted monthly, has a readable article headed "Public Well-Being." It is right in the main, but deals with errors and evils too gently.

Miscellaneous.

SOCIETY OF ARTS.—The first meeting will be held on Wednesday next, the 16th.

INSTITUTION OF CIVIL ENGINEERS.—The first meeting of the session was held on Tuesday evening last, Mr. Locke, M.P. in the chair.

EXAMINATIONS UNDER THE BUILDING ACT. The Institute of British Architects, on the report of their Board of Examiners, have granted certificates of competency to act as district surveyors to Mr. R. Richardson and Mr. Josiah Houle.

INCREASING THE STRENGTH OF METALS.—Mr. W. Haggett, Sherborne, proposes to roll, press, or cast iron with undulated surfaces. The corrugations are made to cross each other at right angles, or diagonally, as may be most advantageous for the purpose to which the prepared article is to be applied.

THE PRINCESS'S THEATRE.—Messrs. Grieve & Telbin have painted and built one new scene for *The Master Passion*, called the outlaw's stronghold at Segna. It represents a ruined fortress on the Adriatic. The perspective of the arch that spans part of the stage is doubtful; but it is a charmingly bright and effective scene. A gipsy revel, which takes place there, is arranged by Mr. Oscar Bym with all his old skill and inventive power. Some of the excellent scenery of the *Merchant of Venice*, and the banquet scene from *Henry VIII.* are brought into requisition. The piece itself is interesting, and Mr. Ryder, Miss Carlotta Leclercq, and Mrs. C. Young play well in it. Mr. Geo. Melville, the new actor, is less effective than we had hoped for.

THE DURABILITY OF AMERICAN-BUILT TIMBER SHIPS.—Some tables have been issued in a printed form, prepared by Mr. Donald McKay, of Boston, U.S., ship-builder, "for the purpose of proving, by facts, that ships built with carefully selected American timber, viz. 'live oak, white oak, pitch pine,' &c. will last as long as ships built with the best of English oak, in contradiction to the views entertained by Lloyd's committee, and in support of the favourable opinions entertained by British merchants in regard to the efficiency and safety of American ships." The tables, it appears, have been extracted from the manuscript of a work on the theory and practice of naval architecture, by Mr. McKay.

FATAL ACCIDENT TO A BUILDER.—On Saturday morning last an accident occurred at Hyde Park-gate Kensington-road, by which Mr. William Barnett, a master builder, in business at Kensington, was killed in a frightful manner. The mansions on the terrace known as Hyde Park-gate are very lofty buildings. Recently, some repairs have been going on at No. 8, under the care of Mr. William Barnett and his brother. The work was near completion, and the deceased gentleman went on the parapet on Saturday morning for the purpose of seeing that some carved stone work in the cornice had been properly carried out, and fell to the ground, a distance of above 80 feet, with a frightful crash.

MALICIOUS ATTEMPT TO INJURE WORKMEN.—The workmen employed by Mr. Robert Wrigley, brickmaker, Coldhurst, Oldham, were about to mould some clay into bricks, when one of them observed something shining in it. An examination was made, and it was discovered that a great quantity of broken needles, such as are sometimes used by cabinet-makers for smoothing down their work, had been mixed among the clay, which had thus been rendered useless. The men dare not attempt to use clay amongst which needles have been placed, because of the serious injury done to their hands by the needles in such cases, which have been frequent of late years. Recently the same malicious deed was done at Mr. Holt's brickyard, Higginsshaw, and two men were hurt in their hands, and had to cease work. One of them has been off work nine weeks, and it is doubtful whether he will recover the use of his hand. Doubtless such malicious tricks are stimulating the application of machinery instead of hands in such circumstances.

THE UNIONIST TACTICS AT SHEFFIELD: ATTEMPT TO BLOW UP A HOUSE.—A fresh outrage, of the diabolical kind so frequent about Sheffield, has been perpetrated at the house of Mr. Joseph Wilson, of Headford-street, saw manufacturer. Mr. Wilson and his family, six in number, were startled by a violent explosion while the inmates were in bed. Mr. Wilson hastened downstairs, and in the cellar found the fragments of a tin case, which had evidently contained powder. The can had been capable of containing from one to two quarts, and a strong cord had been tied round it, probably under the impression that the stronger the resistance the more violent would be the explosion. The explosion tore up the floors of two sitting-rooms, smashing the marble mantelpieces in each room, and destroying portions of the furniture. It also blew down a partition wall, and forced out the light over the front door. The external walls were considerably damaged, a large crevice being made in one, extending from ground to roof. Happily none of the inmates were personally injured. Mr. Wilson has refused for fourteen years to employ union men, and has frequently been held up to opprobrium in placards. Some few weeks ago three of his workmen joined the union, leaving their work without giving him notice. He took no proceedings against them, but employed another non-union man named Helliwell. A few days afterwards he received by post a threatening letter, in the approved Ribbon conspirators' style, and appropriately signed "Tantia Tope;" and within a week after a quantity of powder was placed under Helliwell's glazier, and, exploding, seriously injured him. Helliwell had just resumed work, and the present outrage is evidently a further attempt to enforce compliance with union regulations. The unionists at Sheffield have for years tried to overrule their non-unionist fellow-workmen and their masters, and the infernal tactics of late years persisted in would appear to be the legitimate fruits of long-continued impunity in tyrannical misconduct which is leading to the utter ruin of Sheffield as a manufacturing centre. It is full time the Legislature were taking cognizance of the doings of such unions. They have had quite "rope enough" to reveal the devilry to which they tend.

THAMES TUNNEL.—In the week ending 5th November, 18,441 passengers passed through, and paid 76l. 16s. 9d.

CHESTER.—The mayor's drinking-fountain is commenced. The fountain will be 12 feet in base and 18 feet in height.

THE LIVERPOOL AND BIRKENHEAD DOCKS.—In a discussion which took place at the meeting of the Mersey Dock Board last week, Mr. Bushell, one of the members, stated that the docks at Liverpool now comprised 240 acres of water area and 15 miles of lineal quay space. The docks at Birkenhead, when completed, would furnish a water area of 170 acres, and a lineal quay space of nine miles, at a cost of 3,000,000l. The Liverpool docks represent an amount of about 7,000,000l. The Mersey adopted the report of the works' committee on the subject of improving the approaches to the landing stages at Woodside and Liverpool, with the view of carrying out increased facilities for the transit of goods and passengers across the river. The scheme involves an expenditure of 58,000l.

THE STEPHENSON MONUMENT.—On Saturday morning, says last week's *Gateshead Observer*, a meeting of the Stephenson Memorial Committee took place in the board-room, central station, Newcastle, for the purpose of considering whether, in consequence of the death of Mr. Robert Stephenson, it was advisable to make any change in the monument proposed to be erected to the memory of Mr. George Stephenson, so as to combine a monument to both father and son. It was resolved, that the statue of Mr. George Stephenson, designed by Mr. Lough, to be placed at the junction of Neville and Westgate streets, be proceeded with, and that the subject of another monument to the memory of Mr. Robert Stephenson be brought before a public meeting of inhabitants of the town and neighbourhood. The committee, it is understood, unanimously felt precluded from reopening the question of the father's memorial. We regret the decision, says the *Observer*, and can now only hope that the memorial of the son will be thrown open to public competition.

FATAL EXPLOSION OF GAS.—At the Surrey Consumers' Gas Works two men have been so severely injured, that one of them has since died, by an explosion, caused by a defective metre, which destroyed the "governor's room," and much injured the carpenters' shop and smithy. At the coroner's inquest, at Guy's Hospital, Mr. Croft, the lessee of the works, said the metre was the same as used at all other stations: one of the same description was fitted up in 1813 at the Chartered Gas Works, and was now as perfect as ever. His impression was that the metre had been suddenly agitated, and the iron plates giving way had allowed the gas to escape, which entered the blacksmiths' shop, and having accumulated became ignited, and caused the explosion. It was in contemplation to have extra open ventilators so as to allow the escape of gas to mingle in the open air, and thereby prevent the possibility of a similar accident. The jury returned a verdict of "Accidental death."

BUILDING LAND IN EAST LONDON.—The erection of houses in the neighbourhood of Victoria-park has been on the increase; and, within the last seven years, the fields situated between the Old Ford-road and the line of the Eastern Counties railway have been covered. One of the most successful estates acquired for the Conservative Land Society was the one in the Old Ford-road, on which whole streets, shops, and a chapel, have sprung up within a short period. The committee have secured for the society a piece of land fronting the Old Ford Roman-road, adjoining the former property. The new estate, designated the Roman-road, is bounded by Tredegar-road, Cardigan-street, and Park-road, and is therefore close to the stations on the North London and Eastern Counties railways.

PORTMAN CHAPEL SCHOOLS.—The schools in East-street, Manchester-square, having become dilapidated and inadequate to the demands of the locality, additional space has been acquired by the purchase of some houses in the rear in York-court, and it has been determined to build a new school-house, which will accommodate 500 boys, girls, and infants, arranged with class-rooms, exercising-court, and all the necessary appurtenances required by modern improvements. There are also two dwelling-houses, for the master and mistress. The foundation-stone was laid on Wednesday, 2nd inst. by Sir Thomas Fowell Buxton, assisted by Robert Hanbury, Esq. M.P. chairman of the building committee. The architect of the new buildings is Mr. Christopher Eales, of Welbeck-street.

The Builder.

Vol. XVII.—No. 876.

Guide-Books and Maps.



N his preface, written "in the *désobéissante*," the author of *A Sentimental Journey*, &c. classifies "the whole circle of travellers" under ten or eleven heads,—as Idle Travellers, Spleetic Travellers, Felonious Travellers, Vain Travellers, Simple Travellers, Sentimental Travellers, and others. Amongst the number he includes Inquisitive Travellers. The travellers of all the classes, in the past season, numbered more by hundreds of thousands, than those there were prior to development of the existing system; for, it is the peculiarity of railways, that in addition to their advantages of saving time and money, they can take an apparently unlimited number of passengers; and checks interposed on journeying for amusement or health,

instruction, or whatever object of those referred to, are greatly different in the main to those of a hundred years ago. Sterne, however, this season, not of choice but necessity, might have had to write his preface in a carriage, and even pass the night in one at a railway terminus, as the substitute for a bed. The Inquisitive Traveller, too, is not a rare article; and the British Isles, and more so than ever, during one or two seasons last, have been found to offer for the sad specimen of a *genius*, more than the objects to which his attention was directed by Sterne. "Knowledge and improvements," says the author of *A Sentimental Journey*, "are to be got by sailing and posting for that purpose;" and whilst we should be far from saying with him, that a man would act *wisely*, could he be contented to live "without foreign knowledge, or foreign improvements," there is truly much that the Inquisitive Traveller may see "drysod, at home." "For," says Sterne, in a passage alluding to this country (though the application is sometimes misunderstood), and the force of it increases every day,—"there is no nation under heaven abounding with more variety of learning—where the sciences may be more fitly wooed, or more surely won, than here—where art is encouraged, and will so soon rise high—where Nature (take her altogether), has so little to answer for—and to close all, where there is more wit and variety of character to feed the mind with. Where, then, my dear countrymen, are you going?"

The Inquisitive Traveller, as we take him, is a man of mark under the present phase of our social condition and our educational advancement. Varied may be the objects calling him from his home,—nature and art; the works of the past time, and the present; the structure of the earth; the varieties of the human family, and their industrial pursuits; and the whole domain of animal and vegetable life, are included in the fields which induce him to travel, and to exercise the sense which is the avenue of the great bulk of human knowledge, and the agency for the attainment of progress and power. The architect and the painter; the antiquary and the searcher of history; the geologist, and the botanist—the mere picker-up of "the wonders of the seashore;" the observer of facts in any department of mechanical or scientific invention and application; all belong to the order of Inquisitive Travellers, and of men who have each an object which it is important to encourage and facilitate. Not long

ago, we spoke of the means by which these objects might be fostered, to the national gain, through amendment in details of the management of some of the railways. The hotel-system of this country, though repeatedly animadverted upon, is yet in a greater degree open to improvement—with a view to comfort, and economy of money and time; and railway companies should interest themselves in that improvement (which could not but result in increased traffic and larger dividends), more than they do even in the case of those hotels and refreshment-rooms which may have been projected by them, and are to a certain extent under their control. There are, however, other facilities and aids which the Inquisitive Traveller requires in his own country; and of these, the chief are good maps and guide-books.

The improvement which has taken place in some of these, of late years, is so obvious, that it is hardly necessary to allude to the fact. Without mention specially of those of one particular publisher, it may be said that to good guide-books, is largely due that better knowledge of the Continent which now prevails, and of which the benefit to our own art has been in some degree manifested, and will assuredly become greater, and proximately, in results. Maps scarcely have been improved and cheapened to the extent which is necessary; and the number is exceedingly small, of those which avail themselves of the facilities open to maps, for depicting the circumstances of physical geography; the sites of objects of antiquarian interest; the statistics of education, crime, and the like; or even the levels, the soil, and the geology of a country. There is hardly any sort of information respecting a country, that is not to be conveyed, and conveyed best, by maps; and the form of maps of which there are some, with those of the more common kind, in Johnston's "Physical Atlas," and the journal edited by Dr. A. Petermann, should be generally obtainable as regards separate countries abroad, and separate counties and localities resorted to at home. For Great Britain and Ireland, the sheets of the Ordnance Maps are to be taken only as an instalment; though for Ireland, at least, the information they give comprises much of that of which the character has just been specified. In England, however, many of the sheets are quite out of date: the information they give is limited almost to mere topography; and to that extent is often inaccurate; and we have found it especially so as to the environs of London. In the principal sheet for Surrey, now before us, all the railways open at the time it was purchased, do not appear to be marked; large accumulations of houses, of course, are not shown; and the engraving is so defective, that the course of the Wandle about Merton cannot be distinctly traced. Some of the defects and omissions should never have been allowed to exist; others should be rectified on a plate as circumstances arise. We are far from desiring to find fault with the present management of the Ordnance Survey; considering that this is to be credited for many applied improvements to the maps, and greater energy, and that the long continuance of the work and the changes of system are due in great degree to the Legislature. We would merely advert to the fact that this country is not far advanced in comparison with many foreign states, in the work of picturing and publishing the features of its surface; albeit, the progress compatible with the preliminary survey, has been made with that of the geology. What is needed for the purposes we have had in view, is indication of the sites of all objects of interest—on the principle of the Irish maps; and of course for the other or topographical features, invariably accuracy and completeness. The latter requisites it is the duty of the Legislature to provide for,—taking the principle as accepted which led to the Ordnance Survey: the former, it is important educationally, and to progress otherwise, should, by one agency or another, be put within reach of all classes. "Home-keeping youth" may have "ever homely wits;" but the wits of one are sought, who knows not even his own island. It is as great a misfortune to know only that, as it was, compared with the present time, to our fathers to exist with the Con-

tinents sealed, or before the development of railroads.

The extension of London is gradually shrouding, at least in most of the suburban districts, the places of interest which were to be found within the recollection of persons living. Whether the objects are remaining or not, the sites are hardly to be identified; though many a rood of ground has its remnant of antiquity, its story, or its reason of interest. Would it not be possible to arrange a map which should exhibit these sites, and preserve for the environs of London what certain excellent guide-books have attempted in their way to preserve for the older parts of the metropolis?

Let us, however, leave this statement of wants, as regards maps separately, and direct attention to those generally which should be supplied by guide-books. We have had many opportunities of seeing that there are still defects and very serious shortcomings in some of these works. Guide-books to principal towns, indeed there are now, vastly superior to those which there were thirty or forty years since. Such handbooks as are in reach of the visitor to Manchester, Chester, Oxford, and several other places, justify us in speaking of the contrast. Doubtless some of the number may be made of greater utility for primary objects, and more serviceable for after-reference. The guide-books for less important places, and many which are published nominally at a low price, are bad as ever. They are usually characterized by needlessly large type and wide margins; by a number of advertisements, which add to the thickness and the weight; a paper cover, which does not add to the convenience; execrable wood-cuts, but no map; and pages detailing the editor's or author's *individual* impressions, or telling the weary traveller-reader how to admire. Rhymes, frequently the compiler's own, are interspersed; and moral reflections are very general. We may mention, to illustrate our case as to the want which still exists, and as specimens of the happily decaying guide-book literature which we have mentioned, two publications on Holyhead, and a similar attempt as to the Britannia Bridge by the same author. The two first alluded to, it may be allowed, name the objects of interest which there are about Holyhead; but as there is not the first essential—a map; and as the roads in the neighbourhood are most circuitous, and the description of any route is not clear, the guide-book is wanting in what would alone justify publication. Any sale on the spot, of the pages on the Britannia Bridge, would seem to testify only to the inaptitude of some publishers to meet demand in this class of cheap literature.

Whilst giving attention to matters connected with architecture throughout the country, we have had opportunity for judging of the general requirements in guide-books, and the still existing deficiencies; and we therefore proceed to say what we believe are those requirements which a guide-book, for its objects, should meet. We have already spoken of the matter of the map, or maps, and shall come to it again immediately.

Now, the greater number of travellers,—Inquisitive Travellers, certainly,—require a "guide-book" to indicate to them what there is of interest to be seen within their range of travel, and for ready reference as to distances, inns, charges of conveyance beyond railways, and similar matter, and for little more. It is difficult to satisfy the Idle, or the Simple, or even the Sentimental Traveller, or lastly, even every variety which there is of Inquisitive Travellers. Long stories, and excerpts from histories, considering space, we ourselves would rather dispense with in a real hand-book, and be referred to the authorities, which might be looked to on the arrival home. Were the hotel-system devised for the convenience of the traveller, indeed, there would be no excuse for burdening him with the printed matter from county histories and guides of the like calibre; for, these last would be met with, as regularly as the "Directory," in every public room.

Adopting whatever mechanism of compilation might seem best, we should have arrived at the principle that the first essential

for the guide-book, after accuracy and fullness, is portability. A guide-book should be, in fact, what is generally intended by its publication, a volume "suitable for the pocket," or for the knapsack. To this end all "feeble expletives" should be rigidly eschewed, even to the loss of fine-writing; and the matter should be as much as possible tabulated. The buildings of a town should be classified in lists, under the heads of their respective uses; and the dates and architects' names should be filled in in columns, rather than left to be puzzled out of several lines of type. For instruction, there is nothing like the tabular form of printed matter—from the comparison which may be made of details in the so-pictured facts. Descriptive matter of the ordinary kind should be divided into sections, headed each with the name of the place; and with, besides the names of inns, a statement of the distances from each adjacent place. The object is to save the time of the traveller, referring, and learning by his travel,—as well as to increase his locomotive power in every way. The type and paper should be of the best kind; so that the former may be of small size, and the latter as thin as possible; and the binding or cover should be thin and limp, but durable. These conditions accepted, would throw out of the market many guide-books, such as are all that are to be procured in many cases. They might not supersede the more recent works; because those, such as the guide-books of Murray, do not fail to recognize some of these essentials, and have many independent features of value. Murray's hand-books, however, go to the very limit of their designation, and in some instances beyond it;—though any of the number would be valuable as a concise work of reference before or after a journey. A plan of dividing the same quantity of paper and type into a greater number of volumes, with a general introduction to each set, might, we think, be better, and would certainly be relished more by those who travel with knapsack. Our main point, however, is that the bulk might be still further reduced, were the full advantage taken of maps. There should, as we have said, be not one map, but several, that is to say, sufficient to depict the physical geography and geology, the sites of places or works interesting to each kind of Inquisitive Traveller, and other features besides the topography. These maps, at least those which require to have many names of places in them, should be engraved in a manner far superior to that of the Ordnance maps. They should be on scales suited to the size of the volume (whether or not the use of magnifying-glass might be required); because there is no greater inconvenience in using a map than, in the open air, from its being blown about by the wind. Maps on cloth, as first introduced by Murray, are said not to answer in use. We should contemplate a series of maps in the guide-book, almost on the principle of a small atlas, with a general or key-map first of the series. In a skeleton map, devoted to the indication of sites of antiquities and other objects, we would adopt distinguishing marks as for each description of building or ruin. Ordinary maps can find little space for such designating marks; the indication for towns returning members to Parliament, even, seems to have been lately dispensed. A very serviceable archaeological map of Yorkshire, if we remember rightly, was issued some years ago by one of the Societies; and the same sort of information, similarly conveyed, is what is wanted in guide-books.

The primary formation, so to speak, of a guide-book to a district, however, should be the geology, including the levels. A geological map of the common kind, and a contour map might be placed on pages opposite to one another. The geology is the key to every feature of a district where the natural element prevails. It is therefore surprising that the first essential of a guide-book, a geological map, should be hardly ever found.

In these and other particulars, take the case of Black's Guide to North Wales. In many respects the work is excellent. Routes by railway or road, set forth in the tabular

form, with the names of places to the left and right of the road, form an instance of the best principle for such a book as one that is to give much information and be portable. The woodcuts, also, are better than are generally to be found. The geological character of the country is not ignored; but there is no geological map; and we have found the topographical maps incomplete and inaccurate in a degree which is discreditable to any such work. By way of evidence, we may say that there is no indication of the name Moelfre, in Anglesea, referred to in the account of the wreck of the Royal Charter; and Bethesda, the town at the slate quarries near Bangor, a place of great importance in that district, is not marked. Amongst other omissions in the same volume, is that of preliminary information, so much needed, as to meaning of a dozen or two of the common Welsh phrases, sometimes occurring in names of places; and this leads us to say that every guide-book should, as far as the understanding of names of places requires, contain a like list of derivations of the British, Latin, Saxon, Danish, or whatever other languages. We are aware that such a list is given in Black's more bulky volume, which includes South Wales.

It might seem unnecessary to recommend that a guide-book for use and reference, should have either the alphabetical arrangement or a good index. But there are many such books with neither. As, however, we have set forth what we conceive to be the principle for works of the class in question, we need not enter into more details, unless to suggest that every old Italian edifice should not be attributed to Inigo Jones, there having been "brave men" after him, if not before.

As the number increases of Inquisitive Travellers, self-educators, and students from the works of nature and of art, there will be need for greater contrivance, and the labour of a higher order of talent, than has been hitherto generally enlisted by publishers, into guide-book literature; and we should be glad to find that our suggestions, from experience of deficiencies, have been offered in time for the next season, or next adventure in publication. The great wants are portability; information tabulated; and maps of several kinds, accurate and well engraved.

THE TRUE POINT FOR THE CLASSICISTS AND THE GOTHICISTS.

WHEN a magazine article is reprinted and circulated in separate form, it acquires importance obviously beyond that which it had in its original medium of publication, and the more so when that medium is an organ of long standing and great respectability. We therefore offer no further reasons for noticing a reprint from the *Gentleman's Magazine*, of an article headed "Lord Palmerston and the Designs for the Foreign Office; or, Classical versus Gothic," wherein certain errors of statement are made, and conclusions similar to some of different authorship are drawn, which, if finally accepted, would operate disadvantageously for the progress of architecture that all who concern themselves with the question of style, we doubt not, seek to bring about. For, the right perception of points that we here allude to, has importance beyond the question of any style debated of, for the new Foreign Office; it is important, whichever way our readers may be predisposed on that question; and we can therefore inculcate it, without here giving any opinion as to the value contrastedly, for immediate needs, of style Classic, or style Gothic. The object of the writer in the *Gentleman's Magazine* is to show the superiority of the Gothic as compared with the Greek and Roman, and the Byzantine styles, as well as with, and more especially, the Renaissance and the Later Classical Italian styles, and of the English Gothic, as compared with the Gothic of Italy. The former question, we have said, we need not touch; and upon the latter, we long since expressed much the same view as the writer of the article; and therefore it is not these views separately, that we refer to, as those calculated to produce the injurious results. Neither will we altogether complain of a preliminary assertion, that "the architects, as a body, are generally more ignorant of the history of their own art than the generality of educated persons in other professions," having ourselves felt the necessity of

recommending the greater study of such history, and still believing that this is one of the fields in architectural education, needing attention at the present juncture, calculated to aid the removal of the narrow-mindedness which distinguishes the present contest, and also, as we apprehend, enters into arguments such as that in the *Gentleman's Magazine*.

The source of misconception in the main tone of what we refer to, lies somewhere in an error as to the nature and means of architectural art. The language of those who have commenced their observation of architecture in the field of archaeology, reads invariably as recognizing that architecture should be imitative, and not so far creative as is involved in the true idea of art. Such writers, therefore, confine themselves to the discussion of respective merits in old styles, as though that were the sole question, or as though the real question were not the value of the materials for what is to be learned from these in the aggregate, and for the production of new art in the future.

On the other hand it is not to be denied that there has been a tendency on the part of architects of late, often remarked upon by us, to value more novelty, which has found expression in adaptations from Italian Gothic of questionable value, and in exaggerated external colour—adaptations too that have not really the novelty pretended, and therefore are not much nearer allied to true architectural art than the more familiar imitative work which preceded. The true course for living and progressive art, of architecture or any other, is not entirely to be expounded through words; but that which is not the course, may be; and the true course is neither on the one hand, through the imitation fostered by the current language of antiquaries and amateurs, nor on the other through the effort (which must be futile, and is inconsistent with progress and never did result in art in any of its forms), to produce that which is wholly unlike what has been seen before. Whatever there is of value in association is worth the effort to preserve, but this association is insignificant itself; just as is insufficient that which is only new. The defects in Mr. Scott's design for the Foreign Office, as Gothic, are not the result, as the writer in the *Magazine* argues, of looking at buildings totally unsuited for England, but imitations of the northern Gothic; of falling under the influence of "Ruskinism," and departing "from his own manly, vigorous style;" of not preferring as authorities the examples of the English provinces of France: rather on the contrary, the observation of the Italian Gothic, taking the latter as bad for copyism, was right in principle, and should have been not the less likely to result in good art, because of the defects of the examples: the design fails to satisfy chiefly through the anxiety which its author, it is evident, had to show that the Gothic was capable of the greatest variety of expression, and through which he fell into the error, so far as it exists, of substituting variety of features in one work, for that general harmony and unity of expression which all architecture requires. The letter of Mr. Parker, referred to by the writer in the *Gentleman's Magazine*, was, it seems to us, right in the protest "against the introduction of foreign features," so far as these would be discoverable as foreign; but was wrong in terms "in proposing to include the English provinces of France as authorities for our national style,"—so "enlarging the boundary for study to the utmost limits consistent with historical facts," albeit, "the Gothic of Aquitaine is Gothic in principle and construction," while "the Gothic of Italy is not,"—because it is not authorities in the sense hitherto understood, that creative, not imitative, art, needs,—not models for transcription, but "models" as lessons, or for that sort of derivative result in which any source, antiquated or foreign, does not suggest itself, but the expression is prominently that of present time, and active or breathing art. So far then from being bound to England and Aquitaine, Gothic architects, or any others, will only achieve important results when they cease to be narrowed in study to a soil, or a single field of style; and whether, in the future of architecture, there be a style Gothic, or one Classic, there will not be one characterized by the essential, art, unless the one, the "Gothic" in the alternative, be partly the result of study of the Italian architecture, both Gothic and Renaissance, as well as the other styles; and the other the "Italian," in the opposite case, be developed partly with applications from the Mediæval Gothic and Byzantine, such as have already contributed greatly to the result in

many recent so-called Italian works. Whilst therefore we deprecate with the writer, prejudice, which he says is fashionable, "against the bold, manly, English styles," we equally deprecate the restriction under which he would place us, and even the supposition that much may not be learned from defects as well as merits in styles which are in the main bad.

To show how much reason there is for watching the propagation of error on the subject of art in architecture, we may mention some of the mistakes as to the Classical styles on which part of the argument in question is founded. The writer endeavours to show that the windows were the great difficulty in the style of the Renaissance, and the Italian or Palladian, and consequently from all these varieties of style being "avowedly taken from the old Roman style with some variations." He says the windows "are always an ugly feature, looking as if they had no business there," that "some architects boldly wall up the intervals between the columns, and leave holes in these walls for windows;" and that there are other contrivances, "all of them ugly, because any attempt to force into a style a feature which does not belong to it, must always look ugly." Now, this, which could be correct only on the assumption of the practice of architecture being continually the imitation of old styles, is really as false in principle as every one who knows it is in fact. To force into a style a feature which does not belong to it is one thing; and to continually invigorate an existing practice of architecture by new features or adaptations so far as they are harmonious, is a different thing, and is essential to progress. This is what the Italians did in the several styles of architecture, and constituting what is called, and we must say most erroneously called, the Revival: new features were continually added from the first inkling of the Renaissance as a style, through the period of the Cinque-cento, and down to the decadence of all art, which took place from circumstances such as are continually recurring in the world's progress. So far from windows being mere holes in the wall, in intercolumns, they are frequently the whole and sole *motive* of the composition. There are either no orders at all, or, as if completely to quash the reasoning in the *Magazine*, these are applied only, and most effectively, as decorations to the windows. Indeed, were we to select any one contribution to the material of architecture made by the Italian classical styles, which was especially valuable and characteristic of them, we should answer, that one decoratively which has been appropriately called fenestration. Fortunately, we need not quote examples in Italy, whether of the Florentine, the Roman, or the Venetian schools; the reader has before him in London both copies and original productions (of the latter is the Reform Club, though influenced by the Farnese Palace), and may judge how far the orders are the ruling *motives* in the classical styles, and how far the windows were decoratively impaired in consequence. If not satisfied, he may look to what has been done with the Italian style in France. The truth is, there is not even argument for the narrow piers with buttresses, of one style, as allowing of larger windows, and so distinguished from the features used or applicable in the other style: for, it has been over and over again shown, or sufficiently by the Venetian buildings such as those of which there are copies or adaptations in Pall Mall, and cumulatively by many recent commendable works requiring large areas of window surface, that the idea of inevitable difficulty in giving the appearance of strength where there are narrow piers, is an erroneous one. The writer goes on to say, that the pride of the Italian style is St. Peter's at Rome, and to give an illustration, itself ill-drawn, of one of its windows. His assertion in the first place must be disputed so far as is necessary from the fact, that whatever the praise accorded to certain features of effect in the building, there is scarcely any work in Italy of which the defects in the windows and in more important matters are more freely admitted. He continues, that the difficulty of the windows led to the use of *loggie* in front of and to conceal them, in the best of the Italian palaces, and that the inconvenience of such *loggie*, even in the climate of Italy, led to the enclosing of the *loggie* of the Vatican by casements, which, therefore, are "a standing protest against the Italian style, even in the climate of Rome, for which it is specially adapted." Again we appeal to matter of fact. One unacquainted with examples would suppose that *loggie* were the usual feature of an exterior, rather than, as generally, of an internal court, where they served the same purpose as the cloister of the Medieval

ecclesiastical edifices. If they had other use, or as regards the windows, it was to cover these from the heat of the sun. The casements, at the Vatican, we have always supposed, were introduced for an object which the writer keeps carefully out of sight, namely, the chance preservation of works priceless in their value, and which, though executed in fresco, would be in any climate somewhat more exposed to decay in *open loggie*, than protected. The introduction of the casements had nothing to do with the writer's case. But he is not correct, even in saying of the pure Greek:—"Windows are unknown in this style in its purity;" and that, in the Roman, windows have no natural place. There are windows in the Erechtheon, at Athens, and there is one in the temple of Vesta, at Tivoli; glass windows are known to have existed at Pompeii; admirable examples of fenestration in columnar architecture, or in a style formed on Greek models, are to be found in the works by Klenze, and others of the Germans; and the evidence, such as it is, allows no pretence for the assertion that windows are necessarily out of character with the classical styles or with any one of them. Nay, it is almost admitted by the writer, in his justification (which we are not sorry to see) of the Perpendicular style, that tracery is hardly consistent with the material stone,—since he says that curved lines in the early styles are not consistent with such material, but more resemble iron. The effective treatment of the window aperture has been admirably managed, in wood or iron casements—as by the French.

The writer is equally unfortunate in his commendation of the northern style as specially allowing of bay-windows, "polygonal projections of all kinds adapted to catch every ray of light, and convey it into the apartment," firstly, because in any future style of architecture we should be right to use bay-windows; and, secondly, because they do not afford more light to the apartment by the projection. They rather interfere with light to windows adjoining them. It is obvious, on drawing the alternative forms in plan, that the light admitted to the apartment is governed by the size of the opening in the wall, and the thickness thereof, and not by the presence or absence of a projection from such opening. Lastly, the assertion that the Roman buildings, defects in which may be admitted, were all brick-constructed and veneered only with marble or stone, or decorated with marble columns imported from other countries, must be an error, obvious to those who know anything of the large blocks used, and not imported, and of the *travertine* stone.

We have deemed it necessary to point out the errors and fallacious reasoning in the article of our excellent contemporary; because the like style of assertion and argument is becoming very general, and can be merely calculated to act prejudicially on architectural art and progress, as well as on the only application that is to be desiderated, of any style that is held in favour. The primary error, we believe, results from the ascription to *architecture*, of the idea of "imitative art," a term which we regard as unfortunately used even in the case of painting and sculpture. Whilst the study of examples is required, the objects of true architecture are not such as are consistent with exclusive study of either the Classic or the Gothic, or which are to be bounded by the relative merits of the English or the Italian varieties of either style. We will never seek to defend our profession in their errors or their shortcomings: but really just now, we find the architects, whether writing or practising, not only not unworthy of comparison with the "educated persons in other professions" for knowledge of the history of their own art, but generally, when not influenced by others, much nearer to the right application of means for the end of art than those who would be their questioners and instructors.

BRADFORD AND SANITARY IMPROVEMENT.

ON the occasion of the recent meeting of the Social Science Association in Yorkshire Bradford, we expressed fear lest the authorities should be led to think slightly of the necessity of draining their town, and urged upon them its great importance. Circumstances have made it evident that this expression was not unavailing. The borough surveyor had prepared a plan, but the Street and Drainage Committee of the Town Council, to whom it was referred, have declined to take any steps whatever in aid of it. Indeed, as we understand it, they will not consider any plan at all, on the ground that the ratepayers are already taxed higher than they can bear. This is

most short-sighted policy,—the penny wise and pound foolish plan,—and it is to be hoped that some independent member of the Town Council will take the question in hand to bring the real merits of it thoroughly home to the people of Bradford. There are too many clear-headed men amongst them to allow of the continuance of evil which is made evident to them. It has been shown in the case of nine towns, that the average rate in the pound to repay the principal and interest of the cost of the public sewerage works is not 5d. Berwick was done for 3½d.; Lancaster, for 4½d. Good drainage is the first sanitary requirement, and every day shows indisputably that no sanitary improvement can be effected without raising the physical and the moral condition of the people;—that it saves money, shortens illness, and lengthens life.

Since the meeting of the Association, Bradford has lost a citizen who took an active interest in such inquiries, and read a valuable paper on that occasion,—Mr. Thomas Beaumont. A subscription is being raised to erect a public drinking-fountain as a memorial of him. Let it also be an evidence of the taste of those who put it up.

The principal buildings in the town, as we have recently mentioned, are warehouses, all faced with stone, and some of them large and lofty. The neighbourhood abounds in stone. The pavement of half London came from the little village of Idle, near Apperley, hard by. One of the handsomest buildings in Bradford is certainly the Bank, of which Messrs. Andrews & Delorner were the architects. The lower story has large semicircular headed windows, divided into three by Ionic columns, carrying inner arches. The upper story has attached Corinthian columns, the entablature breaking round them. The windows in the interspaces have segmented leads, with a female head in each as a keystone. The arched doorway in a circular corner has the weakness incidental to that arrangement. The mouldings and details, however, are well executed, and the general effect is very satisfactory.

For the front of a new warehouse, now nearly completed under the direction of Mr. George Knowles, architect, the Anglo-Venetian Gothic of the day, somewhat exaggerated, has been adopted as the style.

Once more, in conclusion, we urge the town-council to determine on an efficient plan for the thorough drainage of the town, and to carry it out speedily. In the words of Mr. Beaumont,—The labours of the corporation, so far as they have gone, have tended to abate disease, and to preserve life, to a large extent; and, by the further progress of their efforts in this direction, there is reasonable ground to suppose that their death-rate will be still further diminished, whilst the social comforts of the people will be found to improve on every hand.*

THE ADORNMENT OF THE CAPITAL.

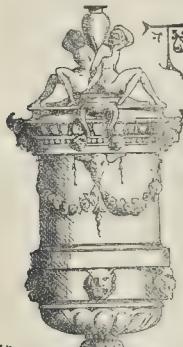
ALTHOUGH we have a great variety of marbles and granites in the country, and possess the opportunity, through our shipping, of obtaining designs and materials from every country, our town, instead of being the handsomest in the world, is one of the most common-place, and not to be compared with Rome, Venice, and other splendid examples of the past, or with modern Paris. In these times, too, how little is done compared to what our forefathers did when there were few of them with a population and means in proportion; yet in all parts of the country, and especially in London, the numerous churches, monasteries, hospitals, and other buildings, attest to the spirit and generosity according to the requirements of the times and the knowledge they enjoyed. Now in Clerkenwell and many other parishes scarcely any improvements worthy of the immense wealth within the metropolitan limits have been made; and in St. Pancras and elsewhere churches remain for months and years untouched after being commenced, from want of the means to proceed with them. Yet never, at any period of our history, from our gold discoveries and immense foreign trade, has wealth been so rapidly made as within the last century: more shipping has been employed and trade done within a year than in the whole of Queen Elizabeth's prosperous reign; and where is the benefit of having a free use of the Scriptures, with the great opportunities of gaining wealth, and the enlightenment we now

* We take the opportunity to bear testimony to the able manner in which the proceedings of the Social Science Association were reported by the local press, particularly the *Bradford Observer*, and to the attentive kindness shown to many of the visitors by the local secretaries, the chairman of the executive committee, Mr. Ripley, and others.

enjoy, if we do not apportion our means to improve the condition of our country and fellow-creatures, which a more liberal adoption of the most useful institutions we have would produce, and which only require to be greatly increased to improve the habits of society, and make the people, instead of wasting their lives, and being a burthen to themselves and the country, profitable, and as happy as we can expect to be in this life—trouble, and not happiness, being the lot of mankind? Every English man and woman has been and is connected with London as the capital of a great country, or of the world; and, since its foundation was laid, thousands and tens of thousands of the influential and wealthy (most of their wealth having been made within its boundaries) have been connected with it by trade, residence, or officially; and possessing, as we do, all the designs of the past with those of the present time to copy from, with the materials of the whole world at our command, we should endeavour to make our capital more worthy of our advantages and name, every individual who has the opportunity, and not a few only, being responsible as Christians and patriots, our foundation being laid upon a perfect system, upon which alone any great nation can hope to prosper.

H.

DEATH OF THE PRESIDENT OF THE INSTITUTE OF BRITISH ARCHITECTS.



ADUCERCAAL 1825.

Square, where he has so often gathered around the profession the distinguished of all classes. When Professor Donaldson said on Monday that "the Institute owed Earl de Grey a deep debt of gratitude for much of the success which had attended its operation, and that the high position which it held in the public estimation, and in that of all Europe, was to be attributed in great part to the warm and untiring interest which he had manifested in its behalf," he said not one word more than the truth. At all times, and in every way, the president was ready to take any step that was pointed out to him as likely to promote the object and welfare of the Institute. It was greatly owing to his intervention that her Majesty was led to found the Royal Medal for architecture; and, at the meetings for the presentation of prizes, he had ever words of encouragement and hope for the younger recipients, warm and hearty congratulations for the elder. "I believe," he said on Monday, and often before, "that it is of very great advantage to the art in which you are all interested that there should be this admixture of persons—professional and non-professional—to meet and encourage each other;" and, certainly, many will long remember the cheering words they received from him on particular occasions.

Earl de Grey was also president of the "Architectural Museum" took the chair at the first public meeting in Canon-row, and up to last year never failed to preside when requested.

Let us briefly say that the departed president was Earl de Grey, of Wrest, Bedfordshire; Baron Lucas, of Crudwell, Wilts; Baron Grantham, of Grantham, Lincolnshire, in the peerage of the United Kingdom; and a baronet; was the eldest the two sons of Thomas Robinson, second Lord Grantham, and Lady Mary Jemima Yorke, second daughter of Philip, second Earl of Hardwicke, and Jemima Marchioness Grey, sister and heiress of Amabel, late Countess de Grey. He was born at Whitehall on the 8th of December, 1781, so that he was on the verge of completing his seventy-eighth year. The late peer succeeded his father in the barony of Grantham in July, 1786, being

at the time not five years of age; and, on the death of his maternal aunt, Amabel Hume Campbell, as Countess De Grey, on her death in May, 1833, succeeded to the earldom. His lordship married, on the 20th of July, 1805, Lady Henrietta Frances Cole, fifth daughter of William Willoughby, first Earl of Enniskillen, by whom, who died in 1848, he leaves surviving issue Anne Florence, Countess (Dowager) Cowper; and Lady Mary Gertrude Vyner, married to Mr. Henry Vyner.

On the late Sir Robert Peel coming into power in 1841, Earl de Grey was selected to occupy the appointment of Lord Lieutenant of Ireland, and discharged the functions of his position with much credit up to June, 1844.

The earldoms of De Grey and the barony of Grantham devolve upon the nephew of the late earl, the Earl of Ripon, formerly Lord Goderich.

The Institute of Architects has lost an admirable president, and many of its members a warm and valued friend.

A meeting of the council has been called to consider what steps should be forthwith taken to express the condolence of the Institute for the loss sustained by his lordship's family. We are asked to state that the decease of the president will prevent any meeting of the Institute on Monday evening next, the 21st instant; and that the reading of Mr. G. Gilbert Scott's paper, announced at the last meeting, when the president was in the chair, is postponed to another occasion.

"ARCHITECTURE."

WHAT WAS IT CALLED IN ENGLAND IN THE FIFTEENTH AND SIXTEENTH CENTURIES?

THE present remarkable dispute as to the respective merits of the Classic, Italian, and Gothic or Mediæval architectures, and especially that portion of the worthy remarks which declares that the present attempts at a Pointed style should not be called Gothic, Mediæval, or any other term applied to bygone times, but rather the National, or Rational style of architecture, has led me to consider what were the terms used at the end of the Mediæval period, and also by the restorers of ancient art, just at the time when the introduction of Italian architecture took place in England; the terms for the style then in use, or being discarded, and for the style then being introduced.

The result is rather a curious one, as exemplified in the following notes; and as the subject can hardly be said to be exhausted, perhaps some one who may possess the works published in England at the period in question, may feel inclined to forward other quotations. In answer to the above question, perhaps all persons would say, "By the term 'architecture,' of course;" hence then my sending the following extracts.

The interesting poem published by Halliwell, and supposed by him to date about the end of the fourteenth century, is entitled, "Constitutiones Artis Geometricæ secundum Euclidum;" this he has called "Constitutions of Masonry;" the words "*craft of masonry*" being used in the poem. In a contract dated 1567, the work is to be done according to "*the science of masonry*." In another, of the earlier date of 1542-3, are the words "shall newlie, substantiallie, and workmaunlike make, build, set up, and fullie furnish a new," &c. In 1509 and 1513, the drawings for the monuments of the kings Henry VII. and VIII. are termed "plats" and "patrens," "to be workmanly wroughte." From my recollection of the contracts of earlier date, these are the terms in general adoption, and I have not therefore referred to them.

Harrison, whose description of England is annexed to Hollinshead's Chronicles, and who wrote about 1574, in the chapter "Of the Manner of Building and Furniture of our Houses," has the following references:—

"The ancient manours and houses of our gentlemen are yet and for the most part of strong timber, in framing whereof our carpenters have bene and are wortheilie preferred before those of like science among all other nations." And then, after speaking of brick and stone houses, he adds:—"So that, if ever curious building did flourish in England, it is in these our yeares, wherein our workmen excell, and are in a manner comparable in skill with old Vitruvius, Leo Baptistia, and Serlio." In another place:—"Those [palaces] that were builded before the time of King Henrie the eighte retaine to these daies the shew and image of the ancient kind of workmanship used in this land; but such as he erected after his own devise—doo represent another manner of paterne—certainly masonry did never better flourish in England,

than in his time. And albeit that in these daies there be manie goodlie houses erected in the sundrie quarters of this land; yet they are rather curious to the eye like paperworke than substantiall for continuance."

He records, also, that Queen Elizabeth, at Windsor Castle, "hath appointed huge summes of monie to be employed upon the *ornature and alteration of the mould*, according to the *forme of building* used in our daies, which is more for pleasure than for either profit or safeguard."

The term "paperworke," as above used, is explained in the following extract:—"Building with stone [is] so commonlie taken up, that amongst noblemen and gentlemen the *timber frames* are supposed to be not much better than *paperworke*, of little continuance, and least continuance of all." Yet many of these timber buildings have withstood time and ill usage far better than those of brick or stone mentioned by him. He, however, adds that "of the *curiousness* of these piles, I speake not, sithe our workmen are grown generallie of such an excellence of devise in the *frames* now made, that they farre passe the finest of the olde."

The last reference I have noted is that he considers the "Divinitie Schoole at Oxford, for fine and excellent workmanship, cometh next the *mould of the king's chappell in Cambridge*."

Spenser, the next author I had at hand, supplies the following from his "*Faerie Queene*," 1589:—

"A stately pallace built of squared bricke,
Which cunningly was without mortar laide,
It was a goodly heape for to behold,
And spake the praises of the workman's witt;
But full great pittie, that so faire a mould
Did on so weak foundation ever sitt."
Book I. canto IV.

In the first line of book ii. canto i. we have "That conning *architect* of cancred guyle." In canto ix. verses 21, 22, a castle is described, but of it I need only copy the commencement:—

"The frame thereof seem'd partly circulare, and part
triangulare:
O worke divine," &c.

In book iv., published in 1596, I find:—

"I much admiring that so goodly frame,
Unto the porch approach, which open stood."—Verse 31.

In "The Visions of Bellay," 1591, the second verse begins:—

"On high hill's top I saw a stately frame,
An hundred cubits high by just assay,
With hundreth pillars fronting faire the same,
All wrought with diamond after *Doricke wise*;
Nor brick nor marble was the wall in view,
But shining cristall:—
An earthquake shooke the hill from lowest seat,
And overthrew this frame with ruine great."

This is the verse which, if I remember rightly, went the round of the journals as Spenser's foreseeing the erection of the Crystal Palaces of 1851 and of Sydenham.

Turning to the "*Ruines of Rome*," 1591, I felt sure my question would be satisfactorily replied to. The commencement is worthy of the poet:—

"Thou stranger, which for Rome in Rome here
seekest,
And nought of Rome in Rome perceiv'st at all,
These same olde walls, olde arches, which thou seest,
Olde palaces, is that which Rome men call," &c.

"And though your frames do for a time make warre:
Gaint Time, yet," &c.

"Why have your hands long sithences travelled
To frame this world, that doth endure so long."

"When ye sometimes behold the ruin'd pride
Of these olde *Roman* works, built with your hands."

"Or that at least I could, with pencil fine,
Fashion the *portraits* of these palaces,
By *paterne* of great Virgil's spirit divine!"

Judge, by these ample *ruines* view, the rest
The which injurious time hath quite outworne,
Since of all workmen helde in reeling best;
Yet these olde *ir* gments are for *paternes* borne:
Then also marke, how Rome, from day to day,
Repayring her sad decayed fashion,
Renewes herselfe with buildings rich and gay."

"All that which Egypt whilome did devise;
All that which Greece their temples to embrace,
After th' *Ionike*, *Atticke*, *Doricke* guise,
Or *Corinth* skil'd in curious workes to grave;
All that Lysippus practice arte could forme;
Apelles wit, or Phidias his skill,
Was want this ancient citie to adorne."

In "The Ruines of Time," 1591, after four lines descriptive of the Roman buildings, is the line—

"Wrought with faire pillars and fine imageries."

Not being yet quite satisfied, I considered that perhaps Bacon, in his memorable essay, would use some expression nearer the mark. Turning to the first edition, 1598, the essay to be consulted is headed, "On Building!" and towards the conclusion of it he says, "thus much for the *model* of the palace."

Then Fuller's essay, in "The Holy State," 1648, is also entitled, "On Building!"

Gerbier gave us the "Three chief Principles of Magnificent Building," in 1662; and it appears that this term "building," by which was meant what we now know as architecture, continued in use until a late period; for, in 1725, Halpenny published "The Art of Sound Building;" and Langley's works, from about the same date to a later period of the century, are addressed to the builder as architect, and relate to building as architecture. Shakspeare I have not looked into for this purpose.

The infrequent use of the term, "architecture" now seems curious. That it was known we are certain; because, supposing that Alberti's work, "De re Edificatoria," 1485, was at the time of the revival of Classic literature in England, the first, when translated, to bring the word "building" into use, still Serlio, in 1540, published his "Architettura," to say nothing of the many editions of Vitruvius, all entitled "De Architectura." Then followed Cataneo, 1554; Da Cerceano, 1559; Bullant, 1563; Vignola, 1563, &c.; and Shute, in 1563, with his "The First and Chief Grounds of Architecture." Of these works I need not continue the list further, as nearly all those succeeding them employed the word "architecture" on the title-page.

The words "*la maniera Gotica*" appear to have first been applied by the Italian writers, to distinguish the previous style of architecture to that then in vogue; and Evelyn, in a treatise on Architecture, 1707, uses the term "Gothic architecture;" and Wren, as given in the "Parentalia," 1750, says, "This we now call the Gothic manner: so the Italians called what was not after the Roman style;" and "Sir C. Wren was of opinion that what we now vulgarly call the Gothic, ought properly and truly to be named Saracenic architecture, refined by the Christians."

I am inclined to conclude that as long as "surveyor" was the term applied to the person to whom the title of architect is now attached, so long was the use of the word "building," together with "works" (as in "surveyor of the works") continued; and when "the surveyor" became "the architect" in general acceptation, that then the word "architecture" became generally adopted. Who was the first person called "architect" in England? We have John Shute, painter and architect, in 1563; Stephen Harrison, joiner and architect, in 1603; Robert Smithson, architect and surveyor, 1614; Robert Adams, *operum regiorum supervisor, architectura peritissimo*, in 1595; John Abel, who, in 1694, called himself an "architect," had conferred upon him the title of "one of his Majesty's carpenters" by Charles I. These were among our early builder-architects: poor Inigo Jones was only a surveyor! and even Sir Christopher Wren a mere surveyor-general!!

WYATT PAPWORTH.

THE ARCHITECTURAL ASSOCIATION. GENOA.

The ordinary meeting of members was held on Friday evening last, at 9, Condit-street. The chair was occupied by the president, Mr. J. W. Penfold.

The honorary secretary having read the minutes of the last meeting, which were confirmed, the following gentlemen were proposed for members:—Mr. C. J. Adams, 23, Brunswick-street, Islington; Mr. A. Mason, 5, Union-street, Berkeley-square; Mr. Joseph James, 15, Furnival's-inn; Mr. R. W. Edis, 16, Huntley-street, Gower-street; Mr. Alfred Smith, 11, Buckingham-street, Strand; Mr. T. Beesley, 4, St. James's-terrace, Camden-town; Mr. F. Cole; Mr. H. A. Reeves; and Mr. Harvey, 6, Whitehall.

The Chairman said he had great pleasure in laying before the meeting the following handsome letter from Professor Donaldson:—

"Professor Donaldson presents his compliments to the president and members of the Architectural Association, and begs to offer for their acceptance a copy of his work recently published, entitled 'Architettura Numismatica.' He trusts that the steady aim of the Association will ever be the elevation of pure taste, the cultivation of the imagination, and the introduction of the art-clement into all the purposes of life, as well the lowest as the highest,—whether for use or ornament."

On the motion of Mr. T. R. Smith (vice-president), thanks were voted to Professor Donaldson for his letter and present.

Mr. S. C. Capes then read the following communication:—

"Glasgow Architectural Society,
41, West George-street, August 4, 1859.
Sir,—A meeting of the architects connected with the Glasgow Architectural Society was held this afternoon, to consider the propriety of memorializing Government—

that seeing that a man of such eminence as Mr. G. G. Scott has been appointed architect of the new Government Offices, he should be allowed every facility to select and carry out that style of architecture which he may consider best; and I have been instructed to inquire if your society has taken, or proposes to take, any step, it being desirable that such a movement should be general.

WILLIAM MACLEAN, Secretary.
The Secretary, Architectural Association."

The Chairman said that the letter had been laid before the committee, and that the secretary had replied to it, stating that the subject would be brought under the notice of the first ordinary general meeting of the Association. The subject to which it referred was an important and delicate one for the Association to deal with, and he should therefore recommend that the letter be referred back to the committee, so that at the next meeting it might be discussed in connection with the report of the committee.

On the motion of Mr. Cates, seconded by Mr. C. F. Hayward, it was ordered that the letter be referred to the committee; and that they be requested to consider it, and report to the next ordinary meeting.

Mr. T. R. Smith then proceeded to read an interesting paper upon "Genoa." Having traced the early history of this once famous maritime Republic, and pointed out the manner in which its early architecture had been influenced by its geographical position, he proceeded to describe the street architecture, the palaces, and the churches. Although marble was extensively used in the public buildings, some were of cement, and the visitor would probably be startled by the positive colours selected for painting some of them. One, in the Brignole Sale, was all over a bright, brick-dust, red; and the same colour had been chosen for the most prominent church,—the Carignano,—while another was of a rather *promiscuous* sage green. He mentioned these features but as casual matters soon to be forgotten, the grandeur and beauty, the skillful proportions, the rich compositions, the precious material, and the noble palatial character of these buildings were never to be forgotten. Theirs was the true aristocracy of bearing, dignified and reserved, rather than ostentatious to the outer world, nay somewhat, perhaps, chilling—at any rate, grave externally; but when you have passed the threshold, receiving you with a lavish display of grace, ease, and beauty, of a far gentler and more winning kind. The frontages of the palaces were generally very richly covered. Alessio, whose manner was closely copied by those other architects who built at the same time, seemed either to have had some dislike to the large masses of plain surface on which the architects of Rome and Florence relied so much for effect, or else more probably to have felt that he had not enough of it at command, to produce effects as noble as he wanted. He accordingly was wise enough, having been brought to decide upon another course, to follow it up thoroughly, and in consequence had very much covered both the piers between his windows, and the spaces below and above them, with architectural features, architraves, pediments, panels, balustrades, rustics, and the like. These were not so pure in design, except in a few instances, as those of the best Tuscan work, but there was much more richness and much more play and elasticity about them. One marked peculiarity of this interesting school of building was the care with which circular forms were reserved for the interior. The semi-circular or curved window-heads were rarely found in the front elevation. One arch in the centre, and as large a one as could be introduced without disturbing the symmetry of the first-floor windows, gave access to the interior, and even it was in many instances replaced by a square-headed doorway, decorated by pilasters and a pediment, or the like. This doorway led into a vaulted vestibule, almost always square; and, in the majority of instances, conducted to a flight of marble stairs, to the back of what was considered the ground-floor. The principal apartments, however, were usually on the floor above, that was to say, the first-floor. These buildings were always either a hollow square, or three sides of one. In the latter case, contrary to our practice, the open side was invariably one away from the entrance. The vestibule was under the main body of the house, and was often a little obscure, while the view up the great flight of stairs through the open arches into the cortile beyond, was all the more charming from the bright light by which it was seen. But the point of view of which the most was usually made was the top of the steps. On mounting the flight, and emerging from under the main building, the visitor found himself in the cortile, a sort of cloister, occasionally square, but oftener by far oblong, and

the entrance always led out to the centre of one of the narrow ends. The most frequently repeated treatment was, that there should be two series of arches, surmounted by a balustrade or parapet, but that treatment constantly varied, and the utmost art had been employed to procure vistas and complications of perspective effect. Some interesting object was usually placed exactly opposite the spectator, across the courtyard; either a statue, a fountain, or a niche, or perhaps a second marble staircase; or else, when space allowed, the end of the cortile was left wholly or partially open, and a gay sun-lit flower-garden was seen beyond,—its green, and its flowers, and its pleasant fountains refreshing and charming the eye. The points most noticeable in the planning of these magical effects seem, first, the judicious use made of the power of bringing a spectator to a certain point, and arranging a view from that point; then the geometricalness of the planning—a quality the importance of which was far too little recognized in the present day; and next the liberality of it. There was no stint of space given to the vestibule or the cortile, however difficult it might be to obtain it; and its effect was heightened by the copious use of the very form so studiously avoided in the exterior,—the semi-circular arch. These arcades usually sprang from circular Doric columns, whose caps were surmounted by a kind of dwarf entablature, consisting of frieze and cornice only. The circumstances of the site sometimes caused the usual plan to be modified; and it was one of the curious results of situation that most of the variations occurred on one side of the street—namely, that towards the harbour, and where the ground fell away from the entrance-level instead of up to it. Here occurred the Balbi Palace, with a vast staircase ascending, and another descending,—perhaps one of the most beautiful of all intricate staircases known. Here, too, occurred a palace, the interior of which fascinated him more than any other in Genoa. In this building (the Palazzo Balbi Pionera) the cortile is on a level with the street, and you see, out of the vestibule and through three arches, a long vista, in which arches answering to them occur four times at different distances apart, under different conditions of light and shade, and with a grove of orange-trees among them. The staircase in this instance is at one side; and, not being intended to become itself a prominent feature in the architecture, when you ascend if you get no view save a pretty but short cross vista, and you land at the top with your face to a wall. Of course you turn round, and the utmost skill of the architect (in this case not Alessio) has been employed to provide a *coup d'oeil* to surprise you. You are at one angle of the upper story of the cortile. Straight before you runs the upper corridor; a pilastered wall on the right; an airy, open arcade on the left; a series of little domical vaults overhead; and, through the open arch at the end, a charming distant view, with flowers and the tops of orange-trees. As a contrast to this one regular vista, if you glance across the cortile anglewise, and downwards, the most charming perplexity meets the eye,—of arches seen through arches, and orange-groves terminating in a half-seen, half-hidden glimpse of a pretty little nymphaeum out in the sunny garden among the orange-blossoms, while the most exquisite play of light and shade, enhanced by your being yourself in a dark angle, has been contrived to add brilliancy to the scene. The whole thing was, in fact, the very poetry of planning. The apartments in these buildings were vaulted and fine, but not so as to claim distinct description. The mural paintings of some of the older buildings displayed vestiges of large fresco paintings on their external walls,—strange and gaunt now, but looking as if, before they had perished and faded, they must have had a fine effect. The internal frescoes had fared better. A large number of beautiful arabesques were executed by Pierino del Vaga, a skilful pupil and assistant of Raffaele, who, after his master's death, was invited to Genoa by the grand Andreà Doria, and settled there. They were very full of grace, and the colours were still fresh and rich. Among the palaces, not usually recommended as places of great attraction, but very interesting for all that, was the Palazzo Santi, situated in rather a remote part of the city, and now fallen into decay. Its disposition was different from that of the other Genoese palaces, as it was a compact block, entered through a fore court formed by three screen walls, having a cortile only one story in height within them. The two fronts of this palace were very different, but both good. The fore-court was, however, particularly well designed, and could not fail to please. There was some fine ornamental stucco-work in the interior. The custom of making the

upper rooms the main house of course affected the smaller sized dwellings; and accordingly, although they could not have a cortile, they generally had a vaulted vestibule open to the public, with stone or marble stairs, to the first floor. Here the student of architecture could not fail to notice how much could be effected by simple means and with very limited space, and how charmingly an entry might be formed by one or two columns, a partially groined vault, and a plain but tastefully placed staircase. The private houses contained a good many noteworthy examples of doorways. Models of two of the most famous were in the Crystal Palace, and others were to be found nearly as fine, and among them some very handsome of the Gothic period, enriched with quaint sculpture and inscriptions. Among the churches of Genoa the cathedral was entitled to the first place, although it was not the most conspicuous of the ecclesiastical edifices. The original portion appeared to have been built in the tenth century. The west front, which dates from the year 1300, is tolerably perfect, and is the most interesting portion of the cathedral. Of the two flanking towers originally intended, one only had been carried out, in an incongruous style, and some unsuitable openings had been cut in the lower part of the front. The exterior and the Gothic portion of the interior had the peculiar striped arrangement common in Italian Gothic, being faced with alternate courses of black and white marble. This produced an unpleasant streaky appearance, destructive somewhat to breadth of effect. But in the oldest jambs and beads a skillful employment of these contrasted materials had helped to produce variety; for instance, in the heads of the doorways the vousoirs were arranged so that their joints should form lines radiating from the centre from which the arch had been struck; but in the different series of mouldings the white and black vousoirs were contrasted—a black one of one series being made to come opposite to a white one belonging to the adjoining series. This elevation presented three east and deeply recessed doorways, with shafts, and simple but rich mouldings. There was a circular window, but scarcely so rich as the doorways would have required; and among other noteworthy features might be mentioned the south door, a curious niche at the south-west angle, and a pair of marble lions, such as were commonly found associated with the entrances to very ancient churches. The interior presented a strange mixture of Classic and Gothic, but the greater portion of it was inaccessible when he visited it. Many of the churches of Genoa were destroyed by the French, and of those that remained few required special mention. Two or three Renaissance churches still existed, of great splendour. The most conspicuous was l'Assompta di Carignano, a large church, dominating over a whole quarter of the city, in consequence of the elevated site on which it was built. The architect was Alessio; but the building, though possessing some merit, and especially a finely-disposed plan, was far from being his most successful work. The plan occupied a parallelogram of about 170 feet square. This space inclosed nave and aisles, forming a Greek cross; a cupola rose above the crossing, and the four great square spaces between the arms of the church were also thrown into it, though not carried up so high as the main portions. There is a pediment at the west, north, and south end of nave and aisles, and it was originally intended that four towers should be erected at the four angles; of these only two were carried up; they were of remarkably good design; and, when contrasted with them, the central dome appeared deficient in loftiness. It rises above a good drum, but appeared to spring rather too soon, and to be crowned by too heavy a lantern. Perhaps one main cause of its unpleasant effect was, that there were no ribs similar to those of St. Peter's at Rome, or of our own St. Paul's. The whole cupola was covered with scale-shaped slabs or tiles, and had none of those lines running up it which gave such an appearance of vigour to our metropolitan cathedral, to St. Peter's, to the Invalids, and to nearly all other celebrated domes. The interior is rather plain, but has some fine effects of light. Next in importance was the Annunziata, a church which probably enjoys the questionable distinction of being internally the most brilliantly decorated church in Italy. It had a nave and aisles, with collateral chapels beyond them, and an apsidal choir. The arches spring from the tops of Corinthian columns, and the entire interior was vaulted and decorated with a profusion of coloured marbles, gilding, enriched mouldings, and paintings. The church of San Siro was next in order, and was the latest ecclesiastical foundation in Genoa. It was remark-

able for having coupled columns separating the nave and aisles. The same feature occurred in the church of St. Ambrogio. Genoa was rather famous for its campaniles. Most of them were connected with the suburban churches, and were very pretty, picturesque, original objects, and displayed a style of treatment which had not been imported into this country. Indeed, the suburbs, generally, were pretty and interesting, and among them some extensive grounds and villas. After some further observations, Mr. Smith proceeded to dwell upon the importance of discussions at meetings such as the present. It seemed to him that these discussions had, in some degree, failed of success, from members not having felt themselves able, at a moment's notice, to select a salient point on which to make observations. He would therefore suggest that some of those who had done him the honour to attend to his observations would undertake to correct some of his errors, describe some of the buildings he had passed over, or give their opinions as to the difference between external and internal composition, and between Italian and English planning. Some account might also be given of cortiles or palaces in the cities of Italy, or in England, or some observations might be offered on the geometrical arrangement of plans, a topic which, in his opinion, was one of the most important to keep in view. Geometrical division, rigorously carried out, lay at the root of all excellence in elevation, section, or plan, when designing in Italian styles; but above all in plan; and the examples of Genoa alone went far to prove this, and to justify the recommendation which he had ventured to give.

Mr. Cates said that Mr. Smith seemed to him to have treated the subject from a proper point of view, and he cordially agreed in all that had fallen from him. He begged to move the thanks of the meeting to Mr. Smith for his interesting paper.

Mr. Capes, in seconding the motion, said that he had listened to the paper with great pleasure, and that he considered the hints thrown out by the author, with regard to discussion, as extremely valuable. The subject, however, was a difficult one for immediate discussion. Those who had not been at Genoa were unable to amplify the subject; and, with regard to the question of planning, the point was one to which architects of the present day did not appear to give sufficient attention. They were too much in the habit of giving haphazard plans without being governed by the laws of geometry. If they were to examine the works of French architects, they would be pleased to observe the attention that had been paid to the inner courts of buildings; and, for his own part, he felt surprised that something of the kind was not carried out in England. With regard to corridors encircling an inner court, they were very rarely adopted, and he supposed the reason was that they took up too much room. In London, where the price of land was so high, architects were crippled in their arrangements to produce effects, and they found it impossible to bring their own wishes within the narrow limits of economical considerations.

Mr. Watson admitted that the history of a place had a great deal to do with its architecture, but that fact was, in his opinion, scarcely borne out by the latter fact of the paper they had just heard read; for, although Mr. Smith had gone very fully into the history of the place, the buildings themselves did not appear to be affected by the peculiarity of the times in which they were raised.

The vote of thanks having been passed, Mr. Smith, in acknowledging the compliment, observed that, with regard to planning, we were so fond now-a-days of the convenient arrangement of Gothic, and trusted so much to picturesque effect, that he was convinced architects did not pay sufficient attention to the necessity of preserving their line of opening and piers on the ground line of their buildings. With reference to lectures or addresses on architectural subjects, he had no hesitation in saying that a paper on bricks and mortar was not what the student of architecture (and they were his students) wanted to hear. He wanted to hear something which would enlarge his mind, stimulate his fancy, and instruct his understanding. With reference to the practical means of treating buildings in narrow streets, he was of opinion that they must depend in great part on a good and rich basement, which was an extremely difficult thing to obtain; for, if it was cut up too much, it would look as if it could not bear the weight imposed upon it; and if it were not enriched it would look heavy. Some of the old houses erected of late years in Manchester were favourable specimens of street architecture. It would be found, as in the case to which he

referred, that a rich basement or an ornamented doorway did much to realize a handsome elevation, while a good effect was also obtained, at a very moderate price, by handsome iron gratings and carved keystones to the windows. The example of the street architecture of Genoa showed that no great effect was to be obtained by varying the face or sky-line of a building.

After some further discussion, the chairman announced that the paper to be read at the next ordinary meeting, on the 25th inst., was "A Review of new Publications," by Mr. B. A. C. Herring.

NORTHERN ARCHITECTURAL ASSOCIATION.

The ordinary quarterly meeting was held on the 18th ult., Mr. Watson in the chair. Mr. A. M. Dunn read a paper entitled "Notes on Continental Architecture," which he illustrated from a portfolio of sketches made during a tour on the Continent, giving a brief history of the progress of Christian art, commencing from the earliest period of the catacombs, and so on, to the early churches erected by Constantine in Byzantium and in Rome, tracing the progress of the art through northern Italy and Lombardy, to Germany, France, and England. Alluding to the picturesque and quaint appearance which is so much admired in continental cities, the reader attributed it almost entirely to the free and natural treatment of the roofs and coverings of the spires, turrets, &c.; laying great stress upon the importance of making the roof one of the intrinsic portions of the design.

GLASGOW ARCHEOLOGICAL SOCIETY.

The second meeting was held on the 7th, the Sheriff Strathern presiding. Mr. Honeyman read the report of the council, which took a very hopeful view of the society's progress. The following were elected office-bearers:—President, Sir Andrew Orr. Vice-Presidents, John Strang, esq. LL.D. and Wm. Euing, esq. Council, Messrs. Michael Connal, J. T. Rochard, Sheriff Strathern, Jas. B. Thomson, William Burns, Laurence Hill, John Buchanan, Gabl. Neil, Robert Harte, John Baird, Alex. Galloway, James Fleming. Hon. Secretary, J. Honeyman, jr. Hon. Treasurer, Wm. Church, jr. The president then delivered a very interesting address. He said, in conclusion,—"I, therefore, in the name of this body, invite my intelligent auditory to enrol as members, and be contributing to an elevating, interesting, and most useful study. Be not, I pray you, characterised by Lord Bacon's apothegm—'Having no knowledge of antiquity, nor antiquity of knowledge;' but rather be like old Camden—'Nourices of Eld.'"

'Then shall memory often, in dreams sublime,
Catch a glimpse of the days that are over;
Then, sighing, look through the waves of time
For the long-faded glories they cover.'

On the motion of Mr. Rochard, a vote of thanks to the learned sheriff for his address, was carried with acclamation.

A history of St. Nicholas's Hospital, by Mr. Connal, and other papers, were read.

STRAITS OF LONDON AND THEIR PERPETUATION.

In the laying out of modern towns, the streets are all planned of great width; and, wherever the surface admits of it, they are traversed at right angles,—as in Washington, in Turin, and in all our Colonial settlements: the increased traffic, and the enlarged size of wains and teams, demand this; and the marvellously agglomerated populations of the earth require it.

In old cities we invariably find the streets narrow, tortuous, and conflicting. Old London differs little from the cities of the Continent in this respect; and it would puzzle the inquirer to discover wherefore the curvatures, and straits, and *cul-de-sacs*, were thus originally formed.

At this epoch of marvellous improvement in all that concerns the social world, it would be hard to explain wherefore so little amendment is made in the thoroughfares of ancient London. So far as the narrow and windings extend within half a mile of the Bank, the enormous value of building sites prevents interference with streets as originally laid out,—noble edifices in public buildings, offices, and stores have been reconstructed at enormous cost;—and thus they fix, seal, and stereotype, both the longitude and latitude of public intercourse. Beyond this limit, however, there is not only scope for improvement, but the examples of Paris and other cities prove

that new and wide thoroughfares could be struck out, affording a tenfold accommodation for traffic, and at the same time a greatly increased return in rents, revenue, and value.

There are a few wide streets within the metropolitan limits, and the rental of these is just in proportion to the width of thoroughfare, and character of buildings in range; but, further, the wide and straight street is easier drained, lighted, watered, and cleansed; and above all it is more healthy.

We need not quote instances in proof of this, for they are palpable in the suburbs, and also in the improved central quarters.

Some amelioration has been lately made, and is now in progress, as we perceive in Newgate-street,—the houses are being withdrawn, and the drift-way widened some 8 feet. In other places, where an old projecting house has been removed, the strait has been or is to be enlarged, as in Fleet-street, next St. Dunstan's. These are pitiful, petty-fogging modernizations,—a slight yielding to pressure from without; but they are as nothing compared to the enormous increase of the population, and to the still greater extension of the commerce of this mighty metropolis.

The stagnation of traffic was before alluded to in the *Builder*, as an evil that has increased, is increasing, and that must finally end in torpor, through very plethora, unless some new esplanade of grand construction be struck out to perforate the bills of mortality from end to end.

There is no doubt but that a grand route of intercourse must and will be made between east and west; and it is almost equally certain that before a very great lapse of time we shall be constrained to adopt the efficient and well-judged plan of tramways, as now used in New York, to ease off the congestion of vehicles which frequent the present antiquated streets of London.

Meantime, however, those who regard with prophetic vision the coming improvement of a grand esplanade between Whitehall and Blackfriars cannot help looking with concern upon the total disregard that is shown in the modernization of the ancient line of the Strand, as it is now being carried out.

The streets branching from the Strand to the river will be, as soon as the great embankment shall be effected, important ducts from one main line to the other: they ought, then, to be as open as possible, so as to clear the various points of view, and also to admit a thorough ventilation both ways. How do we find them? Why, choked up and narrow just at the entrance from the Strand. Doubtless, the value of Strand frontage, where every foot values perhaps at five guineas a year ground rental, has caused these constrictions.

Nearly all the offshoots from this arterial line are in the same predicament: in fact, there is but one, Wellington-street, which is of a decent width.

Cecil-street, a handsome line opening to the river, is 34 feet in width, but is choked off by two houses in the Strand to 14 feet!

Salisbury-street from the river is also 24 feet wide, being reduced at the gola or entrance to 12 feet!

And Craven-street, which is now laid open to the Strand, for the reconstruction of two stacks of four houses in each facing the Strand, has a mean width of 33 feet from the river, and had (before the demolition) but 13 feet at the entrance!!

Whether or not it is proposed to continue the 33 feet range of the street, or to reduce it at the "embouchure" to the original entry or open gateway of 13 feet, is best known to the owners or architects; but a simple workman informed your querist that it is to be as it was in the beginning!

Now what concerns the *Builder*, and the writer, and the public, but most of all the owners of property and the inhabitants of Craven-street, is that, on account of the appearance, of the health, and most of all the convenience of the public, this fine street should be thrown open throughout completely to its full latitude. There have been commissions called Wide-street Commissions: there are Improvement Commissions in existence and in action; but there is a Board of Health. Ought not the attention of some such body to be drawn to this and other similar revivals of our ancestral Gothisms?

Perhaps there may be no public authority duly qualified to take note of such circumstances; still, as they affect private interests as well as public convenience, I would suggest to the owners and occupiers, in this once fashionable and even yet valuable locality, to consider whether, by the subscription of one guinea a house per annum they could not buy up, or subsidize, the owners of the

obtrusive 18 or 20 feet, so that it be thrown into the thoroughfare. With 30s. a house 100l. a year might be raised as a compensation for only 20 feet. The improvement to the street would enhance its value at least 5 per cent. and the angular houses, so far as their remaining *Strand frontage* might be concerned, would also acquire increased light, convenience, and aptitude for trade, fully equivalent to that of the street, and, indeed, much more.

That straits, narrows, and gorges should defile the metropolis, despite its wealth, intelligence, and progress in arts, is lamentable—it is deplorable. While Paris glitters in modern embellishments, we retain the most monstrous deformities. Is it that all are apathetic, or absorbed in selfishness and money-getting?

Surely the City and its convenient approaches are a matter for the attention of Government. There is here no arbiter to decree a *chanson* 100 feet wide and miles in length. It cannot be accepted that there is no public spirit. If there yet remains of it the faintest relic, these points are urged in behalf of the common weal; and, if the opening of closes is to have a beginning, let us commence on the Craven strait; for, if the proposed buildings be once raised, it will be sealed up for ever.

QUONDAM.

BIRMINGHAM NEW COUNTY COURT.

THE new County Court in this town was opened on Monday last. The building stands upon the site of the old library, in Waterloo-street and Bennett's-hill. The bar and attorneys attended in large numbers, to escort the learned judge into the court. After the business of the day, an address and new robes were presented to the judge, and he was entertained at a luncheon at Mr. Smith's, the Hen and Chickens hotel, in this town. T. C. S. Kynnersley, esq., stipendiary magistrate; George Whately, esq.; Mr. John Guest, the registrar; Mr. Charles W. Elkington, the high bailiff; and about sixty of the attorneys practising in the court were present. The building was designed by Mr. C. Reeves, of London, architect. Messrs. Branson & Gwyther, of Birmingham, were the contractors, and they likewise supplied the fittings. The furniture came from the establishment of Messrs. Cooke, Son, & Miers, of Warwick. The whole of the works were executed under the superintendence of Mr. Mansell Phillips, clerk of the works.

IRELAND.

THE contract for the new coast-guard station, to be erected by the Board of Public Works, at Clontarf, county Dublin, has been disposed of to Mr. Stephen O'Connor, of Howth.

Mr. Patrick Kerr, a Dublin building surveyor, has been declared contractor for the new National Model School, to be built by the Commissioners of Public Works, at Ennisconry; and the same body has recently let the contract for the erection of two additional wings to the female training department, in connection with the Central National Model Schools, Dublin, to Mr. Meade, builder.

It is proposed to build an agricultural hall at Mullingar, and that a public library, a reading and ball room, might form portions of the structure. With reference to the same town, we notice that it has been lighted with peat gas, under Mr. R. L. Johnson's patent; the peat being procured from the bogs of Rathconnel, Marlinstown, Woodhouse, &c. This, we believe, is the first instance of gas from peat, or common turf, being adapted to light public streets, though it has been for some time in domestic use in Ireland. The result is said to be "a brilliant success," and the cost considerably less than coal gas.

Tenders are required by the War Department for additions and alterations at Greencastle Fort, Lough Foyle, Belfast district; also, for additions and alterations at Duncannon Fort, in the Curragh district.

The Ballast Board are about contracting for building works in connection with the Tuskar Rock Lighthouse, off east coast, county Wexford.

The Dublin Builders' Association have issued a manifesto to members of the trade, and to timber merchants, expressing dissatisfaction at the recent attempt to change the usual mode of measuring balk timber in that port, "by substituting calliper in place of string measurement in calculating the cubical contents;" and that, "in the event of its being persisted in, they pledge themselves exclusively to support those establishments where the usual mode of measurement is adopted." We anticipate some discussion on this point.

A new line of railway, entitled "The Finn Valley," is proposed from Stranorlar to Strabane.

The members of the Waterford Club propose to erect a monument to the memory of the late marquis. The foundation-stone of a new Protestant hall has been laid in the same town.

Mr. John Fitzgerald's tender for alterations to the Clonmell workhouse has been accepted at 320l. Messrs. Corcoran, his competitors, tendered at 500l.

A project is now under consideration to connect the town of Larne, by railway communication, with the Belfast and Ballymena line at Carrickfergus.

The Lord-Lieutenant has been at Cork, laying the foundation-stone of the new bridge across the northern branch of the River Lee, intended to replace that destroyed by the flood in 1853, and to connect Patrick-street with the other side of the river, where the Great Southern and Western Railway terminus stands. It will have three limestone arches, each 62 feet 6 inches span, a 40-foot roadway, and pathways above, and will cost some 16,000l. Sir John Benson is engineer; Mr. Hargrave, contractor; Mr. Barnard, clerk of works. His Excellency also turned the first sod of the Cork and Youghal line at Dunkettle, some three miles from Cork. In honour of the viceregal visit, there was much festivity, and the mayor, Mr. Annot, M.P., was dubbed a knight, an honour of which the Corkonians seem to receive at least their share. Sir Cusack Roncy, chairman of the Cork and Youghal Railway, on the occasion of the banquet given to his Excellency, drew attention, in an admirable speech, to the fact of the express train conveying the English and Irish mails to Queenstown, to meet the *Cornwall* steamer, en route to America, being run from Dublin to Cork, 166 miles in four hours, and said the Irish railways were better managed and constructed than all those on which he had travelled in America, Hungary, Italy, Norway, and elsewhere.

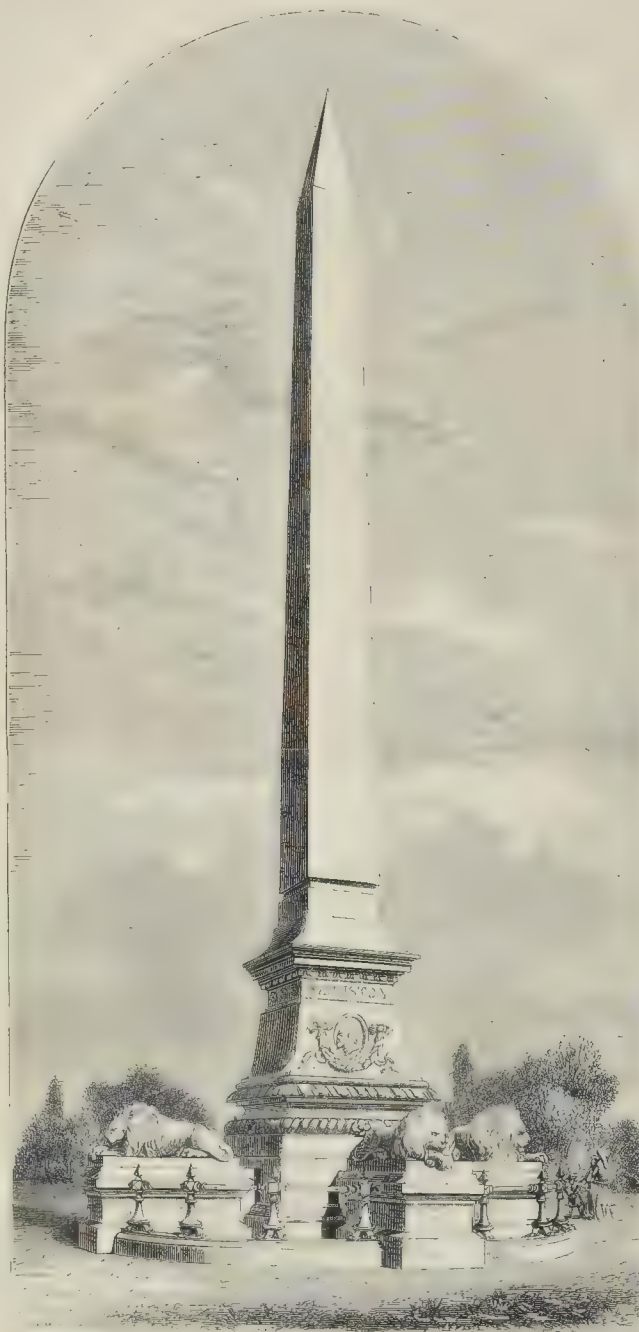
CONVICT LABOUR AND OUR HARBOURS.

THE vast increase of our commerce, the continual enlargement of the ships of this and other trading countries, which causes a greater amount of valuable life, treasure, and goods to be risked in one vessel, and other considerations, both of the safety of our trade and also the defence of our coast, show how desirable it is that the harbours and breakwaters which are partly in progress, or which have been shown to be necessary, should be carried forward with vigour.

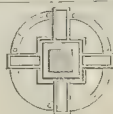
Our prisons are filled with criminals, many of whom are in the prime of life, whose labour is so unremunerative that the amount is scarcely worth mentioning; nor is the kind of labour pursued in the prisons likely to be useful to the prisoners after their liberation.

It is an important consideration in these days to devise punishments which may, without being brutal, deter persons from the commission of crime, create habits of industry, and, if possible, make those who have committed crime less burdensome to the State: it is therefore an important question whether or not it would be found beneficial, as we often urge, to employ our criminals to a far greater extent than at present on the works so much needed along our coast.

In an interesting account of Portland, just published by Mr. Pinks, it is mentioned that about 2,000 prisoners are employed in the Government quarries. This convict establishment, of which there is a governor, a deputy-governor, chaplain, two schoolmasters, &c. is nearly self-supporting, owing to the profitable labour of its inmates. During the year 1857 the average number of convicts working for the breakwater was 985; and the value of their united labour was estimated at 31,836l. 16s. 14d.; being at the rate of about 31l. 1s. per man. A parliamentary report states that 230 were daily employed in the prison; 132 working at their accustomed employments, earned 3,887l. during the year; and 98 convicts, working indoors as tailors, shoemakers, cooks, bakers, and washers for the prison, earned little less than 2,117l. To stimulate industry, a small sum, weekly, varying from 4d. to 1s. is placed to the credit of the convict, which is given to him at his discharge. During the year 1857, very nearly 4,000l. were given in this way. The cost of this establishment in the above year was 53,608l.; and the expense of the maintenance of each prisoner, 35l. 12s. 7d.: it therefore appears that the cost of convicts kept here is about 4l. 12s. 7d. a year. Surely this is better than the oakum-picking, the crank-turning, treadmill, and other unprofitable sorts of labour which in some parts are still in use.



BARNSTON



MEMORIAL.

THE BARNSTON MEMORIAL, CHESHIRE.

IN February last a premium was offered for the best design for a memorial; to be raised by public subscription (principally by the inhabitants of Cheshire), to the memory of the late Col. Barnston, of Crewe-hill, who served during the whole of the Crimean war, and in India, where he was wounded at Lucknow.

From those sent in, a design by Mr. Edward A. Heffer, of which we give an engraving, was selected, and has been carried out.

The memorial is placed in an elevated situation at Farndon, near Chester.

The material of which it is built is stone, from the Cefn quarries, with iron railing between the lions,—quadrant in plan. The dimensions are: greatest diameter, 23 feet; length of needle 40 feet; width at top, 2 feet 3 inches; at bottom next pedestal, 3 feet 9 inches. The width of base, for pedestal is 9 feet, the lions are 6 feet long, and the total height of the memorial from the ground is 55 feet. The cost was 400*l*.

THE MASON'S SONG.

Up, up, with the dawn
Of the bright glad morn,
The ladders high we climb;
And the trowels ring,
As we work, and sing
Some good old English rhyme.

We slave in no room,
We pine at no loom,
Where sick'ning gas-lights glare;
Where the poor souls moil,
And sigh at their toil,
Shut out from God's own air.

Oh! our hearts are strong,
And our laugh is long;
With care undimm'd our eyes;
As, block upon block—
Steadfast as a rock,—
The walls before us rise;

Till our aim is won,
Till our labour's done.
The stately mansion built,
May blessings descend
On it, and defend
Its hearth from shame and guilt.

JOHN PLUMMER.

BASINGSTOKE CEMETERY.

THE site of the new burial-ground is in the immediate vicinity of the ruins of the Holy Ghost Chapel, well known to all travellers on the South-Western Railway. The entrance is through a deep chalk cutting, and the road gradually ascends to the general level. The sides of the roadway are sloped off to an obtuse angle. The entrance lodge, of which we give a view, is in the half-timbered manner, with numerous gables and projections. There is access from the lower floor to the road level, and from the upper floor to the general level of the cemetery, so that the curator has complete supervision of the approach and the grounds. Close to the lodge, and in accordance with it, is an ornamental timber-bridge, which spans the approach road, and connects the "chapel litten" with the northern portion of the cemetery. The chapel is in the Decorated style. The Episcopal chapel has tower and spire away from the main building, and only connected with it by the vestry and corridor, at a much lower level. At the east and west ends are large traceried windows. Over the entrance archways is the bell tower, and above that the spire. The extreme height to the top of the vane is 70 feet. The spire of the Dissenters' chapel is attached to the main building, and is of equal altitude with that of the Episcopal chapel. Each chapel has a convenient robing-room.

Bath stone and flint are the materials of construction, the flint being introduced in squares, alternated with Bath stone. The total cost has been 2,834*l*. Mr. Nicholls, builder, of Basingstoke, is the contractor, who executed the works; and the architects are Messrs. Poulton & Woodman, of Reading.

THE STATE BEDSTEAD FROM STOWE.—The well-known elaborate state bedstead, formerly at Stowe, is to be sold by Messrs. Foster, at Pall-mall, on the 24th. This bedstead was erected from the design of Signor Borra, architect to Lord Cobham, in 1737, and was used on all occasions of Royal visits to Stowe, including that of her present Majesty.



BASINGSTOKE CEMETERY: CHAPEL AND LODGE. — MESSRS. POLLEN & WOODMAN, ARCHITECTS.

ENGINEERING WORKS ABROAD

For some time past the Northern Railway Company has formed a project of reconstructing the Paris terminus, in order to afford the necessary accommodation for the increase of traffic. According to the plans adopted and put through the formalities of public inquiry and discussion in January last, the axis of the present station is to be altered, and the new terminus so placed, that its principal entrance on the Rue de Dunkerque will be exactly opposite the Rue de Denain, instead of its being, as at present, fronting the Rue Saint Quentin.

The branch line from Saint Lo to the Caen and Cherbourg Railway advances with all the activity possible. Very little earthwork remains to be done, and the slopes of the portions completed are being dressed. In the masonry works the parapets are being placed on the bridges, and the guard-rails are in construction for the level-crossings. As to the Roque-Guesnet and La Buissonnière bridges, the abutments of the first are laid and carried up nearly to the springing; the arch of the second is being turned.

On the Limoges and Périgueux line the earthworks and masonry are completed between the latter town and Thiviers. The ballasting and laying of the permanent way were let by contract on the 20th September.

The tunnel under the Alps, at the Col de Frejers, is proceeding as well as can be expected. The length fixed upon definitely is 12,500 metres. The summit of the formation level of the railway is about the middle of the length, and 1,335 metres above the level of the sea. On each side of this the gradient falls 0.0005 m. per metre, on the Bardoniche or Sardinian side, and 0.032 m. per metre on the Modane or Savoy side. On the former side the rock was at once reached: it is limestone shale, which exfoliates upon exposure to the air, and in consequence the tunnel is being arched. The progress is 0.70 m. per day, on an average. Owing to the absence of good stone, the arch is being turned of bricks made in the neighbourhood, where excellent clay is found. The lime is brought from Casal. The heading on the Modane side, on account of the steeper gradient, is 140 metres lower than the other end of the tunnel, but it is, nevertheless, 105 metres above the high road 460 metres distant. In order to bring the railway down to this level, the line has to be carried round in curves the development of which is 4 kilometres.

The service of the Lombardo-Venetian railways has been resumed. Passports and luggage are now examined at Desenzano and Peschiera.

The King of Sardinia, accompanied by the Minister of Public Works, lately visited the works of the Trebbia bridge. When the line is opened as far as Saint Nicholas, there will only remain five kilometres to be constructed in order to arrive at Plaisance.

The Spanish Government has granted authorization for surveys to be made for a new line of railway from the celebrated Sierras de Triano, in the province of Biscay, to the neighbouring small port of Galindo. The other line conceded to Señor Alberto is to terminate in Desierto.

The Austrian Government has granted to a company of capitalists and promoters of industry of Prague, the concession of a railway from Prague by Pilsen to the frontier of Bavaria, with a branch from Hollebkau to Radnitz and Wegnow. The same company is also authorized to construct the branch lines from Pilsen to Eger, and from Pilsen to Budweis. It appears from new surveys at present being made by the company, that the concessionists of the Prague and Pilsen line intend to deviate, from that originally proposed, in many points. The preparation of the plans, for approval of the government, of these changes, and the purchase of land, &c. will occupy much time, so that the works will not be able to be carried on effectively till next year.

A ministerial report upon the financial state of the Netherlands assures us that the Government will, within the space of six years, advance, without interest, the sum of 28,520,000 florins to the several railways in Holland, in order to accelerate the completion of their works.

Some fatality seems to hang over the Algerian railways. Just two years ago we mentioned the commencement of the works by the soldiery, and very little seems to have been done since. According to the latest official intelligence, the works between Algiers and Blidah have never been commenced: as to the section from Algiers to Boufarick, proposed to be executed by the "bras de l'armée," it has met with most unfortunate, yet not-to-be-wondered at, delays; and, as a wind-

up, the said "bras de l'armée" has just got the route for the frontiers of Morocco. The section from Boufarick to Blidah stands a fair chance of being shortly put into active work, it having fallen into the hands of a private company.

RIO DE JANEIRO.

The two engineers to the Brazilian Government, Mr. Charles Neate and Mr. Lane, in conjunction with Mr. Henry Law, C.E., and Mr. W. G. Ginty, Directing Engineer of the Rio Gas Works, have been appointed a committee to report upon the feasibility, or otherwise, of carrying out the project of levelling the Castle-hill, now existing in the city of Rio de Janeiro. This seems a favourite scheme with the Brazilians, but it is thought that it will decline in favour when the proposal comes to be submitted to the judgment of matter-of-fact English engineers, who will doubtless insist on getting a clear idea of the gigantic nature of the work, and the outlay required to carry out the project, before they recommend its adoption to the Government.

MELBOURNE.

The Victorian Houses of Parliament.—The *Melbourne Argus* says.—The heavy and sombre-looking structure which now frowns upon the city from the top of Bourke-street gives but a faint and inadequate idea of the magnificent edifice designed. It is in fact but the centre of a building which, when completed, will extend to within 50 feet of Spring-street, and will form a parallelogram 450 feet in length and 250 feet in breadth. The Chambers as they now stand will be completely encircled by a corridor, leading on one side to the rooms and offices appertaining to the Legislative Council, and on the other to those of the Assembly. The portion now in course of erection is the Library, which has attained about one-third of its proposed height. With the exception of the foundation, the whole of the outer structure will be built of Darley freestone, and will be 20 feet higher than the walls of the centre square. The style of architecture is the Roman Doric, and it will embrace a colonnade 34 feet in height, surmounted by ornaments appropriate to that order. In the centre a handsome tower will rise to a height of 250 feet, and will give an imposing appearance to the new edifice.

Government Offices.—The first steps have been taken towards the construction of the new buildings in the Government reserve. A number of workmen have for the last fortnight been engaged upon the excavations for the offices of the Executive, Chief Secretary, and Registrar-General. These will be comprised in one large building, to form the centre of a group of seven, which will include offices for the Board of Land and Works, the Attorney-General, Postmaster-General, Electric Telegraph Offices, &c. Each of these offices will be connected with the centre building by an open colonnade, and will altogether occupy a large space of ground in the upper portion of the reserve, between which and the lower part of the enclosure a terrace is to be constructed, and the unoccupied ground converted into an ornamental garden. We understand that the design comprises several fountains and other embellishments, as well as, in the centre building, two large and capacious reception-rooms. The entrance-hall will be 60 feet in width, octagon shaped, and surmounted by a lofty dome. These works are under the superintendence of Mr. W. W. Wardell, who was the successful competitor when the designs were sent in.

THE STRIKE.

Our readers will have heard with satisfaction that the Conference of the Building Trades have at length withdrawn the strike at Messrs. Trollope's, in order as they state, that they may retain the support of the trades of the United Kingdom in opposing the "declaration," so that having spent in undesired idleness say 20,000*l.*, contributed by brother workmen, besides their own savings, instead of receiving from the masters say 140,000*l.*, and inflicting a loss on these masters and the country of some hundreds of thousands of pounds, the building operatives are exactly where they were before this mad strike was commenced, with this difference, that the masters are now requiring from them a certain declaration, with the ostensible view of preventing, if possible, the repetition of such calamities. It is to be hoped that some arrangement may now be made to prevent further loss and demoralization.

On the 14th, the number of men assisted by

the Conference was 5,173; the amount paid, 960*l.* 2s. 6d. This shows, as compared with the number and payments last week, a diminution of 522 persons, and 202*l.* 1s. 6d. cash—the totals last week being 5,695 men, and 1,163*l.* 1s. 6d. cash.

THE rules of six operative trade societies having been selected by the Master Builders' Association as evidence of the alleged illegality of the laws and regulations guiding these societies, these rules have been laid before Mr. Edwin James, Q.C., and Mr. Gordon Allan, for their opinions thereon. The rules of the Amalgamated Engineers, which the builders' societies offered to adopt, have also been submitted to a similar ordeal. The act of the masters in combining to lock out their men has also been laid before the counsel. The case for opinion was drawn by Mr. W. P. Roberts, solicitor, of Manchester, and the opinions thereon are subjoined:—

"OPINION.

1. We have carefully perused the rules and bye-laws of the six societies which are contained in the pamphlet circulated by the executive committee of the Central Association of Master Builders, and, with the exception of one rule amongst those regulating the Metropolitan Society of Operative Bricklayers,—viz. the Rule 20 (a), headed 'Members' Obligation to work with a Black'—we are of opinion that the rules are legal, and do not contravene the statute law or common law of England. We are not prepared to say that the rule referred to is in itself positively illegal, but as an attempt on the part of a number of workmen to carry into execution its spirit might lead to injurious consequences, we would recommend that it should be either erased, or, at least modified.

2. We are of opinion that the rules of the Amalgamated Society of Engineers, which have been proposed to be substituted for the rules of the six societies before referred to, are strictly legal. They are, in our opinion, infringing the provisions of any Act of Parliament, nor can any danger result from their adoption. We are confirmed in this view by the opinion of Sir Alexander Cockburn, the Attorney General alluded to in the case now submitted to us, and also by the provisions of the Act passed during the last session, which clearly indicates the policy of the Legislature to mitigate the severity of the statutes against combination, and to protect workmen in the exercise of their right to meet and act in union for the purpose of fixing the rate of wages at which, and the hours of labour, they should work, and peaceably and in a reasonable manner persuading others to cease or abstain from work, in order to obtain the rate of wages agreed upon, so long as no threats or intimidation be resorted to.

3. The law relating to conspiracy is so vague and unsettled that we feel reluctant to offer a decided opinion on this question; but we are inclined to think that the conduct of the masters, in combining and agreeing to lock out from their several yards the workmen employed, and who had taken no part in what had occurred at Messrs. Trollope's factory, until the workmen who had struck substituted for their employment, was such a combination by the employers as amounted to a conspiracy at common law, and might be the subject of an indictment.

Every master has a perfect right individually to discharge any or all of the workmen whom he may have employed, as every workman has the right to refuse to work for any particular master; but the combination of masters to dismiss and deprive of their labour and means of subsistence a number of workmen, for the purpose of compelling or inducing these workmen to effect an object which it may not be in their power to accomplish, appears to us to come properly within the definition given in the cases, and to amount to a criminal offence.

EDWIN JAMES,
GORDON ALLAN."

Temple, Nov. 10, 1859.

SIR,—The opinion of Mr. Edwin James and Mr. Allan which has been published in other journals, will, doubtless, appear in your present number; and I wish therefore to point out that these learned gentlemen have been misled, and have expressed an opinion on facts which never occurred.

Their "opinion" is to the effect, that the Association of Master Builders are liable to indictment for conspiring to close their establishments "until Messrs. Trollope's men, who had struck there, should return to their employ." The facts, however, were, that Messrs. Potter & Co. having, by their mandate, cleared Messrs. Trollope's yard and shops, and stationed strong bodies of men as pickets, to prevent other men from going to work for that firm, the Association of Master Builders determined to "close their yards until Messrs. Trollope were enabled to resume work." There has never been any attempt to compel men to return to any particular master; and, in fact, at the present time Messrs. Trollope are at full work with nearly all fresh hands.

But the false colouring which is thus given in counsel's opinion is only of a piece with the other proceedings of the Conference, who, however, have not restricted themselves always to the "lie" by implication.

At a meeting at Brighton, a few days since, Mr. Potter broadly stated that "workmen were not pressed to belong to societies, neither did the society men strike against non-society men" (*vide Daily Telegraph*, of 10th inst.); while, on the

very same day, three society bricklayers were convicted at Lambeth police-court, for depriving a non-society man of his right to labour. Alas! that in 1859 workmen should be content to follow such a leader!

A MASTER BUILDER.

FROM time to time, since the commencement of the strike, cases of sad distress have been brought under the attention of the public; but so much trouble has been borne patiently, and suffering hidden from notice, that the cases reported are only very faint indications of the effects of this unfortunate dispute. Debts have been incurred, which, particularly in the instance of those who have families of children to support, will take long labour and care to liquidate. Many a comfort, and even necessity, will be missed: tools have been parted with in order to provide bread; and when matters are settled some will not be able to work: executions for rent, &c. have swept away furniture; and many a man of industrious habits has, in consequence of the want of that regular employment to which he has been accustomed, fallen into irregular habits which may be never eradicated. The wives of the men on strike could tell melancholy histories; and what good is likely to result from all the sacrifice that has been made? The nine hours will not be granted, nor will the masters, to any extent or for any length of time, be able to maintain the "declaration."

All who have watched this struggle must regret the want of a right understanding, amongst the workmen, of those sure laws which regulate the price of all kinds of labour,—laws which are as certain as the appearance of the morning sun-light. A few more examples of the manner in which wages are regulated by the demand for a particular kind of labour may not be useless.

About twenty or twenty-five years ago the publication of the "Annals," and other illustrated books, created a sudden and large demand for skilful engravers on steel; and at that time an engraver of talent might depend upon receiving wages from 4*l.* to 10*l.* or 12*l.* a-week. The extensive application of lithography and wood-engraving to book and other kinds of illustration caused a less demand for the fine line-engravers on plates: the wages at once declined, and continued to do so in proportion to the extent to which the line-engraving was superseded by other descriptions of prints. A few steel-plate engravers of the highest talent still continue to obtain considerable sums, but those engravers who might have been able to earn 1*l.* a-week would not now be able, by that kind of employment, to make more than from 10*s.* to 15*s.* a-week.

In the years 1844 and 1845, the immense number of projected railways caused an extraordinary demand for engraved and lithographed plans, which were required in compliance with the Act of Parliament to be deposited in certain places at a stated time. As a natural consequence the wages of map engravers increased, and men who, in ordinary times, would work for from 25*s.* to 30*s.* a week, were paid enormous sums,—as much as 100*l.* was in some instances paid,—for an engraved plan which might be had now for less than half as many shillings. In other ways, the demand for surveys and plans caused changes. The prices of certain kinds of paper rose, so did that of prepared copper and zinc, and the wages of both copper-smiths and copperplate and lithographic printers largely increased; engineers, surveyors, and draughtsmen, of little skill or experience, were paid five times the money which their labour would have brought in usual times. As the unusual demand ceased, the wages fell to their natural level.

The combination of either masters or men cannot for any length of time successfully oppose these certain results; nor can the introduction of steam-machinery into trades be stopped by strikes or combinations. Indeed, it would be ill for the progress of the country, if it were otherwise: though doubtless, in some cases, it has been injurious to particular classes at the time of change. Much as this partial evil is to be regretted, it must not be compared with the vast advantage of the general results. In many trades the introduction of machinery, and other means of facilitating the more rapid production of manufactures, &c., has been a positive advantage to the workers. We have before referred to the potters', glass-cutters', and other trades into which the aid of steam has been brought, and shown that while the workmen can make five times as many articles as they could by the old plan, the number of those employed has increased, and the wages of the potters, &c., are higher than formerly. Those of the building trades, as well as others, derive an advantage from the cheap-

ening of pottery, &c.; and those who have manufactured the goods, have also gained.

A remarkable instance of the advantages of the application of improved means may be mentioned in connection with the printing business.

When stereotyping* came into use, most of the compositors thought that their ruin would be the consequence. Such, however, has not been the case. The practice of stereotyping has enabled publishers to issue books at a reduced cost, which, has led to a far greater demand than ever for publication, and, as a matter of course, the assistance of more compositors.

The introduction of locomotives and railways, from which it was predicted that such evil effects would come, has, in the various departments, been the means of employing probably not less than 200 men in proportion to one engaged in the days of the stage-coaches and the waggons. In the same way the steam-printing machine has vastly increased various kinds of employment. The demand for engraving on wood, box-wood, type-founders, compositors, &c. &c., has grown tenfold; and the labours of this mighty instrument for advancing knowledge have yet only in a small degree developed its capabilities. Besides the additions mentioned, the steam-engine has brought a large number of persons into work in feeding the machines with paper. It is to be hoped that the experience which has been lately so painfully gained may cause all classes of the working community to carefully consider the laws of labour, and, instead of embarking in these disastrous struggles, to endeavour in all ways to advance their intellectual and social positions, by establishment of societies or brotherhoods which may have for their purpose the care of the sick, the accumulation of savings, the education of their children, the provision of proper food on economical principles, and other matters, which will raise the British artisan in the scale of society, and will give them far more weight in dealing with employers than those regulations which are shown by all past experience to have been worse than useless.

Mr. Charles Buxton, M.P., in a communication addressed to the working men of Maidstone, in reply to a request for his opinion on the Master Builders' "declaration," says:—

"I am now bound to own that, the deeper I go into the question, the more cordial does my approval become of the conduct of the master builders in exacting the 'declaration.'"

Now, I will yield to no man in respect for the working class of England, or in anxiety for their well-being and happiness; and I have endeavoured to examine this question with a single eye to their true welfare.

What, then, would be the effect of the adoption of the 'declaration' upon the working men themselves? Undoubtedly, if it hindered their union for charitable purposes amongst themselves, I should warmly condemn it. But it does nothing of the kind. It solely aims at putting an end to an interference, by unions, with the bargains between master and man.

The question therefore is, whether that interference by unions between master and man is a blessing to the working class, or a curse. Would the working class, or would it not, be more free, more rich, more happy, without any such interference?

The unionists assume, of course, that they are fighting the working man's battle,—that they are taking the best means to secure him privileges which could not otherwise be obtained. But it would be very shallow to judge the system by what it professes to do, or is intended to do. History abounds with examples of the readiness with which bodies of men will delude themselves into regarding that as their greatest privilege and protection, which in reality is their greatest bane. Let us look at the system, not by its professions, but by its actual, practical working, under the broad daylight of experience.

1. Look at what experience proves as to the oppression of the unions upon those within them. Their principles seem to be, that each individual surrenders his freedom to the dictation of a committee. The unionist ceases to be a free independent Englishman. He dares not sell even his own labour on the terms he might be glad to accept. The union labels him with its own price. He dares not put forth his whole ability. The

* It may just be worth while to mention that this method, now in general use, is to cast, first in plaster and then in lead, the type set up for printing books, &c.; so that the cast can be printed from when required, and the type dispersed and used for other purposes.

union forces him down to the level of worse workmen. He dares not work with non-unionists. The union would punish him. He dares not teach his craft except to the son of a unionist. The union would punish him. He dares not vindicate a fellow-member who has been fined. The union would punish him. He dares not work on when a strike is ordered. The union would ruin him. It would fill pages to relate all the things he must not do, and dares not do, and for doing which he might be punished. * * *

Mark, again, the system of prying espionage, of inquisitorial inspection, to which the unionist is subjected. He is registered, with his age, trade, marriage, &c. He is fined if he marries without letting the union know; fined if he removes; fined if he changes service; fined if he knows of a vacancy and does not tell the union. And a complete machinery has been framed for secretly watching the members, to see whether they break the rules. Why one could fancy that a Neapolitan under King Bomba might endure thus to throw aside all self-rule and self-dependence; but it does amaze me that any Englishman can bear so galling a yoke.

Still, all this is but petty, though one should suppose irritating, oppression. But sooner or later the day comes when trade is brisk—when the masters have large contracts to fulfil—when, by the inevitable law of supply and demand, wages must rise of themselves if the labour-market is bare. At that moment, when he is on the spring-tide of prosperity, down comes an order, perhaps from the Central Society, that the men are to strike. Gladly, in all likelihood, would he spend the time in action rather than idleness. But is he a free man? No, he is a slave. He has no business to consult his own reason or his own will. Obey he must. He strikes; and perhaps, after months and months have gone by—when his furniture is at the pawn-shop—when his home is shattered, his energies enfeebled, his spirits sunk, his temper exasperated—when, but too probably, his wife's health is ruined, and his little ones are grown pale, thin, and mournful,—at last the society in its wisdom vouchsafes him leave to return to his work, at the very same wages, on the very same terms, that it had forced him unwillingly to reject.

You may think I speak vehemently; but I must speak as I feel: and I do feel a glow of indignation against a system which again and again has wrought such deep, bitter, irreparable anguish, not to the working man alone, but to his wife and little ones."

The writer then gives a list of the chief strikes of our day, and their results, reference to which has already appeared in our pages.

EXPERIMENTS ON STRENGTH OF CAST-IRON GIRDERS.

MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY.

AT the ordinary meeting, November 1st, Dr. Joule in the chair, a paper was read by Mr. James G. Lynde, C.E., entitled, "Experiments on the Strength of Cast-Iron Girders." The paper was accompanied by a diagram, showing the arrangement of the apparatus made use of in the experiments and the dimensions of the beams referred to.

The beams experimented on were eighty-nine in number, and were cast by Mr. Mabon, at the Ardwick Iron Works, Manchester, from iron of the following descriptions:—

- One charge of the cupola consisted of—
- 12 cwt. Goldendale, Staffordshire.
- 12 " Lano-end.
- 12 " Ormesby, Yorkshire.
- 12 " Blair, Scotch.
- 12 " Calder, do.
- All No. 3 hot blast iron.
- 12 " Scrap.

The beams were cast on their sides, and were a very good sample of workmanship.

The section of each beam was of the form recommended by Professor Hodgkinson, and upon which his formulae were based. The total depth of the beam in the centre was 24½ inches, and at the ends, 20 inches: the bottom flange was 15 inches wide, and 2½ inches thick: the vertical part of the beam was 1½ inch thick; and the top flange was 4½ inches wide, and 1½ inch thick: the total length of the beam was 34 feet 6 inches, and the distance between the supports was 30 feet 9 inches: the weight of the beam was 3 tons 8 cwt. 1 qr.

One of the beams was tested up to the breaking weight with the following results:—

With a load in the centre of—
 31 tons 8 cwt. the deflection was .87 inches.
 42 16 " 2.00
 46 12 " 2.25
 50 8 " 2.56
 54 4 " 2.70
 58 0 the beam broke,
 the ends springing back from each other 2 feet 8 inches, the fracture indicating a good sound casting.

There was no permanent set observable in any of the experiments until the breaking weight was applied, the beam being allowed to recover itself on the removal of the load in each case.

Each of the remaining beams was tested with a load of 20 tons in the centre, the deflection varying from $\frac{3}{8}$ ths to $\frac{1}{4}$ ths of an inch.

The calculations for the strength were based on the following formula, given by Professor Hodgkinson in his "Experimental Researches on the Strength and Properties of Cast-Iron:"—

First formula, art. 146:—

Let W = the breaking weight in tons placed on the centre of the beam,
 a = the area of the bottom flange in inches,
 d = the total depth of the beam in inches,
 l = the length between the supports in feet,
 then $W = \frac{2166 a d}{l}$

In this case—

$a = 36$,
 $d = 24.25$,
 $l = 30.75$,

which gives 60.09 tons as the breaking weight of the beam.

The second formula, art. 147, takes into account the thickness of the vertical part of the beam, and is as follows:—

Let W = the breaking weight in tons placed on the centre of the beam,
 l = the length between the supports in feet,
 b = the breadth of the bottom flange in inches,
 v = the thickness of the vertical part in inches,
 d = the whole depth in inches,
 d' = the depth from the top of the beam to the upper side of the bottom flange in inches,
 then $W = \frac{2}{3 d} (b d^2 - (b - v) d'^2)$

In this case—

$l = 30.75$,
 $b = 15$,
 $v = 1.5$,
 $d = 24.25$,
 $d' = 22.03$,

which gives 62.19 tons as the breaking weight of the beam.

The actual breaking weight being 58 tons, it would appear that the constant co-efficient assumed is in each instance too high for the quality of iron of which these beams were cast. This result appears to have been anticipated by Professor Hodgkinson in the case of large beams; and in one of his experiments, art. 147, on a beam cast for Messrs. Marshall & Co., of Leeds, he gives .625 as the co-efficient, which agrees with the result of this experiment.

Applying this co-efficient to Professor Hodgkinson's formula, they will be as follows:—

First formula, $W = \frac{2.05 a d}{l}$

Second formula, $W = \frac{.625}{d l} (b d^2 - (b - v) d'^2)$

The first of these would give 58.2 tons, and the second 58.31 tons, as the breaking weight; either of which calculations would be sufficiently correct for any practical purpose.

OVER-DARWEN CEMETERY COMPETITION.

THIRTY-ONE sets of designs for the proposed cemetery have been received from twenty-eight architects, and the committee have made a report wherein they say,—"We unanimously beg to recommend for adoption by your board, as first plan, the design bearing the motto 'Veritas,' provided the same can be executed and carried out for the amount specified in the competitor's estimate." "We recommend to your board the design bearing the motto of 'A Triangle in a Circle' for the premium of 20*l*. The design bearing the motto 'Experience,' No. 1, for the premium of 10*l*. These being, in our opinion, the second and third best." On opening the three sealed notes bearing the mottoes "Veritas," "Triangle within a Circle," and "Experience," No. 1, the names of the architects were as follow:—1st, Messrs. James Stevens, Manchester, and J. W. Rigby, Over-Darwen; 2nd, Mr. Ernest

Bates, Albert Chambers, Manchester; and 3rd, Messrs. Thos. D. Parry and H. Price, Liverpool.

It was found that the joint designer of the first plan was the Board's own surveyor (Mr. Rigby), and a discussion ensued as to whether or not he should be allowed to carry out his design, the Board requiring all his time for the affairs of his office. How many of the competitors would have sent in designs if they had known the Board's own surveyor was a competitor?

OBITUARY.

Mr. Alfred Ainger, architect, died on the 5th inst. aged 61. Mr. Ainger, who was brought up with his father and afterwards became a student of the academy and competed for the gold medal, was a man of attainments, and would probably have distinguished himself more in his profession than he did had he not possessed independent means. He was the architect of University College Hospital, London.

Mr. George Moore, architect.—We record with regret the death of this gentleman, at his residence in Grenville-street, Brunswick-square, in his 83rd year. Early in life Mr. Moore was in partnership with Mr. Leverton, the builder, of Gate-street, Lincoln's-inn, and afterwards established himself as an architect, in Lincoln's-inn-fields. As long ago as 1813 he was an active member of the Society of Arts. He afterwards was elected a Fellow of the Royal Society, and assisted in the establishment of the Royal Institute of British Architects. He was surveyor to the Skinner's Company, and wrote one or two papers which have been published.

ENGINEERING RATE COLLECTOR AT READING.

AN advertisement appeared in the *Builder* of the 5th, addressed to surveyors, by the Corporation of Reading, inviting gentlemen of that profession to become candidates for the joint offices of surveyor, inspector of nuisances, and collector of rates, at a salary of 200*l*. per annum.

On the following week appears another advertisement from the same body, reducing the salary to 170*l*. per annum, and stating that the inspection of nuisances will not be included; by which it would seem that, having re-considered their former intentions, the office of inspector of nuisances was deemed incompatible with the dignity of surveyor; but they retain the rate collectorship in conjunction with the surveyorship, of course with the idea that the rates should be collected in an engineering manner.

It is to be hoped that this will be again considered. Professional men should not be called upon to undertake duties so incongruously mixed; and the result could scarcely be satisfactory to the Board.

METROPOLITAN BOARD OF WORKS.

At a meeting held on the 4th inst., Mr. Thwaites in the chair, with reference to a request that the Board should contribute 50*l*. towards the estimated cost of the improvement in Little Knight Rider-street, the Works and Improvement Committee recommended the Board to decline entertaining it, on the ground that the improvements in question were of a purely local and not a metropolitan character. Mr. Alderman Cubitt, in reply to observations made as to the wealth accruing to the City from the coal dues, said it was not generally known that the revenue from that source amounted to about 60,000*l*. a-year; and he reminded the Board that the City, entirely and exclusively out of its own funds, made the great thoroughfare, New Cannon-street, leading from St. Paul's to London-bridge, in the interest not alone of the citizens, but of the general public of the metropolis, at a cost of 500,000*l*.; that, in deference to public opinion, the Corporation was compelled to abolish Smithfield market, and to provide a new one at an expense of 400,000*l*.; that they had also expended 100,000*l*. in the erection of a new prison; besides having to maintain the courts at Guildhall, where justice was administered not to the citizens alone, but more or less to the country at large. On a division an amendment for granting a third of the expense was carried by a considerable majority, thus affirming the principle that all the outlying parts of the metropolis are liable to contribute towards street improvements locally situated within the limits of the City.

A report by the superintending architect, relative to the fall of houses in Well-street, Hackney, stating that, in the opinion of the committee, there

was nothing to show any neglect of duty on the part of the district surveyor, was received.

A memorial was presented from the District Surveyors' Association, showing the inability of district surveyors to carry out the assumed intention of the Metropolis Local Management Act as to the occupancy of under-ground rooms or cellars, and praying the Board, in their bill for the revision of the Act, to arrange for the appointment of persons for the discharge of these duties having better qualifications and opportunities than the district surveyors.

At the meeting on the 11th inst. the Board received tenders for underpinning main sewer along the Fulham-road, Cheval-place, &c. The tenders from the various builders were—Mr. Robinson, 3,100*l*.; Mr. Detbick, 2,732*l*.; Mr. Pearson, 2,720*l*.; Mr. Rowe, 2,620*l*.; Mr. Thurst, 2,375*l*.; Mr. J. Phillips, 2,281*l*.; and Messrs. Walker & Neave, 1,959*l*. The engineer's estimate was 2,230*l*. The tender of Messrs. Walker & Neave was accepted.

The Southern Outfall Sewer.—A motion for the further consideration of the report from the engineer, submitting for approval plans and specifications of the southern outfall sewer from Deptford-creek to Crossness-point, and recommending that advertisements be issued for tenders for the execution of the works, was agreed to after some discussion; also for the sewer north from Kensal-green to the northern high-level sewer, near Sir George Duckett's Canal.

THE "BUILDER'S" LAW NOTES.

The New Stamp Act.—This Act repeals the duty on licences to practise the faculty of physic. It also expressly declares that the maker of goods, his children, and servants, may hawk and sell such goods.

Damage done by Sewerage Works.—A mandamus was issued to make compensation for damage done by a local board in the exercise of the powers of the Public Health Act, 1848, when the board denied liability, and refused compensation. The board in reply stated, that the compensation had not been determined, nor had the prosecutor taken any steps towards having the same determined, or given any notice of the amount claimed, or appointed an arbitrator under the Act. The Court of Queen's Bench held that this was no answer to the writ, for that an arbitrator would have no power unless it was a case of dispute about the amount of compensation only, and that the return should have therefore distinctly stated that to be the subject of dispute.—The Queen v. The Burslem Local Management Act.

Metropolis Local Management Act.—The powers given by this Act are intended for the benefit of the public and of the whole community; and therefore, when it becomes necessary to make sewers under this Act, the Board of Works are not compellable to purchase the land under which such sewers are to be driven, as would be the case under an ordinary Railway Act.—The North London Railway Company v. The Metropolitan Board of Works.

PROVINCIAL NEWS.

Whitlifford.—National schools have been erected here. They have been built by Mr. Gimson, of Royston, from the design of Mr. John Smith, of Cambridge. The cost of the school-rooms and teacher's residence has been about 800*l*. the greater part of which sum has been raised by subscription.

Northwich.—The usual monthly County Court has been held in the new Town Hall here, lately erected by Mr. Jackson, adjoining the Crown Hotel. The new Assembly-room is 65 feet long by 40 broad, and 17 feet high. It is said to be capable of holding 800 persons. The architect was Mr. Hughes, of Liverpool.

Sheffield.—The Townhead Temperance-hall has been re-opened. The walls have been divided into panels by twenty Corinthian pillars, marbled, as is also the cornice. The prevailing colour of the hall is a light blue. The front of the gallery has been divided into panels, the prevailing colours being gold and white. The decorations are from the designs, and were made under the superintendence, of Mr. C. A. Malone. They have been executed by Messrs. Heald & Son; the gas-fittings by Mr. Taylor; the upholstery by Roberts & Bottomley; and the paper-hangings by Messrs. Styring & Crabtree; all of Sheffield.

Galashiels.—The erection of a combined Town-hall and Corn Exchange, on the site of the Subscription School here, has been resolved on. The dimensions of the hall are to be 70 feet by

40 feet, with a gallery; and the accommodation will admit 1,000 sitting or 1,600 standing. Mr. A. Thomson, calculating the cost to be 2,500*l.* or 3,000*l.* and the income derived from it as a corn exchange and room for meetings, states that a return of 4 or 5 per cent. on the shares may be expected.

Armagh.—The new Presbyterian School, in College-street, Armagh, has been inaugurated. The building is in the Italian style of architecture, and of two stories, with six circular-headed windows, in front, and two square-headed, in rear of each room; the basement story finished as cut-stone work, with a string-course over; the upper story of harlequin brickwork; the quoins of raised cut stone; a projecting roof, which is raised in front to a semi-circle. The bottom room, appropriated for boys, is 50 feet in length, by 23 feet in width, by 14 feet in height, in clear, with a cloak-room at one end. The upper room, of the same dimensions as the under room, is to be appropriated for girls, and occasionally as a lecture-room, with a room at one end to be fitted up as a library. The architect was Mr. Barr, of Newry; the builder, Mr. Farr, of Armagh; the stonecutters, Messrs. McCullough and Morrow; and the painter, Mr. Maxwell.

CHURCH-BUILDING NEWS.

Sanbridgegworth (Herts).—The parish church here (Great St. Mary's) has lately been reopened, after undergoing great improvements by removing two western galleries, and throwing the fine old tower open to the nave. The old timber beams of oak, and belfry floor, have been restored, and all whitewash removed. The whole of the nave, aisles, and chancel, have now been rebathed in British oak, with carved panels and moulded buttresses. An elegant arch between the chancel and south aisle, for many years blocked up by a colossal monument of late date, has been thrown open and repaired; space has thus been gained for an organ. The brick paving has been replaced with red and buff tiles, and many other improvements have been effected. The tower, of early date, with its leaden reticulated spire, was carefully restored last year, and some lancet windows which were discovered were reopened. Care has been taken to preserve, where practicable, all the old masonry and woodwork. Under the wooden floor of the north aisle was found a sepulchral slab of Purbeck marble, having an incised effigy of a female with a dog under her feet. The words, "ici gist," are discernible; its date is about the end of the thirteenth century. All brasses and monuments disturbed by the improvements have been carefully reset. Mr. G. E. Pritchett, of London, was the architect employed in the restorations; and Mr. Burton, of Sanbridgegworth, the builder.

Kennett (Cambridgeshire).—The works at Kennett Church have just been completed for this year. The rector, at his own expense, has for several years past continued to substantially restore it. The tower was restored first, then the roofs to the nave and aisles, then the roof to the chancel, and the east end was rebuilt, and the Early English triplet with its inner banded shafts and groups of mouldings restored. This year has seen all the windows and north porch restored. Attention will next be turned to the rebathing and paving, which will complete the restoration. Mr. G. E. Pritchett is the architect, and Mr. Brown, of Isleham, the builder employed.

Lavendon.—The old parish church of Lavendon has been reopened, after restoration. The interior has been almost entirely renewed. The high pews have been substituted by open seats. An old gallery at the west end has been removed, and the tower arch opened into the church. The whole church has been newly floored, the chancel re-roofed, and paved with Minton's tiles. Two of the columns on the north side of the chancel had given way, and have had new foundations, and the windows have all been supplied with new stone jambs. A painted window has been presented by Mr. Churchwarden Brooks, of the Grange, for the east end of the church; and a similar window for the south has been presented by Mr. Churchwarden Coles. The restorations have been effected by Mr. W. Parker, of Thrapstone, from the designs and under the superintendence of Mr. Butterfield, of London.

Birmingham.—The foundation-stone of a Baptist new place of worship, to be called Wycliffe Chapel, has been laid at the junction of St. Luke-street with the Bristol-road. The buildings about to be erected consist of a chapel, 83½ feet long, 54 feet wide, and 45½ feet in extreme height, arranged to accommodate 911 persons, with side and end

galleries, entered by stone staircases from the sides of the building; and beyond the chapel, and abutting on St. Luke's-street, will be the school-rooms and vestries, comprising two school-rooms, each 26 feet long by 23½ feet wide; lecture-room, 52 feet by 23½; deacons' vestry, 23½ feet by 16½ feet; two vestries, and other rooms for stores and tea meetings. The style of architecture adopted is fourteenth-century Gothic. At the St. Luke-street corner rises a tower and spire 116 feet high, the spire springing from a solid square tower, terminating octagonally, and having carved crockets at its angles. The front of the chapel next St. Luke's-street has two tiers of windows, with appropriate mullions and tracery. The materials to be employed are, for the chapel, stone from Bath and the local quarries, with, internally, a free use of wood and metalwork. The school and vestry buildings will be built with bricks and Bath stone. The contract for the works has been taken by Mr. Joseph Hardwick, of Birmingham, for about 6,000*l.*; and the designs are being carried out under the superintendence of Mr. Cranston, architect, Birmingham.

Manchester.—St. Catherine's Church, Newtown, Collyhurst-road, has been consecrated. The church stands on "Travis's Island," and is reached by a small bridge over the Irk, at Newtown, in the neighbourhood of Angel Meadow, and is in the parish of St. Thomas, Red Bank. It is a rectangular edifice, Gothic in character, and in its construction a combination of coloured bricks has been employed. The site was a gift of the Earl of Derby. The roof, interiorly, has most of its timbers covered with plaster, the principals and purlins alone being visible. Hartley's quarry glass has been used in the windows. Three of the seven compartments into which the roof is divided are occupied by sunflowers, and from them depend sunlights which illuminate the entire gallery and nave: the aisles are lighted by brackets. The stalls are stained and varnished, with iron ends, and will seat 900 persons. Hot-water pipes are used in heating the church. The architects are Messrs. Speakman and Charlesworth; and the builders, Messrs. Cochran & Co. all of Manchester. The contract for the church is under 1,700*l.*; but, with the party-wall, heating apparatus, &c., the total cost will be 2,000*l.*

Bradford.—For some time past, it is said, complaints have been made of the delay of the parties who had the contract for the completion of the cemetery at Lidget Green. The committee have now let it to finish to other parties, so that the works will be proceeded with as rapidly as possible. The spire of one of the chapels is nearly complete.

Sheffield.—A movement was commenced a short time ago, for raising funds with which to erect a church, on a piece of vacant land in Hanover-square, for the Gilcar district, and a sum of 517*l.* has already been raised. The site and building are to cost 3,000*l.* Messrs. Flockton and Son are the architects, and the edifice, when complete, will consist of nave and side aisles. It is, however, proposed to erect and finish one of the aisles first, for public worship until the edifice can be completed.—The new Congregational Church, Cemetery-road, has been erected from designs by Mr. Joseph James, architect, at a cost of about 3,000*l.* The ground-plan consists of a nave, terminating with an apse, with transepts on each side; a turret in the angle of the nave and transept, next the new street, which assists the general grouping of the building; and two external porches at the principal front. The accommodation on the ground-floor is for upwards of 500 sitters, and in the gallery for 100; side galleries, seating above 200 more, may be erected. The turret is arranged to include a staircase to the intended side galleries. The general style is Early Decorated. The principal feature of the exterior is the turret, intended—not as a tower or spire but—merely as a staircase turret, the idea obtained from the Italian Campaniles, with details modified to accord with the style of the building. The cost of the turret was 250*l.* The level of the side street falls so rapidly, that the architect obtained in a basement large school-rooms 14 feet high. The following were the contractors, all of Sheffield:—Masonry and plastering, Mr. Ainsworth; carpenter and joiner, Mr. Bowsher; slater, Mr. Ellis; plumber and glazier, Mr. W. Bissett; painter, Mr. Langton; pulpit, &c. Mr. Duke; gas-fittings, Mr. Bissett.—The foundation stone of St. John's Church, Chapeltown, has been laid. The church is to be in the Early Geometrical Decorated Gothic style, according to the local Independent, with a tower and spire 93 feet high, a nave 60 feet long, and a chancel 24 feet long. It will have a south gabled aisle, and a south-west

semi-detached tower, forming a porch. On one side it will show three gables, the tower, and the spire, all in one face. It is to accommodate 420 persons, and to cost about 1,400*l.* Two-thirds of the sittings are to be free. The architects are Messrs. Worth & Campsall, of Sheffield; and the contracts have been given to the following persons: Mr. James Powell, mason, Sheffield; Messrs. Ash & Clayton, carpenters; Mr. Brown, of Barnsley, plumber, glazier, and slater; and Mr. Large, plasterer. Mr. John Peaker, Chapeltown, is clerk of the works.

Hull.—In Clowes's Primitive Methodist Chapel, Jarratt-street, Hull, a new organ has been recently erected by Messrs. Forster and Andrews, of this town. The instrument, though not of colossal size, is complete. The great organ extends from CC to G, and contains the following stops:—Large open diapason, 56 pipes; viola di gamba, 44; stopped diapason bass; claribel, 44; principal, 56; twelfth, 56; fifteenth, 26; sesquialtra (four ranks), 224; trumpet, 56; total pipes, 604. The swell, CC to G.—Double diapason, 56 pipes; open diapason, 56; stopped diapason, 56; principal, 56; piccolo (metal), 56; mixture, 168; cornopean, 56; hautboy, 44; total pipes, 548. Pedal CC to E.—Open (16 feet), 29 pipes. Couplers:—Swell to great, great to pedals, swell to pedals. Three composition pedals.

RESTORATION OF POWERSTOCK CHURCH.

The picturesque church of Powerstock, near Bridport, was consecrated on Tuesday, 1st of November, after undergoing a restoration, to such an extent that the church may be almost regarded as a new structure.

It affords evidence of three different dates previous to the present works. The only remains of the first church are a Norman arch dividing the nave from the chancel, (which, although it blocks up considerably the view into the chancel, has been suffered to remain, in consequence of its archaeological value,) and a quantity of Norman work, which was discovered in taking down some portions of the outer walls. There is no doubt, from appearances, that the first structure was destroyed by fire. The second building appears to be of the fourteenth century; piers and arches of this date, dividing the nave from the south aisle, still remain. The tower seems to have been since raised in the Perpendicular style upon the foundations of the fourteenth-century base.

A few years ago, the late Mr. R. C. Carpenter rebuilt the north aisle with piers and arches to match those in the south, and repewed the church with low open seats. Since his death, the work of further restoration has been carried to its completion by Mr. J. Hicks, of Dorchester, architect.

The spandrels in the nave arches have been painted in fresco in various arrangements of natural foliage. The church is dedicated to St. Mary, and all the windows in the chancel are decorated by a band of lilies painted upon the stonework round each, and in the openings of the windows. The caps of the columns in chancel are all coloured and gilt, and the reredos is composed of a diaper of Minton's moulded tiles, illuminated in gold and colour. The stained-glass windows in the chancel are by Messrs. Hardman. The stone carving, including the pulpit, is by Mr. Boulton, of Birmingham, and the whole of the ornamental work by Messrs. Harland & Fisher, of London.

PROFITABLE TREATMENT OF SEWAGE.

BEFORE another summer of discomfort to the inhabitants of large towns has arrived, may I venture to ask space in your columns for a few remarks on the "Sewage Question?"

Sewage, when left at rest, is found to form itself into three distinct bodies.

1. A floating scum, composed of its lighter substances, and particles of a heavier nature, supported by bubbles of an adhering gas. This should be scummed off, mixed with diluted sulphuric acid, and dried. (The wood, &c. should be burned.)

2. An opaque fluid, through which heavy substances are observed to be, from time to time, rising to the surface, and sinking again as soon as the gas which supported them has been liberated.

3. A precipitate, in the form of a black mud, containing its heavier and fermenting bodies. This precipitate continues in a state of fermentation, giving off the white carbonated hydrogen and other offensive gases. Under unfavourable conditions, such as at the bottom of rivers, pools, &c., this fermentation may continue for years, and this is especially true in the case of tidal rivers.

Now it is an established maxim of farming that no manure should leave the land on which it is formed; and nature seems to forbid our throwing into the sea manure that surely belongs to the land.

To prevent this, I beg to submit to the public a plan at once simple and economical.

Let a sewer, at its lowest level, be divided into two distinct channels, working the sewage through the one, while the other is at rest: the object of this is to allow the sewage to precipitate.

Let each of these channels be divided by a series of vertical sluices, and be acted on as follows:—

Let the sewage, working in one of the channels, pass over a sluice into the first division of, say 100 yards, to which add *sulphuric acid*, in the proportion of five drops to the gallon. The sulphuric acid will expedite the precipitation, and cause the fermentation and decomposition to cease. Next, let the sewage pass under a half-sluice (i. e. a sluice partially open at the bottom) and over a complete one into a second division of 50 yards, where it is brought into contact with dried or burnt alkali, which will separate some ammonia and alkalies. Let it next pass over a complete sluice into a third division of 100 yards, where a still further purification takes place. Thence let it pass under a half-sluice and over a complete one into a fourth division of 50 yards containing lime, which will separate the phosphates and sulphates of that earth (the clay and lime should be stirred up frequently). From the fourth division, let it pass over a complete sluice into a fifth, where the phosphates and sulphates are all collected. The fluid that now leaves the channel is nearly pure, and upon exposure to the air speedily resolves itself into chalk and water: any remaining impurities will be consumed by the infusoria and confervæ. I may observe, *en passant*, that these plants and animals will purify any amount of sewage, in reservoirs and rivers, after the floating and suspended bodies have been removed: they will even appear in well-stoppered bottles of sewage, after the removal of these impurities.

When the precipitates reach the half sluices, the latter become choked up, and the sewage will cease to work: it must now be turned into the other channel until the precipitates have been pumped out, and conveyed away to be dried: they should, of course, be kept separate.

The precipitates taken from the second and third divisions will be found to be a valuable manure, equal, perhaps, to guano, and more permanent in its effect. In the fifth division the precipitates are phosphates and sulphates of lime, with a small proportion of animal matter. This is the best of mineral manures, and, when dried in troughs, is light, free from smell, and capable of passing through drills.

After estimating all expenses, these manures may be manufactured at the rate of about 11. the ton: agriculturists are now paying more than 81. for phosphates and guano. The sewage may, I believe, be conducted by closed or open sewers for some distance, without any great change occurring in its composition; and, consequently, the drying houses may be constructed outside the town, and thus be of no annoyance to the inhabitants.

HENRY BIRD.

HOW ARE THE RELATIONS OF MASTERS AND MEN TO BE IMPROVED?

SIR,—Are strikes necessary? Must every few years see a miserable dispute between employers and employed? a dispute, involving misery to thousands, loss to the whole nation. Is it a necessity, according to the rules of political economy, that such loss of time, of money, of happiness, of unity, ay, loss to the stability of England, should be?

I cannot think so. I cannot believe that our rules are right ones, that it can ever be intended that such a scrambling way of proceeding can be the best and wisest: there must, surely, be some way of binding all the members of a nation together, all members of a trade, so that all their disputes may be settled without involving loss, misery, and destitution.

I cannot help thinking that the principle of the old guilds was a right one—the forming into one community the members of a trade, governed by its own laws, united by its common interests. Doubtless, their restrictions were bad, limiting the power and liberty of their members far too much; but still I think some such associations must be formed, or we shall suffer greatly from the spread of an education which must necessarily be imperfect for many years to come. Young,

foolish, and half-educated men are sure to take up with grievances, real or supposed, and try by strikes and intimidation to accomplish the objects which seem to them right. It is not sufficiently clear that the interests of the master and man are the same. Masters have been, and are often, I fear, more “in haste to be rich” than to “give to their servants that which is just and equal;” and therefore I do desire to see them bound together by some tie of fellowship, that these miserable antagonisms, by which all the nation suffers greatly, should be put an end to.

Could not an Act of Parliament be passed constituting each trade or body of trades a community into which any person desiring employment should be admitted by the government of such trade (hereafter to be spoken of) on his signing a promise to abide by its decision on all points connected with wages, hours of work, and everything affecting the relation of masters and men with each other? No one unwilling to promise such obedience could be admitted to work at all, for on this depends the whole scheme.

The government of each community to consist of equal numbers, representatives chosen from masters and men, who should discuss all questions of dispute, and by whose decision the whole trade should be bound. I cannot see that there would be any hardship in such a plan. Surely, Englishmen would be willing to give up a few private feelings or desires for the great benefit which would be derived from making masters and men thus more united; for, without this feeling of fellowship, the terrible scenes of the late and many other strikes must continue to occur; and every foolish and short-sighted dispute will set employers and employed in opposition to each other, at a great loss to themselves and the nation.

Such is a rough outline of my plan. I shall be very glad to hear any opinion on it. I feel sure that the present state of things cannot be a good one, and that it behoves all who have the interests of England at heart to suggest something which will put the relations of master and men on a better footing.

F. A. M.

THE QUESTION OF STABLE-FITTINGS.

SIR,—In an article in the *Builder* of Nov. 5th, under the head of “Stables and Horses,” which is indeed a review of a work on stable management generally, by Mr. Haycock, among other matters, a quotation is introduced from a letter, in which, with reference to water-troughs and wooden racks and mangers, Mr. Haycock, in opposition to the strictures of some reviewer, reasserts his adhesion to the opinions expressed in his book against the use of water-troughs and in favour of wooden racks and mangers.

Now, with all due deference to Mr. Haycock, I venture to say that his views on these points differ entirely from all those which the experience of modern days has suggested, and which Mr. Haycock himself is obliged to acknowledge has effected a complete revolution in the general management of the horse; and my principal reason in writing to you is, that if such opinions are left unnoticed, a system may be prolonged for a time which has been proved to be positively detrimental to that noble animal. I say for a time, as it requires no great penetration to foresee, notwithstanding Mr. Haycock's advocacy, that the stable-bucket for drinking purposes, and the wooden rack and manger, are as certainly doomed as any other similarly circumstanced venerable pieces of antiquity.

Water-troughs are always used in those countries where the horse is cared for, quite as much as here, the chief object being to prevent the animal from surfeiting himself,—an almost habitual occurrence where the water is only given at the painful discretion of the groom. The very fact mentioned by Mr. Haycock, of “horses always slobbering in the water,” tells against himself, for it shows how grateful the mere act of sipping is, both at meals and other times. And if the “fluid becomes so disgusting that the horses will not look at it,” this surely is no fault of the horse, but of the groom, whose business it is to see that the water is frequently renewed. Mr. Haycock himself, no doubt, relishes his glass of beer at a meal; but if the same glass with the dregs is presented again and again, according to his argument, the disgusting fluid is in fault, not the servant! Mr. Haycock must accept his own logic. As to the trough never remaining in stables more than twelve months, my experience goes entirely the other way. I have seen many fitted, but never the fittings removed. Mr. Haycock must prove his assertion; and as to the question of preference between a

trough and a stable bucket, the former is always kept to its one cleanly use, while the latter runs through every phase of stable nastiness and abomination. Look at the facts, and then let Mr. Haycock decide.

With regard to the position of the hay-rack, Mr. Haycock will excuse a familiar illustration. Did he ever, in days gone by, play at “Bob-cherry,” making desperate efforts, with uplifted mouth, to catch the proffered bait? If so, is that the way he would like his food always presented to him? Yet this is the rack to which he would doom the horse, thus forcing the animal to feed in a constrained, unnatural manner. Man has tried many positions for his prandial indulgences. The ancient Roman reclined; the native of Hindostan squats on his hams; the modern European sits; but all prudently have their food presented to them under their noses, not above their heads. And so it is with all animals acting upon nature's laws. Mr. Haycock, however, would make the horse the unlucky exception. What has the poor brute done to deserve such unnatural treatment?

Again, Mr. Haycock finds fault with the low rack, and cites an instance of injury. He surely can never have seen racks and mangers properly fixed; if he had he would have known that, in a stable arranged without angles or places where a horse can be injured, the rack and manger are boarded to a short distance from the ground, so that the air may pass through. This allows the flooring always to be swept clean: at all events, in no case should the manger project, as shown in the engraving.

As to wooden mangers, I trust are long to see them utterly exploded. Valuable horses are annually lost by coming in contact with the virus left behind and absorbed in the wood. Many instances might be adduced: I will, however, confine myself to one, known to myself, where a medical man lost three horses in succession, and only stopped the festering plague by the adoption of iron stable-fittings.

But the crowning fallacy of Mr. Haycock's system is the false bottom. No one who understands anything of stable management would ever admit so clumsy a contrivance. It would have to be constantly taken up and put back, screwed and unscrewed, and there must be a continuous smell rising from boards saturated with ammonia, while the stench from beneath would be filling the air with its filthy exhalations. It is difficult to keep a stable clean, even when paved and drained; but, with the lumbering contrivance of a false bottom, the poor animal is condemned to live in an atmosphere detrimental alike to his eyes, his lungs—in short, to his general health.

I say nothing whatever against Mr. Haycock's work, when he confines himself to his own veterinary department; but when he ventures on a subject which forms entirely a separate branch and has exclusively occupied the attention of many whose experience points to facts differing altogether from those advanced by Mr. Haycock, it is evident he has either not understood it, or been hasty in his conclusions, or he would never have put forth such crude ideas to the public.

G. R. C.

St. Pancras Ironworks Company.

PARAPETS versus DRIPPING-EAVES.

SIR,—Can it be that a building owner has the power to build up to the public way and then form the roof so as to overhang the pavement or road with dripping-eaves, gutters, and rain-water pipes on the face of the wall, provided the same be connected with the drains on the premises?

This has been done in one of the London districts, and allowed by the district surveyor, who states that he has no power to compel the builder to alter it. Surely there must be some mistake here. I have looked over the Building Act, 1855, but cannot see any clause to compel the building of parapets, or to prevent dripping-eaves. Sec. 24, part 4, allows them; but sec. 119 of the Local Management Act, 1855, does not; and it is contrary to common law to place any obstruction on or over the public way, which a rain-water pipe would be, and the slates of a roof overhanging would be an encroachment which vestries have the power to prevent. If this be allowable, the danger to the public would be very great, from slates, tiles, or other things sliding down from the roof on to the heads of the passers-by.

What is the remedy for such a dangerous practice? Only consider what the consequence would or might be, if houses abutting on our public thoroughfares were built without parapets! Accidents are but too frequent from such causes

now, from some of the old houses still existing in London. If there is no power to make parapets compulsory by any existing Act or law, then I would suggest (unless an amended Building Act be passed, which is much wanted), that a clause be inserted in the proposed Local Management Amendment Act, making parapets compulsory, adjoining public ways or the property of adjoining owners.

If, as I feel satisfied, no one has a right to project the slate or other material of a roof over the face of a wall, and parapets are not compulsory, an owner might form a gutter flush with the face of a wall, and the danger would be as great as if there were dripping-eaves. INQUIRER.

WINDING THE WESTMINSTER CLOCK BY THE TIDE.

SIR,—It may be interesting to your correspondent of the 5th of this month, who proposes to wind up the Westminster clock by means of the action of the tides in the Thames, to know that, early in the month of March last, after going through the required calculations, &c., I had the pleasure of laying a precisely similar scheme before Mr. E. B. Denison, when I was informed by that gentleman that so much more had been expended upon the clock and its appurtenances than had originally been intended, that there was not the slightest chance of such an improvement being adopted. J. W. WILSON.

SHINGLE v. SLATE SPIRES.

ARE the "shingle" spires of Kent picturesque and architecturally good or not? and are the oak shingles dearer than (the nasty gloomy) slates? Because, if not, I cannot conceive why the slated spires are coming so much into fashion. They cannot be repaired except at a great expense, and are most dangerous—a slate falling from such a height at such an angle would cut off a head or limb, whereas ladders can be hooked on to wooden roofs without any danger of breakage; and the only objection to them is on the score of fire, but as stoves are rarely and never placed near them, that difficulty vanishes. TIGRUS.

BUILDERS AND MERCHANTS.

The United Builders Land and Investment Company v. Clarke.—This case was tried in the Bail Court, November 14. Mr. Huddleston and Mr. Barnard were counsel for the plaintiffs, and Mr. Linton for the defendant.

This was an interpleader issue to try whether certain timber belonged to the plaintiffs or to the defendant.

It appeared that the plaintiffs were the owners of some land at Lower Tulse-hill. A person named Martin took some portion of the land on a building lease. Martin having commenced building got into some difficulties, and, wanting some timber, he applied to Messrs. Vigors, timber merchants at Kennington, to let him have some. Vigors refused. Martin then applied to the plaintiffs, and they ordered timber of Vigors to be sent to the houses which Martin was building. The timber was invoiced to the plaintiffs, and was sent to the premises as desired, and then the defendant, under an execution against Martin, seized the timber.

It was contended for the defendant that this was a transfer of the property to Martin.

The Judge thought it was not so. Martin was called, and he stated that not being able to get the timber from Vigors without a guarantee, he made an arrangement with the company that whatever timber was supplied he (Martin) was to allow out of money the company were to advance to him. It was to be the property of the company until he was entitled to the advance.

The jury found a verdict for the plaintiffs.

THE DWELLINGS OF THE MANY.

More than two-thirds, probably, of our population are only "lodgers," occupying one or more rooms, or portions of a house. In proportion to the size of their abiding-places, these pay a much higher rent than tenants or householders. Rent is, therefore, a matter of great importance to them, especially as, in most instances, they are in receipt of the smallest incomes of the two classes. As a general rule, the only permanent way to cheapen rent until "ground-rent" has received the attention of our Legislature, and become reduced to a just basis) is by erecting houses of from four to six stories in height, as in Edinburgh, Paris, &c. To obviate the labour of ascending and descending such lofty tenements, might not ascending (and of course descending) rooms be constructed, running through their centres from bottom to top; these to be worked by hand machinery? It would pay to keep a porter or attendant to wind them up, and many poor creatures, unable to work at more active and mental labour, would be glad of a humble living in this way; and the expense amongst a houseful of inmates would be next to nothing to each. Shafts might also be constructed—one for emptying liquid, &c. refuse, and communicating with the sewer, and another for dust, ashes, &c. Water-cisterns—perhaps one to each floor; these to be made of zinc, or some light but strong and incorrodible material; probably wood lined with zinc, would be suitable and cheap. These might be constructed in the corners of landings, and take the shape of the old-fashioned corner-cupboards, which would obviate any inconvenience of passage up and down. Underground rooms are not only unhealthy to the body,

but even more so to the mind, and tend to the demoralization, and thence the pauperization, of humankind. It would greatly increase human happiness if these were prohibited by law from being inhabited; and they should not be used except for storage purposes. Even back-rooms are often so darkened by back-walls, and have such gloomy and dull prospects, as to be injurious to the health and spirits. To render houses fireproof, or to prevent their total destruction, it is not only necessary that staircases be built of stone or iron, or other incombustible materials, but also that the doors and ceilings should be alike protected. Doors might be covered inside with cast-iron plating, which would be capable of ornamentation: the wood part being much reduced in thickness, doors would be little, if any, heavier than at present. Thus access to the rooms above (a way by which fires frequently communicate, and by the door, would be entirely cut off. Rent is perhaps the only matter in which there is little or no competition. While all commodities and products are undergoing depreciation, ground-rents are daily increasing, making the rich richer, and the poor poorer. There is perhaps no more potent cause at work to fill our jails and our workhouses, and to pauperize and starve thousands upon thousands, who endure the utmost misery, yet strive to keep themselves from the moral degradation of those dreadful asylums. ROODSFERE.

PATENTS CONNECTED WITH BUILDING.

CEMENT.—*H. Y. D. Scott*, Brompton Barracks. Dated February 17, 1859.—In carrying out this invention (which is an improvement upon "Scott's patent cement"), the patentee takes the above-named lime cement, and if still in lump, which he prefers, he grinds it in a cement-mill with an equal quantity by measure of chalk, previously perfectly dried. Or he may vary the proportion of chalk, which should be soft, and dried by a draught of hot air or a heated flue. The mixture, it is said, will be found, though much cheaper in most localities in England than the cement alone, to have acquired many valuable properties for plastering purposes.

IRON PAVING, FLOORING BRIDGES, GRATINGS, &c.—*P. E. Fraissinet*, Paris. Dated February 17, 1859.—This structure is formed of hoop or other iron combined, some of the pieces being flat and others undulated, placed on edge, juxtaposed, and riveted at the points of contact.

MEANS FOR DRYING BRICKS AND TILES.—*W. Basford*, Burslem. Dated February 19, 1859.—The first part of this invention relates to a method and means of drying front and floor tiles, roof and floor bricks in what is called the second stage, preparatory to their being burnt in the kilns. The next part of the invention relates to the internal construction and arrangement of the fires, flues, chambers, and walls of kilns or ovens of any form, whether circular, oval, square, oblong, or polygonal, and chiefly to be used for the purpose of burning front and floor bricks, roof and floor tiles, and such like articles of earthenware or pottery, the object of the improvements being economy in the material of the structure and in the fuel consumed, increased convenience and stability in the kilns, and a more uniform and regular distribution of the heat throughout the goods to be burned within them. In the next of the improvements connected with the construction of the said ovens or kilns, he now proposes to construct the intersecting flues, so that they also shall be main draughts or flues, and have mouths or furnaces at each extremity. The next of his improvements consists in the mode of building the interior of the kilns. The next relates to certain appliances for regulating and economising the heat of the said ovens or kilns, more particularly when such are open kilns, but at the same time applicable to all.

FIRE-PLACES.—*F. P. J. Van den Ouweland*, Paris. Dated February 19, 1859.—This invention consists in providing fire-places with one or more apparatuses through which either steam or air, or both, is caused to pass, and afterwards injected, by means of a sort of screen, on the fuel, in order to obtain thereby a better combustion of the gases evolved from this latter.

VENTILATING MINES.—*J. Wilson*, Sunderland. Dated February 7, 1859.—This invention consists in the construction, at or near the mouth of the downcast shaft of the mine, of a gas-holder or receiver, of a capacity and strength proportionate to the quantity and pressure of air required for the supply of the workings of the mine, and for maintaining the purity of its atmosphere. To this receiver is attached a force-pump, or pumps, to produce and maintain whatever pressure may be required within it. The patentee also attaches to the receiver one or more main pipes, of a diameter or collective capacity or size proportionate to the extent of the workings to which the fresh air is to be conveyed, such pipes being furnished with valves to regulate the quantity, velocity, or pressure of the air passing through them from the receiver. These main pipes are continued to the

* They are partly so in the metropolitan districts, but the machinery for enforcing it is so defective that little advantage results.—*Ed.*

bottom of the downcast shaft of the mine; and to the lower end of these main pipes at the bottom of the mine are attached other pipes, to convey the air to all the working portions of the mine.

REVOLVING SHUTTERS AND BLINDS.—*A. Clark*, Gate-street, Lincoln's-Inn. Dated February 8, 1859.—This invention relates, firstly, to making revolving or rolling metal shutters or blinds of sheets of steel, or other metal, instead of forming them of a combination of laths or narrow strips, as usual heretofore. The second part of the invention relates to making revolving or rolling shutters and blinds of fibrous material, combined with strips of steel or other metal, or of wire, interlaced or woven with the fibrous material, or it may be paper stuff, made as millboard, combined therewith. The third part consists in the application of an endless band of steel or other metal to communicate motion to the roller used for winding up revolving shutters and blinds. Fourthly, the invention consists in the use of strips of tempered steel to connect revolving shutters or blinds to the rollers on which they are coiled or rolled up, in lieu of the chain by which they are usually attached. The fifth part of the invention consists in making revolving metal shutters and blinds of a series of laths or strips, having a civil or semicircular curve along each edge, the convex of which curved edges are placed in contact to form the exterior of the shutter or blind. The sixth consists in snail or volute grooves in continuation of the side grooves, in which revolving shutters or blinds are held and slid, whereby he is enabled to coil up and uncoil such shutters simply by pushing them up into, or pulling them down out of, such volute grooves.

Miscellaneous.

AN ARCHITECTURAL RIFLE CORPS.—*Sir:* As so many rifle corps are being formed now throughout England, I would suggest that the architects of London form a rifle corps to be composed exclusively of members of the profession. Architects being a body of men naturally brought much together, it would tend to strengthen that bond of union which should exist amongst them. I trust that these few remarks may have the desired effect.—*A. W.*

SEATS IN LIVERPOOL.—Being on a visit to this city, I have noticed that in the main thoroughfares in the higher parts of the town there are placed (at convenient distances) seats for the convenience of the public, which seem to be appreciated; and, on inquiry, I find that they are placed at the expense of Mr. Melly, the spirited introducer of fountains. I trust this may act as a stimulant for others to go and do likewise in other towns, both large and small.—*A. WELLISHIER.*

PUBLIC MEMORIALS, AND THEIR SCAFFOLDING.—We are not very famous, as a nation, for the successful management of our public memorials. The works themselves are rarely such as to disarm, or even to conciliate, severe criticism. And, besides the questionable character of these productions, which, if any are, ought certainly to be excellent in themselves, we are very generally unfortunate in getting them into their places. We had hoped, indeed, that a better era had dawned upon the works of commemorative art, in which the nation, or certain associations of individuals, desire to do honour to living worth or to glorious memories; and, accordingly, we have for some time been expecting the appearance of two really noble memorials in association with our gallant countrymen who fell in the Crimea; the one in front of the west end of Westminster Abbey, and the other in Waterloo-place. Spaces in both localities have long been enclosed, and scaffolding of the most approved unsightliness have already begun to grow old upon them; and so these memorials still continue. Now, we do not wish to urge the artists to any hurry or precipitation with the completion of their respective works; but we certainly should be glad to learn, both from Mr. G. G. Scott and Mr. John Bell, for what reasons two of the most important sites in western London should have been occupied by these unsightly poles and planks for months before there was the slightest discoverable necessity, or even pretext, for their appearance. We do hope to see, either the memorials speedily erected, or the scaffolding speedily removed. In the one case, such prolonged delays reflect by no means upon the artists; and in the other, the parochial authorities have no right to tolerate what positively amounts to public nuisances in the midst of great public thoroughfares.—*Art-Journal.*

ALL SOULS' CHURCH, HALIFAX.—In our description of the materials used in this church, instead of "400,000 feet of magnesian limestone," read 46,000 feet; and instead of "11,000 yards green slate," read 1,100 yards. Mr. J. M. Johnstone was clerk of the works.

NEW BRIDGE OVER THE RHINE AT MENTZ.—A Munich letter in the *Augsburg Gazette* states that the convention between the Government of Grand Ducal Hesse and the States on the Rhine, concerning the erection of a bridge across the river at Mentz, has just been sanctioned by Bavaria.

MONUMENTAL.—The foundation-stone of a monument to the memory of the Rev. Ebenezer Erskine, the founder of the Scottish Secession Church, was laid at Stirling, in the spring of the present year, and the erection is now completed. The congregation of the first United Presbyterian Church, St. John-street, who are the representatives and successors of Mr. Erskine's flock, have raised the monument, which will cost upwards of 600*l*.

Messrs. Peddie & Kinnear, architects, Edinburgh, were the designers; and Messrs. W. & D. McGregor, builders, Stirling, the contractors.

BULLION-ROOMS ON BOARD SHIP.—Mr. Chubb, with reference to recent accidents, suggests that bullion-rooms on board ship,—now usually formed by lining some nook or corner with strong iron plates bolted to and forming part of the ship, so that if the vessel gets on shore and breaks up, the bullion-room necessarily goes to pieces with it, and the contents are disposed,—should not be in any way connected with or fixed to the ship. In case of a wreck, and the breaking up of the vessel on shore, the safe would then go to the bottom, preserve its contents intact, and be readily recovered. As a safe 4 feet square will hold more than 2,000,000 sterling, very little space will be interfered with.

ELECTRO-TELEGRAPHIC PROGRESS.—A gigantic scheme has been suggested by Mr. Collins, the United States' consul at Nicholasief, on the Amoor. This project refers to the establishment of an electric telegraph from Moscow, through Behring's Straits and Sitka, to St. Louis, in the United States. The author of the plan would further extend another wire from Kiachta to Peking, and thence through Saghalien to Yeddo and Hakodadi, in Japan. The length of the proposed telegraph is estimated at 14,000 English miles, the cost of construction at 500,000*l*. The expense of maintaining and repairing the wires is calculated by Mr. Collins at 900,000 roubles annually, and the revenue at 1,100,000 roubles, or a dividend of 8 per cent. to the shareholders, if a company can be formed. Mr. Collins is said to be on his way to St. Petersburg, where he hopes to find the capital to carry out his plan.

DISCOVERY OF ROMAN REMAINS AT YORK.—The workmen engaged in excavating for the foundation of a house at the Mount, according to the *York Herald*, have come upon a piece of Roman sculpture, at about 3 feet below the surface. It is a slab of gritstone, 5 feet 8 inches in length by 2 feet 10½ inches in width, and 10 inches in thickness. The upper portion contains four figures, incised in the thickness of the stone, representing apparently a father, mother, and two children. It is inscribed to the manes of Flavia Augustina and her children by her husband, who belonged to the Sixth Legion. The slab covered a stone sarcophagus, in which a body had been enclosed and then covered with liquid lime. The sarcophagus appears to have been inscribed to the manes of *Alia Severa* by her husband. The bones were much decayed. These interesting remains have been presented to the Yorkshire Philosophical Society.

PROPOSED ASYLUM FOR THE ORPHANS OF ARTISTS.—Mr. S. C. Hall, whose exertions in many similar good works are well known, is urging the necessity of an asylum for the children of artists. He says,—"While nearly all professions and occupations have instituted asylums in which the orphans of their members may be sustained, instructed, and prepared for the battle of life, the profession that especially requires such aid has no institution of the kind. Artists are very rarely in a position to make provision for the future of their children, when death deprives them of a guide and protector. So many sad cases of destitution have come under my notice, that I earnestly desire to see another added to the many benevolent institutions of the metropolis." He proposes, if the result of the preliminary inquiry be such as to justify proceeding, to give time and energy to the matter. The project would seem to commend itself to all. The directors of the two "Artists' Funds, especially, we should think, should see cause to aid it.

THE HALL OF THE DOGES AT VENICE.—A letter announces that the Hall of the Doges threatens to fall: a fresco on the ceiling is cracked across, and a portion of it has fallen.

A NEW CHURCH AT HAMPTSTEAD.—On Monday, being the feast of St. Martin, the Lord Bishop of London consecrated a new church (named, from the patron saint of the day, St. Martin's) at Hampstead. The edifice, which is capable of accommodating 700 worshippers, is situate in Belsize-lane, in the neighbourhood of the Swiss Cottage, close to the scene of the Hocker and Delarue tragedy, and has been built from the designs of Mr. Mumford.

LECTURES AT THE BROMPTON MUSEUM.—A series of lectures, especially addressed to teachers, are being delivered in the lecture-theatre of the "South Kensington Museum," on Monday evenings, which deserve attention. Last Monday the lecture was "On the Badrum Sculptures in the British Museum, and their relation to Architecture," by Mr. C. T. Newton. Next Monday, and the Monday after, Dr. Lankester will lecture "On the Chemistry of Food."

TENDERS FOR SCREASON FORT.—Last week tenders were delivered at the War-Office for erecting "Screason Fort," near Devonport. It was a private competition, twelve parties being selected by the Government to tender. The following tendered: Roberts & Jenkins, Devonport, 107,200*l*.; Kell, London, 108,480*l*.; Cubitt & Co. London, 109,550*l*.; Myers, London, 96,704*l*.; Moxon, London, 94,820*l*.; Smith & Knight, London, 93,000*l*.; Kirk & Parry, London, 99,769*l*.; G. Smith, London, 109,560*l*.; Lucas, London, 107,900*l*.; J. Willcox, Saltash, 90,338*l*.; W. Roberts, Stonehouse, 88,050*l*.; R. Goodyear & Son, Stonehouse, 76,970*l*.; G. Roach, Plymouth, 76,909*l*.; Pollard, London, 94,484*l*.

CAMBRIDGE ARCHITECTURAL SOCIETY.—A meeting of the Cambridge Architectural Society was held on Thursday evening last, the Rev. H. R. Luard in the chair. A paper was read by Mr. Norris Deck, "On the Ecclesiology of Cambridge-shire." After glancing at the influence of the physical upon the architectural topography of the county, he endeavoured to trace the progress of church-building in Cambridgeshire by means of the existing remains, from the Romanesque period through the successive Pointed styles, noticing the chief examples of each era. In the course of some remarks it was mentioned that the committee for the monument to the late Dr. Willis had resolved to have the figure executed in copper electrolyte, owing to the extreme difficulty of obtaining a piece of alabaster of sufficient size for his purpose.

BUILDERS AND CHELSEA BOARD.—At the last meeting of the Chelsea vestry, Mr. William Jackson, the builder, of Kensington New Park, had to appear before the board to show cause why a new building he has commenced erecting at the rear of Sydney-street, Fulham-road, for a convent, should not be taken down, consequent upon his neglecting to give seven clear days notice to the vestry of his intention to build the convent, under the 77th section of the Metropolis Local Management Act. Mr. Jackson pleaded ignorance. After some discussion, Mr. Jackson was informed that the vestry would not enforce the law in the present instance, and ordered him to give immediate notice to the vestry, and forward his plans. Mr. George Burles, builder, of Middle-row, Kensal New Town, was summoned for a similar neglect, and was also let off.

CLEANING THE THAMES AND WHAT WE TAKE FROM IT.—From a return issued to an order of the House of Commons we learn that between the 10th of April and the 9th of July in the present year—a period of three months—there were poured into the principal metropolitan sewers and sluices discharging themselves into the Thames 94 tons and 7 quarters of chloride of lime, 185 yards of chalk lime, and 2,778 yards and 11 bushels of chalk lime, at a total cost of close upon 3,000*l*. for labour and materials, but exclusive of the necessary water supply. In 1858 and a half of 1859 the Chelsea Waterworks Company "delivered" daily, from upwards of 6,000,000 gallons to upwards of 7,000,000 gallons; the East London Waterworks from 100,000,000 to 123,000,000 gallons weekly; the Kent Waterworks from 2,753,000 to 3,870,000 gallons daily; the Lambeth Waterworks between 6,000,000 and 7,000,000 gallons daily; the New River Company, in 1858, 20,877,598 gallons daily on an average, and, in 1859, 20,220,915 gallons daily; the Southwark and Vauxhall Water Company upwards of 10,000,000 gallons daily; and the West Middlesex Waterworks Company between 5,000,000 and 7,000,000 gallons daily.

THE WINTER EXHIBITION.—The collection of cabinet pictures and drawings, under this title, is now open at the French Gallery, in Pall-mall, and includes 172 works. There are some pretty pieces of hand-work, but the inquirer will look in vain for any great effort of thought. There is more of the "painter and glazier" than the "painter and poet." Nevertheless, when we say that there are contributions by MacIise, E. W. Cooke, Eyre Crowe (a Johnson picture of some interest), Dillon, Cropsey, Gale (62), Roberts, Poole, Stanfield, Ward, Millais, and other well-known names, it will be known that an hour may be spent there pleasantly.

SHEFFIELD.—The first drinking-fountain for Sheffield has been opened. The fountain is inserted in the wall of the Town-hall, facing Castle-street. It is made of Denby Dale stone, and the basin, which is made of Devonshire marble, is placed within a recess, round which is a border curved to represent the leaves of water plants. Over the basin the Sheffield arms are carved, and at the bottom there is a trough for dogs. Messrs. Flockton & Son are the architects, and Mr. Alderman Mycock, the builder.

THE SHEFFIELD SCHOOL OF ART.—The annual meeting of the subscribers to this school has just been held. Mr. Young Mitchell, the headmaster, read the annual report, which stated that, though the hope of the council of reducing the debt had not been realized, it was satisfactory that it was not increased, though some extraordinary expenses had been incurred. The report went on to say:—"The council, feeling the difficulty of raising such a sum as is required to extinguish the debt on the building, in the town, have prepared a memorial to the Lords of the Privy Council, praying that they would take the state of the school into consideration, its generally acknowledged utility, and the large amount already subscribed by the inhabitants; and on these grounds make a grant for the payment of the debt." Many of the national schools in the town and neighbourhood have put themselves in connection with the School of Art, and in consequence upwards of one thousand children of both sexes have, during the past year, received an elementary art education. The report and accounts were unanimously adopted.

WATER SUPPLY FOR HAWICK.—There are now two plans before the [Hawick] public, says the *Kelso Chronicle*, for providing a better supply of water to the town. The first is by Mr. G. Scott, C.E., who is of opinion that, by constructing a large reservoir at the natural basin to the west of Haggis Ha', a sufficient quantity of water would be collected to afford ample supply during the whole year. Another plan has been submitted by Mr. Sewell. He proposes to draw the supply from the Teviot, either by forcing or by the gravitation system. The first cost for construction, adds the *Chronicle*, would be cheapest by the former plan, but the gravitation system would cost much less in keeping it up. Mr. Sewell is of opinion that the reservoir in the Haggis Ha' basin will not afford a sufficient supply, and that in times of continued drought the falling off would be very great. By the plan he proposes he calculates that an abundant supply would be obtained for double the present population of Hawick. The scarcity of water during the last summer at Hawick was so great, that something must be done by way of remedy.

GAS.—The town of Llanidloes has been lighted with gas. The works have been erected from plans prepared by and under the superintendence of Mr. George Walcott, of London. The contract for buildings, apparatus, and castings, has been carried out by Mr. Thomas Spittle, of Newport, Monmouthshire. Wightwick, near Ashby-de-la-Zouch, has also been lighted. Mr. Bower, of St. Neots, is the engineer, and Mr. Beckworth, of Wightwick, the builder of the gas-works, which have been erected between Coiville and Wightwick. The movement at Manchester for a reduction in the price of gas still continues. The local *Advertiser*, in arguing a reduction, says,—"In stating the price of gas to be lower in Whitehaven than in Manchester, we have not selected an exceptional case for comparison. The price at Whitehaven, indeed,—2s. 6d.—is, we believe, a few pence lower than at any other locality in the kingdom; but at Birmingham it is only from 2s. 10d. to 3s. 9d.; and it is only 3s. to 3s. 9d. at Sunderland; 3s. to 4s. at Bradford; 3s. 2d. to 4s. at Derby; and at various other places it ranges from 3s. 4d. to 4s. At Liverpool it is only 3s. 9d.; and in London, notwithstanding the enormous cost of the conveyance of coal, it is only 4s. In Manchester we have far better coal on the spot than the London companies get from the north."

THE DRINKING-FOUNTAIN MOVEMENT AT LEEK.—On the 14th ult. a fountain was opened at the outskirts of this town, on the road leading from Leek to Buxton. The fountain, which stands on the course of a stream from a natural spring of pure water, and has been erected and given to the town by Mr. Joshua Brough, of Leek, is of the local stone, and consists of a central pedestal, with moulded plinth, and cornice with pediment, about 8 feet in height. A niche, with moulded jambs and arch, is formed in the face of the pedestal, within which is carved a large shell, from whence the water flows into a basin of polished Aberdeen granite. A temporary drinking-cup only is supplied at present, but it is intended to affix two proper drinking-vessels, of the tumbler form, of cast gun metal, tinned on the inside. On each side of the pedestal are dwarf wings, through one of which flows a second stream of water, of considerable volume, consisting of the surplus water not required for drinking purposes, and the waste from the granite basin, which is also returned to the same source. The fountain has been erected from the design, and under the direction, of Mr. Sugden, architect. The town is also to be further benefited by the addition of two mural fountains, of polished granite, from designs of the same architect, the gift of Mr. Charles Flint, of Leek, surgeon.

TENDERS.

Seymour	£10,595	0	0
Little	8,190	0	0
Willson	7,985	0	0
Lawrence	7,982	0	0
Nicholson	7,900	0	0
Colls & Co.	7,850	0	0
Browne & Robinson	7,560	0	0

Norris	£5,800	0	0
Cubitt	4,875	0	0
Holland	4,799	0	0
Matthews	4,628	0	0
l'Anson	4,444	0	0
Fish	4,346	0	0
Jackson & Shaw	4,137	0	0

Wood	£2,170	0	0
Cozens	1,919	0	0
Cole & Co.	1,787	0	0
Thompson	1,776	0	0
Deacon	1,700	0	0
Acock	1,700	0	0
Wells	1,695	0	0
Tarrant	1,600	0	0
Westrop	1,600	0	0
Henshaw	1,690	0	0
Warne	1,680	0	0
Cannon	1,450	0	0

Flesher	£1,376	0	0
Smith	1,363	0	0
Spight & Craven	1,295	7	2
Freeman (accepted)	1,289	17	1

Bassett	£1,535	0	0
Henson	1,460	0	0
Williams, Bros.	1,395	0	0
Saunders	1,390	0	0

Soward	£1,714	0	0
Holland & Hannen.....	1,649	0	0
l'Anson	1,593	0	0
Matthews	1,449	0	0

Walker & Neave	£2,796	0	0
Phillips	2,297	0	0
Pound	2,008	0	0
Batterbury	1,969	0	0
Rowe	1,965	0	0
Pickett	1,876	0	0
Thirst (accepted)	1,819	0	0.

Laurance & Sons	£822	0	0
Pritchard & Son	810	0	0
Conder	800	0	0
Jackson & Shaw	760	0	0
Wilson	744	0	0
Scott	725	10	0
Ring & Stangar	720	0	0
Clemence	694	0	0

For hoards, fans, and shoring for Southwark and Westminster Communication, under the Metropolitan Board of Works:—

	Heads per foot run.		Fans dwt.		Gates per pair		Shoring per foot cubic.		Allowance per foot of return.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
George	8	0	8	0	2	0	3	0	1	0
Palmer & Son	8	0	1	6	1	3	0	2	6	1
Gammon	8	0	1	6	1	3	0	2	6	1
Clark	8	0	1	6	1	3	0	2	6	1
Downs	8	0	2	3	1	0	0	2	6	1
Turner & Sons	2	7	2	3	1	5	0	2	6	1
Brooker	1	15	1	15	1	3	0	2	6	1
Crook & Son	2	2	1	6	1	6	0	2	6	1
Hinton	1	1	1	0	1	9	0	2	6	1

The above is *believed* to be correct

For Margate Congregational church and school; Messrs. Poulton & Woodman, architects, Reading:—

	£.		s.		Amount of deduction if the interest is not in receipt.		Amount of deduction if the interest is not in receipt.		Amount of deduction if the interest is not in receipt.		
	£.	s.	£.	s.	£.	s.	£.	s.	£.	s.	
Woodward	4,214	8	996	9	7	357	15	10	302	2	8
Smith	3,653	0	939	11	9	303	10	10	260	10	11
Edwards	3,461	0	833	0	0	204	18	0	200	12	11
Young & Co.*	3,336	0	833	0	0	204	0	250	0	0	0

* Accepted.

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A Subscriber.—R. C.—C. & Co.—A. W.—R. O. S.—E. T. B.—I. C. H.—T. C. (the first named is a two-story house; the second named, a one-story house).—O. F. O. G.—T. C. H.—C. M. D. (send us particulars).—G. R. C. (next week).—Lord S.—E. G. P. (will appear).—E. L. S.—G. S.

J. L. (the case of Kemp v. Rose, in Law Notes of November 13, 1888, appeared in full in *Law Times* shortly before that date)

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The Builder.

Vol. XVII.—No. 877.



Gas and Gas-lighting.

THE "perpetual fire" and "sacred lamps" of ancient Pagan mysteries are now believed to have been kept burning by natural and spontaneous supplies of carburetted hydrogen gas issuing from fissures in the earth overlying beds of asphalt or coal, or from or by petroleum

springs. Among the records of remote ages, at all events, there are intimations of the existence of an inflammable air, the properties of which were sufficiently understood to admit of its being used as a source of heat and light; while even in modern times we know that Pagan and semi-civilized nations, such as the Burmese and Chinese, make use, as they have done for ages, of spontaneous outflows of inflammable gas, which the Chinese are said to convey through bamboo canes as "gas-pipes" to houses in the vicinity of the gas-spring. Amongst ourselves, too, in modern times, it has long been known, in connection mainly with coal-mining operations, that the earth yielded inexhaustible fountains of "fire-damp," which could be burnt in jets, and such jets have been so burnt for many years, as at the coal-pits near Newcastle, where, some years ago, we saw an immense pillar of fire in perpetual ascent from the lower regions.

It was not till 1658 that any scientific or careful examination of the nature and properties of fire-damp appears to have been instituted. In that year the result of some experiments on the gas issuing from a well near Wigan, in Lancashire, was communicated to the Royal Society by Mr. Thomas Shirley. In 1726 we next find mention of the presence of an "elastic inflammable air," in connection with coal, in certain experiments made by Mr. Stephen Hales, who had discovered the possibility of producing elastic fluids from coal and many other substances. In 1733, Sir James Lowther communicated a paper to the Royal Society upon the damp air issuing from the shaft of a coal-mine near Whitehaven, which some workmen were in the act of sinking. A rush of air suddenly burst forth at a depth of forty-two fathoms from the surface, and caught fire from a candle, shooting upwards into a flame 3 feet in diameter and 6 feet high. The workmen, in alarm, beat out the flame with their hats; but the steward afterwards went down and relit the gas, after further opening the black stone bed. It was now 9 feet high, and was with much difficulty extinguished. A tube (the first of our gas-pipes) was then provided to carry off the inflammable air to the surface, where it was made to project 4 feet above the top of the pit; and, at the time of reporting the circumstance to the Royal Society, this gigantic jet of gas had burnt for two years without diminution or cessation. Bladders had been filled with the gas, and these first of "portable gas" apparatuses were fitted with clay pipes, through which the gas issued, as burners. In 1739 the Rev. Dr. John Clayton, Dean of Kildare, made some

experiments on what he called the "spirit of coal." He was one of the first (after Dr. Stephen Hales doubtless) who actually distilled coal in a close vessel. The gas thus obtained he burned from bladders in which it was collected. A stretch of a good many years—from 1739 to 1792, in fact—was expended, so far as gas-lighting was concerned, in various experiments on inflammable air chiefly as a subject of philosophical curiosity, and without immediate practical results, although latterly it became a common practice for amusement to shut up a small fragment of cannel or other coal in a tobacco-pipe with clay, insert the bowl into the parlour fire, and, when red hot, set fire to the gas as it issued from the pipe stalk. Attention had thus and otherwise been awakened to the subject and the way prepared for the "new light." Yet for nearly thirty years beyond 1792, the subject continued to be merely one of philosophical experiment, although, in 1792, Mr. William Murdoch, of Redruth, in Cornwall, had actually lit up his house and offices with gas, supplied from an apparatus of his own construction, and was thus the originator of the coal gas manufacture. More than that, this "hasty fruit before the summer" of modern invention at that time actually astonished his neighbours still further (and would have even surprised their descendants at the present day) by adapting the gas to the lighting of a small steam carriage for common roads, in which he himself rode to and from the mines which he managed, and which were situated at a considerable distance from his residence. In 1797, Mr. Murdoch had removed to Scotland, and soon had his premises, at Old Cumnock, in Ayrshire, also lighted with gas.

About the time Murdoch was so employed, a Mons. Le Bon was engaged in experiments on inflammable gas in France; and, in 1801, a son of James Watt, writing from Paris, urged his brother to make haste with Murdoch's light, as Le Bon contemplated lighting up a part of Paris with gas. In 1785, however, Murdoch had already constructed, at Boulton & Watt's manufactory, at Birmingham, an apparatus for the production of gas; and, in 1802, he publicly exhibited the light at each end of the manufactory, at the general illumination for the Peace of Amiens. The manufactory itself, nevertheless, was not even by that time lighted with gas, nor till about a year afterwards. At the Peace exhibition of the "Bengal light," as it was called, a pupil of Boulton & Watt's was present, and assisted, who afterwards identified himself with the history of gas lighting, and may be said to have been one of the maturers of the manufacture, namely, Mr. Samuel Clegg, gas engineer, the inventor of the first gas-meter and governor, and of many other appliances in the realization and establishment of the gas manufacture as a commercial and economical substitute for lamps and candles.

Boulton & Watt, in 1805, lighted up some extensive cotton-mills in Salford with gas, under the direction of Mr. Murdoch, who gave an account of the apparatus to the Royal Society in that year, through Sir Joseph Banks, F.R.S. Simultaneously with the fulfilment of this contract, another was being carried out by Boulton & Watt at Halifax, under the direction of Mr. Clegg. In these cases the gas was not purified; and, to remedy this vital defect, Mr. Clegg, in the next manufactory he lighted (at Coventry), introduced lime as a purifier, which in one way or another has ever since held its ground as an important agent in gas purification.

The Roman Catholic College of Stonyhurst, in Lancashire, merits distinguished mention, as one of the earliest to adopt the new light,—a fact in strange contrast with the repugnance of the central authorities at Rome (till recently under Mr. Shepherd's able direction) to follow so excellent an example. The professors of Stonyhurst, it appears, afforded Mr. Clegg great encouragement in the making of experiments and the improvement of his apparatus, especially as regarded purification.

The successful experiments of Messrs. Boulton & Watt and their assistants attracted immediate attention. Philosophers, engineers, mechanicians, and capitalists were soon in

motion: chemists busied themselves in the laboratory and at the lecture-table: engineers and mechanicians occupied themselves in devising the best forms of apparatus. The first specimen of street-lighting by gas was made by Mr. Windsor, in Pall-Mall, in 1807. This gentleman had lectured at the Lyceum Theatre, on the subject of gas-lighting, in 1803, the year after that in which the first public display of the new light took place at the Soho Works, Birmingham. He did an immense deal in persuading the Londoners and others of the practicability and superiority of gas-lighting; but he cannot be fairly called its original inventor.

In 1809 the first application was made to Parliament for an Act to incorporate a gas company, and in 1810 this company, "The London and Westminster Chartered Gas-light and Coke Company," was fairly established by Act of Parliament. In that year Ackerman's premises, in the Strand, were lighted with gas, but not by the Chartered Company. The lighter of Ackerman's, however (Mr. Clegg), was engaged by that company as their engineer, in 1813, previous to which time Messrs. Windsor, Accum (of "Death in the Pot" celebrity), and Hargraves, were employed in the erection and management of their works. Much had to be afterwards done, however, ere the first gas company was fairly set agoing, and lighting a town was even still thought to be a visionary scheme. Davy, the celebrated chemist, considered it so ridiculous, that he asked Mr. Clegg if it were intended to take the dome of St. Paul's for a gas-meter; and Scott, the novelist, entertained his friends with jokes about the absurdity of lighting London with smoke.

Houses and shops were first fitted up and supplied, by the Chartered Company, free of expense, by way of advertisement. For nearly two years this was continued.

It was believed that the pipes conveying the gas must be hot; for, when the passages to the House of Commons were lighted, the architect insisted on the pipes being placed 4 or 5 inches off the wall, for fear of fire, and the curious often applied their gloved hands to the pipes to ascertain their temperature. A lady of rank was so delighted with the brilliancy of a gas-light, on Mr. Ackerman's counter, that she offered him any money he might charge for it if he would allow her to take it home with her in her carriage for the illumination of her mansion.

On the 31st of December, 1812, Westminster Bridge was lighted with gas, and it soon became an object of attraction, and while the novelty lasted, the bridge was a fashionable promenade; but the lamplighters were so disgusted with the new system, that they struck work against it! and the Chartered Company's engineer, Mr. Clegg, had to act as lamplighter himself.

The parochial authorities of St. Margaret's, Westminster, were the first who applied for a contract to have their streets lighted with gas; and, on 1st April, 1814, their old oil lamps were replaced by gas brackets, attached, in the old form, to the houses; and these, after a good deal of objection on the part of the parish authorities, were ultimately replaced by the present form of lamp columns.

New companies began to be formed in various parts of the country so soon as the pioneers had cleared away their earlier difficulties; and Bristol, Birmingham, Chester, Kidderminster, Worcester, and various other towns began to adopt the new light.

It is a somewhat remarkable circumstance that, so early as 1812, according to a new and useful journal, now in course of publication in the United States,* a house, factory, and lighthouse, in America, were lighted with gas by a Mr. David Melville, of Newport (R.I.). The journal in question, however, does not claim the invention as originally an American one, but admits that it was introduced from England. Baltimore is said to have been lighted in 1816, Boston in 1822, and New York in 1823.

* The American Gas Light Journal, Water Gazette, and Sewerage Advocate, J. B. Murray & Co., bankers, 40, Wall Street, New York, proprietors.

An elaborate practical treatise on the manufacture and distribution of coal-gas, by Mr. Samuel Clegg, jun., was published in 1841; and the field thus occupied has since been retained by a second edition, and now, since his death, by a third, greatly enlarged and extensively illustrated.*

From this standard work, to which we have already been indebted for some of the reminiscences of the introduction of gas-lighting just sketched, we may extract a few other particulars on one or two points of more special public interest in the present state of gas-lighting. And first of the purification of gas, respecting which we may just note that whatever may be the merits of the respective modes of purification now adopted in the metropolis, and however much improved of late years, still the system is by no means even yet perfect, and much remains to be done ere the gas companies can fully reap the vast harvest which the lighting of private houses, from top to bottom, from bed-room to kitchen, offers to those who shall mature the system of purification, especially if combined with some definite, simple, and economical mode of gas ventilation, or removal of the products of the combustion of the gas, however pure. The very fact, however, that there are no fewer than eleven different processes of purification adopted in the gas works of the metropolis alone, would seem to imply that the best possible mode of purification has not yet been fully discovered, or at least unanimously recognized and adopted: and as to gas ventilation, as we once before said, we are nearly in as primitive a state as Paddy with his peat fire in his mud hut without a chimney, if not more so, inasmuch as the poor Irish bog-trotter has provided many natural routes of egress for his products of combustion, through holes, cracks, and other openings of his cabin; while, in our "smug" metropolitan dwellings, every crevice is still but too usually shut up, even where gas is burnt, as if its poisonous products were too good a thing to be wasted or lost.

The various processes of purification through which the metropolitan gas passes ere it reaches the public are as follows:—

- * 1. Cream of lime; dry hydrate of lime; oxide of iron.
2. Dry scrubbers, containing brickbats, etc., and "Epsom material," oxide of iron; dry hydrate of lime.
3. Dilute sulphuric acid or acid solution of sulphate of ammonia. Cream of lime; dry hydrate of lime; oxide of iron.
4. A dry scrubber, containing coke; solution of muriate of manganese; dry hydrate of lime; oxide of iron.
5. Water; oxide of iron; dry hydrate of lime.
6. Solution of muriate of manganese. Cream of lime.
7. Oxide of iron (Lanning's); a scrubber containing coke, over which water is passed.
8. Oxide of iron (Hill's); dry hydrate of lime; a scrubber containing coke, into which a jet of steam is thrown.
9. Dry hydrate of lime; oxide of iron.
10. A scrubber containing crocks, over which water trickles; water; cream of lime.
11. Scrubber containing coke and tan; scrubber of wet coke; oxide of iron; dry hydrate of lime.

Into details as to the respective purposes and merits of these and other elements of purification we cannot here enter. The various plans of purification described in Mr. Clegg's work are intended, we presume, to present a full view of what has already been done. Yet there is at least one hopeful mode we recollect of to which no reference seems to be made. The plan referred to was one discovered and patented by a clergyman in the north of England, named, if we mistake not, the Rev. Mr. Bowditch. Clay was the basis of this peculiar mode of purification, and it was said to have been successfully tried, we think, at Wakefield. But successful or not, surely the process ought to have been referred to,—if successful, favourably; or if unsuccessful, by way of warning, and to obviate future useless trouble in its revival. We are the more inclined to make allusion to this mode of purification, that we recollect of certain unseemly observations as to it by a writer employed by the gas companies, and probably interested in other processes, whose grand objection to it seemingly was that it was discovered by a clergyman and not by a gas engineer; whereas, according to this writer apparently, every cobbler ought to stick to his last. It is to be hoped that mere oversight, and no unworthy feeling of kind, has prevented any allusion to the Rev. Mr. Bowditch's mode of purification from appearing in the excellent treatise now before us.

There has been much discussion on the question which is the burner best suited to the different qualities of gas made in the United Kingdom, and

in this discussion the *Builder* has occasionally taken part. We may here merely present a tabular review of results arrived at by Mr. Darlow. These results are not very new, but they are still of sufficient interest as a point in the progress of gas-lighting: they relate to the effect of different burners on the same quality of gas obtained from Newcastle coal:—

BURNERS.	Consumption of gas per hour.	Value of gas consumed		Value of gas in state of pure air	
		Value of gas consumed in state of pure air	Value of gas consumed in state of pure air	Value of gas consumed in state of pure air	Value of gas consumed in state of pure air
1. No. 3, Fish-tail or Union-jet	5.5	376	2.3	335	
2. No. 5, Bat's-wing	5.0	290	2.41	332	
3. Common Argand, 15 holes.	5.5	341	2.84	414	
4. Platow's registered Argand	5.5	316	2.9	422	
5. Byrner's Argand	5.5	388	3.16	467	
6. Winfield's Argand	5.5	335	2.79	406	
7. Le-le's Argand	4.1	369	3.07	448	
8. Guise's Shadowless Argand	5.5	364	3.03	442	

"Though these experiments," Mr. Barlow observes, "indicate the relative adaptation of the several burners for the combustion of Newcastle coal-gas, they must not be taken as settling the question of the practical value of each. Some of them cast shadows which detract considerably from the light they yield when placed above the level of the eye; this is particularly the case with No. 5, which otherwise gives the best results. Others, like No. 7, require a more perfect uniformity of pressure, and an absence of all currents of air. Taking all things into consideration, No. 8 is perhaps the one to which these objections least apply, and it gives the next largest amount of light for the gas consumed, though the slight advance upon the old Argand, as constructed twenty-five years ago, cannot fail to be remarked."

One of the most recent and important improvements in gas-lighting is that of lighting exclusively from the ceiling, a mode now very generally adopted in churches, public halls, &c.; and yet this is no novelty, of recent introduction, as we lately proved by special reference to the columns of the *Builder* some ten or twelve years back, where a correspondent, "J. E. D.," described the plan as resultant from an idea of his own, and carried out into practice by him, some years previously, in a provincial theatre. The form which the "sun-light," as it is called, has now assumed, however, is certainly improved, although the invention is not a new one. It was introduced at Liverpool by a Mr. King as his own invention, and it may be interesting to some of our readers to quote what is said of it in Mr. Clegg's treatise:—

"The sun-burner, introduced by Mr. King, and first applied by him to light the public buildings of Liverpool, produces the most brilliant effects of gas illumination. It consists of a combination of six or more fish-tail burners, fixed horizontally in a circle to form a star, and several of these stars are then combined together in a single constellation. This burner, as usually constructed, is fixed near the ceiling, and two concentric chimneys carry off the products of combustion to the external air. The construction of the chimney there is a reasonable peculiarity, for the purpose of making the flames of the jets of gas horizontal, so that they may throw the light directly down instead of turning upwards, as they would do if the draught of air passed below the burner, as in an ordinary chimney. The lower part of the inner chimney is conical or trumpet-shaped, and covers all the burners. It rises about three feet within the chimney that encloses it, the bottom of which is also conical. The flames and combustion are not allowed to escape unobstructed through the inner chimney; for, near the top, there is a throttle-valve, which is so adjusted as to pass only one-fourth of the gases and air passing through the burners, the fourth being reflected upon the back part of the flames, and, flowing over the lower edge of the inner chimney, are carried off through the outer one into the air. This reorganization of the heated air and vapour forms a horizontal range of flame round each jet, and the combination of these in a sun-burner of seven stars, seen from below, produces a beautiful effect.

Fig. 16 shows the section of a sun-burner with the addition of some improvements very recently patented by Mr. Strode. The horizontal fish-tail burners are inserted in a ring. The inner chimney is choked by a throttle-valve. The arrows show the direction of the air as it rushes to the burners, and the return of a large portion of it from under the bottom of the inner chimney into the outer one through the metal network.

In the sun-burner, as thus described, some inconvenience is experienced, especially where the burner is placed lower than the ceiling, by the shadow of the chimney, which throws the upper part of the room into gloom, and by the entrance of cold air when the gas is not lighted. To remedy the first inconvenience, Mr. Strode has made openings in the lower parts of the chimney, which are filled in with talc, and the access of cold air is prevented by an ingenious application of a regulating screw, which works a butterfly-valve. By this means, as soon as the gas is turned on, it rushes up the tube, and raises the cover of the gas-holder, which is sealed with mercury, and in rising it opens the valve. On shutting off the gas the contrary effect is produced, for then the valve is closed and the air is excluded."

One of the most important points connected with the sun-burner is that it affords in itself a system of ventilation for the products of the gas combustion.

To such ventilation, however, the simplest and cheapest lights might surely be effectively applied. A gas-light without a chimney or ventilating apparatus ought to be as unusual as a fire without a flue. Stoves without chimneys—"self-con-

suming stoves," as they have been cunningly, but absurdly, called—are certainly to be heard of; but so are the poisonous effects of such stoves, when these effects happen, as they not unfrequently do, to be consummated in death and coroners' inquests. We regret to observe that in the treatise now before us the important subject of gas-ventilation is discussed in a single paragraph. It ought to have been much more prominently treated of. Again, some inventions, it seems to us, are scarcely treated of as they should be; and there are other points in the book to which objection might be taken. Nevertheless, it is a very valuable work, and must be studied by all who would thoroughly understand the subject whereof it treats or are connected in any way with its manufacture.

THE METROPOLITAN MAIN-DRAINAGE.

THE OUTFALL SEWER; SOUTH OF THE THAMES: AND THE MIDDLE-LEVEL SEWERAGE; NORTH SIDE.

AFTER repeated delays resulting from the strike, further portions of the work of the London Main Drainage are about to be undertaken; and in our advertisement columns of last week, appeared the announcement of a call for tenders for the Outfall Sewer—southern side of the Thames. Besides the drawings and specification for this sewer, there are also ready, and have been approved of by the Metropolitan Board, the drawings and specification for the Middle-Level Sewer, on the north side of the Thames. We are, therefore, able to supply detailed particulars of each of these portions of the design of the Metropolitan Main Drainage. The account in our first number of the present year, may be referred to for comprehension of the general scheme of outfalls and sewers for both sides of the Thames,* though some alterations have been made; and the account subsequently, of the works to be undertaken, and which are now in progress, of the Southern High-Level Sewer, should also be looked at for the understanding of the relationship in position and levels of that which is called the Outfall Sewer, South Side, to the high level and low-level sewers.† A portion of the outfall sewer, north side, for both the high-level and the middle-level, or so far as the westward of the Lea is concerned, being included in the contract for the high-level sewerage, has been already described.‡

THE OUTFALL SEWER: SOUTH SIDE.

Although the system has been explained in our pages, it seems desirable to preface the present account, by a reference to the circumstance that the outfalls differ in important particulars—the south side from the north side. In the former case, the outfall sewer, that is to say the line from Deptford to the outfall below Woolwich, will be a single channel carried wholly below ground—so that pumping will be required both at the outfall at the Thames, and at Deptford to pump the low-level sewage to what is called the "high level," instead of only under such as the last-named conditions of place and purpose, as in the case of the northern sewerage, where the outfall line will be above the level of the present ground, actually in three channels, and in an embankment. The temporary outfall, and future storm-water outfall, at Deptford-creek, by Church-street, will be tide-locked during a considerable portion of the twenty-four hours; whilst the high-level sewer, up to the time of completion of the outfall line and the reservoir and pumping-machinery thereat, will be subject to the inconvenience of being at times charged with a large volume of the rainfall coming from those localities which it is designed to serve. Hence the peculiar urgency of the measures which have, in fact, for their object, to relieve the low-lying locality of Deptford from the concentration thereof of the sewage and rainfall of the whole of the populous, and the upland districts forming the south of London and suburbs. The work immediately to be tendered for commences at Normans-road, otherwise North-Pole-lane, Deptford, thus leaving a gap of about a quarter of a mile in the course between this point and that ultimately of the connection with the works now in hand. We shall refer to the portion of the work required to complete the line in a future number, when we can also give particulars of the pumping machinery for the low-level sewage, which will be in connection with the portion of the outfall sewer referred to, as well as of the machinery which will be necessary at the outfall of the Thames, south side,

* See page 3, ante.

† See pp. 371, 390.

‡ See volume for 1859, page 789; and page 611, ante.

* "A Practical Treatise on the Manufacture and Distribution of Coal-gas, by Mr. Samuel Clegg, jun., with general estimates. By Samuel Clegg, Jun. 2nd Ed. E. G. S. Third edition." Weale, 59, High Street, London, 1859.

and at the spot near the Lea, where the low-level sewer, north side, will be raised, so far as this machinery may have been decided upon. We shall also take an early opportunity of looking at the works of the high-level sewer, now in progress at Deptford and elsewhere.

The Southern Outfall Sewer, as at present specified, or from North Pole-lane to the point in Erith Marshes, opposite Dagenham Reach, will be in length 7 miles 2,240 feet, and of 11 feet 6 inches internal diameter. It will be laid to a uniform inclination of 1 in 2,640, or 2 feet per mile; and will be constructed partly in open cutting and partly in tunnel, and will be of brickwork in Portland cement,—the length of 34,200 feet being 2 bricks thick, and the length remaining of 5,000 feet in tunnel, being 2½ bricks thick, or more in particular places. Tracing the course upwards from the outfall below Crossness Point, the line begins at present 150 feet from the water's edge, and passes south-westerly across the Erith and Plumstead Marshes, and the south-eastern corner of the arsenal-ground, to the Plumstead-road. Close by where the latter crosses the North Kent line, there is a branch line from the arsenal. This the line of the sewer passes under, and then continues westerly along the Plumstead-road to Burrage-road, opposite which the portion to be executed in tunnel commences; and that continues under the town of Woolwich (directly under Beresford-square) to Albion-road, receiving various sewers in the course. Thence the ground is to be excavated; and the line continues past the Dock-yard, along Albion-road, and afterwards south-westerly along the Greenwich and Woolwich Lower-road, past the Workhouse and the Hospital, in the same line of road, and along Nelson-street, whence the line turns nearly at right angles past St. Alphege's Church, and then passes along London-street, and afterwards again in the south-westerly direction past the Greenwich Railway Station, and along the Greenwich-road to the point in that road opposite North Pole-lane first mentioned. The invert at the end next the Thames will be about 28 feet 6 inches below Trinity high-water mark, or about 20 feet below the average surface of the ground where the sewer ends—the latter surface being of course lower than the high-water level.

The boring in the Erith Marshes was carried to a depth of nearly 60 feet, or very considerably below the future level of the sewer,—and a similar depth was gone to in most of the borings, of which thirteen in all are shown in the drawings as having been taken. The result would seem to be more satisfactory than has sometimes been predicted. Water was met with at 8 to 20 feet from the surface; but at the Erith and Plumstead marshes, the invert of the sewer would be laid in the upper part of a bed of "grey subangular flint-gravel," which seems to reach to 25 feet thick and upwards, though some portion of the sewer itself is in peat. At Cross Manor way, in the Erith marshes, the strata, after the surface soil, are 5 feet of light brown clay; 2 feet, brown silty clay, with vegetable matter; 5 feet 6 inches, peat; 1 foot 6 inches, dark grey silty clay; 1 foot, peat; 1 foot 6 inches, dark grey silty clay; 27 feet 3 inches of the grey flint-gravel before-named; 1 foot 6 inches, grey sand; 2 feet, dark grey sand; 1 foot black sand, and 3 feet grey sand. In some part of its course, as in the eastern parts of Woolwich, the sewer would pass through chalk and flints. The strata are marked as sand, chiefly, of various kinds, and gravel, throughout the course. All these appear to be charged with water, which near Deptford Creek rose to within 3 feet of the surface after the boring had been carried down about 9 feet, or to the bottom of the point. The open cutting required may vary from 15 feet in depth to 40 feet; the invert in the tunnel, being 70 or 80 feet in the deepest part below the street level in Woolwich. At the tunnel, all vacant spaces round the sewer, hard up to the timbering, chalk, or maiden earth, are to be filled in solid with bricks bedded in Portland cement. Shafts are to be sunk for the construction of the tunnel; and six of these, 11 feet 6 inches in the clear, are to be left finished in brickwork, and to be covered over with iron plates, and finished with ventilating grates, two to each shaft. There will be thirty-seven other ventilating shafts to the sewer, inclusive of those over side entrances, but exclusive of seven over bell-mouth junctions. These shafts will be 3 feet in diameter, and of 9-inch brickwork, and will have each two cast-iron gratings. There will be twenty-two side entrances and sixty gullies—the latter to be each 3 feet by 3 feet, and 6 feet in depth.

In one part of the sewer's course along the Greenwich and Woolwich and Lower Road, there addresses

a tramway which leads from the Charlton Chalk-pit. Some contrivance, therefore, was necessary to get the sewer across, but beneath the rails. In effecting this, the road will be raised only 8½ inches higher than at present at the crossing, and the rails 15 inches above their present level; this is managed by forming 6 feet 5½ inches of the crown of the sewer, of two cast-iron ribs or plates, each 4 feet 3½ inches in width,—each plate with, along the middle of it, a strengthening web and top flange. The lower flange or plate carries the rails, and is the crown of the sewer: the top flange and web to each plate curve above the level of the rails. The sewer will also pass under some other branches of the line of railway. The general directions for execution of the work, and the conditions of the contract, with the schedule of prices, are nearly the same as those we have quoted from in former cases. Weekly accounts of extras and omissions, duly ordered in writing, are to be given by the contractor. The works are to be finished within two years from the date of the engineer's order to commence, or 50% as liquidated damages for each day over that time are to be paid." But in the event of delay to the works, by reason of strikes or combinations on the part of the workmen employed, the engineer will allow such additional time as he may deem fair and reasonable." In the schedule of prices, the items are the same as we have before given, with one or two additions. The earthwork in tunnelling, with the carting, are set down at 5s. 6d. per yard cubic. The day labour for bricklayers, carpenters, masons, and smiths, is to be 6s. per day of ten hours; that for the excavators, 4s.; and that for labourers, 3s. 6d. The specification and form of contract fills twenty-nine pages, and refers to nine drawings as numbered—including the sections of borings and trial shafts; but these drawings extend over thirty-five large sheets.

THE MIDDLE LEVEL SEWERAGE, NORTH SIDE.

The works designed for the middle-level sewerage, north side of the Thames, comprise a main line 9 miles 2,650 feet in length, and three branches, the whole amounting to 12 miles 1,280 feet, of which 33,862 feet will be executed in tunnelling, chiefly through London clay. The works commence eastward of the Lea and of the North London Railway, from the penstock and overflow chambers described in our notices of the high-level sewerage and works; and the line passes along Old Ford-lane, the Bethnal Green-road, Old-street, Wilderness-row, Liguorpond-street, Theobald's-road, Hart-street, Oxford-street, the Dayswater-road, Pembroke-gardens, and up to the western arm of the Counter's-creek sewer where the Great Western Railway crosses it at Kensal-green. There is a branch for Coppice-row and the Baginje Wells-road; one passing along Bedford-row and Piccadilly, called the Piccadilly branch; and one for Dover-street.

From the junction with the high-level sewerage the mainline, traced up the stream, first extends south-westerly to Old Ford-road, and then along this road to near the skew-bridge over Sir George Duckett's canal, and south-westerly again along Warwick or Chisenhale road, to within a few feet of the Regent's canal; the whole length of this portion of the works being 1,430 feet, in which distance the sewer will be laid to an inclination of 1 in 2,610, or 2 feet per mile, and will be in cross-section a silted semicircular arch of 6 feet radius, with a wide invert as the channel. The dimensions in the clear are 12 feet in width, and 9 feet 6 inches in height; and the invert and the semicircular arch are each of 2 bricks thick, the latter rising from dwarf walls of 3 bricks, carried up from a level foundation. Except the semicircular arch, which will be in mortar, the whole of the work here will be executed in Portland cement weighing not less than 108lbs. to the struck bushel, mixed with an equal proportion of sand, except where the cement would be liable to be acted upon by water before having had time to resist it, in which event neat cement is to be used. The invert will be here above the London clay, and the sewer will pass chiefly through sand and gravel, which, in some cases, was found on boring to be copiously charged with water; and the excavation for the sewer may average 20 feet in depth. Under the Regent's canal a length of 160 feet will require special construction, to be further described. The line thence extends with the same inclination, for a length of 2,760 feet, as a barrel sewer 10 feet 6 inches internal diameter, and 2 bricks thick, the upper half in mortar, and the rest in cement, still above the London clay, along Green street, in the course of which street the Limekiln Dock sewer is connected with it. Towards the end of Green-street, the sewer will be for 120 feet in

length, 10 feet 3 inches in diameter, and 2 bricks thick as before. This length ends at the Cambridge-road, where there is to be a connection with the Ratcliffe-highway sewer. Here the sewer has passed into the London clay, which is met with at 11 or 12 feet from the present surface; in which clay where it occurred on plan, all the borings for the middle-level sewerage ended. Thence the line passes along the Bethnal Green-road and Church-street to High-street, Shore-ditch, a length of 5,130 feet, the internal diameter being 10 feet. Here the London clay does not rise to more than half the height of the sewer. From High-street the sewer will pass through private buildings and property to New Innyard, along which it will extend to Curtain-road; and thence pass in a north-westerly direction along Susannah-row and Willow-walk to Tabernacle-square. This portion, a length of 1,740 feet, is 9 feet 9 inches in diameter. At Tabernacle-square, the London-bridge sewer will be connected. Next there is a length of 930 feet, 9 feet 3 inches in diameter, passing along City-terrace and through private premises to Old Street-road, along which road the line passes to the City-road. Thence for 2,620 feet, with 9 feet internal diameter, the sewer will extend along Old-street to Goswell-street; thence for 1,731 feet, with 8 feet 9 inches, across the angle of the Charter House grounds, along Wilderness-row, across St. John's-street, through private property, across St. John's-square, and to near Red Lion-street, Clerkenwell. From this point a special method of construction is devised for passing the Fleet Valley, whereat the soil is made-ground for a considerable thickness overlying the London clay. The borings generally for the purposes of the main drainage, we may observe, present a body of information which will be of great value, effecting a saving of expense, or preventing loss in future building operations. It may be noted, by way of illustration, that the made-ground in Goswell-street is shown to extend to a depth of nearly 20 feet from the present level of surface; and nearly the same thing occurs at the Regent-circus. In St. John's-square, there is made-ground for about 22 feet, on the London clay; and that ground, at the base, is copiously charged with water. At Red Lion-street, however, there is only 7 feet of made-ground, the London clay rising higher—with about 7 feet of fine sand, gravel and sand, and yellow clay, interposed. Thence following the line of the sewer past the south angle of the Sessions House, and across the vacant ground and Victoria-street, the top surface of the ground, as well as the London clay, descends rapidly, until the level of the invert of the sewer would coincide with that of the floor of the existing vaults, with a depth of about 12 feet of made-ground below that level.

The sewer, east and west of Victoria-street, for a certain distance, will be lined with cast-iron plates; and in the same portion of the sewer there will be contrivances for an overflow into the Fleet Sewer, as well as for the junction of the Coppice-row branch. The entire length, 559 feet, where the special construction occurs, will be divided thus. The length, 223 feet, eastward of Victoria-street, which will be of 8 feet 11 inches internal diameter, of two bricks thick in cement, will be lined with plates, 1 inch in general thickness, with flanges, the joints made water-tight with iron cement, and all the plates being bolted and screwed together, and built in the brickwork, giving 8 feet 9 inches as the diameter when finished. Westward of, and under Victoria-street, for 300 feet, the sewer is constructed in similar manner, but so as to finish 7 feet in the clear. The distance left between the 223 feet and the 300 feet, or 36 feet, includes the contrivances for overflow into the Fleet Sewer, and the connection of the Coppice-row branch. There is an overflow chamber, 8 feet 9 inches in width, and chiefly 10 feet 9 inches in height, the top lined with iron plates, which are to be bolted to the brickwork with bolts 8 feet in length. A weir, of cast iron, is to be formed on one side of the chamber, tapering from 17 feet in width and 2 feet in height, to a 1-foot iron pipe of 6 feet lengths, with sockets, made water-tight with tinned zinc and lead; and the pipe is to be joined into the Fleet Sewer. The Coppice-row sewerage will be connected with a 4-foot iron piping of a similar kind. Where this chamber and a portion of the sewer is above the level of the ground, the work will be built into solid brickwork, and will be covered with 6-inch landings. The whole of this brickwork will be in cement.

The 300 feet ends at Little Saffron-hill, and here, also, terminates the portion of the sewer, east, which is to be constructed in open cutting.

Westward of Little Saffron-hill, by the line of streets to the Bayswater-road, and along that road and Pembridge gardens and Crescent, to Denbigh-road, the work will be executed in tunnelling. From Little Saffron-hill, first, a length of 1,200 feet of 7 feet sewer, of 1½ brick in cement, will pass partly through private property to Back-hill, and along Liquorpond-street. Hence or from Gray's-Inn-lane, along King's-road to Bedford-row, a length of 780 feet will have a diameter of 6 feet 9 inches, and the same kind of brickwork: from Bedford-row, where the Piccadilly branch commences, a length of 2,830 feet of sewer, 6 feet 6 inches, will pass along Theobald's-road, Vernon-place, Bloomsbury-square, Hart-street, and New Oxford-street to Bloomsbury-street; and thence along Oxford-street to Wells-street, 2,270 feet of 6 feet 3 inches; and thence to Regent-street 1,192 feet of 6 feet diameter. From the Fleet sewer to Regent-street, the inclination will be 1 in 1,637, or 3·23 feet per mile.

At Regent-street there will be formed, in open cutting, an overflow chamber 18 feet in length, with a weir, by the Regent-street sewer. Further the tunnelling will be continued along Oxford-street for 1,800 feet, of 5 feet 9 inches diameter, to the King's Scholar's Pond sewer by Davies-street; thence the sewer, for 6,120 feet, along the Bayswater-road to the Ranelagh sewer at the Grand Junction-road, will be of 5 feet 6 inches diameter,—as before, of 1½ brick thick in cement. Opposite Great Cumberland-street, the invert of the sewer will be about 55 feet from the surface of the street. Continued to Pembridge-gardens, 4,690 feet, the sewer will be egg-shaped, 6 feet high by 4 feet wide, and 1½ brick thick in cement; and turned northward along Pembridge-gardens to Denbigh-terrace, 2,050 feet, it will be 5 feet 3 inches by 3 feet 6 inches. The construction in open cutting is then resumed, and will comprise 1,550 feet along Denbigh-road, through building ground and private property to Cornwall-road, 5 feet 3 inches by 3 feet 6 inches, and 1½ brick thick; and 5,170 feet from Cornwall-road, north-westerly, through fields and private property, to the western arm of the Counters Creek sewer at the railway, as before mentioned, which length will be 4 feet 6 inches by 3 feet, and 1 brick thick. The inclination from Regent-street to the Cornwall-road will be 1 in 1,338, or 3·95 feet per mile, and that beyond the road will be 1 in 300, or 17·60 feet per mile.

In the 160 feet of special construction under the Regent's canal, the sewer will be covered by girders, 5 feet from centre to centre, and half-brick arches. The bottom flanges of the girders will carry cast-iron plates as the ceiling to the sewer; and the spaces left will be filled with cement concrete, which also is to be laid above the brickwork, to form the bed of the canal. The junctions and beddings of the iron-work are to be run with iron cement. The contrivances in all portions of the sewerage which have been described by us, for passing a sewer under a canal or railway, display much ingenuity. Weirs and overflow contrivances are provided where several of the old sewers intersect, as in the case of the London-bridge sewer at Tabernacle-square, where a chamber 20 feet in length is formed, in order to get a considerable width of opening for escape. The sills of weirs will be formed of Aberdeen granite, with dowels into the brickwork at meeting ends of the stones of the sill where required. The general mode of connection in the case of these weirs and overflows to the old sewers, is by iron pipes; the contrivance being such that the new sewer will intercept the sewerage from the old sewers under ordinary circumstances; whilst in cases of excessive rainfall the old outlets to the river will come into use.

We have yet to describe the intended course of the Piccadilly Branch, and other portions of the works specified for the Middle Level Sewerage, north side of the Thames.

AMATEUR CRITICISM ON ART: ITS RIGHTS AND LIMITS.*

No man of experience who has taken the trouble to investigate at all the present state of the art architectural in this country, as compared with its position in the days of his early remembrance, can fail to recognize the fact, that we are now witnessing, with respect to it, the recurrence of one of those great revolutions of public taste and private feeling which seem to mark the history of almost every pursuit, whether moral, intellectual, or imaginative, whereby the human

mind has sought for solace, instruction, or recreation, in its present estate.

From being, as of yore, neglected by the great majority of men of taste, who did not actually depend upon its practice as a means of subsistence, and from being excluded from the consideration of polite society as too doubtful and inelegant an art to find favour in its polished circles; not only is it now deemed a worthy study by every one pretending to the possession of a liberally informed mind, but entire ignorance of its leading principles and chief classifications is looked upon almost as a reproach; and, not staying its career at the threshold of the rich man's house, or finding a final resting-place amid the neglected shelves of the pedant's library, we meet with its introductory hand-books and illustrated volumes occupying honoured places on every drawing-room table, and often constituting the most prized and eagerly perused treasures of the lady's boudoir.

Various speculations might be hazarded, no doubt, as to the causes which have combined to bring about the revival of this beautiful and much neglected branch of the fine arts; but I think that one of the principal motive powers has been that, in the course of architectural and archaeological researches, the minds not only of professors but also of amateurs and connoisseurs have been aroused, by the very fact of its almost utter extinction among us, to a sense of its worth and dignity; and, by one of those revolutions which often occur in the course of human events, the day of the greatest degradation of architecture in England seems likely to be succeeded by a culmination, though limited in degree yet as unmistakable in fact, as any which has marked the ever-revolving cycles in the progress of the fine arts during the history of the world.

I do not think that a great revolution in art has ever been brought about except by the concurrence and combined influences of both professor and amateur. As with the poet, so with the architect, the sculptor, the painter, and the musician; all are as it were the offspring of their own particular time and country. The man of genius may, doubtless, in the first instance, lead the public mind in a particular direction, and suggest to it certain pursuits or elements of thought, which the existing state of social taste and circumstances may cause to take deep root; and he may thus be the means of giving definite aim and form to some innate feeling,—a feeling probably brought into existence by a vague sense of an intellectual want, and which his sagacity leads onward, and renders predominant and practical. But other minds must necessarily already sympathize with his own, for otherwise no genius, however great, could exercise any influence on them. And in this manner it is, I submit, that the professor and layman must ever co-operate, and mutually as it were act upon each other, before a fine art can gain an ascendancy, and exercise its legitimate influence on the tastes of a people.

Are not the effects of these combined influences strikingly illustrated, in the place which architecture as a fine art now occupies in the public mind? And if we refer to history, do not the annals of ancient and modern art attest the same story, of genius patronized by the wealth and influence of crowned or mitred heads; and, secondly, by the support and approval of public taste and intellect? If, in glancing back at the early efforts of our own ecclesiastical architects, the mind is staggered in the contemplation of the magnitude and beauty of structures, whose origin is to be traced to times so gloomy and troubled, that historians can bestow upon them no more fitting epithet than "the Dark Ages," still may we find some explanation of this seeming anomaly, if we may be allowed to conjecture that the quenchless spark of genius, bowed down by surrounding evil, yet found for itself this medium for the expression of its emotions, and in these great monuments asserted the brightness of its flame, in far-off days, with a power that shall be acknowledged to the latest generations.

It is, I apprehend, quite unnecessary to enter upon any argument in proof of the fact that the great body of intelligent amateurs must ever exercise a powerful influence upon the progress and success of the arts; for a discriminating patronage, bestowed by those who have it in their power, is absolutely necessary to ensure its existence and advancement among a people. How far, then, may a connoisseur of refined and educated taste indulge in the office of independent criticism on art? To what extent should his influence and opinion be acknowledged, as compared with those of the professional man? I, of course, assume that all men of taste agree in acknowledging the

existence of certain principles of beauty, and therefore their diversities of opinion and feeling may be expected to exhibit themselves only in their choice and preference of some one or more of their various phases and combinations.

In all questions of importance to the welfare of mankind in general, it is incumbent upon us as members of the great human family and of society, to form an independent opinion for our own guidance, according to the judgment and ability with which we may have been endowed, and not from mere negligence and love of ease to permit ourselves to be carried away at the will and dictation of others, to avoid the trouble or responsibility of arriving at a just and candid conclusion. I cannot see that the study of the fine arts ought to form any exception to this universal rule of conduct.

It would seem to be almost an infirmity peculiar to our own times, that certain classes of the professors of art, should array themselves against one another in parties as advocates of extreme and widely differing views and doctrines, an adhesion to which they even sometimes propound as forming the very essence of their art. How, then, shall the civilian decide between these contending parties? His most simple and obvious course, under many circumstances, would probably be that too often taken, of giving in his allegiance to one side or the other, and adopting all its opinions without due thought or consideration.

There can, I think, be no doubt that this system of leaning upon others in matters of art, instead of exercising a rational judgment founded on principle, is one of the greatest obstacles to the growth and development of sound taste; for let a man once adopt his school and his leaders, and he soon learns to mould his own previously imperfectly-formed opinions to those of his party, (and of course it is much easier to have a thing done for you than to do it yourself). But in the meantime, for want of a little energy and moral courage, in maintaining the genuine predilections and feelings with which the man's nature has been originally endowed, they will gradually weaken and droop, till he finds himself to an extent which as an independent agent he could scarcely suppose possible,—the mere tool in the hands of more energetic men than himself; and, like a child in leading-strings, he surrenders himself to the guidance of any who will take the trouble to lead or mislead him, as the case may be.

There is, I think, a very marked and obvious distinction between the position in which the non-professional man stands with respect to an exact science, and that occupied by a connoisseur in the fine arts. The former sciences, based as they are upon certain fixed rules, and developed by innumerable steps of discovery and invention, are matters of certain and progressive knowledge, and any one who pursues them as a study, to have any prospect of success, must acquaint himself with all their latest discoveries and improvements in principle and detail; and possessing a knowledge of these, the chemist, the engineer, or the mathematician, may be tolerably confident of their ground, and even prove to demonstration that the conclusion each may have arrived at is the only admissible one under the circumstances. The artist, on the other hand, may, so far as the technicalities of his art are concerned, speak with authority, and prove to demonstration his correctness in such matters as accuracy of drawing, exactness in delineation of an order of architecture, and other details, to which precise rule is applicable; but here the parallel between him and the man of mere science ceases, and the moment we come to the discussion of matters of imagination, invention, and feeling, the professional artist and the amateur occupy common ground; and thus on the very essentials of fine art, actual right or wrong are incapable of arbitrary definition, and the amateur of a cultivated and refined mind becomes as competent a critic upon questions of high art as the professor; and this distinction must always exist; for what would be thought of the engineer, or philosopher, who began to construct a steam-engine on the model of fifty years ago, or who betrayed ignorance of the doctrine of gravitation, instead of taking up their respective sciences at the point at which they have now progressively arrived. But, except as to technicalities, and the general principles of art, as derived from former schools, the artist is entirely dependent on his own individual genius to give life and character to his work; and before any just analogy can be admitted to exist between him and the professor of an exact science, he must be prepared to say that he can (the elements and principles of his art once mastered) take it up where it was left by a Phidias, a Michelangelo, or a Turner.

* From a paper, as already mentioned, read before the Liverpool Architectural Society, by Mr. FRANCIS HURNER, associate member.

I have heard it asserted by artists, that the mere connoisseur in the fine arts ought to confine himself to admiring what is beautiful, without presuming to criticise what he deems to be the faults, of works which may come under his review; that he must look upon a Rembrandt simply as a splendid example of *chiaro-scuro*, and there be satisfied to limit his estimate of the master, acknowledging him too great to be subject to any qualification of his perfect homage; that he is in like manner to acknowledge Turner as transcendent in painting light, and be blind to any deficiencies in his works of any of his dates or manners. So with respect to the sister arts, I presume he is to see the beauty of architectural compositions, sculpture, &c., but is to be absolutely interdicted from expressing an adverse opinion upon any of their shortcomings or deficiencies, in expression, proportion, or execution in any manner whatever. Now, I must respectfully but decidedly differ from the advocates of such a system of blind adulation as is thus propounded, for the guidance of men who have been endowed with a perception of the beautiful in nature or art, and who have cultivated this portion of their mind, in any degree, by observation and study. I repeat that I do not deny that there are certain technical characteristics in all branches of art of which the artist is necessarily a more competent judge than the amateur; but beyond these practical technicalities the latter must, unless he is to be a mere puppet in the hands of a certain clique or school, be permitted to exercise his own individual and unbiased judgment. And miserable patrons indeed would the artists find such a community as the contrary doctrine assumes.

What can a man's estimate of character or beauty be who is not capable of detecting where character or beauty is absent? What is commendation worth from the lips of one, who knows not when or how to condemn? * * *

If the public are to follow the lead of the professors in all these matters, on whose dicta are they to rely? for, among artists themselves we shall find as diverse and opposite opinions as it is possible to entertain. In architecture a man may attach himself alike to the Gothic or Classic factions, and in either, will not fail to meet with able leaders, who zealously advocate their own views, to the disparagement of those of their opponents; and it is singular to observe the earnestness and indomitable perseverance with which this hand-to-hand fight between the disciples of the vertical and horizontal styles is kept up on both sides. If, like the seven sleepers, we go to slumber at a time when the Pagans are persecuting the Christians, and sleep ever so long, and awake at ever so remote a period, it would seem as though we should still find the fight proceeding, the only variation being, that it may then be the turn of the Christians to chastise the pagans. In circumstances like these, how absolutely necessary it is that the civilian should endeavour by study, and the exercise of original thought and feeling, to arrive at an independent conclusion as to the merits of the subject under debate.

Some of the facts connected with this very controversy, however, afford the strongest illustration of the great influence which intelligent amateurs may exert upon the object of their taste, for I believe I am right in saying that two of the most prominent disputants engaged in the discussion are laymen. Nor would it be difficult to point out instances in which connoisseurs in other branches of art have, by sound judgment and an enlightened and liberal patronage, directed their course and advanced their interests to a very remarkable extent. If we turn to the painter's art, shall we find a greater spirit of unanimity amongst them as to the principles and practice which ought to govern them? Shall we not, on the contrary, find them broken up into contending parties? dismembered by the most extraordinary schisms? And in this instance also do we not find some of the most powerful champions of each party amongst the ranks of their amateur adherents?

It is satisfactory to find that in some of our more prosperous colonies, where the struggle for a bare subsistence, which first settlers generally find it their lot to encounter, has given place to circumstances of comfort and comparative affluence; the inhabitants begin to display a taste to reproduce around them the outward architectural forms, as well as the social institutions of the mother country. And one most interesting instance of the associations of home being introduced through the medium of architecture, has occurred at Sydney, in the erection of the fine Tudor design for the University there, which has just been completed by Mr. Blackell, the colonial architect, who, under the auspices of Sir Charles Nicholson and other

magnificent patrons, has apparently produced a building on a great scale, of a beauty of design and solidity of construction which reflects high honour on all concerned in it; and which, with its elaborate decorations, and richly-stained windows, seems well calculated to recall to the minds and hearts of the colonists, the ancient grandeur of their native land, and in no small degree contribute to attach them to her memory.

It is to be hoped that a work so well begun may be continued in the same spirit, and that not only in Sydney, but in all our colonial dependencies where our fellow-countrymen have sought distant homes, we may find the development of high civilization, which ever accompanies wealth and prosperity, adorned, also, by a reviving love of art.

It has often occurred to me that the position in which the modern architect, practising in a new country is placed, is one of great peculiarity. On the one hand he has, in all probability, emigrated from the mother country, furnished with a knowledge of almost every style of architecture that has existed in the ancient or modern worlds, the individual types of each of which we are to suppose originated in, and were developed in accordance with the peculiar state of society, and the habits of the time and country to which they respectively belong. On the other hand, combined with this extensive knowledge, and the possession of such vast and heterogeneous materials from which to select, he finds himself placed in the midst of such novel circumstances, as would seem most favourable for the introduction of a phase of art, which, being adapted to the climatic and other coincidences which surround him, might possess more of originality and distinctive character, than are likely to arise from a system of design, strictly based upon the model of an elaborate and highly-developed exotic importation.

What the ultimate destination of colonial architecture is likely to be, is indeed a very wide speculation; but in the meantime, taking into consideration the innate feeling of attachment to his native land with which man is always more or less endowed, we must not be surprised if the colonist, when he first finds himself in a position to indulge his artistic tastes, from which he has in all probability been long debarred; naturally turning his thoughts backward to the recollections of the mother country, is, in the land of his adoption, inclined to reproduce around him (so far as circumstances will admit) the architectural forms and types which must ever be so intimately associated in his mind through her works, and which are probably held more dear by him than ever, in a country where all is new; from the fact of their speaking to him the language of the olden times, and serving, as it were, as emblems of the antiquity and stability of his race and lineage.

Architecture, from its enduring elements and national associations, seems above all other arts to exercise this very powerful influence over the human mind; and in this respect, indeed, it often occurs to me, that the emotions suggested by the contemplation of its ancient works—those works which seem as it were to embody in their stones the history of a people—are very analogous to those excited by external nature herself.

THE EXHIBITION OF DESIGNS FOR A NEW GUILDHALL, CAMBRIDGE.

THE designs for the new Guildhall, and other public buildings for the borough of Cambridge, which have just been exhibited in accordance with an announcement made in our pages, comprise twenty sets of drawings. The number is small in comparison with that of designs in competitions of similar importance, to which we have had recently to give attention. The amount first to be expended, however, was not to exceed 6,000. Perhaps architects are beginning to find that results to those who are not chosen, do not compensate for labour, great and repeated, and such as must remain profitless, at least so long as the authors' names are not appended to designs. The motto system, even in the point of view of the objects of the promoters of a competition, has been shown to be not merely useless, but prejudicial, and in the present case, the stipulation that the motto should not be in the author's handwriting, has been equally as usual, inefficient for concealment. Some of the best designs are at once to be referred to certain authors, from treatment and character, and the manner of drawing; and in others, the same mottoes, and, we think the same handwriting, are used, as were appended to designs obviously of the same authorship, which were reported upon by us

at Westminster, Manchester, or elsewhere. The identification is assisted by the description of mounting, and that in spite of the careful prohibition by the committee at Cambridge of "ornamental margins." The system, simply, gives prominence to some competitors; and does not give to others that which may be their due by merit. It is retained because committees, not aware of the objection to it, are under the idea that it is consistent with fairness, and is acceptable to architects. We trust, however, if competitions are to be continued, we may shortly be able to speak of the use of mottoes as merely optional. It may be said, the effect would be to direct attention to designs by architects having a reputation. But, with professional assistance in selection, we do not think that would be the objection; whilst without such assistance, we are prepared to show, not merely the objects of committees, but probably those of the profession generally, and of each architect, would be better served, had the name and experience of an individual just so much weight as a committee are compelled to place in the balance when they come to actual building,—so much as will constitute a design something more than a picture—a mere unacted drama—a *vox et præterea nihil*. The whole, however, adds to the argument otherwise, in favour of the professional assistance.

With these several views arising out of the nature of architectural designs, the course taken by the Cambridge Committee in seeking advice of the Institute of British Architects, met with our warm approval; and we shall be not sorry should such applications force upon the Institute a more active interest in the competition system,—in order that they may regulate or oppose it, one or the other—seeing that it is now greatly influential; and peradventure is baneful to art. For, it is obvious that the offer, as in this instance of premiums of 200*l.* and 100*l.*, must call into play a considerable proportion of mere drawing-practice, which, whether valuable as such, or made the indication of some kind of talent, would not be what the object demanded. In the present case we believe we see results of this sort of competing in designs which are made with an eye to a premium rather than to the object of the committee, and its accomplishment, and to a return as coming therefrom.

The problem given was one of unusual difficulty, and demanding much professional experience. The ground is of very irregular form. The streets at Cambridge, called Butcher-row, east; Wheeler-street, south; and Pens-hill west, are narrow or unsuited for a public building: a street or way, called Butter-row, at present separates the front or northern portion of the ground, on which the Shire-hall stands, from the main portion in which the assembly-room would have to be placed; buildings, not the property of the Corporation, cut into the ground at the north-west angle; and portions of the property are let on lease for various terms, and are in such positions that they interfere much with freedom of design and planning, and perhaps with the prospects of success as regards the objects of the building. Most of the competitors, however, have followed the irregular boundaries,—as though it were necessary in planning, to entirely cover ground.

In decorative character there is unusual similarity in the designs. The majority of those sent are Gothic, and Gothic which is distinctively Italian or Continental in appearance. There is not one design of this number which is either English, or which, as it appears to us, is at all in harmony with the associations of Cambridge. In several cases, the Gothic, whilst very different from that of the modern built colleges, is quite as much caricature of a style. The preponderance of Gothic designs, no doubt, is due—besides the idea which many would have that such designs alone would be acceptable—to an idea that the Gothic could be made best to meet difficulties of the site. Those plans, however, which are best devised both for the temporary circumstances, and those of the possession of the remainder of the site, we think, are not those which are Gothic. We speak not confidently on the matter, because, as usual, there is great difficulty arising from manner of delineation and inattention to instructions, in comparing one plan with another,—the difficulty of catching the intentions of the architect in the time which we could devote to one subject, being greater from our having been deprived of the written particulars, which had been brought to London for purposes of reference in the adjudication.

The professional assistance acquired by the committee, is that of Professor Donaldson; and, having had reason to apprehend in some cases

that a similar duty by architects has been got through too hastily, we are glad to learn that he has so far, given the time to the examination which such difficult and arduous duty requires. By next week we shall, perhaps, have the result. We cannot but think that some observations upon the taste displayed in most of the designs, which is far below what produced such art as Cambridge contains, whether in King's College Chapel, or works that are of very different style, would not be ill-timed from the London Professor of Architecture. The conditions were stringent against color in tinting and writing on the drawings. Though this sort of stipulation may interfere with exhibition of an architect's intentions, it has on the whole a good tendency at this time, when that which has been called the "sleazy-bacon style," is so much in the ascendant.

For the 6,000l. proposed to be expended first, there were to be provided the public Assembly-room, to hold 1,400 persons, a free library and reading-room, town clerk's offices, committee-rooms, and a school of art,—the rooms of the school to be lighted from the north or east—the former preferred. Portions of the Shire-hall, or northerly building which fronts the Market-place, and which is of very plain Italian character, as well as the eastern and western ground generally, are those portions which are not available. Part of the ground south of Butter-row is occupied by the present hall or Assembly-room, and certain offices—these being joined to the Shire-hall by a way bridged over the narrow row. The buildings for future erection, and not included in the 6,000l., comprise a corn exchange, a post-office, inland revenue offices, a council chamber, a magistrates' court, and some minor rooms and offices. The longest lease in the case of ground for these buildings, expires in 1876, when power also might be obtained to stop up and build upon Butter-row. The main access to the Assembly-room in many of the designs is seriously affected by these disadvantages, and that equally whether it be supposed to be from Butter-row, that is at least temporarily, or by passing through the Shire-hall by passage or staircase. Other designs get sufficient width of entrance into the building, from the opposite end, or Wheeler-street; but this would call for improvement in Wheeler-street, and the streets leading to it. The south-west angle of the ground was suggested as the site for the Corn-Exchange—Peas-hill and Wheeler-street there joining in a larger area than ordinary, of street-space.

The drawings are exhibited, and on the whole with more success than usual in these cases, in the present Assembly-room, and have been visited by large numbers of persons, particularly in the evenings. The first design to the left on entering the rooms, marked "Similis non vidisti," is a Gothic design, having the principal street entrance for the Assembly-room or hall, from Butter-row; this placed north and south, being on the ground-floor, and so designed as to serve several purposes. There are no side galleries to the hall. The decorative character of the interior, which approaches nearer to the English Gothic than in most cases, seems as though by a different hand. The collar is carried by timber principal arches rising from hammer-beams, and by struts which are ceiled to—giving a common form of ceiling, the hexagonal. An organ gallery is placed at one end, and there is a dais with seats and desks, and bay-windows at the other.—The design marked "Floreat Cantabrigia," which comes next, and is to be distinguished from several others with the same motto, as being marked thus ⊕, is one of the best of the continental Gothic designs. We give on this occasion, for the reasons we have stated, more prominent attention than we generally think desirable to the designs in their exclusively decorative character. We may, however, state that the present design has the Assembly-room placed east and west, on the first floor above the street—or nearly in the position of the present room; whilst the access to it is circuitous, the staircase being in the centre of the building. The principal entrance would be at first from Butter row, which might be covered with glass, and eventually from Butcher-row. A great proportion of the designs have the corn-exchange polygonal on plan; but the present plan adopts the rectangular form, with a gallery on one side, over an external loggia to the ground-floor—the front of this gallery to the interior presenting an arcade in light ironwork construction, which supports the half of the roof. The building for the site of the Shire-hall has a character similar to that of the town-halls of the Netherlands, with coloured materials in stripes, added; and it may be

right to say in deduction from what we have hinted at as questionable in present taste, that this and some other designs may contemplate the use of stone, in which the slight variation of tone and colour which is obtainable is not always objectionable, but is in some cases rather pleasing; though contrast is usually intensified in drawings. There are three stories of windows, the upper story with an arched parapet, and twisted shafts, as pinnacles with vanes, carried from the stringcourse below; and a lower story as a loggia or arcade. A tower rises from the centre of the front, but not from lines carried to the ground; and it has a balcony at the level of the parapet, and a second balcony on its lower stage, above which the tower is octagonal, with mullioned and transomed windows, angle shafts, and gurgoyles, and a double conical capping, with banded covering and lucarnes. In the centre of the first-floor is a bay-window. The angles of the building have octagonal turrets, with spirelets or pinnacles; and the ends and gables are broken by narrow buttresses or projections carrying pinnacles, somewhat similar to the manner in Mr. Scott's design for the Foreign Office. Use of the same models in this latter design, together with the new museum at Oxford, and in many of the designs at Cambridge, indeed, is the impression given on looking at most of the Gothic designs under consideration. As in the design now under notice, parts of the buildings at the angles, square on plan, are treated as pavilions, with high saddle-backed, or truncated roof coverings; and the fondness for towers, each with double conical and slated and banded spire capping, and square pinnacles, also slated, and placed directly upon a lofty undecorated portion of wall-surface in the tower, is general; and a tower somewhat of this character is placed at the south-west angle of the design just instanced. The author has sent six well-executed perspective views. It may be well to add, that he estimates comparative cost of different descriptions of flooring for a room of 18 feet by 16 feet, thus:

Timber floor; commonest	15	s	6
Ditto; superior	20	9	1
Fire-proof—with cement surface (iron joists, filled in with strips of wood, mortar, and concrete)	17	3	0
Ditto, with boarded surface	20	9	3

A design, marked "Cantab," is of Florentine Gothic, and decidedly clever, though too much enriched; and from defects of the drawing is apparently the work of one having his course yet to make. Moreover, the interior view of the Corn-Exchange, suggests that the author has been looking at the Covent-garden Floral-hall. The Assembly-room will be placed north and south, with a semicircular end appearing prominently in the south front: it would be 128 feet by 43 feet, and would have the school and library below it. In the principal front there are statues under canopies—the latter ranging with the parapet—the design generally being two stories in height.

Passing over a design marked "Esse quam videri," we come to one marked "Cito," which also is Gothic, and more English, so far as the impression which is conveyed by the interior of the hall with open hammer-beamed roof. Side galleries are carried on cantilevers. The main features of the exterior are the high truncated portions of the roof, geometrical traiered windows, with crocketed canopies or coloured vousoirs, a tower of the character we have spoken of, but with a truncated roof, and pinnacles elsewhere, which are carried by square buttress-like projections, some of which, however, do not rise from the ground, but are borne by slight shafts with enriched capitals. There is an alternative design by the same author, also Gothic, but not of great merit—"Floreat Cantabrigia," by a different hand to that which produced the design already mentioned, has a plan not sufficiently studied, and a peculiar pointed-arched character which we can scarcely call good, or Gothic. The roof-coverings, also, fall into error of the day—imitation or exaggeration. The management of breaks and recesses in the design, however, is happy; though the defects we have referred to may prevent many observers from noticing these points. Some of the window apertures are glazed, so far as the head is concerned, with a single sheet of glass. There is a tower of the usual character, but with a stone spirelet, which, if not unpleasing in itself, is not well combined with the tower-base.—The drawings marked "Design," show an assembly-room with polygonal ends on plan, and a general character as to the galleries, with columns, like a common form in the designs for the Spurgeon Tabernacle. Resemblance to these, also, there is in the staircase over which the end gallery extends. The

design may be called Gothic; but it has exaggerated, not to say ugly, details.

The author of "Tubal Cain" has gone elaborately into the subject in a printed general description, but less successfully in his drawings: from the former, something may be learned; but of the latter we have made no note. A third design marked "Floreat Cantabrigia," is Gothic, rather of Continental character, with a dome in which a resemblance to pastry-cook's work, sometimes imputed to designs, is not fancied, but real. The first-floor is remarkable for extent of space filled by windows closely set, and for a projection from the front, with a carriage porch to the entrance.

We do not know how it is that in competition exhibitions, drawings which have merit, but are executed in faint lines, get placed generally in the worst positions; but we have so frequently witnessed this, that we begin to think the occurrence may be referred to fixed laws of the nature of the competition system. The fact alluded to shows that striking drawing has still more attention paid to it than is always justified by the art really in question, and by the merit of the design in reference to the objects of the competition. The design marked "Camelia," has at least so much merit as justifies our making it the case opportunity for these remarks. We cannot, however, say from the drawings, whether the author has strictly observed the conditions first referred to, of the ground: but his plan, which throughout deserves careful examination, provides a good entrance to the Assembly-room, approaching from the principal or north front. The room, placed north and south, centres with that entrance; and, east of its portion of the plan, unoccupied ground is left—required as regards Butcher-row, and also with a view to gain light to the school of art, which seems to be placed on the ground floor thereat—the doubtful part of the arrangement. Rectangularity is the principle of the plan, as opposed to that in following the boundaries of the ground in the manner we have remarked upon; and which principle, the latter, is not very successful in results in this competition, even in planning; whilst in some cases it would be fatal to the best perspective effect. The staircase-hall and entrance-corridor arrangement in this plan, whether possible or not under the difficulties of the site, is certainly that which the use of, and the desirable effect in, such a building, should be taken to demand. The stairs are arranged, one staircase on one side of the hall and one on the other, so as to divide the stream and leave access to the ground-floor of the hall: winders however, as here, (and they are top and bottom of each flight,) we have thought fit to object to in such cases. The Corn Exchange has a glass roof, not however showing externally; and it is separated from Wheeler-street, by offices one story in height. The external wall-surface, rusticated in horizontal bands, the alternate courses vermiculated, has peculiar richness and beauty of effect; and the same treatment is continued round the building and to the shafts of the columns, which are as Roman Doric tetrastyle porticos without pediments—one of the number in front of a projection occurring in each of the four streets. A bell-tower is placed at the north-east angle. The portico in the principal front has statues over the columns. After this approval of excellent qualities in the design, (of which the authorship is unmistakable,) it may be well to observe that the porticos border upon the objection of being not sufficiently useful, the columns being applied rather in the manner of those of the Roman triumphal arches. The flank elevation of the Assembly-room building shows a range of lofty arches springing from the entablature of an order, on the low basement, the windows being the height of the columns—so that space for enrichment is left; and the whole elevation is terminated by an effective cornice. Enriched spandrels, and broad angles, complete this part of the design—which slightly rescues the Free Trade Hall, Manchester, though we do not think it due to the same author. The details of the internal decoration, and artificial lighting, are in the same good taste as those of the exterior.

We must complete our notice next week.

METROPOLITAN BOARD OF WORKS.—At the ordinary meeting last week, it was resolved, by a large majority, that Mr. Woolrych, the clerk to the Board, be appointed to act as their legal adviser and standing counsel, at a salary of 500l. a year, with power to do other business on his own account.

THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

A SPECIAL GENERAL MEETING of the members of this Society was held on Wednesday last at the offices of the Architectural Union Company, Conduit-street, to receive the report of the committee, recommending the continuance of the Association, to take such steps as might be desirable thereon, and to elect an honorary secretary in the room of Mr. Hesketh, resigned.

The chair was taken by Mr. P'Anson.

Mr. Holmes (who has acted for some short time as interim secretary) read the minutes of the last meeting, which were confirmed, and also the report from the standing committee and the members nominated, at the last special general meeting, to confer with them on the best means of continuing the Association. That meeting was continued by the following members: Mr. Cockrell, Mr. G. S. Scott, Mr. C. C. Nelson, Mr. Thurston, Mr. Lockyer, Mr. Morgan, Mr. Lightly, Mr. Ferrey, Mr. Bury, Mr. Woods, Mr. Cockrell, jun., and Mr. Hesketh. The report, unanimously agreed to, was in the following terms:—

"At a meeting of the standing committee of the Architectural Association, and of the committee appointed by the late general meeting, it was agreed that it is the opinion of this meeting that it is practicable to carry on the operations of the Association on the present basis, but that the committee may find it advisable to make some alteration in the details of the manner of working the Association; avoiding, as far as possible, the present objectionable appearances of trading with responsibilities. It was also resolved that this meeting recommends that Mr. W. Lightly be requested to act as honorary secretary."

Mr. Bury raised a question as to the legality of the proceedings, contending that the proper course to have adopted would have been to dissolve the old society, ascertain and discharge its liabilities (if any), and then hand over what might remain to their successors.

Mr. Lightly reminded the meeting that the committee, and the gentlemen appointed by the last special meeting, had unanimously agreed to the report just read.

Mr. Bury observed that he for one had not agreed to it, although he had not moved any amendment in opposition. It seemed to him that it was not strictly legitimate that architects should unite together for a trading purpose, and subject themselves to censure by the public if the photograph impressions were not all as fine as might be expected. This, at least, was the view of Mr. Tite, Mr. Smirke, and many other leading members of the profession, and he quite concurred with them. Moreover, there was a certain responsibility attaching to the committee which should be ascertained and discharged.

Mr. Hayward said that Mr. Bury could have avoided all responsibility by resigning his seat on the committee.

Mr. Bury apprehended that Mr. Hayward was mistaken; the debts were 200*l.* the second year in excess of the receipts.

Mr. Holmes said that although the subscriptions might not have been as large the second year as the first, the receipts of the Association were quite as much.

Mr. Wood was of opinion that the present meeting was inconsistent with the conclusion deliberately arrived at a short time ago to dissolve the Association. Personally he had no objection to their going on again, except that it was unprofessional that they, as architects, should identify themselves with a trading company.

After some discussion—

Mr. Hayward moved that the report of the committee be received and adopted. Having been from the first one of the local honorary secretaries, he knew the difficulties that were to be met, and he also knew of the obstacles which had to be surmounted in the first instance. When the Association commenced its operations it was supposed that its only support would be derived from the subscriptions of some three or four hundred architects spread over different parts of the empire, and that the money expended would not exceed some 500*l.* It was soon, however, found that the anxiety of the public to participate in the advantages offered to the profession far surpassed the expectations of the promoters; so much so, that instead of expending 500*l.* they expended 1,200*l.* in the first year of their operations. It was, in fact, the success of the Association which caused it to stop.

Mr. Bury said Mr. Hayward was in error when he spoke of the "great success" of the Association. He believed that in the second year the number of subscriptions had decreased by 300*l.*

Mr. Lockyer seconded the resolution, and remarked upon the circumstance that both Mr. Bury and Mr. Wood had coincided in the view

taken by the meeting and the conference, which had agreed to the report now under discussion. As for the falling off in the number of subscribers, he was glad to hear it, as they were embarrassed by the large number they had already.

Mr. C. C. Nelson inquired whether the meeting had as yet seen its way to getting rid of the commercial difficulties by which the future operations of the Association might be encumbered.

The chairman said that the subject had been very fully discussed at the meeting which drew up the report, and that it would, no doubt, again occupy their attention.

The resolution for the adoption of the report was then put from the chair, and carried *un. con.* The next business was the appointment of an honorary secretary in the room of Mr. Hesketh, resigned.

Some discussion ensued as to the power of the meeting to make the appointment, Mr. Wood contending that the committee were the proper persons to appoint the secretary, and not a special general meeting. Ultimately, however,

Mr. Hayward proposed that Mr. Lightly be requested to accept the appointment.

Mr. Hanson seconded the motion; and, after a short discussion, a resolution was passed to the effect that Mr. Lightly be requested to act as honorary secretary in the room of Mr. Hesketh, at whose resignation the meeting desired to record its sincere regret.

This motion was carried unanimously, and

Mr. Hansard next proposed a resolution, that the honorary secretary be requested to convene an early meeting of the committee to consider the state of the funds, and to report generally upon the affairs of the company to a general meeting to be speedily convened.

Mr. Lightly reminded the meeting that it would be impossible to have an exhibition in the coming season.

A desultory conversation ensued with reference to what Mr. Bury called the "irregularity" of the whole proceedings. The impression of the great majority of the meeting was, however, adverse to the opinion entertained by Mr. Bury, and it was urged that the body from whom the report had emanated, although not a numerous one, was important in regard to the professional status of those attending. It was also stated that a great number of persons had derived benefit from the operations of the Society, and that it would be a pity to dissolve it simply because certain modifications were required in what might be termed its internal machinery.

The resolution, as proposed by Mr. Hansard, was ultimately carried, *un. con.*; and, after a vote of thanks to Mr. P'Anson for presiding, the meeting separated.

Sta.—Whereas, "A special general meeting of subscribers" was called by Mr. Hesketh, to be held at No. 9, Conduit-street, (in the 2*nd* inst., and at which meeting only a *gentleman* attended who were unacquainted with the committee, and, indeed, were not even subscribers (as no subscription had been paid). These gentlemen elected a chairman, proceeded to pass resolutions, and to elect another secretary, although protested against by members of the committee, who alone were the responsible parties. It is necessary to inform those unacquainted with this unfortunate business, that the committee of the Association are not responsible for any resolutions these six gentlemen may pass, or any liabilities they may incur, as those members of the committee who know how to display this Association has worked, as well as the real difficulties and state of affairs, only desire to relieve themselves from further liability and ensure of bad faith with the public, to see the accounts of any made up, and the existing debts paid.

It is much to be deplored that a cabal has been got up to continue in a judged trading proceeding, which were never contemplated, when the committee were induced to assist Mr. Hesketh in a scheme which they thought was for the advantage of the profession generally, and without discredit to themselves.

ONE OF THE COMMITTEE WHO PROTESTED AGAINST THE MEETING.

DRINKING FOUNTAINS: DESIGNS AND VIEWS.

IN continuation of the efforts we have made to induce the erection of drinking-fountains, efforts commenced before the movement was so general as it is now, we have engraved another set of designs, some of which have been executed, some not.

It would be amusing, if it were not disheartening to notice the decision with which men of position ignore altogether agencies of which they happen to be ignorant. To take one instance as respects ourselves and the drinking-fountain movement. At the last meeting of the Association for the Promotion of Social Science, Lord Brougham said, speaking of the paper by Mr. C. Melly, describing the fountains erected by his brother, which was read at the Liverpool meeting,—"The council allowed a separate edition of the tract, with the print of a fountain as a model,

to be published; and it was extensively distributed during the Congress. The effect has been to spread the establishment of fountains over the whole country, so that there is hardly a great town without one or more. It cannot be doubted that the gratuitous supply of good water, at convenient places, has a tendency to lessen intemperance by diminishing the temptation, and preventing the resort to public-houses; and it is certain that the benefit thus derived has been entirely owing to the services of this Association."

We have the fullest appreciation of what the Association has done: it has no warmer advocate than the *Builder*; but we must, nevertheless, claim for ourselves the credit of a considerable share of the result which Lord Brougham asserts belongs entirely to the Association. However, let that pass, as we do with many similar mistakes.

The antiquity of the provision of drinking-fountains, has been recently shown by a quotation from Turner's "History of the Anglo-Saxons," which is worth repeating. "Edwin," says the historian, "had now *teirca* 626 reached the summit of human prosperity. A considerable part of Wales submitted to his power, and the Menavian islands (Anglesea and Man). The internal police which prevailed through his dominions was so vigilant that it became an aphorism to say, that a woman with a new-born infant might walk from sea to sea without insult. As in those days travelling was difficult and tedious, and no places existed for the entertainment of guests, it was an important and kind convenience to his people that he caused stakes to be fixed in those high-ways where he had seen a clear spring. Brazen dishes were chained to them, to refresh the weary sojourner, whose fatigue Edwin had himself experienced. In another reign these would have been placed only to have been taken away; but such was the dread of his inquiring justice, or such the general affection for his virtues, that no man misused them."

The two outside designs at the top of the right-hand page, are by Mr. Edward Appleton, architect, and are about to be erected in Torquay,—that on the left side (No. 1) by the Temperance Society, at the edge of the path, in one of the leading thoroughfares; and the other, a wall fountain, by the Local Board, at a cost of about 6*l.* only. The materials used in this are glazed Poole brick, dressed limestone, and Devonshire marble for the bowl. It has a dog-trough. The Temperance Society's fountain is to cost about 15*l.* The lower part is of Dartmoor granite, the small shaft Devonshire marble, and the capital and upper bowl are of Portland stone.

The fountain in the centre at the top comes to us from "One studying architecture in Paris." "It is designed," he says, "after reading some of your remarks on the subject in the *Builder*, to show what might be done in the modern French taste, to be executed in marble, stone, or cast-iron. In the latter case, flat grooved pilasters should be substituted for the round shafts indicated; the lion's head and inscription-plate should be bronze or brass, and the drinking-cups of solid galvanized india-rubber." The engraving on the left-hand side at the bottom (4), shows the fountain which has been put up by some of the inhabitants of Kilburn, on the north side of the North-Western railway bridge running obliquely to the Edgware-road. The background and shell are of Portland stone, with dolphins' head in bronze under it forming jet; the basin and shaft are of veined marble, polished; the base is of Gazyly stone, having a large hollow member at the bottom, forming a dog-trough; the waste water running through the basin and shaft, rises on one side of the base, and flows round to the waste-pipe on the other. The cistern is formed in the parapet-wall of the railway-bridge; the background, at top, being cut away, and fitted with a key-stone and rings, to give access to the cistern. The supply is thus kept cool. The centre design at the bottom is one that was submitted by Mr. W. G. Smith to the Metropolitan Drinking-fountains Association, and proposes the use of various coloured materials.

The engraving at the right-hand corner is a view of the fountain recently put up in Norwich, against the wall of the old Guildhall, in the Market-place. Some particulars of this we have already given. Mr. James S. Buxton was the architect. The basin and tablet (presented by Mr. C. P. Melly, of Liverpool) are of polished Aberdeen granite; the other portions of Ancaster stone, a band of polished slate being inserted to receive the bowls of the drinking-indies. The over-*ow* water runs into the trough below, which forms a drinking-place for dogs.

Those on the left-hand page are designs by



DESIGNS FOR DRINKING FOUNTAINS.—MR. HENRY GODWIN, ARCHITECT.

Mr. Henry Godwin, architect, who has striven to throw a little more ornamentation into them than is usually done, though of an inexpensive nature, the carving being shown to be bold and plain.

In one of the designs, proposed to be of Bath stone, the voussiors to the arches are alternately of white and red marble; the basin which stands in the arched recess is of white marble; as also are the brackets on either side for the cups; the back of the recess to be faced with tiles having a pattern of some water-plant in blue upon a white ground. Two recesses for dogs below are proposed, through which the waste water will pass into the drain. Above is a panel for the erector's name, or an inscription. Bullrushes in metal are introduced as a termination to the stonework, with an octagon lamp surmounting the whole, supported by the same plant symbolical of fresh water.

In the other the top of the brackets for the cups is to be of white marble, with the basin supported by a Bath stone pedestal. Dog-troughs below as before in the face of the erection. A metal hood is introduced, supported by ornamental foliated metal brackets, which are continued up against the face of the stonework, tending to give additional support to the projecting hood, and rendering the design more complete. The cups are to be suspended from the brackets by slight chains. The whole is raised on two steps, the arrises of which are rounded off. The Bath stone would be indurated, to resist the action of the weather. Both of these fountains, it will be seen, are proposed to be mural.

It is necessary to mention that the views are not all to the same scale.

Let us add to this article some notes of what has been done in furtherance of the movement since our last account.

London.—A metal drinking-fountain, by the Messrs. Wills, was, on Tuesday, the 15th, opened

for the use of the public, in the Regent's-circus, Oxford-street. It is composed of bronze figures, emblems of springs, and of masks of water deities in panels, surrounded with ornament. Above the cistern, from the bottom of which the water runs, a lamp-pillar springs up, at the base of which are four sphynxes. The whole is surmounted by a lamp, crowned with a phoenix. It is the gift of Mr. Samuel Gurney, M.P.

Northampton.—One of two drinking-fountains, presented to this town by Messrs. Frisby, Dyke, & Co., has been erected on the west side of All Saints' Church.

Winchester.—The fountain about to be erected by subscription on the northern side of the railway station road, opposite the Eagle Tavern, by Messrs. M. Macklin & White, for the sum of 45l. says the *Hampshire Advertiser*, will shortly be commenced. The design selected by the committee was that of Mr. W. Coles, architect. It is pyramidal in shape, and the materials to be used are stone with coloured brick dressings. The fountain may be said to consist of three stories or parts: the base on the eastern side will be formed of a cistern, intended for the use of dogs, sheep, &c.; above that another stone reservoir for cattle is fixed, to receive the water flowing through the mouths of two lions on a shield. The apex of the fountain is formed of a cornucopia, supported between a group of dolphins, which again rest upon a nautilus-shell, into which the jet of water thrown up through the cornucopia will fall, and pass down through the lions' mouths and cisterns to the drain prepared for it. The lion-headed shield, the heraldic insignia of Winchester, will be encircled in a border of red Fareham bricks, or gauged work, and the remaining surface will be filled with fine bricks herring-boned. The plinth will be of Purbeck, and the sides and coping of Bath stone. The west side will have no convenience for drink-

ing, but will be perfectly flat.—A fountain has just been erected by the mayor, Mr. W. Hutchinson, at the south-east corner of the City West-gate. It has a Gothic canopy, and the usual conveniences for drinking purposes both for men and animals, and on the face of the upper basin the following distich is cut in the stone:—

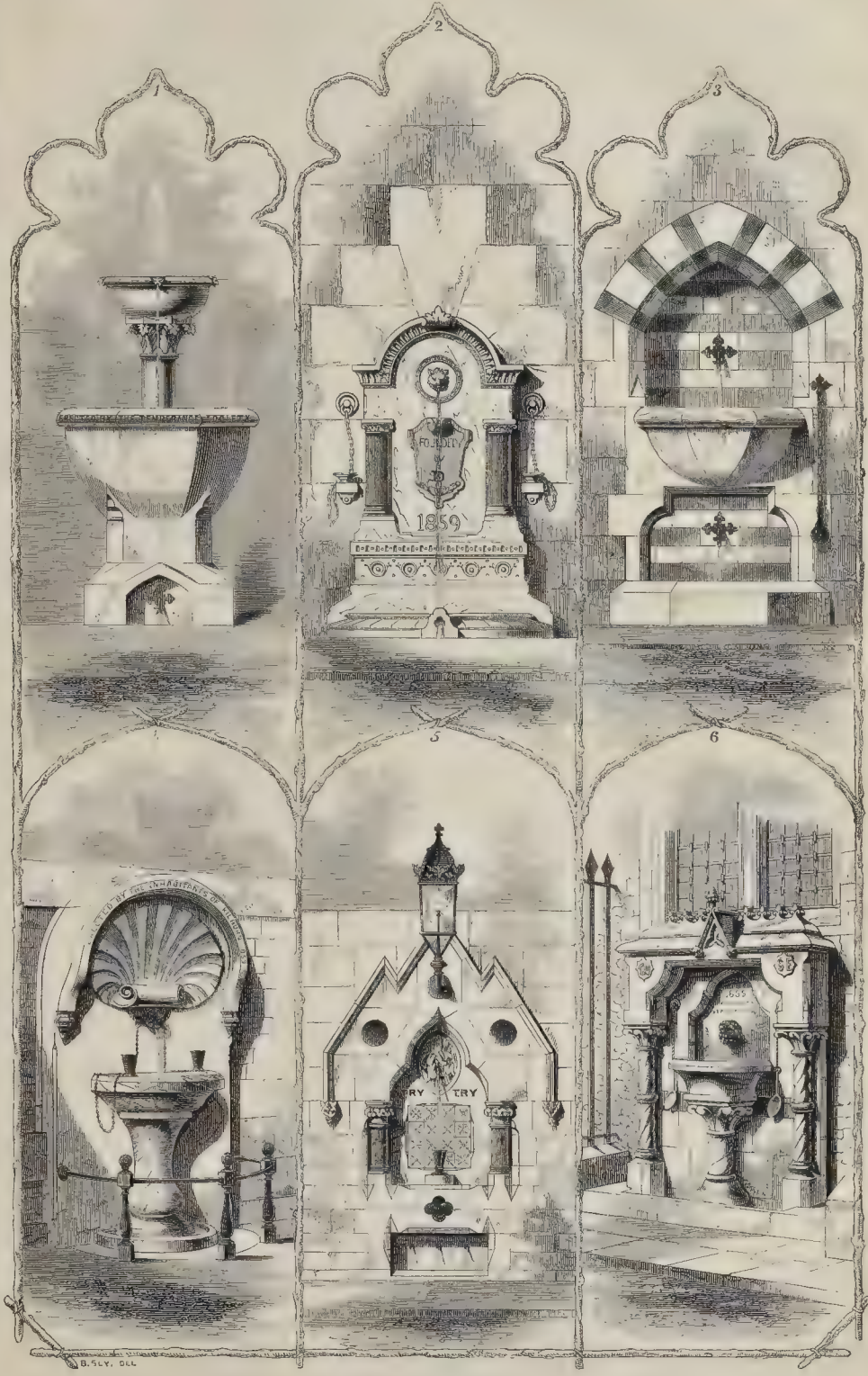
Drink, friends, drink, and take your fill,
Do not use my fountain ill.

The design is that of Mr. W. Coles, the City Surveyor.

Bristol.—The drinking-fountain, erected at the expense of Mr. Robert Lang, near the Triangle, Queen's-road, is now completed. The fountain, says the *Mirror*, stands on a raised platform, of three steps, of blue Pennant stone, and is executed in bronzed metal. It is formed with columns at the angles, having a swan on the top of each. Two of the panels are filled with emblematical figures, and the other panels are formed with brackets, representing masks of river gods, to support the cups. The height of the stand for the cups, from the top of the steps, is about 4 feet. Above this rises a canopy, in the form of a vase, which contains the cistern for the supply of water, and from which the water descends through the cone of a shell, the whole height of the fountain being about 9 feet.

Birmingham.—The mayor has caused an ornamental drinking-fountain to be erected under one of the front windows of the Temperance Hall in Temple-street. The design is a canopied niche in the Italian style. Mr. Yeoville Thomason was the architect, and the work has been carried out by Mr. J. Browning. The structure is of Darley Dale stone, fronted with pillars of Aberdeen granite.

Leith.—A fountain has been erected under the superintendence of Captain Grant, at the foot of Leith-walk, on the way from Leith to Edinburgh.



DRINKING-FOUNTAINS.—DESIGNED BY MR. APPLETON, MR. W. G. SMITH, MR. BENEST, AND OTHERS.

RECENT EXCAVATIONS AND DISCOVERIES
AT FURNES ABBEY.

For some time past, but especially in the earlier part of the present year, workmen have been engaged in trenching and exploring the ground which formed the site of what was once the most spacious and magnificent, and is still, perhaps, the most complete Cistercian abbey in England. As no account of the discoveries has yet been made public, a brief and somewhat general statement of facts, with some speculations suggested by them, is here presented to the readers of *The Builder*.

The partial clearing away of the ruins, and the excavation of the extensive foundations, which had hitherto been completely concealed and unknown, are due to the energy and judgment of Mr. Ramsden, the general manager of the Ulverston and Furness Railway, which runs quite close to the abbey. During the last spring, however, the alteration of a road, caused by the enlargement of the hotel which overlooks the abbey grounds, added to the above discoveries the interesting and important one of the entire and original plan of the abbey gateway. This structure, which was of immense size and length (not less than 85 feet by 30 feet), stood on the north side of the church and the monastic buildings. The details, consisting of the footings of several buttresses, the lower part of the base course, and one or two transition Norman capitals, prove its date to be contemporary with that of the transepts of the church (about 1170). An outer archway, of considerable depth and span, of which, of course, only the foundations and plan of the jambs now remain, opened into a vaulted space of two bays or compartments. Within, and about one-third of the entire length, a second archway occurred, which was, doubtless, closed by massive doors; for on one side is the space for the wicket or lesser door, the cill of which is quite rounded by the ingress and egress of feet for five centuries. At the extreme southern end was another archway, apparently opening under a tower of great strength, for the walls in this part are of great thickness and solidity. On the eastern side of the wicket is a small square recess in the wall, which either held the porter's seat, or contained the door-bar when withdrawn. A building of some magnitude, and rectangular plan, was continued westward from this gate-house. Its purpose cannot certainly be ascertained, for the present hotel unfortunately occupies this, one of the most interesting portions of the old ruins. Here the excavations were, of course, stopped, though various intersecting walls were found in the space between the gate-house and the small but very beautiful chapel, which still remains tolerably complete at the extreme north entrance to the ruins. Hitherto this chapel has been called the "Abbot's Chapel," from some tradition that the abbot's house was situated hereabouts. As, however, the oblong building annexed to the gate-house was probably the guest-house, and as the foundations of a wall connecting it with the chapel still remain, and one entrance into the chapel is in this direction, it is more likely that this was in reality the "osty chapel," or chapel of the hostelry. A well of cut masonry was discovered not far from this place, and a wall also of squared ashlar, which extended so deep as to suggest that it may have risen out of a moat, supplied from the adjoining stream, and continued up to the precipitous high ground beyond the great gateway. Within the church itself a good deal yet remains to be cleared away. The choir extended some way into the nave, and was terminated by a stone screen, the foundations of which are yet visible. Even the stone basement which bore the wooden stalls, and (singular to relate) the well-worn stone steps leading up to them on both sides, are yet distinctly to be seen under the nave arch. Of the church itself only the walls of the transepts and the choir still remain with the lower part (about 60 feet high) of a very large and noble perpendicular tower at the west end, which was probably left unfinished at the time of the dissolution. The whole nave has been demolished, but portions of the aisle walls and the main pillars remain. It was on the south side of the church that the great mass of the monastic buildings extended themselves. These were of vast size, and the recent excavations have given every hope that the entire plan of a first-class Cistercian monastery may now be revealed to us. It is, of course, earnestly to be hoped that this work will now be prosecuted with increased energy.

From the south-west end of the nave, and at right angles with it, extended a long though rather low building. This room, or hall, was vaulted in

the lower story, as a row of pillars indicates. Towards the south end various intersecting walls complicate the plan. A clear spring was found here, built in with cut masonry. Was this the ancient dormitory? At least, the old dormitory of the Benedictine abbey of Peterborough (if that be thought to furnish any analogy) stood in the same position; and it is rather difficult to assign a more probable use.

Parallel with this building, and extending beyond the beautiful chapter-house at the south end of the south transept (which, by the way, was also the position of the chapter-house at Peterborough), runs another long and still more spacious building, which is still to some extent complete. This has been commonly called the refectory; but it could not possibly have been this, for its lower story was vaulted from a central row of pillars, while its sides were lighted by windows, and terminated at the south end by archways opening to the outer air. The upper story, which communicated with the south transept, had long rows of glazed lancets, the place for the wooden frames being quite visible in some. In all probability this was the great dormitory, which had superseded the older on the western side. The lower story formed an *ambulatory*, or vaulted cloister, such as we find still existing under the dormitory of Fontaines Abbey. Two objects in this *ambulatory* are apt to escape a superficial survey. One is a garbore, or retiring-place, only large enough to receive one, built over the main drain, and once inclosed by a wooden door in the interior western wall; and the other is what seems to have been a fireplace at the southern end. Beyond this we come to a very fine building of the best geometric period (*circa* 1270), which is called in the guide-books "The chapel of the guest-house." It was, however, in all probability, no chapel at all (since there is no entrance to it except through the refectory), but either an assembling place for the monks before entering the great refectory, or a smaller dining-hall belonging to the infirmary. This so-called chapel has an upper story, ascended by a newel staircase, though not now easily accessible, and is vaulted within in a very beautiful manner. It contains, however, no vestige of an altar under the east window, nor any piscina, though there is a kind of water-drain which more nearly resembles the base of a lavatory. Immediately to the north-east of this building, and almost touching it, stood the great kitchen, an octagonal building (like that at Glastonbury, but much smaller). It is to be regretted that the entire site of this is not cleared, the greater part being occupied by heaps of loose rubbish overgrown with *Atropa Belladonna*. This kitchen was buttressed at its angles: its fire-place, and even part of its flooring, is visible. From the kitchen, access was afforded through an arched entrance on one side of the supposed chapel, directly into the great refectory, which stretches westward, the southern wall of it being continuous with that of the chapel. The whole arrangements very closely resemble those of a college "buttery." The refectory must have been one of the most magnificent rooms of its date (Early English) in the kingdom. It was fully the size of the great hall of Trinity College, Cambridge, or that of Christ Church, Oxford. The upper walls were arcaded, as the small remaining fragments of it show. The width was about 40 feet, the length about 140 feet. The north-west angle of this noble apartment has fortunately been laid open, together with the basement of the entire south wall. Further excavations will probably reveal the north wall, north entrance, and base of the pulpit. It is strange that this building should hitherto have been called "the guest-house." Undoubtedly it was the great refectory, and it has a close analogy in the hardly inferior refectory still remaining in the Cistercian ruins of Rievaulx. From the vestibule of the building we have conjecturally called the smaller dining-hall, an inclosed way, or rather road, led in a polygonal deviating direction towards the east, where it seems to have crossed the brook, but is there wholly lost. As this leads up to a large archway, midway between the kitchen and the refectory, and from a road which in all probability ran along the east end of the abbey, it is highly probable that this was a covered or inclosed passage for the vehicles which brought up the provisions. The present course of the stream has been altered since the monastic times. A two-arched bridge still remains, under which it formerly ran very close to the east end of the church. Beyond the stream, and close under the cliff of new red sandstone, now tunnelled for the railway, lay a range of buildings of very perplexing character. Some have called them the

Infirmary; and it is hard to assign a more probable use, unless, perhaps, some economic purpose was its real destiny. Considerable remains exist here; and, whatever the building was, it was far from unimportant. It was vaulted within, from a double row of pillars, and had a wide hooded fireplace, with a row of windows, opening at the back, quite close upon the cliff, and externally some rather singular recesses. Broken pieces of a millstone may be seen in the floor here; but an entire millstone, much worn on its grinding face, has recently been dug up, we believe, in another part. It formed the lower stone, and is of the usual quartzose millstone grit, of the average size of those still in use. Still southward were other buildings, which baffle all conjecture; and more than one fish-pond or *vivarium*, which seem to have been lined with masonry. At the north-west end of the refectory there is a considerable group of foundations, which have only lately been laid open. A main drain, finely paved and arched with close-jointed masonry, proceeds from this point through the *cloaca* in the *ambulatory* into the stream already mentioned. The size, cleanliness, and gradual descent of this drain, with the means for flushing it from an upper streamlet, afford a very interesting testimony to the care of the monks in respect of sanitary arrangements. It is not improbable that the foundations last mentioned were those of the *cloaca maxima*, if we may so term the principal retiring-place of the abbey. Several other drains are said to extend laterally with this, which has been opened in two or three points of its course, and is really an admirable piece of masonry. There is a large drain under the kitchen and lavatory, and another under the church.

If this abbey had any enclosed cloister at all, it must be looked for on the south side of the nave; but no vestiges of a cross (or end) wall have yet been found. Nevertheless, there are clear marks of a timber roof or penthouse having extended for some way along the transeptal wall as far as the doorway opening into the south nave aisle. Of the church itself, its chapels, altars, and other interesting appurtenances, we have not now space to speak. Suffice it to say that, as documents show that this abbey was founded in the reign of King Stephen, whereas no part of the present church can safely be placed earlier than about 1170, it is highly probable that the present choir, which is of Perpendicular date, superseded an older one of pure Norman work. For we know that the choir was commonly the first part of a monastic church which was commenced on the settlement of monks in a locality made over to them by a deed of gift.

F. A. P.

PROPOSED INTERNATIONAL EXHIBITION.

THE council of the Society of Arts announced through their chairman, Sir Thomas Phillips, on the 16th, that they propose to organize an international exhibition for the year 1862. Speaking of the causes which led them to abandon their previous determination to hold the Exhibition in 1861, the chairman said in his address—

That decision was arrived at by the Council with much regret. An Exhibition which should present an adequate picture of the progress and triumph of arts and industry, when employed in extending the blessings of peace, and promoting the progress of civilization, might prove of special utility at a season of strife and warfare; and, even if war were again to interrupt the peaceful intercourse of Continental states, it is obviously within the power of the United Kingdom, including the colonies and dependencies of the empire, to produce an Exhibition deserving of national patronage. The progress of art and industry is not suspended, however much it may be interrupted, by actual warfare; and the loom and the forge may pursue their wonted activity even amidst the din of arms. The past history and present position of our country alike impose on Englishmen duties which cannot be evaded with dignity; and they surely may decide themselves whether and when they will hold exhibitions of art and industry, although warlike preparations may seem to occupy neighbouring nations. The war in Italy having terminated, the Council has anxiously resumed the consideration of this important subject; and, notwithstanding the present aspect of Continental affairs, which we do not regard as the most favourable to arts, manufactures, or commerce, it is nevertheless the intention of the Council, interpreting aright, as they believe, the feelings of their countrymen, to originate measures for carrying into effect an International Exhibition of Works of Art and Industry, to be held in 1862; and they pro-

pose to invite the manufacturers, merchants, public companies, and other capitalists willing to promote such an exhibition, to unite in raising a guarantee fund (not less in amount than 250,000*l.*), to be vested in trustees whose position, character, and qualifications will secure the confidence of those capitalists who are prepared to share the responsibility of the undertaking. It is the intention of the council that full and absolute power to originate and conduct the Exhibition shall be vested in such trustees, and that the permanent buildings which may be found necessary shall vest in the Society of Arts, in order that such buildings may be devoted to future Exhibitions, and when not so occupied may be employed for purposes tending to the promotion of arts, manufactures, and commerce. The trustees will doubtless seek the assistance of her Majesty's Government, in order the better to obtain the friendly assistance of foreign Governments, and secure the co-operation of foreign exhibitors, and otherwise promote the success of the Exhibition of 1862; and will also apply to the Royal Commissioners for the Exhibition of 1851 to grant a convenient portion of the ground, purchased at Kensington out of the surplus funds of the Exhibition of 1851, for the next and future international exhibitions.

It is obvious that the corner-stone of the undertaking is a guarantee fund of adequate amount which shall afford ample protection to the trustees, as well as indicate the favourable opinion with which the undertaking is regarded by those eminent men, in the various walks of active life, who, best appreciating the arts and industry, are ever the most ready to promote the manufactures and commerce of this great country. The subscription to the guarantee fund will be shortly re-opened.

THE GUARANTEE WATERWORKS, TRAFALGAR SQUARE.

INSTITUTION OF CIVIL ENGINEERS.

At the meeting held November 15, Mr. G. P. Bidder, V.P., in the chair, the paper read was "On the Origin, Progress, and Present State of the Government Waterworks, Trafalgar-square; with a few Facts relating to other Wells, which have been sunk, or bored, into the Chalk Formation;" by Mr. C. E. Amos.

The author commenced by stating that, a good supply of water having been required for the fountains in Trafalgar-square, it was determined, in the year 1843, to carry out a plan which had been suggested by Mr. James Easton. This was so framed as to include the water-supply for the Public Offices. The water was to be obtained and raised by engine-power, from the springs beneath the London clay. The quantity of water required for condensing the steam of the engine being too great to be taken from the main spring, in full quantity, it was considered expedient to use cooling ponds; and it was thought that a small quantity of water in excess of that required for the Public Offices, running continually into the cooling ponds, would keep the water clean, and in a state fit for the purpose of condensation. The basins of the fountains were intended to form the cooling ponds. The water from them was to be taken for the use of the condenser, afterwards to be raised into a cistern, from whence it was to be conveyed to, and be passed through, the jets of the fountains, where, meeting with the resistance of the air, it would be partially cooled and returned to the basin, for farther circulation.

Estimates having been made, it was found that the yearly interest on the cost of erection, added to the cost of working, would be less than the sums hitherto paid annually for the water supply to the Public Offices, and that, consequently, the playing of the fountains could be effected without cost to the Government. A contract was then made with Messrs. Easton & Amos for the execution of the works; and a piece of ground having been selected in Orange-street, the works were commenced in January, 1844, by sinking the first well to the depth of 174 feet. A cast-iron pipe, 15 inches diameter, was then driven through 30 feet of plastic clay and 10 feet into a stratum of gravel, sand, and stones, being left standing several feet up in the well. Within this another pipe of 7 inches diameter was driven through 35 feet of green-coloured sand, and 3 feet into the chalk formation, and the boring was then continued to the total depth of 300 feet from the surface. A considerable quantity of water came from the sand, but a much larger supply was obtained from the chalk. A second well was sunk in the enclosure immediately in front of the National Gallery, to a depth of 168 feet from the surface. A pipe, 14 inches diameter, was then driven

through the plastic clay, and into the gravel, sand, and stones beneath it. Within this a pipe, 7 inches diameter, was driven through 42 feet of green-coloured sand, and 3 feet into the chalk, the boring being continued to the total depth of 383 feet. The springs were found to be stronger than those in the well in Orange-street. A tunnel, 6 feet diameter, and about 400 feet long, was driven to connect the two wells; the bottom of it being about 123 feet below T. H. W. M. A catch-well, 5 feet 6 inches diameter and 32 feet deep, was sunk just outside the engine-house. A tunnel was driven from it, passing beneath Castle-street and the National Gallery, to contain the pipes for bringing the water back from the basins of the fountains to the catch-well.

The works were finished in December, 1844. Their total cost, as completed, amounted to nearly 8,400*l.* The water rose to within 90 feet of the surface (about 48 feet below T. H. W. M.), and was found to be of good quality. When the engine was pumping 110 gallons of water per minute, it could only lower the water 4 feet in the well.

In 1846, a further demand for water having been made, a larger pump was substituted, which was capable of raising 350 gallons of water per minute from the springs.

In 1849, a second well was sunk in Orange-street, and an engine of 60 horse-power, on Woolf's principle, was erected. The well was carried to a depth of 176 feet, and a tunnel was driven to connect it with the other wells. A bore pipe was driven through the plastic clay, within which it was intended to drive a smaller pipe through the sand into the chalk, and then to continue the boring as in the other wells. But an accident having occurred in driving the large pipe, which allowed sand to come up the bore-hole, and made the water foul, the hole was stopped with bags of clay, and no further use had been made of it, than as a sump well to contain the pumps. The accident was accounted for in this way:—In driving the pipe great resistance was offered by the "hugging" of the plastic clay, and considerable percussive force had to be used. In consequence, several of the screws which held the joints were shaken out, and the pipe having been improperly driven through the layer of gravel, sand, and stones, into the sand beneath, there was an escape of water through the screw-holes, and sand followed in sufficient quantity to cause inconvenience.

The steam-engine worked one double-acting pump for supplying the fountains, and two other pumps for raising water from the springs into the tanks above the building. At an average speed of sixteen strokes per minute, the first could throw 660 gallons, and the other two together 600 gallons per minute. This engine is the one now mainly used. The supply of water from the springs was still found to be abundant. The pumping of 600 gallons per minute lowered the water from 20 feet to 24 feet, when it remained stationary as long as the engine was kept working. The level of the water did not appear to be gradually lowering, and it was stated that on the 1st of December, 1858, it rose to within 66 feet of T. H. W. M., being about the same level as it stood in December, 1847. The author thought there could be no doubt that the greater portion of the water was obtained from the chalk.

He then referred to the fact of the towns of Brighton, Croydon, Deal, Epsom, Ramsgate, and Woolwich, being all supplied with water from the chalk formation. There was an uncertainty, however, of obtaining a good supply from the chalk, as was illustrated in the case of the well sunk at Messrs. Truman's brewery.

ENCOURAGEMENT OF FLORICULTURE AMONG THE OPERATIVE CLASSES.

In these troublous times when strikes and lock-outs jar upon the ear, and are causing want and misery to thousands whose only error has been that they have trusted their enemies,—in these times, I say, it is pleasing to turn aside our regards, and view the working-classes under a different aspect. There is a movement commencing among those classes which does them the highest honour, and which is, I think, calculated to become an inestimable benefit to them. I allude to the growing taste for *floriculture*, which I have reason to believe is gradually, yet extensively, developing itself among the operatives, not only of London, but also of other large provincial populations.

It is most gratifying to find how many families are rendering their humble homes happy and comfortable by this new and permanent source of

pleasure, which can be indulged in with perfect innocence, at very trifling cost, and with the utmost social benefit.

I could say something on this subject of what has come under my own observation, but I prefer transcribing the words of one far better informed. Samuel Broome, the well-known gardener in the Temple, who appears to be the main-spring of this happy movement, writes to me as follows:—

"Having some years' practical experience of the increasing love of floriculture among the industrious working men in this great metropolis, I visit hundreds in the course of the year, sometimes at public meetings called for the purpose of hearing conversation as to the best mode of cultivating their show-flowers; at other times at their private homes to inspect their gardens; and to me they are the happiest hours I enjoy, as they are so united and good tempered one towards the other when conversation is introduced about flowers; but if any other subject is brought under notice, such as politics, strikes against employers, &c., then I find a different spirit exist directly, as there are not two of the same opinion: but quite the reverse on floriculture, for they all feel like brothers, and their innocent rivalry never engenders bad feeling: the one that gets the third prize is as pleased as his neighbour who obtains the first."

Allow me to give a few instances of what has come under my notice with respect to some of their gardens. For some years past Mr. Dale and myself have cultivated chrysanthemums in the two Temple-gardens, very extensively, and generally have been successful in having a good blaze of bloom in November, when our gentlemen very liberally throw open the gardens to the public to inspect them: most seasons they are visited by hundreds of thousands, the majority being the operative class, composed of all trades, and I must confess I rarely have a flower touched by any. They inspect the collection with great interest, and ask all sorts of questions as to the best mode of cultivating them. They say, 'Gardener, give me a slip for a pot to grow in the window.'—'Have you any garden?' I ask.—'No,' they say; 'my back-yard will not grow anything, it only does for the dust-hole.'—'I will give you some plants,' I reply, 'if you will try and grow them in it. Tell me where you live; I will come and look at it.' I get the address, and sure enough when I go, it is like a dust-hole, full of ashes, old rags, and rubbish. I say to them, 'Chrysanthemums will grow here, friend, if you form it into a garden. Trench it up well, put in some manure, and make some walks with some dry ashes, and your yard is converted from a rubbish place into a garden at once.' He has confidence in what I tell him, and goes to work. I then give him plants and directions, and in a few months he comes round and says, 'Gardener, I think I beat you; my plants are better than yours; come and see them.' I go and find it the case. The next neighbour follows his example; and so it passes from one to the other, till at last they find they are numerous enough to form a society to show their productions to the public. The wives begin to find their husbands, instead of going to a public-house after taking their tea, are employed at home among the flowers: she also keeps her house cleaned, for visitors calling to inspect them: the children are clean, and are delighted to see the visitors come to see their father's garden; and this teaches them not to touch the flowers at home, and a growing disposition not to do it when out in other places. I have been hailed in a spirit of joy by scores of the wives for persuading their husbands to grow flowers, it being the means of keeping them at home. As they say, it takes up all their time to look after them, and prevents them from spending many a hard-earned shilling in a beer-house. But I must here state that most of them are hard-working men. I rarely come in company with a lazy man that will grow flowers: the more industrious the man, the better he cultivates his flowers: he being of an active mind, must have something to employ it at all times after leaving work: and what is more innocent than flowers? To see the fine productions they show at their exhibitions, would surprise many good cultivators. I often feel ashamed of mine, after seeing what they have produced in some of the most confined spots.

I must apologise for going so much into detail that I fear I may tire your patience in reading; but every word I state is correct. There have been within these last three years no less than ten of these societies started, consisting of from 100 to 200 members, composed principally of mechanics belonging to different trades, and esta-

published in all parts of London, east, west, north, and south. But, as the old saying is, there is never a good without an evil; and the evil is this.

They have no place to hold their meetings and annual shows in, except at public-houses, and this often keeps them to a late hour from home; whereas, if held at some institution, the business would be done in half the time, and save them many a shilling; as, when they meet at public-houses, they are apt to spend more than does them good, and they get excited. The only remedy to obviate this would be to get every parish round the suburbs to build good-sized rooms in a central part, where they could meet and talk about the flowers, and have a room large enough to exhibit them in afterwards, free of expense, except the gas and firing, and an attendant to keep it clean. I think large rooms might be built very reasonably, with sliding partitions in them for the meetings, and then the whole space thrown open when the exhibition takes place, so that there is plenty of room to see them to advantage: the planer it is built the better, and it might be used for any other parish meeting. I am sure the parish would lose nothing in the end, for it would not be so burdened with winter rates; and we should have hundreds more members to join them, as at present many dislike belonging to our horticultural societies because they are held at public-houses.

Should you be enabled to promote this object among the thousands of mechanics in this large metropolis, you will, I am satisfied, be effecting a great public benefit."

I might weaken rather than strengthen the case were I to add anything to these simple and honest words of Samuel Broome; but I would remark that, although my friend's zeal may be carrying him too far when he permits himself to expect large permanent buildings to be erected in various parts of London for these unpretending flower shows, yet I cannot doubt that there are many gentlemen holding large business premises in and about London who would not be unwilling to allow a portion of those premises to be occasionally applied to so truly useful a purpose. To the leading builders, for example, I would beg to suggest that it might contribute much to restore peace with their men were they to afford this evidence of their sympathy and good-will.

SIDNEY SMIRKE.

ARCHITECTURE AND GEOLOGY.

OXFORD ARCHITECTURAL SOCIETY.

At a meeting held on Wednesday, the 16th inst., Mr. James Parker read a paper on the connection between the study of architecture and geology. He began by referring to the sad state of the buildings in the various parts of the country, and especially in Oxford, arising from error in the choice of stones, and shewing that from early times it was part of the duty of the master of the works not only to decide upon the stone that was to be used, but even to arrange for its conveyance to the spot where it was wanted. He instanced Canterbury Cathedral as an example in the twelfth century, where stone was sent from Normandy, the district only yielding chalk and flint; but he also noticed the numerous churches built of these materials in the neighbourhood. In the fen districts he considered that the fine churches were owing to the facility with which stone was brought down the rivers from the west. He said we were perhaps apt to look too much upon the choice of stone by the Mediaeval architects as a matter of chance; but he thought that it might be shown that far more study was given to the nature of the stone they used than we generally suppose; and that though, as a general rule, the material nearest the spot, or most easily accessible, was used, it was not always so; and that they had rules known to the craft by which they could judge of the value of the stones they found. He then pointed out how, in the true spirit of the Gothic style, the plan and design of the building were adapted to the materials of which it was constructed; and he thought that the marked difference between the buildings before the Conquest and those of subsequent date was not so well described as that between the work of the carpenter and the work of masons. It would be more to the purpose to say that the latter work was that of men who knew how to quarry, and the early work of that of men dependent upon the chance surface stones; and in this way he pointed out how many of the features of a Saxon design seemed to be the result of the use of these small slabs of stone. He referred but slightly to the influence which the stone of Ireland had on the buildings there, as this had been recently treated of in the *Gentleman's Magazine*

and *Archæologia*. He then read numerous extracts from rolls of expenses of quarries in the Middle Ages, especially those of York Minster, which were very perfect. He explained several of the entries which threw light upon the manner of working quarries in those times. He also quoted extensively from the accounts of Merton and Magdalen Colleges, showing whence the stone was derived for the several parts of the buildings, and thought that an exact investigation of the various kinds of stones used, and the way in which they have severally withstood the effects of time, would not only be very interesting, but also profitable. He then went on to show some points of coincidence simply in the study of these two sciences. He laid great stress upon the principles of construction which Dr. Buckland pointed out in the ammonite as being identical with those adopted in Gothic architecture, and explained by several specimens the argument made use of in the *Bridgewater Treatise*, in which the Gothic style is more than once referred to, as affording illustrations of the mechanism of some of the extinct species of animals. He said that, as in the geological specimens, it had been shown that the features which might at first sight be regarded simply as ornamental, and for the purpose of beauty, did in reality contain deep and true principles, which rendered them most applicable to the purpose for which they were intended. So in Gothic architecture many of the features which we are apt to regard only from an architectural point of view, such as the arch and vault, were in reality the natural results of the true application of nature's first principles to obtain a certain given result. And it is from Gothic architecture in these her principles, and not only in her forms, approaching so much more nearly to nature than other styles, that he believed arose the charm which, to the eyes of so many, hangs round a true Gothic edifice. Before concluding, he showed the connection in the very grammars of the two sciences, comparing the primary, secondary, and tertiary, preceded by the igneous to the first, second, and third Pointed, preceded by the Norman, on which the others rested, if indeed it could not be said from which they were developed. He concluded by saying, "In the stone of the quarry, marked by the impressions of living things, if we will read faithfully and carefully, we can trace the history of the earth; so in the stone of the building, marked by the chisel, if we will but care to open the book rightly, we can read the history of our country. English architecture does not present a series of men's fancies, any more than the strata of the earth presents, as was thought some years back, a series of 'Lusus nature.' And so we should study architecture as an historical truth, not as a mere matter of art. We should bring to bear upon it the same research and the same labour as is bestowed on geology, and adopt the same care in arriving at conclusions. Nor do I think we should despise the former, simply because its pages but lay before us the history of scarcely a thousand years, while the latter science opens to our view millions. Both histories deserve study, and both, I think, may advantageously be studied together."

OUR SHOWS.

In these struggling and pushing times we have lost sight of many old observances which were kindly and cheerful in their nature, and were the means of bringing persons more closely into friendly contact. We have too few holidays—too few rests from labour, which can be looked forward to with hopeful pleasure, and, in consequence, sweeten labour.

Ancient ceremonies which have continued in use for many generations are unfashionable and laughed at to a greater extent, in most instances, than is wise. The old picturesque official costumes of officers of justice and corporate authorities are falling into disuse, and it is not unlikely that those peculiar robes which are a means of distinction, and have an impressive effect upon a large and even intelligent part of the community, will, ere long, become amongst the matters of the past. It is said that these robes and decorations are not in the spirit of the age; that people are careless of such matters. It is, however, a fact that, when the Queen goes in state to Parliament, immense multitudes assemble, who evidently enjoy the show. On the last Lord Mayor's Day, although the procession could neither be said to present much of the quaint aspect of the past, nor to be such a spectacle as might be presented in these times, countless thousands thronged the long line of that procession which, for centuries, has in various forms been one of the means of stimulating many to

those exertions which have ensured success in business. The last procession afforded some curious instances of the changes of the times. The dingy scarlet coats of the watermen showed signs of decadence, and ordinary chimney-pot hats were substituted for the picturesque velvet caps: even the beaules had assumed this head covering, which did not at all correspond with the other antique part of their costume.

The Lord Mayor's carriage, rocking and lumbering along, its paint and gilding tarnished and faded, contrasted strangely with elegant modern equipages. The heraldic figures on the banners had lost the antique cut, and, although rudely done, were evidently painted from the knowledge gained at the Zoological Gardens rather than from the heraldic conventionalism of other days. There were other things of singular note, which excited some laughter, and made many say that it is time the Lord Mayor's Show was ended. We differ from that opinion. Like the triumphal processions of the Romans and Athenians, this civic triumph would have its use, provided it was managed in a proper manner. We want holidays. We want shows.

WATER FOR LONDON.

If, as we believe is the case, fifty million gallons of water per day are taken from above Teddington-lock for the supply of certain districts of the metropolis, it is certain that this must materially affect the force of the river. Large as this body of water is, it is trifling compared with the amount of the surface and other drainage which is passed daily into the Thames.

It is stated on good authority that the water supplied for the use of more than two millions and a half of people, horses, cows, street watering, &c. &c., is about one hundred million gallons daily. This large supply will, if the main drainage be efficiently carried out, be taken from the land or "back" water of the river.

Captain Claxton, R.N. estimating the quantity of water in the Thames, from above Putney down to Shadwell or thereabouts, calls the length 14 or 15 miles, and multiplying the feet by 600 for average breadth, and again by 21 feet for average depth, the sum will be about 3,000,000,000 (three thousand millions) of gallons. These figures, if nearly correct, show that about one-thirtieth of the whole water at present in the River Thames will be withdrawn, on an average, each day. This cannot fail to greatly injure the current, and calls for immediate measures to be taken for the purpose of preventing serious mischief, which it would need a large sum to remedy.

During the drought of this summer there was for some time no water passed over the Teddington-lock; and although the heat of the present summer is much above the average, it is certain that, year after year, the land water of the Thames will lessen, and the tide gradually reach a lower level, so that in course of time "Father Thames" himself will be troubled with thirst, and will in various ways appeal to those by whom he has already been so ill-used, after long and faithful service. He will require fresh streams to invigorate him; and at the same time skilful measures must be taken to prevent any useless waste of new supplies. The embankment of the Thames is a matter of immediate necessity. If it is deferred, there will be a mass of accumulations which it will be a costly work to remove.

At the present time, the very imperfect plan in use ofodorizing the sewage, costs 20,000*l.* a year, and the flushing of the sewers costs 20,000*l.* a year more; in six years the cost of this would amount to nearly a quarter of a million sterling, if even it should not be necessary to resort to much more expensive means of odorizing the poisoned water of the Thames. A similar large expense will arise if the embankment be not soon carried out and means are not taken to increase the supply of land water.

If we consider the constant increase of the population, it is evident that before thirty or forty years have expired, if other measures are not used, we must, instead of fifty millions of gallons, have not much less than one hundred millions of gallons of water from above Teddington-lock.

The towns near to and upon the banks of the Thames will also increase in population, and of course more water will be extracted from the river.

Again, when we consider that the population of the metropolis will, at the present rate of increase,

* A list of the chief of these towns and their population is given in the "Memorial of Father Thames," which appeared in an early volume of the *Builder*.

be five millions in about forty years' time, it is evident that the present arrangements will be quite insufficient. Moreover, the increase of sanitary knowledge will not permit the impurities which at present exist. In a recent report on the condition of the water-supply, the amount of impurity was stated as follows:—

	Total Impurity per gallon. Grains, or deg.	Organic Impurity per gallon. Grains, or deg.
Chelsea.....	14.92	0.80
Southwark and Vauxhall	16.64	1.76
Lambeth.....	16.30	1.30
Grand Junction.....	17.32	1.02
West Middlesex.....	16.72	1.48
Other companies:—		
New River.....	17.00	1.00
East London.....	20.00	2.00
Kent.....	20.00	1.30

Although the varieties of water above mentioned are purely in comparison with that of the pump in St. Thomas's-street, mentioned in the same report, which contains a total impurity per gallon of 89.70 grains or deg. and organic matter, 10.40; still, the impurities of the metropolitan water must find a remedy.

The diminution of the water of the Thames requires the most careful consideration. We should be perfectly assured of the extent of the evil, and look forward to the changes that will occur during the next half century. The sources from which pure water can be had for the supply of the rapidly-growing metropolis should be examined; and, if it be found necessary, measures ought to be taken to feed the Thames with water. We have before hinted at the possibility of bringing a water-supply from the Severn! This, and other plans which have been suggested for the improvement of the river and the supply of this vast population with one of the elements of life, should be examined into and considered in that unprejudiced and intelligent manner which the advancement of the present times and the nature of the circumstances require.

This matter is of very great importance; many have schemes on the subject, but very little is really and practically known. It would be most useful to take measures for a systematic and scientific inquiry into the subject. If such a commission were appointed, it should have instructions to look at the matter with a view to meeting future contingencies, and putting to one side old-fashioned ideas, considering that we live in the days of advanced science, railways, and the electric-telegraph; it should devise measures which would be permanently effective, and not suggest plans which might do a little good for a time, but which would soon become a constant source of expense.

WORKS IN IRELAND.

A new Roman Catholic Church is to be built at Tralee, and another is being erected at Killynaue, diocese of Cashel, from designs by Mr. J. J. McCarthy, architect. The front elevation of the latter displays a central and two side gables for the nave and aisles respectively; and in the former is a cingfoil-headed, splayed, moulded, and richly crocketed doorway, with five-light traceried window above; and the latter have smaller doorways of similar character, but ornamental portions omitted, and three-light traceried windows above. A tall spirelet rising from a buttress, and terminated by a metal cross, is introduced in an attached building.

New schools are being erected in connection with Killynaue Cathedral. A new market-house and town-hall are to be built at Navan.

About 11,000*l.* have been already expended on St. John's Roman Catholic Cathedral at Limerick, and much more is required to complete it. The plan is cruciform, with nave and chancel 168 feet by 30 feet; aisles 20 feet in width; transepts 114 feet across; two small chapels at each side of high altar, and two sacristies communicating and displaying with the gable of chancel nine gables on east elevation; a tower and spire adjoining transept, and an entrance porch. The transepts and chancel have each five light, tall, trefoil, lancet-lights: traceried wheel-windows light the chapels, and two-light windows the sacristies and aisles. Externally the building contains many pleasing features, the outline being very much broken, and the tower, with its stage-lights, louvred and traceried heavy windows, embasare parapets, &c., and crocketed spire, will contribute much to the *total ensemble*. Mr. Philip Hardwick, R.A., architect, London, designed the building.

In addition to the works previously mentioned

in the *Builder* with reference to Mr. Pollock's gigantic steadings in county Galway, there have been erected an Elizabethan residence for the proprietor, eight farm-houses, mills, stores, tradesmen's shops, linekilns, stewards' and labourers' cottages, &c., &c., comprising upwards of forty miles of stone walls. Mr. William Maxwell, agricultural engineer, directed the works. The total cubic contents of all the building is 756,224 cubic feet, at an average cost of less than 2*d.* per cubic foot. The standing is lighted with gas by Messrs. Edmundson and Co., of Dublin. The Ecclesiastical Commissioners announce that they are about having extensive works executed at the Church of Alampish, county Sligo, according to plans, &c., by their architect, Mr. Welland. The same body has at present—together with numerous other works—a new church in course of erection at Waterville, county Kerry, and has just completed a tower and spire at the new church of Kenmare, county Kerry. Mr. D. W. Murphy, of Bantry, is the builder.

Mr. Percy is to be the contractor for building the breakwater at Galway harbour, and contemplating the laying down of a line of rail from Ennis direct to that town.

PERNAMBUCO.

Pernambuco Railway.—The works of the second section of the Recife and São Francisco Railway, have been carried on under the direction of the company's engineer, Mr. Ponistone, since February, 1859, in which month the works were taken out of the hands of the contractor, Mr. Furness. It is unfortunate that there should have been misunderstandings between the company's engineer and the contractor, as there are prospects of the lawyers reaping a harvest, several lawsuits being at this time in process between the parties, from which it is not at all likely that the shareholders will derive benefit. The tunnel near Villa da Cabo is the heaviest work on the section, and it seems probable that the accidents which have occurred during the heavy rains in May will cause the completion of the tunnel to be at a later period than is desirable. Allowances must be made in every calculation respecting works carried out in the Brazil, for the contingencies which will arise in consequence of scarcity of labour and material, and the neighbourhood of Pernambuco seems to be prolific in such contingencies. The workshops belonging to the railway company, at Villa da Cabo, are very complete, especially in the smiths' and turning shops, and saw-mills.

Pernambuco Gas Works.—These works have been in operation since the month of May, 1859, and the demand for gas is steadily increasing. The city is lighted by one thousand street lamps, and thirty miles of mains have been laid down, varying from 18 inches to 3 inches in diameter.

Pernambuco Baths.—This establishment, with separate hot and cold water baths, reading-rooms, &c., all lighted with gas, and convenient in arrangement, is meeting with the success it deserves, and the proprietors contemplate the erection of a large lavatory for washing, drying, and ironing clothes by steam and machinery. This will supply a want which is greatly felt in the city and its neighbourhood.

AMERICAN AND CANADIAN NOTES.

Montreal.—The *Daily Wisconsin* says that the Victoria bridge seems "the synonyme of permanence and substantiality, but has no beauty save that of massive strength, not often appreciated in America." So it would appear, judging from wholesale fatal accidents caused by viaducts, bridges, &c. falling! The first suggestion of a bridge across the St. Lawrence originated thirteen years ago with Mr. John Young, a capitalist of Montreal. Engineers reported favourably, notwithstanding the great width of the river,—two miles; and in 1854 the work was actually commenced. Robert Stephenson is believed to have been paid 225,000 dollars for the plans. American engineers say that "the English, in the matter of tubular bridges, only know how to build them, and to squander money on them." "Stephenson," they say, "scouted the Niagara Suspension-bridge, but Roebbing built it for 400,000 dollars." The Victoria has cost nearly 7,500,000 dollars. The spans are 250 feet each; but American engineers say that by making them 300 feet, the stability would not be impaired, and a saving of 1,500,000 dollars be effected. Our readers are already aware of the particulars of construction. It is in contemplation to build a footway on the outside for pedestrians. The

Grand Trunk railway is said to be in every respect the noblest railway in America. Every thing about it is said to be "British and solid." The embankments and bridges substantial, the culverts wide, the station buildings neat and commodious. The telegraph follows the line everywhere.

Brooklyn.—The new Academy of Music is about being erected in Montague-street, near Court, and will cost 150,000 dollars, the whole of which in Capital Stock has been subscribed.

Toronto.—The new University building is the finest in the country, except the Capitol at Washington. It is in the Medieval style, with a frontage of 400 feet, a right wing 285 feet, and a left wing 273 feet. The towers are 110 feet in height, and the pinnacle 165 feet, about ground level. Externally it is built of fine grey stone, mostly from Cleveland, Ohio; and the dressings, &c. are of Caen stone. The roof is covered with Canada slate, and in the fashion. Internally the building contains a main vestibule for entrance, promenades, &c.; a convocation hall in right wing, elaborately decorated with traceries and carvings by a Swiss artist, and floor inlaid with encaustic tiles from Shropshire (we presume Minton's); a senate chamber for meetings of the Faculty, with magnificent stone fire-places, and stately carved mantelpieces; a public and a student's reading-room; a library finished in white oak; a museum of natural history, decorated with black walnut carvings; a surgery; a laboratory, finished with blue and gold in antique style; lecture-halls, recitation-rooms, an immense dining-hall, with culinary offices, &c. below; students' quarters, suite of apartments for Dean of the University, &c. The grounds contain about twenty acres, and there is a botanical garden, and an observatory, with mounted telescope attached. The cost is said to have been 500,000 dollars.

LIVERPOOL ARCHITECTURAL SOCIETY.

At the fortnightly meeting of this society, on Wednesday, 16th, Mr. Horner (president) in the chair, announced that the prize for the best set of sketches of real objects had been awarded to the author of the set signed "Palman qui meruit ferat." Mr. Frank Howard exhibited the drawings of a design for a stained-glass window, representing the Transfiguration, with three of the apostles beneath, intended to be erected in a church near Ballinac. Mr. Howard also read a paper, "On Education in Art." He endeavoured to show that the mere placing of works of art before the artist, amateur, or the public, would not educate them. They would have to learn or to be taught what constituted the merits of works of art, and then to seek for their merits in whatever might be placed before them, or to have those merits pointed out and explained to them. The right of the amateur to independent criticism would be correlative only with his education in art. During the evening Mr. Pictou alluded to a visit he had recently made to Lichfield Cathedral, and adverted to the practice of whitewashing ancient stonework in ecclesiastical structures. A discussion followed, in which the chairman and Mr. J. Hay took part.

CHURCH-BUILDING NEWS.

Rochester and Chatham.—The new church of St. Peter, Troy-town, recently consecrated, has a site hemmed in by houses, chiefly of an inferior character. The architect has consequently devoted his attention chiefly to the interior. The plan consists of a nave and chancel, terminated at the east end by a multangular apse; a western vestibule, giving access by spacious doors to all parts of the church; a fourth aisle, extending westward to the chancel; and a children's aisle, continuous with the latter, together with a vestry and entrance filling up the south-east angle. The length of the nave and chancel from east to west is 90 feet, and the width 30 feet; a flight of seven steps divides them, there being no chancel arch, and the roofing is carried at one elevation throughout. The height of the nave walls is 42 feet, and to the ridge of the roof from the floor 64 feet. The south aisle is 24 feet wide, and is divided from the nave by three aisles, each of 20 feet span, supported by round stone pillars with bellily foliated capitals. The roof of the aisle is framed after the manner of groins, being arched both ways. The fall of the ground has been utilized internally, giving greater elevation to the chancel and children's aisle, which are entered at a level from the vestry door. A gallery has been erected at the western end of the nave. The architectural decoration of the interior is chiefly confined to combinations of coloured

bricks and tiles, which have been freely used instead of stone-work, but also enriched by carving on the capitals of the pillars and the corbels, all of which has been executed by Mr. W. Farmer, of London. The general effect is also enhanced by stained-glass windows on the apse and at the western end, which have been executed by Mr. Hughes, of London. The seats are all open, and the church is capable of accommodating 592 adults on the ground-floor, 92 in the gallery, and 139 children at the eastern end, making a total of 823 seats. The church is built of rag-stone, coursed and dressed with white and red bricks. As regards the architectural character of the church, it cannot be said to belong exactly to any of the usually recognized periods of Gothic architecture, as seen in the old buildings in this country: it is nevertheless founded on that of the thirteenth century. The total cost of the building, inclusive of extra foundations, has been about 4,500*l*. The architect is Mr. E. Christian, of London; and the builder Mr. A. Stump, of Brompton.

Bristol.—Mr. S. W. Lucas, of Birmingham, has offered the sum of 500*l*., provided nine other gentlemen will give a similar sum, towards the restoration of Saint Mary Redcliff Church. One gentleman has offered a second 500*l*., and Mr. Churchwarden Powell has stated that he will give 100*l*. per annum for five years.

Byton.—The church of the parish of Byton, near Leominster, which was burnt down about two years ago, has been rebuilt, says the *Hereford Times*, under the direction of Mr. T. Nicholson, diocesan architect, by Mr. T. Bannister, of Hereford. The new edifice, which is in the Early English style, consists of a nave, chancel, and south porch. The nave has a double window at the east end, divided by a buttress; four single lancets at the sides; and a transeptal arrangement at the east end, pierced with two light windows. Broseley tiles have been used for the external coverings, and the floor is laid with a pattern of Godwin's rustic tiles.

St. David's (Brecon).—The new parish church of St. David's has been opened. The edifice is in the Gothic style of architecture of the thirteenth century. It consists of a nave, chancel, and tower at the west end. The walls are built of stone from the district, finished with Bath stone dressings to doors, windows, &c. The extreme dimensions of the interior are about 90 feet in length by 25 feet in width. There are about 500 sittings, a considerable portion free. The floor of chancel, aisles of nave, &c., are laid with tiles of an enriched pattern, from Mr. Godwin's manufactory at Lurgardine, near Hereford. The windows to chancel, comprising an east window of three lights, with enriched tracery to the head, and two smaller side windows, are filled with stained glass. The larger or east window has the leading events connected with our Saviour, viz., the birth, crucifixion, and resurrection. These were executed at the manufactory of Messrs. Clayton & Bell, London. The remaining windows are filled with Hartley's patent glass. The cost of the church exceeds 1,300*l*. The building was erected from the designs and under the superintendence of Mr. John Clayton, architect, by Messrs. Williams, the contractors.

Hunslet.—The foundation-stone of a Roman Catholic Chapel, to be dedicated by the name of St. Joseph, has been laid at Hunslet. A Roman Catholic mission is said to have been first established in Hunslet about five years ago, and now there are, it is alleged, about 1,000 Roman Catholics there. The chapel, which is to be erected on a plot of land near the Leeds and Wakefield road, is intended to accommodate 560 persons, and will be in the Gothic style of architecture, and constructed of ornamental bricks, with terra-cotta dressings. Messrs. John Child & Son, of Leeds, are the architects, and the edifice, including the price of the land, will cost about 1,500*l*. Messrs. Richardson, Moses, & Greenwood are the contractors for the masonry, brickwork, &c.; and Mr. Branton for the plastering. It is intended to raise money to build a school and residence for the priest.

Sheffield.—St. Mark's Church, Broomhall district, has been opened. This is an iron edifice, erected by Dr. Sale. It has cost about 1,400*l*., exclusive of the ground, fences, &c. Mr. Hemmings, of London, was the contractor. The length is 90 feet, and breadth 50 feet, with side aisles; the fittings being of the ordinary kind, and the walls being covered with painted canvas. There are seats to accommodate 625 persons.

Lanark.—The new Roman Catholic Chapel, recently erected at Lanark, and consecrated on the 10th inst., is in the Early Decorated style, and consists of nave, aisles, chancel, mortuary chapel, and tower, with attached sacristy and

manse. The edifice is about 112 feet long by 52. The carving and decoration, as well as the numerous statues in the nave, were executed by Messrs. Lane & Lewis, of Birmingham, from designs by Mr. G. Goldie, the architect of the building. Above the chancel-arch there is a large fresco of the "Last Judgment," painted by Mr. Henry E. Doyle, from whose designs all the coloured decorations are carried out by Mr. Early, of Dublin. Amongst these the ceiling of the chancel is the chief. Most of the windows are filled in with stained glass by Mr. Wales, of Newcastle, and Mr. Ballantine, of Edinburgh. The site selected for the chapel is one overlooking Lanark and the Falls of Clyde. The whole expense of the building has been borne by Mr. Monteith, of Carstairs.

SCHOOL-BUILDING NEWS.

Llanarth (Cardiganshire).—The contract for the new schools here has been taken by Messrs. Griffith & Thomas, of Aberaywn, and the works are to be completed forthwith. The Committee of Council and National Society are liberal donors to the work. The buildings comprise a school-room, 60 feet by 18 feet; lobbies, offices, and master's residence complete. The whole will be built of local stone, with red brick bands, Bath stone dressings, &c. The architect is Mr. Withers, of London.

Guernsey.—The school adjoining the Catholic Church is being built. The walls are completed, and the roof is being covered in. The architects are Messrs. Hadfield & Co. The cost is 300*l*. The dimensions are 30 feet by 20 feet. The style is Gothic, with Caen stone dressings to the windows, executed, with those to the door, by local masons. There are three windows and one door: one window in particular is a fine one, with foils, &c. The edifice is plain, but neat.

THE ARCHITECTURAL MUSEUM.

The following communication has been addressed to the committee of the Architectural Museum:—

"Gentlemen,—There can be but little doubt that the general subject of architecture is increasing in interest with the public, who, however, although they hear much discussion on the different styles and their varieties, know little about them. Probably they would wish to know more. Under the assumption that the society would desire to assist them to this knowledge as much as possible, I venture to submit to you the following suggestion:—

That, as regards the architectural section of the Museum at South Kensington, one method might be to place a single screen down the centre of the whole length of that part of the above section which occupies the west gallery; the present cases occupying the centre being removed temporarily to the sides. The screen to be hung on both sides with groups, chronologically arranged, of engravings, drawings, and photographs, with descriptions, and references to cards, &c., so as to form an epitome illustrative of the different styles of architecture of various countries and periods, ancient and modern.

In case of your entertaining this idea, I have ascertained that the Department of Science and Art would be ready to assist with such stores of illustration as they possess.

I beg to add that I am in no way officially connected with the Department, but venture to submit the above solely as one of the public.

JOHN BELL."

SOUTHWARK WATERWORKS.

SIR,—I beg to state, for your information, that as I was passing the reservoir of the Southwark and Vauxhall Waterworks, in Battersea-fields, one day last week, I saw, to my great surprise, what appeared to me a supply of water gushing from the Thames, at that part, as it was just high water, and the colour of the water coming in was exactly the same as that in the river outside, and a little below the level of the river. Now, if there is an outlet pipe from the reservoir to the river at low water, that same pipe can be used as an inlet pipe at high water, and thereby the reservoirs can be filled with impure water, which, however filtered from all organic matter, cannot be deprived of its liquid poison any more than you can turn vinegar into spring water by filtration: and, moreover, the Act of Parliament compels them to take the water from a much higher source, so that every communication with the river at Battersea ought to be completely prevented, so as to preclude the possi-

bility of their taking any water from that part of the river; as, if that is not done, there will always be a suspicion that, in order to save expense or trouble, the public, in the parts which this company supplies, may occasionally be treated with a very impure supply of half-and-half, if the Thames at Hampton should be rather low or deficient in water, and thereby render the Act of Parliament null and void, and again have the health of the district placed in jeopardy. AN OBSERVER.

EXCESS OF QUANTITIES: RESPONSIBILITY OF ARCHITECT.

MR. H. P. BOLT, builder, of Newport, says the *Hereford Times*, has just been awarded the sum of 199*l*. 15*s*. 8*d*. expenses, for excess of quantities furnished by Mr. R. G. Thomas, architect of the new English Baptist Chapel, Commercial-street, of which Mr. Bolt was the builder. Prior to the commencement of the contract, Mr. Bolt was furnished with a bill of quantities by Mr. Thomas; and, as we learned from the evidence given in the action thereon at the last Monmouth assizes, the architect assured the builder, on his signing the contract, that the bill of quantities furnished was quite correct. As the work proceeded, however, Mr. Bolt found, to his astonishment, that the quantities furnished were anything but correct. Not being able, under his contract, to sue the chapel committee, he had no alternative but to apply to the architect for payment of excess on incorrect quantities. Being unsuccessful in his application, he thereupon sued the architect, and obtained a verdict before Mr. Justice Byles, at the Monmouth assizes, adjudging the architect liable to the builder for excess of quantities; such excess to be referred to arbitration at Gloucester.

AN ARCHITECTURAL RIFLE CORPS.

SIR,—In answer to the letter from your correspondent, "A. W.," as to the formation of an architectural corps, we take the liberty of enclosing the accompanying letter to show that, so long ago as June last, steps were taken to enable members of the profession to form, at least, a nucleus for a corps.

We beg to add that since then the Highgate corps, including several members of the profession, has been enrolled as the 14th Middlesex, and is now in a state of great proficiency. The first company is nearly full, but there is ample room for a second, third, or any further number of companies, which may be formed of architects. Members of the profession, desiring any further information, may obtain it by application to Josiah Wilkison, esq., commanding officer, 2, Paper-buildings, Temple; R. Clarke, esq., honorary secretary, 14th Middlesex R.C., Albany-road, Highgate-rise; or ourselves, who acted as honorary secretaries at the meetings of the 30th June and 5th July.—We are, &c.,

JAS. S. DONALDSON, M.L.B.A.

MATT. WYATT.

Bolton-gardens, Russell-square.

THE STRIKE.

THE following propositions have been forwarded to an influential member of the Masters' Association by the Masons' Committee, viz.:—

"Masons' Committee-rooms, Sun Inn, Masons-street, Lambeth, Nov. 11, 1859.

To the Master Builders' Association of London.

Gentlemen, We have the pleasure of forwarding you propositions for the final adjustment of the existing dispute:—

1. The masons are prepared to resume work on the same terms as when 'locked out' on August 6.
2. The masters to dispense with the 'declaration.'
3. The masons are willing to resume work with those of their own trade or others who may have accepted the 'declaration.'

4. The masons will work in strict conformity with the law of the land.

5. The masons of London are willing to enter into a discussion of their by-laws, to be represented by six masons with six employers, and should the masters and the operatives not agree to the satisfaction of both parties upon any point at issue, the matter to be decided by a chairman selected from the following gentlemen: Sir Charles Barry, Mr. P. C. Hardwick, Mr. Digby Wyatt, Mr. J. Vallamy, Mr. G. G. Scott, and Mr. W. Butterfield.

* "At a meeting held on Thursday, the 30th June, 1859, at Bolton gardens, of several junior members of the architectural profession, it appeared to those present desirable that junior members of the profession should become members of some rifle corps, and they were informed that a favourable opportunity presented itself of joining the Highgate Volunteer Rifle Corps, which was now in course of formation, and numbered about fifty members.

A meeting was accordingly held on Friday, the 8th of July, to consider further steps, and to receive the names of such junior members of the profession as were disposed to join that corps."

which this paper gives the results was suggested by her Majesty to Professor Graham, the Master of the Mint, and by him was referred to the authors of the tract for experimental investigation, and the result is that sulphate of ammonia and tungstate of soda (both of which the discoverers have patented for such purposes) are the best agents for rendering fabrics non-inflammable. To the tract is appended a specimen of muslin prepared with sulphate of ammonia, and we find, upon trial, that it will not flame, and scarcely even glows, although of course the fire destroys the fabric. Manufacturers, laundresses, and housewives ought to see to this without delay, especially if crinoline continues to spread the ladies' "fabrics" out to their present vast dimensions any longer.

Miscellaneous.

CRYSTAL PALACE FOR AMSTERDAM.—The Amsterdam Crystal Palace is to be completed and opened in the year 1861. It will be 400 feet in length by 200 feet in width, and the central dome will be 200 feet in height, at the junction of which will be a transept and the nave of the edifice. The structure is to be of iron and glass; but, as Holland is not famous for iron, it will be supplied by England.

PROPOSED FORTIFICATION OF BERWICK.—Flagstaff Mount, a portion of the old and neglected walls of Berwick, commanding the mouth of the Tweed, as well as the entire range of the bay outside, is to be ornamented by a battery of four 68-pounder guns. Mr. Coomber, C.E., of the Fortification Department of the Board of Ordnance at Edinburgh, has visited Berwick for the purpose of inspecting the site. The plans are not yet fully completed; but it is estimated the cost of constructing the battery will be from 1,500l. to 2,000l. At Holy Island, we understand, it is proposed to construct a battery of three guns.

THE SOUTHERN MAIN DRAINAGE.—STRIKE OF WORKMEN.—An unexpected interruption to the progress of the southern main-drainage works took place on Tuesday morning, by a number of workmen engaged in the operations at Deptford leaving their employment. It appears that on Monday a demand was made, on the part of between twenty and thirty of the men engaged in the mining operations, for the working day to be limited to the nine-hours movement, which was at once refused by Mr. Yeomans, the contractor. The men thereupon left the works, and, fearing some disturbance might be occasioned, Mr. Inspector Selden, of the R. division, was communicated with. Nothing, however, has occurred during the night to occasion the interference of the police.

ACCIDENTS TO PERSON AND PROPERTY.—A bricklayer's assistant was engaged in a sewer 220 feet deep, in course of erection, under the authority of the Board of Health, in West Ham Lane, Stratford, when a large quantity of earth buried him alive. Two other men were injured; and, although an instant alarm was given, the deceased was not dug out for an hour, when all efforts to restore animation were of no avail. A coroner's jury returned a verdict of accidental death.—The Dutwell-bridge, Burwash, has fallen in. Mr. Fleming, high constable of the Hundred of Hawkesborough, immediately set men to work to remove the debris to prevent the accumulation of water, and, naturally judging that if the foundation had not been bad the bridge would not have fallen in, began to pull down the side walls. This has not met with general approbation. At a meeting held at the Bear Inn, it was resolved to build a temporary wooden bridge at a cost of from 20l. to 25l., and proceed to the building in the spring.—A destructive accident has occurred at the extensive ironworks of Messrs. Gibbs & Brothers, Deepfields, near Wolverhampton, by which a large iron-rolling mill was levelled with the ground, one man killed, and several others severely injured. Whilst some alteration was being made in the rollers, suddenly the large driving-wheel, some tons in weight, broke into fragments, which were propelled on all sides with great force. Several of the iron pillars that supported the roof, the principal iron beams, and several of the lesser ones were broken, and the entire roof shortly afterwards came down. The damage is estimated at about 3,000l.—A high wall, which was in course of construction with a view to the accommodation of additional machinery at the works of Messrs. John Leeming & Co., worsted spinners, Water-street, Bridge-street, Manchester, has fallen. The only serious injuries were received by two labourers in the employ of the contractor.

PIPE JOINTS.—Mr. M. Memmons has patented some improvements in articulated joints for water, gas, and steam pipes, the object of which appears to be the curving of the pipes to any required degree by the use of pipes of one pattern. The joint may be described as a ball and socket joint, but the socket is only a partial one, being completed after the pipe is in position by running in a plectet of lead or other metal.

TAKE CARE OF YOUR POCKETS.—Sir: Will you kindly assist in warning architects and others from being imposed upon by a person of the name of "Jones," a Welshman, calling himself an architectural assistant, who has been levying contributions upon several members of the profession, by stating that, through my recommendation, he has obtained an engagement with an architect in the country, but, from want of sufficient money to pay his railway-fare, he is unable to enter into the engagement at the time fixed upon. By an apparently intimate knowledge of the names and professional occupations of many architects in Wales and in the West of England counties, he is enabled to make a very false but very plausible tale, and to succeed, in many instances, in obtaining as a loan the amount required to make up the pretended deficiency.—SILVESTER C. CAPES, Hon. Registrar, Architectural Association.

NEW LIGHT.—The "Life Light," as exhibited by the Hon. Major Fitzmaurice, at Cherbourg, during the visit of the Queen to the French Emperor, has been shown from under the columns of the National Gallery, between seven and nine p.m., before many members of the scientific world and a vast assemblage of the public. Notwithstanding the brilliancy of a full moon, Trafalgar-square, Whitehall, and the adjacent streets and objects, both animate and inanimate, were flooded with the light. A curious effect was produced by directing a stream of light upon the equestrian statue of George IV., erected on the left side of the square, the result being a well-defined shadow on the front of Morley's Hotel. Lord Nelson also, on his elevated resting-place, was clearly represented to the crowd. What has become of the electric light?

MANCHESTER ACADEMY OF FINE ARTS.—A meeting of Manchester artists took place at the Royal Institution, Mosley-street, on Tuesday evening before last, in order to hear the official announcement of the formation of an Academy of Fine Arts for this city. Mr. J. A. Hammersley, F.S.A., head master of the School of Art, presided. About fifty gentlemen artists were present. Mr. Hammersley addressed the meeting, and afterwards a conversation ensued respecting the terms of admission for architects.—Mr. E. Salomons thought the rule indefinite. The rules require that each academician or associate shall present to the Academy a work of his own; and Mr. Salomons asked whether, as an architect could not present a real result of his professional skill (a building), it would be required that any drawing should be the actual production of the candidate. It was admitted that a man might be a skilful architect without being a painter or draughtsman; but the feeling was that whatever was presented by an architect should be the work of his own hand, even if it were but a pen-and-ink sketch.—The matter was left for further consideration by the officers, with a view to verbal modification of one of the rules.—The Chairman said that there would be no difficulty in the matter; and it was strongly desired that the Academy should include architects as well as sculptors.

NORFOLK AND NORWICH ARCHEOLOGICAL SOCIETY.—The quarterly meeting of the members of this society was held on Wednesday in last week, at the Guildhall, Norwich. Mr. Cartbew read a short paper, descriptive of shields exhibited, which he stated had been attached to the panelling in the hall, and were no doubt those mentioned by Blomfield. The Rev. C. R. Manning read a paper on "Lost Brasses," first glancing at the subject generally, the extent of which might be judged of from the fact that the number of brasses once existing in this country is estimated at 50,000, and then noticing specially the known instances of lost brasses in the county of Norfolk. The Rev. John Gunn then read a paper on the Hoxne Brick pits, in the midst of which flint celts have been found in connection with extinct animals, to the great perplexity of geologists, such a circumstance being inconsistent with their theoretical notions, and hence repugnant to their feelings, and very unwillingly admitted by some, while still explained away or doubted by others. Members of the society under notice expressed their opinion that the subject scarcely came within their province.

AN ARCHITECTURAL MAYOR.—Mr. E. F. Law, architect, was unanimously elected mayor of Northampton on the 9th instant. Mr. Law was already in the commission of the peace for the borough.

GLASGOW CATHEDRAL.—The great western window of the Glasgow Cathedral, which has been completed at Munich, as the contribution of Messrs. Baird, of Gartsherrie, has been inaugurated.—The friends of the late Professor Nichol, the astronomer, propose to erect a window in his memory in the crypt of the cathedral.

FIRE AT DAVENTRY CHURCH.—The organ-tuner, while engaged with a candle inside the organ, dropped the light beyond reach, and left it burning to go for assistance. On his return the organ was in a blaze, and the instrument has been completely destroyed, but the fire was prevented from doing much other damage. The building and organ were insured for 1,000l. The instrument was built by Hill, and enlarged by Bishop.

ROYAL ACADEMY.—Mr. D. J. Phillips, painter, and Mr. Sydney Smirke, architect, have been elected into the seats of Mr. Leslie and Sir Robert Smirke. This choice will give general satisfaction. Two vacancies have since been created, by the death of Mr. James Ward, the oldest of the academicians, and, more recently, of Mr. Frank Stone. The premature death of this gentleman will be heard of with great regret by a large number of persons.

DISCOVERY OF A RARE BOOK.—A few days ago, as some workmen were pulling down an old building formerly used as a glebe-house, and lately in the occupation of Mr. William Eagles, of Willscott, Oxon, they came upon a closet or oratory, which had been bricked up, and the wall wainscotted to accord with the panelling of the room of which it formed a part. This closet contained about fifty volumes of books, probably concealed therein during the early days of the Reformation, to evade the penalties attendant on the possession of prohibited books, and consisted chiefly of works of controversial theology, but including a copy of the first edition of the complete English Bible, printed in 1535, commonly called "Coverdale's Bible," which was in perfect condition, with the leaves at the beginning and end uninjured. Another of the books in the small collection discovered at Willscott is titled "Admonition to the Faithful in England," by John Knox, bearing the date 1554, the year in which Mary succeeded to the crown.

TENDERS

For house at Grafton, near Petworth, Sussex, for Mr. J. P. Murreough; Mr. Francis H. Fowler, architect. Quantities by Mr. Smithers:—

Blaker	£2,100 0 0
Johnson	2,017 0 0
Ellis	1,816 0 0
Porter	1,799 0 0
Greenwood	1,790 0 0
Low	1,727 0 0
Carter	1,575 0 0
Littfield (accepted)	1,335 0 0
Donely	1,280 0 0

For new gun-factory at Wapping, for Messrs. Barnett & Sons. Mr. Francis G. Lee, architect. Quantities furnished by Mr. Arthur E. Robinson:—

Rider	£1,060 0 0
Ashby & Homer	1,925 0 0
R. Ashby & Sons (accepted)	1,908 0 0

For re-building No. 44, Blue Anchor-alley, Dunblow, for Mr. Modlin. Mr. F. G. Widdows, architect:—

Roberts	£380 0 0
Heath	549 0 0
Sargeant	547 0 0
Glenn	510 0 0
Child, Son, & Martin	499 0 0
Raby	497 0 0
When	475 0 0

For additions and alterations and a new conservatory at Clewer-park, near Windsor, for Daniel Gonch, Esq.: Mr. Edward Roberts, architect. Quantities supplied:—

	Conserv.	House.	Total.
Myers	£490 0 0	£1,197 0 0	£1,687 0 0
Dove, Brothers	390 0 0	1,055 0 0	1,445 0 0
T'Anson	450 0 0	985 0 0	1,435 0 0
Cooper (Windsor) .....	.....	.....	1,392 0 0
Holland & Hannan (accepted) .....	.....	.....	1,248 0 0

TO CORRESPONDENTS.

H. de M.—P. C.—O. R. A.—J. H. Jun.—J. D.—H. W. H.—F. R.—J. S. J. R. S. S.—A. Z.—A. F. (Communication is ordered by charge upon the amount expended, sometimes in the mean of the tenders.)—Other correspondents must enclose in full next week.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c. should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

The Builder.

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Progress of Educational Art.

E Englishmen, as a rule, buy all our experience in a dear market: we are as a people decidedly gullible. In political relations, in arts, in sciences, and in business, we only begin to be wide-awake when we are smarting under the consciousness of having been taken in. It is only now, when our national debt has been increased, and is become a more galling burden than before, that we ask ourselves,—"What is the visible advantage we have derived from our Crimean experience, where our blood was poured on the earth as water, and our treasure was spent as though its expenditure were a gratification?" In art and in taste we begin to feel our deficiency, but only after we have peopled our cities with grotesque and costly bronze statues, when we have made a curiosity-shop of our National Gallery, and when we have to import men from the Continent to supply the art element to our manufactures which makes them valuable or passable. We, as critics, speak not without book,—Julien, to design carpets at Halifax; Vechte, at Hunt and Roskell's, to design our race-cups, and plate, and national medallions; whilst the more expensive of our paper-hangings, and carpets, and curtains, and hearth-rugs, show unmistakeable evidence of a French influence. The majority of English people still dine from the willow-pattern plate, borrowed from our artistic and civilized friends—the Chinese. You shall look into the print-shop windows in London, and observe the artists' names who have produced the lithographs and prints; and, though the expensive works shall be those of Englishmen, the cheaper ones, and those that are bought for their prettiness, will be the work of Frenchmen and Germans. But although in so many points we are lamentably deficient,—although in the mass of our manufactures we are of ourselves tasteless,—there are some brilliant exceptions which make our cry of penitence and humiliation a little less intense, a little less agonising. And these exceptions illustrate a principle which we have always advocated—that of unshackled responsibilities and private enterprise. In architecture, we are much inclined to say, we stand at the head of the world; and Minton has no rival. At our water-colour paintings, the people of the earth look with wonder, and our ornamental metal-work is not surpassed. If we ask the reason, and begin with architecture, we shall find that when an English architect is chosen to build a cathedral or a town-hall for the people of the Continent—as at Hamburg and Lille—he is a man who is self-made, and, as far as Government is concerned, has not once been patronized. Minton was a private individual, such as, we are proud to believe, only this age and this country could have produced. We had our grand cathedrals, with their unlimited revenues, kept, in an intensely respectable manner, as the breeding-grounds of spiders and the fattening stalls of canons, until a humble individual, a Dissenting preacher, started up, and proved the possibility of teaching thousands collectively; when, behold, the ponderous doors of St. Paul's and Westminster Abbey are

opened, and our other cathedrals are following in the wake, taking the steps and the initiative pointed out to them by the Dissenting preacher aforesaid.

But we began by saying that, as Englishmen, we buy our experience in a dear market. As a recompense for this national characteristic, we generally obtain a good article for our money; and, by the law of compensation, we know how to make use of it when once we have obtained the experience.

We have been led into this train of thought by a contemplation of the very extraordinary change that is now going on in matters of taste. There never yet was a period in the world's history, of which we have any record, during which such a revolution in art was brought about as is now occurring steadily and quietly in the art of England. It was but a few years ago when Napoleon called us a "nation of shopkeepers," and the self-consciousness we are possessed of made it anything but a pleasant remark to us. But the tables are turning, and this year we had to record the mission of a gentleman from the French metropolis bent on the errand of discovering by what means art education in this country is rapidly becoming general and self-supporting. The tortoise is winning the race, whilst the hare has been good-humouredly regarding it from an eminence in the course that was once but is now no longer a-head. Not long since we had to look for our art applied to manufactures to foreign designers, and the vestiges of this system remain in the instances before quoted; but our efforts to remedy this have been so successful, the substratum we have laid and the superstructure we are raising are both so satisfactory, the seeds we are sowing are so fertile and the fruit so promising, that our artistic neighbours have sent to examine, and analyze, and observe, and take a lesson.

If we are to be successful in this world we are born into, our experience has taught us that we must cultivate and refine the senses we are endowed with, and develop the powers that are latent within us. These senses and these powers apply to different subjects, and will be eventually exercised in various channels. But, for all ultimate success, we require a similar primary training and discipline; and, when this has been acquired, and a mental force thus generated, we direct our further exercise and efforts to those subjects and in those channels for which each individual is specially fitted. In other words, we first learn a common language, which enables us, as gregarious animals, to have communication with each other and exchange our thoughts on equal terms; and then we study some special subject which enables us to minister to each other's wants. We first learn to work, and then we divide the labour that has to be done. In the work we have to do in the world we find it necessary to become tolerably well acquainted with Numbers, Proportion, Action, Form, and Colour. Everything we engage in will require the exercise of our senses and mind upon it, and excellence in our work will depend upon our thorough comprehension of the relation these five influences have upon and bear towards the work to be done. These influences may bear upon a subject separately, as they are, or in a modified manner; or two, or three, or all may be associated; and our proper and accurate understanding of a subject will be in the power we have of bringing our mind and senses to act upon it, and seeing and comprehending the relation of these five elementary influences on the subject or object to be considered. We have long realized this and allowed it, and in education we partially practise it. Thus in our schools we teach arithmetic, to give us notions of numbers and proportion, of positive truths and comparisons. We are taught to read, that we may become acquainted with actions and ideas, and words and thoughts which express them. We are taught to write, which is an exercise of our hand and sight in form and proportion, that we may express our ideas to others, and record actions and retain thoughts which are fleeting. All other developments of our powers which are higher in the scale of education have similar aims in a more exalted manner and with regard to higher subjects; and a man is possessed of a greater or lesser amount of edu-

cation according to the amount of training he has had, and the power he has acquired of seeing the relation of the elementary influences before-mentioned, and exercising his mind with reference to them. Thus a professional man should be well acquainted with the circumstances and conditions under which these influences will be associated, and in what manner; whilst those who work under him may, perhaps, only be required to be thoroughly conversant with one of them. We will take the case of an Architect. If he be worthy of the name, he should be able to produce a work in which Form, Proportion, and Colour are associated, with a due regard to their importance and subordination; whilst the Mason and the Carpenter will only have to be well acquainted with the Forms they have to make, and the Painters with the Colours they have to lay on.

This is an artistic instance. We might quote others in which a similar law prevails with regard to subjects that are not commonly deemed artistic. It must be understood, we are not arguing that these are the only influences, the proper appreciation of which is education, but that in five words they express the most general and the most particular, the highest and the lowest kinds of education. Now the point we are coming to is this. In our education we have not hitherto thoroughly appreciated what has been said. We have taught children to understand and express a good deal of Numbers, Proportion, and Action, but we have neglected the other two, Form and Colour. The one, Form, has been practised in learning to write, and the mistake we have made is that, having spent a certain amount of time in acquiring a power of making straight lines and curves for the purpose of writing, we have not continued this same power to a different application, that of imitating, by the same means, forms which occur in nature, and of which we very frequently require a representation. It may not have occurred to most men that, when they have learnt to write, they are possessed of a power by which, properly applied, every form in nature or art may be reproduced. This is not all. It has been proved, beyond all doubt, that if, of a given time spent in learning to write, half of it were devoted to learning drawing, people would write better, and the power of drawing, at all times pleasant, and often very useful, would be a clear gain. This is no theoretical statement. A meeting of schoolmasters was held at Marlborough House, and the sense of the meeting was taken on the point. The verdict of practical men showed what experience had proved to be the case, viz., writing and drawing are both to be acquired by every child in the time hitherto spent upon writing alone, and the writing will be better.

From the time this point was settled, there has been such an increase in the numbers of those who are taught to draw, that the radical improvement in matters of taste, before referred to, no longer remains a mystery. When people know a beautiful object from an ugly one, they know it increases their happiness to have the former, and the latter disappears in the usual manner: it does not pay, and therefore must be put an end to.

But in proportion to those who may be taught to draw, those that are taught are few indeed. Even in large cities it is considered a grand triumph if one per cent. of the population is taught: this leaves the mass of the people untaught.

Yet it is gratifying to us to see how large and important institutions are recognizing the principles we have advocated with regard to the teaching of drawing in Form and Colour. It is impossible that, when drawing is now becoming a part of the education of poor children, those above them in the social scale can long remain ignorant of it. And in consequence we remark how those public schools which are inclined to keep up with their age have already admitted drawing into the curriculum of their studies; and have admitted it, not as an accomplishment, but as a necessity. We do not consider the periodical visits of a mere drawing-master as a fair specimen of earnestness in the matter of drawing. Every

parent knows of the wonderful productions of his child, if he happens to have a "genius"—of a boy or girl: when the portfolio is brought from school, and the works of the "genius" are spread out before admiring and astonished spectators—fresh from the finishing touches of the drawing-master, though erroneously supposed to be the work of the "genius"—the duped parent regards them as ample return for the "little bill" for materials and instruction. The proud parent is astonished at his child's productions, but the child itself is really the more astonished of the two.

This kind of educational drawing has been well defined as "drawing-masters' drawing of the picturesque pig-stye style." It is valueless. If we are to make drawing general, and develop latent taste, the first thing to be done is to get rid of this kind of instruction. Our eyes and hands must be exercised to see accurately the true forms of objects, and to reproduce them in a systematic manner. There are as accurately defined steps of producing a representation of a form by means of drawing, as there are methods by which certain results are arrived at by means of arithmetic. Yet, though the knowledge of arithmetic we possess is valuable to us, the fact of our possession of it does not make us qualified to teach arithmetic, systematically, and in the best manner, unless we have been specially educated to teach it. The same law holds good with regard to drawing. The trained teacher, who is familiar with all styles of drawing, who knows from long experience the difficulties to be met with, and the precise method of overcoming them; who will lead us along the straightest path, and strengthen us in our weakest steps.—this is the man who will give us the best instruction. Until very lately such men have not been in existence, because drawing has been confused with high art, as a special inspiration, only to be acquired by the possessors of genius.

But now there has arisen a class of men possessed of art power, who have been specially trained to give instruction in drawing as an educational subject. They are usually employed as masters in Schools of Art, and their profession and name is that of Art-master. The simple fact of being masters of Art schools does not show that they are eminently qualified to teach drawing in first-class schools or colleges. But there are means of testing whether such men are qualified to do so. Their appointment, at considerable salaries, in many of our best schools, proves this. In Cheltenham College, in Dulwich College, Wellington College, Queen Elizabeth's School, Southwark, Huddersfield College, Leeds Grammar School, Ackworth School, and in a very large number of public schools, in all parts of England, drawing is taught by Art-masters, who have graduated in London in the Science and Art schools. In several instances where drawing has been, and is, a very important feature of the studies, as at Cheltenham and Dulwich, and where a large salary is attached to the position of teachers, open competition has been resorted to as a means of finding the best men. At Cheltenham, two masters were required, at the salaries of 300*l.* and 200*l.* per annum. The fact was advertised in art papers, and a competition ensued. The highest position was given to an Art-master, the lowest to an artist of experience.

Competition, both of works and theory of art education, and scrutiny of testimonials, and results of previous teaching, will in all cases decide who is the best man, and who should be selected. This we strenuously recommend to heads of public schools, and, from our means of information on such subjects, can assure them there will be no lack of good men as applicants for the position of Art-masters, in such institutions as are willing to give fair remuneration to good teachers.

Let us remember that what we want is a similar power in our hands, with regard to form, as we already possess with reference to words;—to learn to speak out intelligibly the divine language which nature is for ever addressing us in; to cultivate our senses in rational, and, perhaps, needful channels of enjoyment; and then, when we can listen

while nature addresses us, and understand the language of the Creator through His works, we may possibly have more claims upon us to be great and good. If we plant good wholesome fruit-bearing seeds in the mind of youth, there will be less room for the tares which often flourish there. Who shall say that in our education we have yet appealed even to all the faculties we know to exist in the human mind? Let us do this according to the light we have. In our struggles after the useful, after the necessities for the animal, let not the beautiful, the true, and the natural, the necessities of the man, be wholly forgotten amongst us.

In conclusion, let us state that, after a somewhat patient consideration of this subject of educational art, we are enabled to look with some degree of hope to the future. We have many great and positively vital elements in our systems. Schools of Art for artisans, with special classes for special subjects, school-masters teaching in schools for the poor, the Art-masters in our higher schools, and a general interest awakened, first by the Great Exhibition of 1861, and subsequently by local exhibition, all these facts are hopeful and promising. We cannot dwell too much on the importance of drawing in all our manufacturing districts. The elements of art and taste are as essential to the production and appreciation of our manufactures, as the soul is to the vitality of the body. Our readers will not require us to show them that it is by our manufactures we thrive, and have become the prosperous nation we are. Our commerce is the immediate source of our riches and power—our manufactures the main-spring of our commerce. Everything, therefore, that increases the production and demand for the former, and thereby increases the latter, is an immediate addition to our wealth and our power. We are convinced that the universal teaching of drawing in our schools will do this; and, having examined this subject, and given our verdict upon it, we will leave our readers to draw their own conclusions on this important matter.

THE HOMES OF ENGLISH SAILORS.

WHETHER we consider the vast mercantile importance of the navy or the national strength, it must be admitted that the lives and health of our seamen are worthy of the greatest care and attention; and yet it unfortunately happens that the sleeping-places provided for our sailors are of the worst description. We have before referred to the evil arrangements on board ships of the smaller size, and mentioned some of the results. Feeling the vast importance of this matter, we have made inquiry how the seamen are accommodated on board large ships, and regret to find that the sleeping-place provided for those who are the strength of the "wooden walls of old England" is also of the most unsatisfactory description.

We will first glance at a fine-looking English ship of 1,091 tons burden. At the time of our visit workmen were busy fitting up the holds with regard to emigrants. Here it may be noted that sufficient space is available; some little care is shown as regards ventilation and decency; water-closets and bathtubs are provided; there are cabins fitted with tiers of beds, in which families can be lodged in comparative privacy; and even when from the necessity of economising the space of ships these places are not satisfactory, there are holes in the doors, &c.; and, when the weather is favourable, the opening of the ports will admit plenty of fresh air. The height between the decks of this vessel seemed to us scarcely sufficient for the comfort of a large number of emigrants, and generally throughout this ship the doors are so small that they cannot be passed without stooping. There are few scenes of greater confusion than the fitting of a vessel for a long voyage. The clang of carpenters, the bustle of men loading the provisions and other goods; the filling of the casks with water, which is brought to the East India Docks in covered barges, and is pumped into the ships by small engines, fitted in each barge. Passengers roam about as if lost; a small boy of four or five years old flourishes an old-fashioned sword, and one not much bigger is shouldering a "Brown Bess." They, with the rest of a fine family, are about to start to try their fortune in New Zealand. When all is set in order and the ship on her way, as it seems to us, the deck will be so much crowded with various wooden sheds,

that it must interfere with the proper management of the vessel.

Passing those matters, we descend into the "forecastle," which is close to the bowsprit. This is most inconvenient in shape. All the openings are tightly closed, and when the door is shut, no air can get in. Boxes, not so large as coffins, are placed one above the other, three deep. Bad as are the conditions of the soldiers' barracks, they are good in comparison with this home of the sailors. In this cabin there are ten beds, in a space, if even ventilation were arranged for, scarcely sufficient for two. It will be said that sailors are accustomed to this; that this part of the ship is exposed to the weather, and that if openings were left, the water would rush in; that every inch of the interior of a ship is of much value, that more room cannot be spared. All, however, agree, that the arrangement in the fore-castle is both unwholesome and inconvenient for the men, and surely they should not be worse lodged than the lower class of emigrants. From such a berth must come early death.

If the ventilation of the cabin at the head of a ship cannot be managed, it might be better to use this part for the stowage of stores, and find sleeping room for the seamen in some other situation. Long custom has sanctioned the present faulty arrangements, and as is the case in too many other instances, it is difficult to obtain a beneficial change.

In addition to want of ventilation and insufficient space in many vessels, there is a great neglect of cleanliness. The accommodation for emigrants is cared for in some cases—the surgeons and other authorities enforce sanitary measures, but it seems that the sailors are unregarded. It would be well, even in the present state of affairs, if the same kind of inspection was made of the sleeping places of the sailors, as is done in those of the passengers. The officers of the ships should see that the bedding in the fore-castle is properly aired and kept clean. In many ships the dirt and neglect of the cabins are as great as are to be found in the worst places ashore. All this might be easily prevented.

From the English ship we go to one of American build, a fine vessel of 1,300 tons burden; here the space between decks is much higher, and there is no need for a tall man to damage his hat in walking about; the fore-castle, too, is more spacious than in the other case; but truly it had enough, and the bedding is not in a sanitary condition; such things are managed better on board ships of war.

The deck of the American was, in comparison with the English ship, clear; there were the cook-house and carpenter's shop, but these were not of sufficient size to interfere with the proper working of the ship at sea.

The captain's apartments, the dining-room, bed-rooms, &c., were admirably arranged, and tastefully decorated; and in all parts of the ship care was taken to supply ventilation. At the time of our visit the vessel was ready to receive a cargo; the various parts were clear, but it was said that if it should be necessary to carry emigrants or troops, in less than half a day the bedsteads and every accommodation for 600 persons could be provided. The bed-frames are of iron, fitted with screws in a simple manner, and when not needed can be used as ballast. With the exception of the fore-castle, every part of the ship was remarkably clean; and although the American vessel was of larger size than the English one, this was not sufficient to account for the marked advantages of the build of the American over that of the English. As regards the former, we found that the "bilge water" was pumped out every day, so that there was no fear of ill health from that source; such care should be taken in every ship.

In the American ship, a sleeping-berth is provided for the boys, so that they are not so much exposed to the rather rough manners and language of the fore-castle. It was pleasant to converse with the intelligent captain of this vessel, and to note the knowledge he had of the principles of health; to hear of the interest he took in old English places connected with the events of the past. He had at his home antiquities—such as old glass, china, books—gathered in various parts of the world, but none were so highly prized as those he had found in Old England.

In connection with all shipping, great reform is needed in the accommodation for the sailors.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—At the meeting to be held on Monday evening next, the following paper will be read, "Gleanings from Westminster Abbey," by Mr. G. G. Scott.

ON THE COMPOSITE CREATURES OF ART, IN RELATION TO ARCHITECTURE, PAINTING, SCULPTURE, AND DECORATION.*

MANIFOLD as are the forms of Nature, man, as a poet and an artist, has not been content to exercise his power solely within these limits, but has sought in various directions to reach even beyond, and to evoke creatures of his own thought. In no instance, however, has an animal, thoroughly new and original in all its parts, been produced by him; and it is probably as impossible for him to imagine such as to conceive a fourth primary colour. Creation is not the attribute of the creature, although the field of re-combination is open to him: hence, in the various forms observable in poetry and the arts, which are without precedent in nature, we find no new elements, but only new combinations of those already existing. It is evident that several of these do not adhere to the usual numerical theory of natural anatomical structure. This is a point very readily urged against the use of emblematic compounded forms altogether, especially by those in whom the matter-of-fact element is stronger than the poetic; but among nations, and in times, especially imaginative, all such forms were readily welcomed into art as were at the same time justly symbolic, poetic, and beautiful.

In a large portion of the vital architecture around us we perceive four limbs to be the law: e.g., in man, in the horse, the dog, the lion, and in birds. In all these the two hind or lower ones are always legs, but of the forward or upper (the nearest the head) the form and use vary. In man they are hands, in the lion and in the horse they are legs, and in birds they are wings. Comparative anatomy still further shows the structural relation existing between these various examples. By setting the skeleton of a quadruped on its hind legs—of a horse, for instance—the relation to that of man is at once seen. Thus, the hock of the horse answers to the heel of the man; the stifle joint to the knee (in both we find a patella); the knee of the horse, with its many small bones, to the wrist; and so on. In a bird the wing answers to the arm of the man, being similarly attached to the clavicle and scapula; and there are the types of the elbow and wrist in the wing, which terminates occasionally with an embryo thumb and finger, just as the horse has on each limb only one toe; a member, however, which, in the deer, sheep, camel, and lion, and in the foot of the bird, occurs in its greater number. There is nothing new in this statement, and I only mention it because it may possibly be brought forward realistically to support the argument that any composite forms of art based on these higher structures should be confined to this law, to which in some cases they assuredly are not. The Angel, for instance, when represented with only two wings, has six limbs; as also have the Pegasus, and the Lion of St. Mark. When, however, we look further among the forms around us, we cannot, I think, hold such limitations to be conclusive, as we see various adaptations and uses of limbs different from and additional to those we are accustomed to in the higher orders, as well as wholly different numerical arrangements and modes of movement. I need only allude to the butterfly and the bat, which have each four wings as well as legs; and to the membrane of the flying squirrel and the bat, which, though not departing from the generally prevalent bony structure, may yet suggest an idea of the means by which the powers of flight might have been added to other modes of movement in the higher animals, had Almighty power so willed it.

It is to the early hieroglyphic mode of writing that we may attribute in some degree the introduction of several of the composite creatures of art. Engraved on Egyptian edifices we find records which may be looked on as midway between writing and art, in which, besides the human form, the lion, the cat, the hawk, and others, we see introduced various combinations of these and other forms which do not exist on this planet. This, however, was by no means the only cause: apart from their value as emblems and means of expression, the requirements of architecture early found these combined and modified forms exceedingly apt, useful, and harmonious, in presenting contours and masses not to be obtained so well, if at all, by other means. Indeed, as we proceed and consider each in detail, we shall find this strictly architectural use constantly combined with emblematic expression in the best examples of their employment. Like her sister art, Paint-

ing also has in all ages found advantage in such combinations. The ancient painters of the best periods displayed their love for them in their most complete state: thus one of the most celebrated pictures of Greek art represented a family of Hippocentaurs. Etruscan art was equally full of these forms; and various pictures found in the Herculeanum and Pompeii give ample proof of the taste for them among the Romans, in the shape of Centaurs, Sphinxes, Griffins, Tritons, Satyrs, and Fawns, but especially of winged human beings, as Auroras, Cupids, and Psyche; in figures of the Winds, and in Genii generally, the profane versions of the Angel; of which, in later times, the works of Early Christian art in the Catacombs of Rome, of Cimabue, Giotto, Luca Signorelli, Raffaele, Paolo Veronese, Titian, the Caracci, Rubens, and others, present us with such beautiful examples, as well as of other composite and emblematic forms of art. Sculpture equally has in all times adopted these forms; and, being more abstract in her character than painting, she may be considered by some as still more fitted for the representation of these decorative and symbolic combinations, especially as she is constantly employed as a direct accessory to architecture, to complete her lines and masses, and tell her story. In sculpture, therefore, these compound forms, yielding lines, surfaces, and masses, not otherwise attainable, and conveying their special symbolic expression, find a congenial region, while their monochromatic character is calculated to tone down the association of forms not combined in nature; inasmuch that those who might not accept a Centaur or a Griffin in an oil picture, might readily permit it in marble or bronze, especially when strictly subserving architectonic purpose. In fact, the justest title to the introduction of these composite forms rests upon their power to symbolize and effect something that cannot be so well effected by other means. This is their true mission, which should be kept in mind while considering them in succession, as it affords a touchstone to distinguish the really noble and worthy from those which are arbitrary, inconsistent, merely fanciful, and irrelevant.

The Angel or winged human being, in one phase or other, appears to have been a primitive and continuous idea in the mind of man. In all times and places also, these winged human forms appear as symbolic ministers of the Deity—hence the name *Angelos*, or Messenger. In Egyptian works we find these emblems of intelligence and flight closely associated with the images of the gods. Eternal intelligence itself was indicated by the winged orb, either simply or with the decoration of the double asp, an aspid of royalty, "King of Kings." These winged orbs are very prevalent symbols, cut deeply in the stone over the doorways of temples, as emblems of protection and of the object of the buildings to which they afford architectonic decoration and enhancement.

The Assyrians also used the winged orb or circle as a symbol of the Deity, but always filled by the upper part of a human form, usually occupied with the work of destruction, bending his bow and shooting his arrows. It was natural, perhaps, in the early twilight of the world, that the orb, the most complete and self-contained of forms should be, like the altar the Athenians raised to the "Unknown God," the emblem of Eternal Deity; and it may probably be allowed that the Egyptian mode of leaving it untenanted, except by the imagination, was by far the most noble. This, however, is a wholly different type from that of the winged human form or Angel, which is represented either as attendant on the gods, or ministering to their behests; existing in a mid-space, as it were, between them and men. As a symbol, the addition of wings invested an object with a sort of god-like power, physical, intellectual, or both: thus they were given to evil as well as to good spirits, when it was desired to represent them as possessing great power. In the large Assyrian reliefs in the British Museum, showing a contention between a good spirit and an evil one, both have wings, but the minister of good has four while that of evil has but two. As has been well exemplified by Mr. Layard, Mr. Ferguson, and Mr. Bonomi, great analogy existed between Persepolitan and Assyrian art. In the sketches before us the figures have four wings; and in the vision of Ezekiel the Cherubim are described as having the same number. These may be but coincidences, yet they appear to point to a certain consistency in the acceptance of the winged human being or Angel in early times.

The graceful winged human figures and genii of Greek, Etruscan, and Roman art are too well known to require a lengthened notice. Iris, the

Angel of the Rainbow; Cupid, the Angel of Love; Psyche, the Angel of the Soul; and Aurora, the Angel of the Morn, were all represented with wings of various kinds, as also the Angels, or genii of life and death. In Canova's celebrated group of Cupid and Psyche, the aim was, as he himself expressed it, to restore the ancient gods to their pedestals. On Greek and Etruscan vases we see genii and winged figures, and in a picture from the Herculeanum, Cupid confined in a cage or basket. Examples of the classic type are to be seen in the works of Thorwaldsen, and in the inimitable designs of our own Flaxman, illustrative of the Theogony and the Works and Days of Hesiod; in which he has so truly caught the purer part of the inspiration of early classic legends and of ancient poetry.

In Holy Writ we have the highest precedent for the representation of those symbolic forms: the Cherubim were admitted as emblems on the very Mercy-seat of the Holy of Holies. But while the idols of the heathen were objects of worship, the Cherubim were themselves worshippers; and the mode in which they were represented was doubtless in harmony with the architectural and decorative arrangements around. We have no precise data as to the form of these sacred emblems of angelic adoration. In the Bible they are described only in general terms; and Josephus, in his account of the building of the Temple of Solomon, says, "what the figure of the Cherubim was, it is impossible to express." As we are told that these sacred emblems were actually executed of a precise and definite form, it may, perhaps, be allowable to conjecture something respecting them. I conceive the form of the Angel of early sacred art differed widely from that of any other phase, and I venture to think the passage in Isaiah, 6th chapter and 2nd verse, may throw some light on the subject: "Above stood the Seraphim: each one had six wings: with twain he covered his face, with twain he covered his feet, and with twain he did fly." It is under this image that Milton, so well versed in Biblical lore and of so reverential a spirit, describes the Angel Raphael as approaching our first parents in Paradise:—

"A seraph wing'd, six wings he had to shade
His lineaments divine: the pair that clad
Each shoulder broad came mantling o'er his breast
With regal ornament: the middle part
Girt, like a starry zone, his waist, and round
Skirted his loins and thighs, with shining gold
And colours dight in Heaven: the third, his feet,
Shadow'd from either side with indur'd mail,
Sky-tinctured grain. Like Man's son he stood
And shook his plumes, that heavenly fragrance flid
The circuit wide."

In Ezekiel, angelic beings are mentioned as having four wings, while there is no passage in which the Cherub is introduced in which more than two wings are spoken of, although, indeed, on no occasion is it said that they had only two; but in the view I venture to take of the subject, even if it were so, it would involve no want of coincidence between the form of the Cherub and Seraph, which I conceive to be the same. Where Ezekiel speaks of four wings, he adds that the wings were joined together. It appears, therefore, probable, from these descriptions of six wings, four wings, and two wings, that they could be united in action in one expansion, or divided when required. If this view be worthy of any acceptance, it at once unites the various descriptions of the sacred Angel into one type in form and appearance, only distinguished by office:—Cherub, signifying fulness of knowledge; and Seraphim, the shining ones; and the Cherubim of the mercy-seat are described in Exodus, as made of beaten gold, the most shining and radiant material known. My idea of the Angel of sacred art, though differing from that of any other type, is, yet, I submit, reasonable as a naturally clothed vital form, either in action or in repose; it displays an amount and disposition of wing that would poise and convey the form in flight with more apparent ease, by far, than only two wings on the shoulders; offers a magnificent background and enhancement to the human form; and either standing, kneeling, or flying, is capable, as a form of art, by the arrangement of the wings, in accordance with the description in Isaiah, of presenting a more complete symbol of absorbed and seraph adoration than is to be expressed by any other means. Milton also presents us with some magnificent descriptions of Angels, not only in Raphael and Michael, the Archangels, but in the fallen Angel, Satan. The painters of the middle ages were more realistic in their representations, giving their evil spirits no longer with plumage, but with the wings of bats, to symbolize that they had fled from light. Raffaele, Rubens, and various others, have so represented the fallen spirits, and probably, if Michelangelo's copy of

* From a paper read by Mr. John Bell, at the Royal Institute of British Architects. See p. 231, ante, for report of discussion which ensued.

Dante had not, most grievously for the world of art, been lost at sea, we should have on its margin, on which he had made many sketches from the Inferno, many marvellous compositions of this nature.

Among the angels of modern and Christian art must be reckoned the Æons of the Gnostic heresy in the early ages of the Church. These enthusiasts claimed to know more than the rest of the world—hence their name—and at first were highly thought of, but afterwards they fell deservedly into the most evil repute, and eventually died out about the seventh century. Their Æons were mythical mysterious intelligences, of what character we now hardly know, but of which (although the Gnostics claimed to be Christians) they were informed, they said, not by the Gospels, but by some other revelation or means. Their gems, I believe, are now their principal records. The one represented was worked in Egypt, and has a very Egyptian character, the arms and wings being associated in the same way as in the winged genii of that country. The representations of the "Emanations" of the Gnostics are of a most debased type, and we cannot receive them as truly belonging to Christian art.

In the early paintings of the Greek church, the Cherubim and Seraphim are frequently represented with a various number of wings, usually very gorgeous in colour—green, red, and blue; generally the Seraphs with red and the Cherubs with blue. Milton, however, gives golden wings to his Cherub, Contemplation. Knowledge, and love, and shining beauty, seem the attributes of the superior Angels. The Cherub, as it still holds its place on our country tombstones (and when perchance it is well carved I know no better decoration) is merely a child's head with wings, with us generally two, but sometimes four and sometimes six, as was usual in the Greek church. They are symbols of the soul, and of heavenly intelligences, though the representation of the organs merely of thought and flight. In Raffaele's picture, the Madonna di San Sisto, the whole upper background is made up of a glorious galaxy of these cherubs represented as children. On various of the keystones of the interior arches of St. Paul's, three of them are grouped together, and the same is the case under the dome of St. Peter's, where they are colossal in reality, though diminished by distance, and they have bodies. A remarkable example is afforded in a beautiful composition of very early Christian art in the catacombs of Rome (in the very spot in which tradition says that the bodies of St. Peter and St. Paul were buried after their martyrdom), in which two angels are represented as supporting our Lord in an elliptic orb. The original is an exquisite design of unusual form, yet well adapted to the purposes of decoration. The analogous example from York Minster, selected by Flaxman to illustrate his lectures, I conceive to be inferior. In various of the examples illustrating this part of my subject, from early Christian art, Byzantine, Italian, German, and that of our own country, are to be seen arrangements of six wings, according to that which I conceive the sacred type. There are some architecturally good-angels in the spandrels of Lincoln Cathedral, and some, if I recollect right, far more delicate and better wrought at Ely. Some painters have occasionally left out the wings altogether, as in the ministers of wrath represented by Raffaele in his picture of "Heliodorus stricken in the Temple." This, however, is an exception, and the angelic being, either as a minister of wrath or of blessings, as the destroying Angel over the palaces of the Egyptians, or at the annunciation, is usually represented with wings. Of the four and six-winged examples Byzantine art is full, and in one from the dome of St. Sophia, even more than this number are indicated. Of the two-winged, none are perhaps more varied and pleasing than those contained in the examples from the Oratio Dominica of Albert Durer. To the sketches of Raffaele's ladder of Angels in "Jacob's Dream," and other compositions by that great painter, whose name, and that of his great contemporary, are both those of angels, I have added examples from the works of our own Flaxman and Blake. The Cherubim in the upper light in St. Michael's, Coventry, and at Cirencester, are represented standing on a white wheel with eight spokes, evidently after the description in Ezekiel. They have six wings of a rich yellow. At Cirencester they hold a book; at Coventry, a scroll. According to the Church the divisions of angels are represented with the following attributes:—The seraph with a sacramental cup; the cherub, with a book; thrones, with a throne; dominations, with a globe and cross; powers, with a sceptre surmounted by

a cross; principalities, with a crown of lilies; archangels, as warriors; angels, with various emblems; and virtues, with lilies.

Some painters have, with doubtful taste, made the wings exactly like those of a particular bird; but the more celestial these bringers of tidings, these ministers and messengers of heaven, can be made in appearance, the more the true aim of the artist, I conceive, is obtained.

ARCHITECTURAL PUBLICATIONS.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of this Association was held on Friday evening last, at the house in Conduit-street. The chair was occupied by Mr. John Norton.

The minutes of the last meeting were read and confirmed.

The following gentlemen were balloted for, and elected members of the Association:—Mr. C. J. Adams, 23, Brunswick-street; Mr. A. Mason, 5, Newman-street; Mr. R. W. Edis, Mr. Alfred Smith, Mr. Harvey, jun., Mr. T. Beasley, Mr. H. A. Reeves, Mr. Joseph James, and Mr. H. Cole. Mr. E. A. Wyon, Mr. Edward Winbridge, Victoria Cottage, Bayswater; Mr. S. Wakefield, 8, Gastigny-street, St. Luke's; Mr. Edward Low, St. Clement's Inn; and Mr. Robert Reynolds, 3, Grafton-street, Gower-street, were proposed for membership.

Mr. B. A. C. Herring then read a short paper entitled "A Review of New Publications."—

He noticed, among them, "The Art of Illuminating, as practised in Europe from the Earliest Times; illustrated with Initial Letters and Alphabets selected from the libraries of the British Museum, the Bodleian, and other valuable Collections, by W. R. Timms, with an Essay on the Art, and Instructions as to its Practice in the Present Day, by Digby Wyatt, Architect." "Examples of Building Construction, edited by Mr. Lister, containing Details from the Works of eminent living Architects; and "The Architectural Society's Dictionary," of which Mr. H. said that it was a publication that strongly recommended itself to the profession, from the fact that it would, when complete, the only really comprehensive dictionary of architecture that we possessed; and he drew particular attention to the numerous references given by the Dictionary to books and other authorities.

Amongst books recently published were noticed those published by Mr. John Murray, viz., Scott's well-known work on *Secular and Domestic Architecture*; "The History of Ancient Pottery, Egyptian, Grecian, Etruscan, and Roman," by Samuel Birch, F.S.A.; the second edition of "Medieval and Modern Pottery and Porcelain," by Joseph Marriott; "The Arts of the Middle Ages and Renaissance applied to the Decorative Furniture, Arms, Jewels, &c.," by M. Jules Labarte. Mr. H. noticed next "Painting popularly explained; including Fresco, Oil, Tempera, Mosaic, Encaustic, Water-colour, Miniature, Mosaic, and other kinds of Painting, Enamel, Glass, &c., with Historical Sketches of the Progress of the Art," by T. J. Gullick, painter, and J. Timbs, F.S.A. Messrs. Parker's two new volumes of *Domestic Architecture*, together with "The Fac-simile of the Sketch-Book of William de Homecourt," translated by the Rev. Robert Willis, M.A., F.R.S., were next noticed. A list of new works connected with Architecture and the Fine Arts published by Messrs. Day & Son was given as follows:—"The Art-Treasures of the United Kingdom: consisting of Selections from the Manchester Art-Treasures Exhibition of 1857, with Historical and Descriptive Essays by the following writers:—George Selous, Jun., J. C. Robinson, A. W. Frank, M. Digby Wyatt, Owen Jones, & R. B. Waring; chromo-lithographed by J. Bedford, and produced under the direction of J. B. Waring." "The Grammar of Ornament," by Owen Jones; "The Grammar of Ornament," by J. B. Waring, with descriptions by J. C. Robinson, F.S.A.

Works on the ornamental arts, edited by J. B. Waring, viz., sculpture, pottery and porcelain, glass and enamel, metal work and jewellery, weaving and embroidery, decorative art in furniture; "Architectura Numismatica," by T. L. Donaldson, Ph.D.; "Architectural Sketches from the Continent, a Series of Views and Details from France, Italy, and Germany," by Richard Norman Shaw, architect; and as a companion book to Shaw's, will be published, "Specimens of Medieval Architecture from Sketches made in France and Italy," by W. Eden Nesfield, architect; of all which notices have appeared in our pages. Amongst French works, the writer mentioned Gallibaude's "L'Architecture du Cinquième au Dix-septième Siècle," Letarouilly's "Édifices de Rome Moderne," and Viollet le Duc's "Dictionnaire de l'Architecture Française." The *Quarterly Review* for October required notice, inasmuch as it contained a review of Mr. Fergusson's "Handbook," and likewise an article on "Stained Glass." Mr. H. remarks following extract concerning the "Handbook":—"Both Greek and Gothic Architecture, at the time of their highest perfection, represented the most earnest and truthful expression of one great leading idea, the idea religious. The Greek temple, as the most perfect work of men's hands, was the habitation of the god in the most perfect of outward human forms, admirable in the proportions of beauty, exalted in the development of physical strength and grace. The Gothic cathedral, the most impressive, the most solemn of all the creations of man, was the house of a god of no human likeness, of inconceivable majesty, and unknown power, to and through the spirit, and in the spirit alone. But, as the religious effect upon the imaginations of men that they were intended to produce, as no other architecture has ever done. Both forms of architecture declined in purity and grandeur as the conceptions of the deity who dwelt in them were weakened. Both were succeeded by untruthful and unreal styles; borrowed relics representing no definite, earnest, existing faith. A monument in the perfection of Greek architecture can never be again, because the belief in a faith that should inspire it, and which it should embody, has passed away; nor can the essential ornamentation

and symbolism of the Gothic of the middle Ages be revived, at least in this country, because the convictions from which they sprang are gone, although the style itself, duly modified to suit an earnest national belief, may still be adapted to the noblest purposes of our religion. These are truths that in these days of attempted revivals have got to be learnt. Mr. H. continued,—In this passage we shall not only find our own belief reflected, if we except the last sentence. The question is, what is meant by duly modified? If the modification will not extend to the removal of all internal columnar conceptions, which are the growth of the Gothic churches, I must say that it is not sufficient. My idea of what a place of worship ought to be is this; a large comfortable building in which every one can see and hear without obstruction; and then this despoiled Gothic of its chief interior effects, and necessitates a very great modification indeed of the remaining features to get a good building. Look at the Dissenting places of worship, where they have tried to do Gothic without columns, and I do not believe that you will find one that is a success. I believe, however, that it is possible to design a church so as to make a handsome building by ignoring all previous models, and by starting on this principle:—Let your construction be real, and your decoration honest, and adapted to the material used. You will then make no abortive attempts to cover a large span with a would-be-Gothic-iff-it-could roof; you will then no longer plaster your walls, nor paint your cornices and capitals, nor things stuck on to the doors without doing duty. These points, together with many others, are where the architects of Dissenting places of worship have broken down; if you succeed in one or two of these points, I believe you will make a first-rate national church, suitable for the Church of England service. Doubtless we shall feel regret at dispensing with the clustered shafts and triple roofs; but it is not a matter of common sense? Would you like, the next time you visit the opera, to find some huge obstruction intercepting your view and hearing? Certainly not. And there are many persons who feel just as uncomfortable when they take their seats in a large columned church, as they do in a modern one. Gothic can be modified so as really to suit a modern church, without losing its name of Gothic, although much of the Gothic detail and feeling will be introduced into your decorations. The *Quarterly Review* then winds up its article thus:—"We have no space left to us to examine Mr. Fergusson's views on the present condition of architecture. We cordially lament with him that he lost, and that ignorance of the true principles of art, which are still leading us into wrong systems, and threaten to prevent the development amongst us of a truly great and national style. For some years past communities have been the monuments, such as few nations have enjoyed, have been utterly lost. Our national architecture is still under the control of Parliament, and at the mercy of the official esthetic of the time. If time should bring about the resignation of Mr. Conyngnam. The struggle between Classic and Gothic is as life as ever, as if we had no other choice left us, and instead of endeavouring to develop and elaborate a style which shall represent our wants and our true character as a nation, we are still endeavouring to revive those which have long ago passed away, and are no longer suited to the spirit of our times. Whilst the cause of ignorance and this false appreciation of the ends of art prevail, we see no prospect, we confess, of any advance in the right direction, or of the realization of Mr. Fergusson's hope that we may have a national architecture worthy of the country." Now with these views I have no sympathy. I do not lament the bad taste and ignorance of the true principles of art which are still leading us into wrong systems, and threaten to prevent the development of a truly great and national style. On the contrary, I believe that taste is more refined and more generally distributed than it has ever been before in England. I believe that true principles of art are more generally understood, and that they will prevent us from ever having a national style of architecture. It seems to me perfectly impossible: no two men think alike on art in all particulars, although both may recognize the same principles, and be led by them to totally different, yet successful results. I conceive it just as impossible for artists in wood and stone to adopt a fixed style, as for artists in colour to paint all their pictures in the same style. What would you say to having all your landscapes painted in the green of Crewel, or the sunny hues of Linnell? Would you like to hang your galleries with only the pearly tints of Harding, to the entire exclusion of a glowing sunset from Dargie? Or may I say that the Greek had a style of their own, that Gothic is another style, and therefore, why should we not have one? In answer to this I would say that in both cases the architects of the buildings were few in number, and for the most part were devout disciples of the same masters, and in both cases were building materials circumscribed in variety. I likewise repudiate the charge that we are endeavouring to revive the styles long passed away. I believe that we are doing just the contrary, and there is pretty good evidence shown of this in our class of design, where, if old styles were ever cast to the winds, they are in these.

Mr. Arthur Cates (honorary secretary to the Architectural Publication Society) called attention to the "Dictionary of Architecture" now in course of publication, which he said was intended to supply a great want in the professional literature of the country. At present there was no work which might be said to serve as a standard of reference in architectural matters. There was, it was true, Nicholson's Dictionary, and a few other works of a similar nature might be mentioned; but they were either very defective, or had been published to carry out the particular views of an individual, or merely as booksellers' works. The committee of the Architectural Publication Society, in commencing their work, had done so with the view of filling the gap. The principle of the Dictionary was to collect information of the most authentic character, and to produce a pre-arranged list of articles or essays on architectural subjects. The work had been for some years in progress, and was complete up to the end of the letter D. The letter E was now in hand, and the committee hoped that within the present year text and illus-

trations would be supplied to E, F, and G. All that was now required to accelerate the publication was some more extended support from the profession; and he believed that, if the great value of the work was more generally known, the number of subscribers would be greatly increased. The price of the volumes (seven guineas) was, in many instances, a drawback; but gentlemen anxious to procure the work might make an arrangement to pay up the back years' subscriptions by instalments, and thus in a short time become possessors of a work of great intrinsic value and professional interest. With regard to Mr. Herring's observations upon it, he wished to state that the Dictionary was intended to comprise, not only the strict technical information appertaining to architecture, but also a photograph or description of cities so far as they contained buildings of interest to the architect. In the letter B, for instance, the article on Baalbec was contributed by Sir Charles Barry. The biographical portion would also have reference, not only to the personal history of the architects themselves, but also to the works they had produced. Mr. Herring had omitted to mention in his sketch of new publications the "Dictionnaire du Mobilier Français," which was a magnificent work, worthy of the study of architects, especially of those in favour of the Medieval style. The essays upon that subject were remarkable productions, and threw much light upon the inner life of the Medieval noblesse. The subject was a difficult one, and was treated in a masterly manner; indeed, the work contained a vast amount of valuable information not easily accessible to the English student of architecture. Another work published by the French Government, entitled "Entretiens sur l'Architecture," was also worthy of notice. It contained engravings of all the monumental public buildings of France, with drawings showing the proposed restorations.

Mr. Capes expressed the gratification it afforded him to find that the Publication Society had adopted an arrangement by which the junior members of the profession might be enabled to obtain the "Dictionary of Architecture" without the immediate payment of seven guineas. He had long been of opinion that the condition of paying seven years' subscription in arrear operated to prevent many young professional men from procuring the work. Now that this difficulty had been got rid of, he had no doubt but that a great impetus would be given to the sale. With regard to new works on architecture, owing to the necessarily costly nature of such publications, it was difficult to obtain access to them except at the British Museum; and even there some time must elapse before new works could be obtained. The library of the Institute of British Architects was certainly open, but the funds of that society were not sufficiently large to enable them to buy all the new books. Under these circumstances he should like to see a reading-room or club established, where, for a moderate subscription, architects might be enabled to meet each other, and where arrangements might be made with the publishers of architectural works to lend their books. Many of the works referred to by Mr. Herring were of great interest, and regard being had to their prescribed circulation and costly character, their production testified to the enterprise of the authors and the publishers. It was said that English architects, as a class, were not reading men; but if those who held that opinion were to cast their eye over Mr. Weale's pamphlet, they would find that a very large sum of money was annually expended in this country on architectural works. Looking to this fact, he did not think we were behind any nation in Europe in the private patronage which we extended to works of art. It should be remembered that in England the production of those publications was left entirely to the zeal of authors and the enterprise of publishers; while in foreign countries the Government took the whole cost upon its own shoulders. Mr. Capes concluded by expressing his opinion that the Gothic architecture of Westminster Abbey might be copied with advantage in the erection of modern churches, so that, as far as possible, all obstacles to seeing and hearing might be removed.

Mr. Christian said, that he had read very little lately, and, consequently, knew very little of what was going on in the publication world. It appeared to him, however, that the English and French architectural dictionaries were both fine works, but that the latter showed that the illustrations could be produced in a less expensive manner than in the former. Reference had been made to roofs, and upon this subject he might be permitted to say that, in his opinion, a good deal

of practical information might be derived as to construction and ornamentation, from the examples, given in the French work, of the roofs of churches in the north of France and Belgium. If the plans there illustrated were adopted in our modern churches, the objection would be got over, that the open timber roof broke up the sound, and interfered with the full volume, which would otherwise fill every part of the building. An examination of these roofs would show that a good deal of information might be derived from French carpentry. As they were on the subject of books, he wished to suggest whether it would not be desirable to have some place in which the Association could keep their books, for it was idle to suppose that authors would present their works to the Association unless there were some means of preserving them. If the committee could suggest any way of meeting this difficulty, he would be very happy to join in a subscription for the purpose.

Mr. Hall thought if it were generally known that the Association was in a position to form a library, they might get donations of new works, and that, if recent publications were discussed at the ordinary meetings, sufficient books might be presented to form the nucleus of a valuable collection. It was, no doubt, a great boon for the members of the Association to obtain access to the library of the British Museum, but it should be remembered that, as a general rule, modern works could not be obtained much sooner than a year after publication.

The Chairman reminded the meeting that the South Kensington Museum was peculiarly rich in architectural works, and that they might be consulted there, free of expense, or at a very trifling weekly charge.

A Member said that at the South Kensington Museum peculiar facilities were given to the students of architecture; as, upon making their requirements known to the curator, he was always ready to render them every assistance in his power. This was a boon which could not perhaps be conceded in the British Museum, owing to the large number of readers.

The chairman said he feared the idea of establishing a library in connection with the Architectural Association was hopeless, although there could be no objection to the forming a collection of ephemeral works. The Institute of British Architects had, however, an excellent library, and the privilege of consulting it would no doubt be an inducement to gentlemen to enrol themselves among its members.

Mr. Cates agreed in thinking it would be impracticable for the Association to set up a rival library to that of the Institute, when there was already the nucleus of a very fine collection of architectural works. It was all very well to talk of the necessity of a club for architects, where they could consult new works; but it seemed to him that until the architects, as a body, supported the present Institute, there was no ground for calling for new associations.

The Chairman, in proposing a vote of thanks to Mr. Herring, dwelt upon the advantage which might be derived from discussing occasionally in the course of the session the merits of such new publications as might make their appearance. He also suggested that if those members who were in possession of new works would bring them to the Association, the result might be some interesting criticisms and discussion bearing upon their common art.

The vote having been unanimously accorded the proceedings terminated.

The paper to be read on Friday, the 9th inst., will be by Mr. G. A. Bunker, and the subject, "Practical Hints on Working Drawings, and Construction generally."

THE DESIGNS FOR A NEW GUILDHALL CAMBRIDGE.

THE notice in our last publication,* of the exhibition at Cambridge, of designs for a new Guildhall, particularized only one-half the number of those works; but the remarks on the general character of the Gothic designs would equally be applicable to works yet to be mentioned. In this second half, however, of the whole number, twenty, of the designs in the exhibition, there are several which are Italian classical, or of similar treatment.

The Gothic designs, as regards plan, we found not remarkable for good distribution of their accesses and their internal communications, or for the sufficiency of their external lighting,—short-comings which might be attributed to a precise observance

of the irregular form and boundaries of the ground, or to the narrowness of the present streets; these circumstances, however, having perhaps themselves influenced the adoption of the Gothic. Decoratively considering these designs, we found them imitations, and works foreign and medieval, in their prominent character, rather than English and modern,—in some cases through the preponderance of main forms or details like those of the townhalls of the Netherlands, as in the arrangement of the roofs,—in other cases through the use of coloured material in bands, combined with further distinctive marks of the Italian Gothic.

The first set of drawings to which we come in our present notice, following the order in which the designs are hung, and marked "Nisi Dominus frustra," is one of those which bear the Italian Gothic impress. Coloured bands predominant; pointed arches to the openings; an arcaded parapet; parts of the plan grouped and covered with high truncated roofs; and a tower, with a truncated roof or capping, and with considerable space of blank wall-surface; are the features of this design—as of some others which, as regards drawing, are worthy of commendation with it. In the plan, the Assembly-room has not the route of access provided in direct line from the external entrance, as the design has which we named last in our former notice. The Corn Exchange is planned in the heptagonal form, with a lower ambulatory and a gallery on the floor above, having iron columns and arches in the two tiers; a high-pitched roof and lantern covering the central space, being carried by columns larger, and clustered four together.

In a design bearing the device of three red berries, on a dark ground of the form of a *fleur-de-lis*, the Shire-hall is proposed to be entirely removed whenever possible. Meanwhile, though the front would be finished, or nearly so, as it would appear eventually, the entrance until the expiration of the leases, would be from Butter-row, on the ground-floor; and on the floor above, by a bridge from the Shire-hall, as at present. The perfect plan has on the ground-floor a corridor through the building, with the staircase to the right; and the Assembly-room on the first-floor, runs north and south, measuring 83 feet by 40 feet, exclusive of the orchestra at the end,—a glazed screen, allowing the landing also to be thrown in. The author, therefore, estimates the capacity and accommodation:—

The hall	3,320 feet.
Ditto, galleries to,	1,500 "
The landing on 1st-floor	600 "
Ditto second-floor	600 "
	6,020 "

which, giving 4 feet superficial of space to each person (including passage room), would allow accommodation for, say, 1,500 persons. The details of planning display practical skill. The Corn Exchange forms a square on plan (besides projections), and the central space, with eight columns, is covered by a domical roof, with lantern and lucarne openings,—resembling the old Corn Exchange, London. The design, externally, is of French-Italian character; and the main building has Mansard roof and dormers, a central pavilion over the entrance-gateway, and a bell turret on the roof, broad angles, with statues in niches, and to the ground-story, pilasters and very wide arch-headed window openings. The authorship is unmistakable—knowing anything of the City of London. The front next Butter-row, which is best, because it proclaims least the manner of the author's other works, whilst it has perfect harmony with the main front, is treated as two pavilions; the upper story of one and the other being joined by a loggia, to which there is access from the hall. The hall would have a flat ceiling, with oblong panels, filled in with square forms, placed diagonally.

The design marked "Utility," of Palladian-Italian character, by its manner, its motto, and the appearance of the drawings, has its authorship marked even more plainly. It has attracted considerable attention; and this its merit it owes to: but the obtuse angle formed in the flank, on the east, or Butter-row side, not concealed by the tower placed at that point, would be fatal to the desired perspective effect. We cannot, however, now point out any better mode of masking the deformity than that adopted—in a design on the principle, so far as the flanks are concerned, of not giving up ground to the street. The defect is not to be seen in the perspective view, in the position in which this is hung. The author, whose intentions we have to get at, for the reason referred to in our last, without the advantage of written particulars, would have his principal entrance to the Assembly-room

(an apartment, 113 feet including organ gallery, by 54 feet, and on the first floor) from the principal front, at least temporarily, and by a long straight flight of stairs, without any sufficient space at the foot within the external doorway. But the defects incidental to this arrangement might terminate with the acquisition of the Butcher-row frontage, next which the plan shows an ample hall and staircase. Generally, the design decoratively regarded, exhibits two stories, — the hall, however, showing above, — the upper story with coupled columns and arch-headed windows, — and the lower story somewhat weak in character. There are two flanking turrets, one in the position we have referred to, and one to correspond, — each being carried up with an Italian lantern stage, terminated by domical capping. The hall, as shown in a perspective view, would be lighted by an upper range of arch-headed windows, these groining into a cove, and would have an effective panelled ceiling.

"*Suum Cuique*," again, is Italian Gothic: it deviates little in plan from the irregularities of the ground, and has in the centre of the chief front an exceedingly lofty tower, with a tall spire capping, slated, and square pinnacles, also slated, at the angles. A principal feature in this design is an advancing loggia, with terrace-roof, which might be used as a place to speak from. The angles of the building are peculiar: they are cantled off and gabled; but the line cutting off the angle has three sides of an octagon as projection from it covered with a "lean-to," or weathering, and each face finished with a gable. The angles of the building have plain octagon turrets, flanking the gables, with very lofty spirelets. The access to the Assembly-room would be from Wheeler-street, by means of a loggia of three arches. This front has a very wide gable, and a pointed arch enclosing a pierced head above six lower lights, and has a square staircase turret at one angle, with the usual slated capping and square pinnacles. The Assembly-room, on the ground-floor, is remarkable for loftiness above the galleries. It has an open timbered roof. The Corn Exchange, polygonal on plan, has a singular truncated roof, the truncated portion formed as a skylight. — The last design on the wall, bears the motto "*Economy*;" it also has pointed arches and coloured materials, but is inferior both in plan and decoratively to some we have mentioned.

The remainder of the designs are, or rather were, placed along the middle of the room. The design marked "*Excelsior*" is Gothic, also of Continental character, though different and unequal to several that we have named. — "*Comme il faut*," is the motto of two alternative designs. — Italian and Gothic, whereof the latter is on the whole the best. The plan seems to have been made chiefly with reference to the Italian design; and there is much about it deserving of attention. It appropriates the whole of the ground, and provides an assembly room, ranged north and south, 75 feet by 54 feet (as we make the dimensions), to accommodate 1,125 persons, partly in side galleries. The access is from Wheeler-street as well as from the principal front. The ceiling is a wagon-headed vaulted one, carried by iron columns in two tiers, a short distance from the walls, by which, says the author, these columns act as buttresses to the thin walls, and the galleries, which are partly carried by cantilevers, have little space obstructed by columns. The day-lighting is wholly by openings in the ceiling; which method, it is argued, would best meet the circumstances, present and future, of the buildings abutting on the assembly-room. The artificial lighting would be by sun-burners, with ventilating shafts connected. There is a gallery also at the end of the hall. The Corn Exchange is a building of iron and glass, like the Covent-garden Floral-hall, though of plain character. There is considerable difference in the decorative character of the fronts in the Italian design, resultant, perhaps, from the effort to express the varied uses of the building: thus general harmony has not been fully attained. Moreover, a tetrastyle portico, which there is to the principal front, has faults such as are observable in most porticos attached to many-windowed fronts, but faults which should not again be committed, since they are by no means necessarily involved in use of the portico in modern buildings. The end of the Free Library, which forms a separate elevation towards Peas-hill, next to the Corn Exchange, has a rusticated basement with arch-headed windows; projections in advance of the piers, carrying statues, and not very successful in treatment; and an upper story of Venetian windows, pilasters, and a balustrade. The Gothic design is shown

chiefly by a view of the front building, and has, in some measure, a Continental character, arising from the bands and patterns in colour, and the general grouping into three stories including the dormers. These last are well combined with a lofty parapet. The principal windows are of two lights, with cusped heads and central shafts: the rain-water pipes intersect the first-floor story only; the centre of the front is carried above the general level, and covered with a truncated roof; and an octagonal bell-tower, with slated spire-capping, appears in the distance. In grouping, this Gothic design, as compared with the other, has considerable merit.

A design marked "*Lux*," which is placed next, is Gothic and continental in character, and appears to have a timber roof with dormers, but is not shown with sufficient clearness in the drawings. — "*Cui bono*" (on a red spot) may be called Italian, or Romanesque character. It is most remarkable for the singular contortions of the lines of the parapets — wherefrom great deformity results. — The design marked "*Economy*," Cambridge, exhibited in some clever but very sketchy drawings, has evidently been prepared with particular regard to the conditions; and the view which the authors adopt of the subject, and the result, deserve attention. The design differs from all the other designs, inasmuch as the authors propose to give the whole of the accommodation required ultimately and at present, excepting the Corn Exchange, for the first limit of expenditure, 6,000*l*. This they would effect by retaining the front building, or Shire-hall, adding to it only a dome, and by retaining likewise portions of the other buildings, as, for instance, the walls of the present Assembly-room; whilst the Butcher-row property, or ground to the east, would not be required in their design, and would therefore remain a source of revenue to the corporation. For the expenditure of 6,000*l*, they would provide an Assembly-room, which they say, taking data from the town-halls at Newcastle, Bradford, and Chesterfield, would hold 1,100 persons, but which in their plan does not fairly measure so much as they have figured it — perhaps by taking in the recess. This room would have galleries on three sides, with distinct ingress, as well as a platform, an entrance vestibule at the south end of the building, covered space for setting down, and other appurtenances. Considerable attention has been paid to the internal communications, and with some success. The external character of the building would continue to be remarkable for plainness, rather than for what might besem the municipality of such a town as Cambridge. A balustrade, the dome, and a clock, would be the only alterations in the way of addition to the north front. In the Corn Exchange their design has somewhat more of effect, though there may be little ornament. There are rusticated arches as the lower story, glazed as windows, and there is a clerestory with buttresses and semicircular windows. Beyond this in the view, the hall shows an apsidal end. — The last design in the collection, bearing the motto, "*Treu und Fest*," is an Italian design, of more decorated character, but with no special characteristic that we can call to mind. Our inspection did not suffice to show us any advantages which the plan may or may not possess: the Assembly-room, 90 feet by 40 feet, certainly has not in the drawings, the access clearly shown.

As regards the object of the town council in the competition, it is difficult to say that they are offered any design which, answering entirely to the conditions, would be when completed, honourable to the town. It has been impossible, in the time to which we are inevitably restricted, to go fully into the comparison of accommodation, and dimensions bearing upon cost; but we regret to have found that the site is so confined on all sides but one, — the property is so hampered with restrictions, and the amount for immediate outlay is so small, — that there is no probability of the town having shortly a building, if smaller in scale, not unworthy in some respects to rank with buildings for similar purposes lately erected. We trust the council will not be satisfied with the present site, or will be able to devise the improvement of it in time for the best contrivance of the communications, internal and external, which are essential to the purpose, no less than to the effect, of a town-hall.

Since the above was in type, we have learnt that Professor Donaldson, after an elaborate examination of the designs, has made his report to the committee. It has been approved, and, upon his recommendation, the committee have adopted the following six designs, placed in the

alphabetical order of the mottoes, from which to make their own ultimate selection: —

"Comme il faut".....	Italian and Gothic
"Nisi Dominus frustra".....	Gothic
"Suum Cuique".....	Gothic
"Treu und Fest".....	Italian
"Utility".....	Italian



described above as bearing the devices of three red berries on a ground formed as a four-leafed

..... Renaissance.

The drawings will be exhibited to the members of the committee and of the town-council, from the 1st to the 7th inst.; and Professor Donaldson's general review of the designs and his letter to the committee are laid upon the table.

So much of the general review as relates to the six designs from which the selection is to be made, is ordered to be printed for the use of the members of the committee and of the council.

It is a curious coincidence, whether causal or intentional, that the Gothic and Italian appear in about equal numbers. At all events it affords the members of the committee ample scope for any personal predilections in favour of either style of art.

THE STRIKE.

ON Tuesday, the weekly meeting of the Metropolitan Trades' Delegates was held at Shaftesbury Hall, Aldersgate-street. Mr. M'Lauchlan (delegate from the Type-founders' Society, who was in the chair) said he was not aware of any material alteration in the position of the parties to this struggle; but it appeared to him that they were bound under the circumstances to stand more closely together, shoulder to shoulder, than they had ever done.

Mr. Potter, secretary to the Conference, said that the chairman had truly told them that there was little alteration in the state of affairs. What change had taken place was in fact of an unfavourable character. Many of the employers who had induced, by means of their foremen, workmen to enter their employment upon the non-presentation of the "document," had, within the last week, turned round and demanded that the workmen should agree to the "declaration." In some cases the men had refused to do so; but, seeing that they had most of them been out of work sixteen weeks, it was no wonder that some were disheartened and disposed to accept work on any terms. Seeing this was the case, the Conference had passed a resolution that any member of the building trades should be at liberty to accept employment where the "document" was not presented individually. That resolution, he believed, had given general satisfaction, and he hoped would lead to the re-employment of many now "locked out." He regretted to say that, in the course of that day, an attack had been made upon the delegates from the Conference, who were deputed to pay the labourers at the Mitre. The police had been called upon to interfere, but had declined to do so, and the money in the possession of the delegates had actually been carried off by force. The first step taken by the Conference was to reduce the dividend this week to 3*s*. 6*d*. to skilled artisans, and 2*s*. 6*d*. to labourers; but there was this explanation, that the various skilled trades had discontinued their payments of one-third of their levies into the general fund, and thus, though there would be a nominal decrease to the skilled artisans on the general dividend, there would, in fact, be an increase. The Conference, however, had been subjected to such annoyance, disturbance, and danger recently, that it had been determined to remove from the Paviers' Arms to a private and more accessible office, for really business purposes, and he hoped that change would have the approval of the delegates. They had been again and again deputed by the labourers; and, seeing that there was no chance of satisfying the demands of these labourers, they had resolved to discontinue all payments in future. The number of artisans and labourers paid the dividend last week was about 5,000, and the sum was about 800*l*.

SRG.—Mr. Potter, in his letter to you of last week, reiterating the statement made by him at Brighton, viz., that "workmen were not pressed to belong to societies, neither did society men strike against non-society men," nevertheless admits the falsity of the same, with this proviso, "That trades' unions are not chargeable with the

conduct which the members in their individual capacity may choose to pursue."

Now, sir, I do not suppose that there is one amongst your numerous readers who has a shadow of doubt but that these strikes against non-society men are the direct effect of the rules of the societies; but I would ask Mr. Potter (if he has any real desire to terminate the lock-out) to put the matter beyond all doubt, by inducing the several societies to strike out all the rules about "blacks," &c. (which even Mr. Edwin James condemns), and to adopt two additional rules as follow:—

"1st. No member shall, by intimidation, insult, or obstruction, or by striking, or threatening to strike, or by spoiling the work, tools, or property of a non-member, attempt to force any workman to join the society; nor shall any member incite others to acts of intimidation or annoyance towards non-society men.

"2nd. That no funds of the society subscribed for sickness or other benevolent objects shall, directly or indirectly, be appropriated to the support of strikes."

If the societies will do this, so as to leave it perfectly optional with a workman to join or refrain from joining them, and, allowing labour to go unshackled, give a man the opportunity of using his skill and industry to advance his position in the world, I, for one, shall be quite ready to urge the Association of Master Builders to abandon the putting of the "declaration."

A MASTER BUILDER.

AN APPEAL FROM A WORKING BRICKLAYER.

SIR,—In reading the letter of Mr. Potter, in your last impression, in answer to a "Master Builder," as regards society men refusing to work with non-society men, I was compelled to come to the following conclusion—that he was either ignorant of what he should have known, being the mouthpiece of the Conference, or that it was a deliberate falsehood. The following facts will, I hope, prevent him from falling into that error again, which his coadjutor, Mr. Noble, if he has any honesty, will substantiate. It is not produce them merely to refute him, but consider they have a very important bearing on the whole question. In the month of September, 1858, there was in the course of erection in London a large building, that had to be completed in a short time. The contractors were Messrs. H. & R. Holland & Hannen. The bricklayers' labourers taking advantage of the circumstance, struck against all non-society labourers. Their demands were complied with. But that did not satisfy them; they would not go to work till the general foreman of the job was sent off, of course that was not complied with. Another gang of men was got in, and the job completed without them. From that time (as a natural consequence) there was a mutual dislike between the employers and the Labourers' Society. The next step they took in the spring of this year was to strike against the men that went in at the above job. The employers refused to discharge them, which they were bound not to do on principle. The result was a general strike of the labourers throughout the firm. With a little inconvenience their places were filled up, and the firm got on working order again: when it makes me blush to write it—the Bricklayers' Society took it up. They wished the bricklayers in the firm to have a meeting amongst themselves to decide whether they would come out in support of the labourers; they met, decided they would not as they had got plenty of labourers, and nothing to complain of; but that did not suit them. The Bricklayers' Society called a general meeting, and passed a resolution, that every bricklayer in the above employ should strike in support of the labourers; those belonging to the society were bound on principle, as well as the fear of being "blacked," to comply. The consequence was a complete standstill of bricklayers' work in the firm. From the extraordinary influence the society at that time had, the firm would have been compelled (had it not been for the lock-out) to have submitted themselves (or have been ruined) to the dictation of a class of men useful in their station, but surely my own class will own not fit to be dictators to their fellow-workmen,—to bricklayers in particular.

Let us hear no more prating about the tyrannical conduct of the masters in introducing the "document." Is it possible for the mind to conceive tyranny in a grosser form than you have been guilty of? You would make employers submit to humiliation, and thencey out about might against

right. I ask the intelligent and well-disposed portion of my class to take with me a retrospective view of the last eighteen months: what do we find? Duty, law, and order, that should regulate business, set at naught. The contemplative mind seeks to know the cause. He begins with the Labourers' Society to investigate the laws that regulate it. Does he find a clue to it there? No. There, everything is good and framed for a noble purpose—a Sick and Burial Society. He goes to the bricklayers' laws: does he find anything there that authorizes them to take part with the labourers? No. Then, whence does the state of things that I have referred to proceed from? Not from writtendaws, but from the bad passions of the human heart, stimulated and led by unprincipled men. There is the solution to the problem. Submit your hearts through your actions to the inspection of counsel. What would be their verdict then?

Do not think I write this to pander to the masters. My aim is higher. I have sacrificed as much as any of you, and, feeling the errors so forcibly, I want you, after sincere and deep reflection, to see them, so that you can teach your children, by pointing them out and the consequent punishment that followed them, to enable them to guard against the same in their battle of life. It is a convincing proof to me, and must be to any thoughtful mind, seeing the existence of a state of things that I have referred to, that had the nine-hours movement been successful, it would have been a curse instead of a blessing. The battle would have had to be fought.

If you meet with any intelligent bricklayer and ask him what he thinks of the course his Society has taken, he admits it is very wrong: the more blamable you and I, and many others with clearer perceptions of right and wrong, to lend our countenance to a system that created the evil, without giving the weight of our superior judgment to counteract it.

Where are our leaders that led us into it? Do they suffer? Do you still contribute a portion of your hard earnings, to enable them to sit in their idleness, and prate about the un-English conduct of the masters in introducing the "document?" If you do, you deserve your fate. I'll go with them with all my heart in denouncing it as un-English; the very existence of it is a disgrace to Englishmen of the nineteenth century. But where does the disgrace fall? I think you must say with me,—on those who, by their un-English actions, have made it a disagreeable necessity. I say to you, who are making away with your homes, and depriving your wives and families of the comforts of life, by all the love you bear them, persist no further. A BRICKLAYER.

THE STAINED GLASS FOR GLASGOW CATHEDRAL.

WE mentioned last week that the great western window of Glasgow Cathedral had been filled with stained glass, in pursuance of a scheme for so filling the whole of the windows. The great western window is the gift of the brothers Baird, of Gartsherrie, and has been executed, as the others are to be, at the Royal Factory in Munich. The subjects illustrated in the four compartments of the window are:—Compartment first, The Giving of the Law (Exodus, xxiv. 27 to 32); compartment second, The Passage of the Jordan and Entrance into the Promised Land (Joshua, iii. 15, 16, and 17); compartment third, The Dedication of the Temple (1 Kings, viii. 12, 13, and 14); compartment fourth, The Captivity of Babylon (Psalm cxxvii. 1 and 2). The memorial window, which commemorates the virtue and charity of Mr. Buchanan, who conferred great benefits on Glasgow, is nearly finished. The window for the Earl of Glasgow is in progress, and the great northern transept window, presented by the Duke of Hamilton, will be there in a few weeks. Nearly the whole of the designs are in progress, and may be expected in a short time. When we tell our readers that there is a very large number of windows, and that the smaller ones will not cost less than from 250*l.* to 350*l.* each, while the expense of each of the larger, such as that now completed, will be nearly 2,000*l.*, it will be seen that this is a gigantic undertaking, and that it is of more than merely local importance. It was discussed in Glasgow at very considerable length, our readers may remember, and ultimately the Munich glass-painters were selected for the commission.

A writer in the Glasgow *Daily Herald*, apparently representing the committee, says,—"The recommendation was made not merely because the finest

* We have corrected the spelling, but in other respects have not altered a word of this communication.—Ed.

modern painted glass is produced at that factory, but also because the committee took into consideration that the strong staff of artists and workmen constantly maintained and employed there would enable the intelligent director to undertake the most extensive orders, with a fairer prospect of completing them within a reasonable time than any rival establishment could offer. The decision may be a humiliating one, so far as our native artists are concerned, but no one who looked on the exquisite work of art which was exposed for the first time on Saturday, can doubt that it is just. And our consolation is that, now we have these magnificent specimens of foreign art permanently amongst us, our native artists and workmen will sooner or later equal, if they do not excel them. Let the demand for painted glass of a high order of art become extensive, by its general use in public buildings, and British artists will soon acquire such proficiency that it would be treason to artistic excellence to pass them over." Of course this opinion is not unanimous in Glasgow; nor are all prepared to admit the inferiority of British artists in glass. We have ourselves seen some very bad glass from the Munich factory, bad in execution—wrong in principle. Nevertheless, if we said that we are satisfied with the work that is being done at this time in this country, we should contradict former assertions, and say what is not true. It is the manufacture of stained glass, not the art of glass painting, that is chiefly practised amongst us. We shall look for an opportunity to see for ourselves what is done in Glasgow Cathedral, and shall wait the result of the experiment with interest and hope. The designer of the window already up is M. Von Schwind, a member of the Royal Academy, Munich. The window has been executed under the inspection of Inspector Ailmüller, and the general control and direction of the veteran companion of Cornelius, Schnorr, and Overbeck, Heinrich Von Hess.

LAND DRAINAGE AND IRRIGATION.

THERE are many thousands of acres of deep-drained agricultural land in different parts of Great Britain, where the outfalls of the drains are at sufficient elevation, and in suitable places, to allow of the water drawn off being used for purposes of irrigation. Lands, to be deep-drained, may also be laid out, so as to work the subsoil-water of the upper portions over the surface and through the soil of lower lying districts. No available depth of drain yields pure water, and it has been long proved by analyses that water from a manured field contains soluble salts of any manures used: it must evidently be an advantage to pass such water over and through other lands. We throw out the hints for what they may be worth: we think deep-draining and irrigation may work together with advantage.

GUARD THE GRATES.

THE accidental burning of women and young children has become a thing of almost every-day occurrence, and forms a large proportion of the accidental deaths which take place in the metropolis. Many of these deaths are to be attributed to the arrangement of the furniture, the small size of the apartments, and the want of proper fire-guards. The other day a lady was burnt to death in Islington; and we are told that, in the bedroom in which the accident happened, there was barely space for any one passing in front of the fireplace, without the fashionable crinoline dress coming in contact with the grate. Lately, when the weather had become suddenly chilly, we noticed the unprotected fire-place in the book-office of the Crystal Palace Railway, which also serves for the line to Pimlico. Cold as the day was, both the doors were wide open, and an extraordinary draft of wind rushed through the place (swing doors would have prevented in a great measure this unwholesome arrangement): people come to a station, many heated in consequence of their having to catch a train, and are seriously damaged by their exposure to the current of air, waiting until it is time to pay the fare. Round the open unprotected fireplace, a crowd of ladies were waiting in a position in which their dresses were every instant liable to be blown against the blazing grate. There are few more terrible deaths than that from fire; and yet it is extraordinary how little care is taken to prevent accidents. Many lives and dwellings might be saved from destruction by properly guarding the grates. Indeed, with the present fashion of the dresses, in apartments of moderate size this care is really necessary; for we fear that it will be long before the fire-proof fabrics are brought into use.

ARCHITECTURAL DETAILS IN JERUSALEM AND NAZARETH.*

The three sketches of sculptured stone on this page are from the inner court of the Latin Convent at Nazareth. They are built here and there into the modern stone wall, over and near to the archway which leads directly to the principal entrance to the celebrated church of the Annunciation, without any regard to uniformity, but as if merely to preserve them as relics of some former buildings.

As they tend to testify the early existence of Christian art in Nazareth, it will be interesting to see whether historic records throw any light on the period of their execution, for they seem to be of various styles and epochs.

We find that there were in Nazareth no Christian inhabitants till the time of Constantine, and no Christian pilgrimages to it till the sixth century.

In the seventh century we hear of two churches existing in Nazareth, one over the fountain where a Greek church now stands, and the other over the supposed house of Mary, called the church of the Annunciation.

After the capture of Jerusalem by the Crusaders, Tancred, who was made governor of the province of Galilee, built a church at Nazareth. In 1263 this church was laid in ruins by Sultan Bibars, and continued so for nearly four hundred years.

In 1291 Nazareth was taken by the Sultan Khaleel, when he stormed the neighbouring city of St. Jean d'Acre. From this time, for a long period, Palestine was closed to Christian pilgrims and architects.

In 1620, however, the Franciscans obtained permission from the renowned Fakhr-ed-Dëen, to rebuild the church on the original site, and to take possession of the grotto of the Annunciation; from whence it is believed by the Latins, that the house of the Virgin had been removed to Italy.

It is said that these Franciscans found among the ruins the fragments I have sketched here.

* See page 744, ante.



Can they be relics of the church of Tancred, or of an earlier shrine upon this consecrated site?

There are other remains which bear the stamp of thirteenth century feeling, especially a curious cat-like monster, twining about grotesquely, with his hind leg over his head: it is carved on the key-stone of an arch, and is now introduced in the modern gateway leading from the outer to the inner court of the convent.

There are several old columns of red sienite near the church door, and a few carved capitals lying about.

From the time that the Franciscans began their work, under Fakhr-ed-Dëen's protection, when the present church rose out of the ruins, the convent has been ever increasing in importance and wealth.

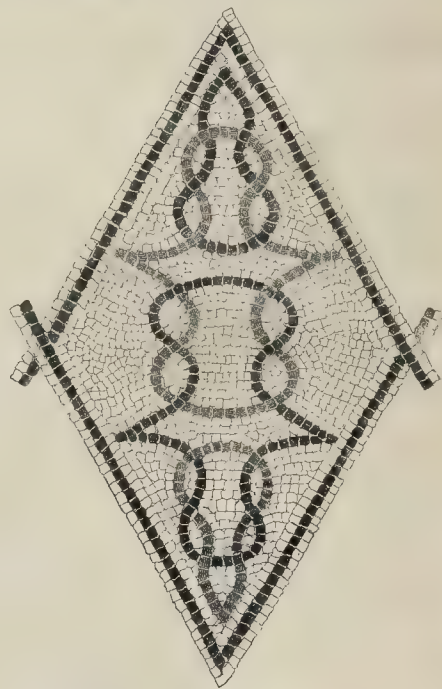
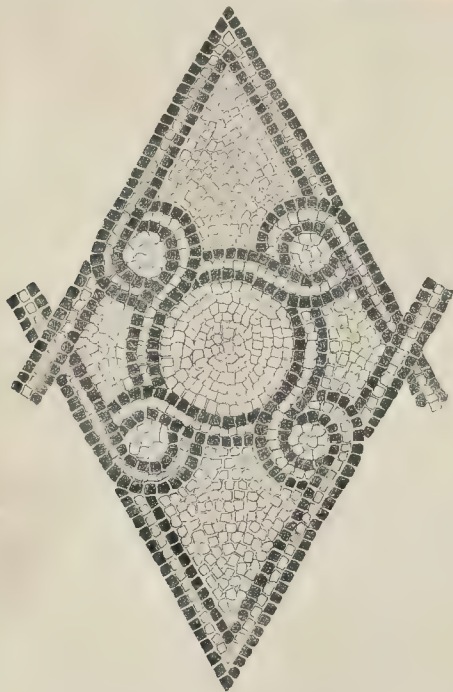
The church is about 70 feet square: the walls and piers are covered with canvas hangings, painted in imitation of tapestry: all the alabaster carvings and decorations, which really belong to the modern building, are, though very elaborate, bad in design, and executed without intelligence.

I tried to glean some information from the superior, but he was no archaeologist; he however gave me every facility in my examination of the convent buildings, in the spring of the year 1858.

About a quarter of an hour's ride from the City of Jerusalem, in a rocky and lonely valley, stands the "Convent of the Cross," lately very thoroughly restored by the Greeks, to whom it now belongs. An excellent college has been established there for forty or fifty students.

It was formerly the property of the Georgians, and was founded by them, in the fifth century, on the very spot where grew the tree which furnished the wood of the cross. This, at least, is the tradition.

The building stood in ruins for a long period, but much of the ancient portion is still carefully preserved. The old church is about 70 feet long, and is divided into nave and aisles by four massive piers, supporting pointed arches and a groined roof. The walls are covered with curious and quaint



frescoes, and the altar-screen contains a pictorial history of the sacred tree, from the time when it was planted by Abraham and Lot till it was hewn down and formed into a cross. In a dark, damp, rocky cavern, under the altar, an opening is shown as the identical spot of its growth.

As sculpture is strictly forbidden by Georgians and Greeks, all the decorations depend on colour;

but, in some of the pictures, the figures are cut out in thin wood, painted and mounted on appropriate backgrounds. The nimbus is generally of gold, and many stones and jewels are introduced in the adornment of the dresses.

Under the dome is a large square mosaic pavement, the finest I have met with in Palestine: quaint birds and curious figures and Christian

symbols are represented, and in the lozenge-shaped spaces, left by the intersecting lines of the framework of these devices, beautiful designs are introduced. I have selected two examples of the style. The tesserae of which this pavement is composed are about three-quarters of an inch square, and are black, white, red, blue, and yellow.

MARY ELIZA ROGERS.



THE VICTORIA ARCH, PEEL PARK, SALFORD.—MR. THOMAS GROOM BARKER, ARCHITECT.

THE VICTORIA ARCH, PEEL PARK, SALFORD.

ON the occasion of the Queen's second visit to Peel Park, on the 1st of July, 1857, it was considered desirable that some memorial should be erected, by which the event should be suitably commemorated. A committee of working-men was formed to collect subscriptions from the inhabitants of the borough, &c. They afterwards invited several architects to contribute designs for a memorial. About thirty designs were sent in. The committee then solicited a site, and decided upon the character of the memorial. Five of the designs were selected, the cost of erection coming within the limit of the fund which the committee have hopes of ultimately realising, viz.,

500l.; and from these they recommended for execution a memorial arch for the entrance to Peel Park, designed by Mr. Thomas Groom Barker, architect, Salford. This final selection being approved of and cordially accepted by the Park Committee, with an expression of their desire to render the Memorial Committee every facility and assistance in carrying out their object to a successful completion, it has been carried, as shown by the accompanying engraving.

In style it is called Byzantine; but that we do not feel compelled to assent to. It consists of a central and two side arches. The central arch, springing from short detached columns with capitals composed from the sycamore and maple, measures 24 feet to the crown; has a radius of

6 feet 1½ inch, and a clear width at base of 11 feet. It is flanked by octagonal towers, crowned by cappings giving them a minaret aspect, and rising to the height of 53 feet 6 inches from the ground. Over the arch is considerable space, varied by bands of stone mouldings. The cresting is eccentric. All the quoins, arches, columns, cresting, moulding, and bases are of a light coloured sandstone from Hollington, Staffordshire, whilst the panels are filled in with deep-coloured red brick. The length of frontage at base is 59 feet, height of arch at side is 12 feet 9½ inches, and the width 5 feet 4 inches. The openings are closed with iron gates, but these are not shown in the view. The statue seen in the distance is one of the late Sir Robert Peel.

PROPOSED MEMORIAL OF THE LATE
MR. BRUNEL.

On Saturday last, a meeting of gentlemen was held at the offices of Messrs. Pritt & Venables, Great George-street, Westminster, to consider the propriety of erecting a suitable monument to perpetuate his name and the memory of his genius and public services. There were present, among others, the Earl of Shelburne, who was called to the chair; the Recorder of London, Mr. H. T. Hope, Mr. St. George Burke, Mr. Joseph Locke, M.P.; Mr. Errington, C.E.; Mr. John Fowler, C.E.; Mr. J. Hawkshaw, C.E.; Mr. Thomas Woolcombe, chairman of the South Devon Railway Company; Mr. Venables, Mr. Saunders, Mr. Pritt, Mr. Wyatt, and Mr. Cripps, barrister.

Mr. Burke brought the matter before the meeting, and handed in 500 guineas in subscriptions from his own friends, limited to ten guineas. Various resolutions were passed, determining to take steps for the erection of a public monument, and arranging for the collection of subscriptions. It is to be hoped that the determination to have a visible artistic monument will be adhered to; and moreover that it will be something more than one of our ordinary namby-pamby portrait statues perched up on an egg-shell, set endways.

TO WORKING MEN.

In a lecture delivered at the Mechanics' Institution, Keighley, November 24, on "The Importance of a Knowledge of Drawing to Working Men," Mr. Walter Smith said:—

"It is high time that you working men of England should have something more to depend upon than the mechanical exercise of your various trades. It will be well for you if you can associate, in the practice of your callings, something which is unattainable by mere mechanical power. This is what I urge you to acquire for yourselves. Do not trust alone to your past competence to discharge the duties of your several professions, and argue that you have a store of knowledge laid up that will serve the term of your natural lives. For, let me tell you that, in the course of a few years, perhaps months, some inventive genius may discover a process which will render your trade skill as worthless as the paper currency of an insolvent bank. From our experience of the past, it is not possible to set limits to what can be performed by machinery. You must know how a simple invention, nay, even the change of a fashion, has rendered useless an apparently necessary trade. It is not well, then, to trust to that which may be taken from you at any moment, viz., the mechanical application of any power of muscle or trade skill. We have invented a giant force, steam power, and are gradually applying it to all more labour that can be accomplished by a repetition of motions or actions. Anything that depends on repetition of recognized and directed force may be accomplished by machinery.

And I warn you all, and each individually, not to allow any argument to convince you that your own particular trade must remain untouched in the progress of invention. So thought the carpenter; yet machinery has taken the planing and sawing, the moulding running and the mortise cutting out of his hands. So thought the mechanic; and I should tire you by recapitulating into what narrow limits machinery has confined his craftsmanship. So thought the agricultural labourer; yet it is taking the sowing and reaping, and ploughing and thrashing out of his hands. Indeed, we can reckon up what machinery can *not* do, sooner than tell what it can. Do not, therefore, be beguiled into a slothful trust of your own mechanical powers. I would rather see you diligently exercising yourselves in such self-improvement as would both make you better workmen now, and less dependent on your present standard of work.

There are, however, certain things which machinery *never* has done and *never* will do. It will never be made to think, or design. All that the hand alone will do will in time be done by machinery; but it can never do what may be done by the hand, guided by intellect, and taught by art.

Come, then, I urge you to your own institution, and learn to draw. Possess yourselves of a power more potent than steam, more subtle than machinery. Do not be ashamed to learn because you are grown men. As long as a man learns, he has not done his mental growth, be he ever so old. His mind is youthful and expanding. But when he is ashamed of learning, or too proud to learn,

he has attained his perfect mental development, his growth his over, and he remains for ever a dwarf in intellect, a pigmy as a man. The great and the good are always learning, and I here urge you by learning to become both great and good."

ART AND SCIENCE IN CHINA.

At the Society of Arts, on the 23rd ult., Sir John Bowring read a paper on "China and its relations to British Commerce," in the course of which he said:—

"Looking into the early history of China, I find that 4,000 years ago the art of draining was thoroughly understood; that mountains were levelled, that valleys were raised, and that agriculture was carried on in a state of perfection, beyond which it has not progressed a step. I find that 2,200 years before Christ the Chinese people were clad in silk; and there is a very ancient proverb which says it is an opprobrium to a man who, having reached the age of fifty, does not possess a silk garment. I lately stumbled upon a passage in a history of the second century, in which I found a description of the manufacture of paper in all its details, from rags reduced to pulp, and which, by pressure, were made to give a paper upon which the Chinese were in the habit of writing, while it is notorious that in Europe the manufacture of paper was contemporaneous with the invention of printing, and, perhaps, more important than the invention of printing itself in the advancement of civilisation. Many of the discoveries which are modern in Europe are ancient in China. It is impossible to say when the Chinese had not the printing art. The mariner's compass, it is notorious, was possessed by them hundreds and hundreds of years before we had any knowledge of it. There is a description even of iron boats and rotary paddles at a remote period. Every one knows of what antiquity is their beautiful porcelain. So far from progression, I am sorry to say that these arts are in a state of decadence in China, and the value of porcelain is now estimated by its age. In consequence of some porcelain having been found, either in the Pyramids or in the ruins adjacent to them, it was maintained that there must have been intercourse between China and Egypt, and that these, bearing as they do, undoubtedly, Chinese inscriptions, and being filled with cosmetics or perfumes, or with the valuable produce of the East, contained evidence of the existence, not only of the Chinese language three or four thousand years ago, but of intimate relations between India and China. The fact led to investigation, and we were enabled to trace in the poets of China every inscription that was found upon these curious porcelain jars; and this showed that they could not have had an earlier existence than the period at which these poets lived, which was between the eighth and the tenth centuries, certainly a very curious and not uninteresting fact."

THE METROPOLITAN BOARD OF
WORKS.

INCORRECT BILLS OF QUANTITIES FOR DRAINAGE
TENDERS.

Our readers will recollect the startling statements we made long ago in respect of the bills of quantities for the Northern High-Level Sewer, statements which have never been questioned. At a meeting held last week, the Board proceeded to consider a motion by Mr. Peckett:—

"That the order of the Board of the 15th April last, to Mr. Moxon, not to pay the claim of Messrs. Roberts & Gotto, for taking out the bill of quantities for the Northern High-Level Sewer, be rescinded."

and an amendment, proposed by Mr. Leslie,—
"That the reports of William Pole, esq., C.E. (ordered by the Board at an expense of 250*l.* to the ratepayers), upon the services of Messrs. Gotto & Roberts, upon which their claim is founded, be taken into the previous consideration of the Board."

A long discussion ensued on the alleged errors and discrepancies in the bill of quantities. Mr. Pole, civil engineer, had been commissioned by the Board to examine and check the bill of quantities in question, and to report how far it correctly represented what should have been laid before the parties tendering on which to base their estimates. The report of Mr. Pole was before the Board, and was constantly referred to during the discussion. The principal discrepancy in the bill of quantities was stated by him to be as regarded the concrete, which was given by the surveyors in the aggregate about 22,000 cubic yards greater than the quantities shown on the plans. He added that the excess of about 50 per cent. was so constant in every length of sewer

that it was quite clear that it must be intentional and systematic, and could not be attributed to any incidental errors. The alleged discrepancies and errors were variously estimated in money,—by Mr. Leslie at upwards of 30,000*l.*, by Mr. Bennett at about 15,000*l.*, and by Mr. Carpmael at possibly 7,000*l.* The discussion turned chiefly upon the data on which, and the manner in which, the surveyors and Mr. Pole had come to such conflicting conclusions. A question was raised incidentally how far the errors in the bill of quantities given in by the surveyors were due to mistakes of judgment or to motives of fraud. On a division the amendment was lost, six voting for and twenty-one against it. Mr. Peckett then moved an amendment to the effect that, although it appeared that the quantities taken out by Roberts & Gotto were inaccurate and excessive, yet, considering it was unadvisable to call on Mr. Moxon, the contractor, to contest the legality of the claim made by them upon him for that bill of quantities, that the Board rescind its previous order that Mr. Moxon should not pay that claim. This amendment was, on a division, negatived by eighteen to nine. The question was eventually settled by the adoption of an amendment, moved by Mr. Ware, and carried by twenty-one to seven, that Mr. Pole's report did not contain a sufficient justification to continue the previous order of the Board to Mr. Moxon not to pay the claim of Roberts & Gotto, and that such order ought to be rescinded.

The extent to which the ratepayers have suffered by this transaction, has not yet been made clear. One of two things, of course, is certain: either Mr. Moxon, who obtained the contract, estimated on a different bill of quantities from that supplied to the other contractors who tendered, in which case the latter were, of course, being played with and lost their time; or he estimated for the erroneous quantities, and will be paid for a much larger amount of work than is to be done.

Some of the newspapers are now making a stir in the matter. When we first pointed it out to the public, they were silent enough.

CHURCH-BUILDING NEWS.

Oxford.—A new church is to be erected at Park-town, St. Giles's, from a design by Mr. Street, architect. The style chosen, according to the *Oxford Herald*, is an amalgamation of the English and French Early Decorated styles. The plan comprises a nave, with north and south aisles, transepts, a central tower forming a chancel, an apse eastward of this, a south porch, and a vestry. The tower is crowned by a spire. The nave is of such breadth that the whole congregation nearly will be seated clear of the pillars of the arcade: the aisles are narrow, and will seat but few: the pillars are far apart. In the transepts the children will sit, and the organ be placed. The eastern apse is not a strictly English feature, but Mr. Street's apse, though of course smaller, will, it is thought, bear comparison with Mr. Scott's. The tower rises above the great roof of the nave, clear of the ridge, to a considerable height. It is here that Mr. Street's combination of the English and French Decorated is most notable, according to the *Herald*. The clerestory of the nave rises well above the aisles, and is English in character. Marble is freely used in the interior; and, both within and without, bands of coloured stone are sparingly employed. These being horizontal, serve to modify the general tendency of the church, which is vertical and aspiring in a high degree.

Melbourne.—The new cemetery for Melbourne and King's Newton is completed. It is situated on the turnpike-road from Melbourne to King's Newton. The boundary between the consecrated and unconsecrated portions is formed by a carriage drive of the width of 15 feet, which is to be bordered on either side by chestnut and lime trees. The chapels and vestries are connected so as to form one group, and are situated on a raised platform in the centre of the ground. An archway is provided for the hearse to draw up underneath, and to shelter the entrances to the chapels, which are on either side of the archway; and the central portion of the group is formed by a tower and spire of a total height of 85 feet from the ground to the top of the vane. The chapels are of exactly the same proportions and style, but differ somewhat in details: they are each about 30 feet by 16 feet interior dimensions, and will each accommodate about fifty persons. The lodge, adjoining the main entrance, is in the same style as the chapels. The whole of the buildings have been erected in the Gothic style, and are from the de-

signs and under the superintendence of Mr. B. Wilson, architect, who also laid out and superintended the approach roads, drainage, planting, and forming flower-beds and other parts of the work. The "extras," according to the *Derbyshire Advertiser* do not amount to 10*l.*; and the accepted tender was 50*l.* below Mr. Wilson's estimate given with the design at the competition. Mr. Cooper, of Ashby, was the contractor for the buildings, and Mr. Earl, of Melbourne, for the roads, drainage, &c.

Leeds.—A statement in reference to the repairs and restorations now in progress at Lichfield Cathedral has been issued by the Dean and Chapter. The choir is now undergoing restoration. The Dean and Chapter are convinced that they are acting in accordance with a very general feeling in their endeavours to bring again to light those architectural beauties in this part of the edifice which have been so long suffering under concealment and mutilation. They referred, in the first instance, the whole subject to a committee, consisting of five gentlemen:—Mr. A. J. Beresford Hope, the Rev. J. Petit, and Messrs. S. Smirke, G. G. Scott, and B. Ferrey, and received from them a report, unanimously adopted, with the exception of some difference of opinion expressed by Mr. Petit. This report they have taken for their guide, entrusting the details of the work entirely to Mr. Scott. Their financial position at this time is as follows:—

Amount already expended:—	
Warming apparatus and double-glazing windows in choir	£1,556
Fitting up nave for service, benches, and removal of the organ	370
Work done in the choir, from October, 1857, to August, 1859, including restoration of mutilated stonework in arches, vaulting, and columns, many of which are almost entirely new; scraping off whitewash, scaffolding, stone, and materials, &c. &c.	3,005
	£5,920

The Chapter have expended this amount out of their ordinary fabric fund, on which a surplus had accumulated. This fund they estimate will suffice for the restoration of the stonework, much of which is still unfinished. It is proposed to re-open the choir as soon as funds can be raised for the Bishop's throne, stalls, gateways into the choir, the fine carving in stone, and some part of the metal screens. These will require not less than 5,000*l.* The remainder, including the reredos, new organ, pulpit, benches, and the metal screens, which will require a like sum, and also the restoration of the Lady Chapel, must be indefinitely postponed, unless means for their completion are speedily provided.

Liverpool.—Certain works of restoration and repair have been going on at St. George's Church, the officially-patronized church of the town, for six months past, and probably will be for six months more. The site was anciently occupied by the Castle; but, when the church was erected, some trouble was experienced in securing appropriate foundations. The body of the church, says the *Journal*, was built on piles, whilst the foundation of the steeple was dug to a depth of 30 feet, so that it might rest on the sandstone rock. Two vestries were placed on either side of the steeple, and the foundations of these were laid upon blocks of wood placed in transverse directions. The wood, not being sufficiently deep, was subjected to the variations of the atmosphere, and began to rot. In consequence of this the vestries gave way, together with the surrounding walls; and at last it was feared that they would fall. Workmen, on coming to the foundations, found nothing but rotten wood. These they have replaced by thick beds of concrete, and the vestry on the north side has just been restored. During the late severe gales the spire of the church, which springs from the tower to a total height of 230 feet, was observed to rock considerably. On being closely inspected, the upper portion of the spire, a cone of solid masonry, seemed to have been removed from its bed out of the perpendicular. Scaffolding is now being run up by Mr. Wells, the contractor, as expeditiously as safety will permit. Whether the spire will have to come down or not is uncertain until it has been surveyed; but the probability is, it appears, that the upper portion will have to be rebuilt and secured with new iron cramps.

Droylsden (Lancashire).—An Independent chapel was opened here on November 23rd. The plan forms a parallelogram, 63 feet long by 35 feet wide inside, with porches on each side of front elevation, making the front in all 53 feet wide. This front is divided into five compartments, including the centre one, which has a large five-light window, with tracery of flamboyant character. The main school-room (underneath the chapel), is

35 feet square, with nine class-rooms opening out of it, including an infants' class-room, 22 feet by 13 feet. Most of the class-room doors are folding ones. The chapel has one end gallery, and is built of sufficient height to allow of future side galleries. The cost of the whole, including lighting, heating boundary-walls, &c., will be about 1,900*l.* The exterior is faced with red bricks, relieved at intervals with bands of white fire-brick, and with York stone dressings to doors and windows. The tower is surmounted with a spire, square on plan, the whole rising to 90 feet in height. There is accommodation for 400 adults, on ground-floor, and 116 in end gallery, making a total of 516 sittings, exclusive of side galleries. The school will accommodate some 400 scholars. The architect was Mr. R. M. Smith, of Manchester; the builders, Messrs. Bates, Baguley, & Bates, of Droylsden.

Leeds.—A new chapel and school-room have been opened in Burley Lawn, by the United Methodist Free Church. The building, which has been designed by, and carried out under the superintendence of, Mr. G. Smith, architect, Leeds, is of the Italian style of architecture, according to the *Leeds Intelligencer*, and built of brick, with stone dressings. The chapel is 55 feet 6 inches by 37 feet, and 24 feet high, with a small gallery over the entrance, and will seat about 500 persons. The windows are glazed with stained and flocked glass margins. The school-room is 42 feet 6 inches by 37 feet, and 12 feet high. The works have been executed by the following contractors:—Joiner's work, mason-work, and brick-work, by Messrs. W. Nicholson & Son; plaster-work, by Mr. W. H. Barker; plumber-work, by Mr. T. Storey; painter's work, by Mr. E. Smith; and slater's work, by Mr. W. Watson, all of Leeds. The total cost of the building, including land, &c., is about 1,400*l.*

Newcastle-upon-Tyne.—St. James's Congregational Chapel, situate in Blackett-street, has been reopened after reconstruction. The present building is on the site of the old one, the limits of which were confined on three sides by the adjoining streets. The site being wider at the west end of the building than at the east, or entrance end, remarks the local *Courant*, has rendered its internal arrangements as well as its external treatment a somewhat difficult matter. To obviate this difficulty internally, the architects have resorted to a novel and successful expedient, by carrying the iron columns which support the galleries up to the ceiling in a parallel line, between which is formed a cove, which gives the appearance of a uniform width of ceiling to that portion of the roof which mainly strikes the eye. The pulpit is placed at the entrance end, for the purpose of securing an increase in the number of sittings. The basement of the building has been excavated to the depth of the original foundations, thus securing a large lecture-hall and school-room. The building, which may be said to be in the Anglo-Italian style of architecture, is a stone structure, the front being carved and moulded. The portico is approached by a terraced entrance. The interior of the church has large open benches of stained and varnished deal. The pulpit is of Caen stone, with polished marble shafts. The gallery front is filled with open ironwork, backed with blue, the ironwork being painted white, and relieved with gilt. The whole of the other iron and plaster ornamental decorations are also painted white, and relieved with gilt. The prevailing colour of the walls is a light grey, relieved at intervals with a pale red in the medallions, spandrels, &c. which are also decorated with gilding. The upholstery is entirely of blue-coloured material; and the great east window is filled with diaphane, executed by Mr. Joshua Watson. The building is warmed; ventilated by means of channels and shafts throughout the walls and roofs; and the artificial lighting by gas is effected by means of star-lights from the ceiling. The acoustic properties are said to be improved by the coved ceiling. The architects are Messrs. Oliver and Lamb, of Newcastle. The building has been erected by Messrs. Scott and Reed, masons; Smith, joiner; Montgomery, plasterer; Jobling, plumber; Dunn, painter and decorator; Beck, slater; and Beall and Patterson and Burstall, carvers. The pulpit was executed by Mr. Beal; and the warming by Messrs. Henry Walker and Co. of the Neville Iron Works, of this town. The organ, which is fixed at the east end of the building, has been provided by Mr. Clark Dawson.—A new Roman Catholic church is about to be erected at Walker. The church will consist of a nave, north and south transepts, with a tower; and will contain 855 sittings when completed. Mr. Foggin, of New-

castle, has undertaken the contract for the mason work, which will be carried out under the superintendence of Mr. Archibald M. Dunn, the architect from whose designs the church is to be built.—The foundation stone of the Clayton Memorial Church has been laid on a site on Jesmond Cemetery-road. The architect is Mr. Dobson. The edifice will consist of a nave, with communion at the end, 112 feet 3 inches long, by 27 feet 6 inches wide, having an open timber roof, the apex of which will be 54 feet high from the ground. There will be a north aisle 10 feet long by 13 feet 7 inches wide, having an entrance from the east end, and a south aisle 90 feet long, by 13 feet 7 inches wide, having an entrance porch, together with a vestry and tower entrance at the east end. The church will accommodate about 840 persons on the ground floor. A gallery might contain about 490 additional sittings, making a total of about 1,330 sittings. The church, which will be of the period of Geometrical Decorated architecture, is likewise designed for a tower and spire of the height of about 150 feet. Mr. W. C. Robson is the contractor for the mason's work, and Mr. James Dunlop for the joiner's work.

High Elswick (Newcastle).—St. Paul's Church has been consecrated. It has been constructed from the design of Mr. John Dobson. Towards the cost of the new church, one lady alone made the donation of 1,000*l.*; but in consequence of the limited means at the disposal of the committee in proportion to the number of sittings required, the church was designed in the most simple form of Gothic architecture, and is calculated to contain about 900 sittings, 550 free. The building is after the Early English period, and consists of a nave, with an altar recess at the end, 111 feet 6 inches in length by 28 feet in width, which has an open timber roof stained as oak, the apex of which is 54 feet high from the floor. The nave is divided from the aisles by six arches on each side, with a span of 15 feet centre and centre, and a clerestory above the arches. The nave terminates at the south-west angle with a bell-turret and spire above. The aisles are 113 feet in length by 16 feet wide, and have open timber roofs, stained as oak: the fourth aisle has an entrance porch. The east end of the nave has a triplet window, finishing at the top with a quatrefoil light. The west end of the nave has two single-light windows, with a wheel window above, in the centre of the gable. These windows are intended to have stained glass. The piers and nave arches, as well as the window jambs and other moulded work, are of stone. The interior of the walls is plastered. The building has been erected at a cost of about 4,500*l.* exclusive of the site; the contractors being—Mr. Joseph Kyle, for the masons' work; Mr. Calder, for the carpenter and joiners' work; and Mr. John Bailey for the plumbers' and gasfitters' work.

Linark.—We are asked to mention that the architects of the chapel were Messrs. Hadfield and Goldie, instead of Goldie alone, as stated.

MONUMENTAL.

A MONUMENT has been erected in St. Mark's Church, Brighton, to the memory of the late Marquis of Bristol. The chancel of the church has been altered, the old windows removed, and new windows built in of Bath stone, moulded, and with polished marble columns. The windows are filled with stained glass, in subjects, the centre window representing "The Ascension" of Christ, and under it the figure of St. Mark, with his Gospel. The window on the left-hand has "Christ leaving his Disciples in Sorrow after the Supper," and on the right-hand the Angels, as addressing, and the Apostles while gazing after his ascension. To each of the subjects are texts of illustration. The windows have been painted by Messrs. Lavers & Barrard, and the works executed by Messrs. Jackson & Shaw, under the direction of Mr. Peacock, of London, the architect. In the centre, under the window, is the reredos of Caen stone, cut in diaper with a central panel, with the words, "Till He come," carved, and enveloped in foliage of the passion-flower (referring to the second coming of Christ). The whole is relieved with colours of blue, red, and gold. Over this, on the plinth of the windows, is the inscription, engraved on brass, and inlaid—"In memoriam honorandissimi Frederici Gulielmi, primi Marchionis de Bristol, funditoris hujus Ecclesiae. Nata A.D. 1769, defuncti Vitis X^{vi}. Kal. Mart. 1859." The funds have been raised by public subscription, a token of the liberality and benevolence of the founder, and expended by the Rev. E. B. Elliott, the incumbent.

A marble monument to the late Lord Francis Gordon is about to be erected in the Military Chapel, Windsor.

Steps are being taken to promote the erection of a suitable monument in Spilby to the memory of the late Sir John Franklin, that being his native town.

A public meeting has been held at Newcastle-on-Tyne, to consider the best mode of testifying respect for the memory of the late Mr. Robert Stephenson, C.E. Most of the leading men in the town and district were present, and the chair was occupied by Lord Ravensworth. Mr. George Ridley, M.P., moved a resolution to the effect that the best mode of carrying out the object in view would be to erect a monument in Newcastle. The Hon. H. G. Liddell, M.P., seconded the motion, which was carried unanimously. Mr. John Clayton moved the next resolution, that such monument should partly consist of a statue of the late Mr. Robert Stephenson. This resolution was also agreed to. Mr. T. E. Harrison, C.E., moved that, in addition to the monument, a portion of the fund subscribed be devoted to the establishment of one or more scholarships, to be open to the youths of Newcastle and the district. Dr. Bruce, an old schoolfellow and college companion of the late Mr. Robert Stephenson, seconded the motion. A good deal of discussion took place with regard to the terms of this motion; but ultimately it was resolved, that a portion of the funds be devoted to educational purposes, and that the committee, about to be appointed, report at a future meeting the plan they suggest for carrying this motion into effect. The existing Stephenson committee, with power to add to their number, were appointed a committee to carry out the resolution of the meeting, and raise subscriptions.

The statue of the late General Neill, at Ayr, has been inaugurated. The monument has been erected in Wellington-square, in which Brigadier-general Neill was born on May 27, 1810. The subscriptions amounted to upwards of 1,250*l.*, and the execution of the bronze statue was entrusted to Mr. Noble, sculptor. The statue is cast in gun metal, which was supplied by Government, at the same time that a similar grant was made for a statue of General Havelock, and for a monument at Chatham to the Royal Engineers. The metal alone is of the weight of 3½ tons, and of the value of 360*l.* The figure is of colossal size, 10 feet high, and stands upon a pedestal of granite, 2 feet high. One hand of the general rests firmly on his sword, and the other is extended in an attitude of command. Behind and at his feet are a broken cannon, a pith helmet, and a round shot.

Within a month or two Berlin will receive artistic adornments of a notable kind,—a pendant to the Amazon group posted upon the staircase of the Museum, and known in England from its exposition in the Crystal Palace of 1851. The new group represents the struggle of a warrior on horseback with a lion, and, being a work of Albert Wolff, is expected to equal the achievement of his brother artist Kist. It is to be posted on the corresponding flank of the staircase.

ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

SIR,—As one of the "*six gentlemen who were not even subscribers*," I must protest against your protesting committee-man's letter,—not that I have any hope that the Association can be carried on successfully; for, if the acts of the committee are to be judged by that letter, and by what I saw of their proceedings at the "special general meeting," I cannot wonder at the failure of the whole plan.

I attended that meeting from seeing the advertisement in your *Builder*, signed by the original promoter, "Robert Hesketh." I never was at any previous meeting, and I have been in no way mixed up with any "*cabal*." I heard a record read of a report from a meeting, at which (I think) eight members of the committee were present, thus justifying the advertisement. As to the idea of those present not being subscribers, who ever heard of a society constituted by subscribing members, suspending the qualification of membership because subscriptions for the current year had not been applied for?

But to the immediate point of the latter paragraph of the protester's letter. Mr. Hesketh's scheme was originally expressed in a somewhat doubtful manner. I certainly understood it to mean, that the management intended to cause to be photographed, for their own use, negatives of such valuable and important architectural objects as, not being accessible to the public, might, by a

mutual fund, be given to the subscribing members at a moderate cost. If this plan had been carried out, we should have obtained three or four subjects, well approved, and all worked from the negatives of equable tone and beauty, under the control of the management. But if this was ever the limited view of Mr. Hesketh, the object was soon enlarged. And from the moment that a more general collection of subjects was made for public exhibition, and for the selection of the subscribing members, the Association became what Mr. Bury and others complained of in the meeting, "an ill-judged trading proceeding," which, the protester says, "was never contemplated." For consistency, therefore, those of the committee who entertain such views should have withdrawn from the moment that Mr. Hesketh's matured plan was promulgated. That plan, however, being determined on, the success of the trading operation depended entirely on the vigour and tact with which the arrangements for procuring photographs from the different artists were carried on. I cannot but think that the failure has taken place simply because Mr. Hesketh, having departed from what I understood his circular to have expressed as the original plan, found himself involved in an amount of business which only a paid secretary could properly manage. Hence the disappointment to the subscribers, who found that at one exhibition they could speedily obtain fine impressions of what they chose; while, at the other, a long delay was not always followed by a satisfactory delivery of fine impressions.

I doubt if any one will be able to carry out an exhibition, and the present plan, without an amount of labour that involves a paid secretary; but I strongly deprecate the tone adopted by those who, seeing the difficulties, wish to ignore the subscribers, and coolly call them a "*cabal*."

SAMUEL HANSON.

THE ABBEY CHURCH AT LINDISFARN.

It is reported that there is an intention to roof in and restore the old Abbey Church at Lindisfarn, or Holy Island (a magnificent specimen of Norman), of which, I believe, the property is vested in the Crown. Can any of your readers inform me whether the report is true, and, if it is, into whose hands the restoration has been committed. It is needless to observe that a ruin so interesting, both historically and architecturally, ought not to be touched except by an architect of the most undoubted talent and knowledge.

VIGIL.

IMPROVEMENT OF TOTTENHAM COURT-ROAD.

WHILST thousands are being expended on a new approach to Covent-garden, could not you induce the authorities to remove the little block of wretched houses (a remnant of Old St. Giles's) that obstructs the junction of Oxford-street and Tottenham Court-road,—a spot now difficult and sometimes almost dangerous, from the crowds of drays, omnibuses, and cabs congregated there?

At a trifling cost this very obnoxious corner could be made a broad and convenient thoroughfare,—an ornament instead of a disgrace to the metropolis, and an especial boon to myself and companions.

RUSSELL SQUARE.

RULES OF TRADE SOCIETIES.

I TRUST the few remarks I wish to make, in reference to the builders' strike, will not be considered impertinent, and may be attended with benefit. Having watched this unfortunate affair through all its stages, it appears at the present moment to be most desirable that the men who are desirous of belonging to a society should have the best information on the subject, and be enabled to remodel their societies, so that they would be *beneficial to themselves and families*, unobjectionable to the employer, and not prejudicial to the public good; in fact, that they should be perfectly healthy in all their aspects. Therefore, feeling that a working example of such a society would be more likely to remove every prejudice than any argument without an example, I beg respectfully to submit the following extracts from the trade society of the United Order of Smiths, Manchester, which has been in existence since 1822:—

"It has been already stated that this society had an early origin, and, like most of its kind, became embued with, and indulged more or less in, the category of strikes, which expensive item, in all probability, tended more than anything else to repress and to reduce its funds and its members to a very low ebb. In the year 1844 a delegate meeting assembled, at which it was unanimously

considered and determined that strikes of all kinds, however seemingly just in their nature, were in the aggregate an unremediated evil on the part of the operatives, and an unmitigated one to all concerned—in fact, an infliction upon society at large—the immediate enactors being the proximate sufferers in all cases, the ultimatum of which was beyond calculation. At this meeting it was most wisely determined, for the future, to avoid all such contests, and thus this society became incorporated, in point of fact, as the original Anti-Strike Society, a fact (although put forth, perhaps, a little before its time, and which may, in some respects, have militated against the society), yet a fact of which we have no cause to be ashamed; a fact which, in the short space of eight years, has nearly trebled the number of our members, and has enabled us to meet every demand honourably, which certainly was at one time rather doubtful; and, above all, has put us, in a pecuniary sense of the word, in such position that perhaps no other society of the kind can boast of. So much, then, for anti-strike principles. Want of intelligence on the part of both man and master induces and precipitates strikes: they are battles between the employers and employed, which are too often unwisely and indiscreetly got up by one or both parties, and continued more for the purpose of trying which shall gain the mastery over the other than otherwise, at no trifling sacrifice both to themselves and to the public at large, when a small spice of intelligence would convince both that it is impossible for the wages of labour or its concomitants to be permanently regulated by individual action. Disputes of this kind can only be settled by friendly consultations between master and man, imbued with the spirit of mutual understanding, with a view to render assistance to each other: if this, in connection with the efforts of mutual and disinterested friends, cannot be accomplished, we say, let men and masters part, offer no opposition to the men, however great or small their number, to be supplied with means of existence until they obtain other situations of work from the funds of the society (their savings-bank); and the employers to obtain other men as best they may; and we contend that this unassuming quiet plan of operation, as pursued by this society, is, according to its number of members, accomplishing, and will continue to accomplish, infinitely more real good to the trade in all its ramifications, at a minimum expense to its members, than any other plan of operation, by any other society, however much vaunted or boasted of, and therefore deserves to be well supported by the operatives of the trade in general.

The history of strikes in the aggregate confirms the opinion, that they are a serious evil to all concerned, and to the public in general: the right to combine is true to that artisan, and operative, as well as employer, are fully entitled. Combinations are capable of producing great advantages, and supply important deficiencies; the master of the operative is his capital, and he is justified in disposing of it to the greatest advantage, and protecting it from injury or depreciation; but he is justified in no more: he must stop here; he has no right to assume, or interfere with others: the moment this line is transgressed by either master or man, that moment a complete change is effected in the character and operation of the body: from a positive good it becomes a positive evil."

In conclusion, I beg to draw attention to the impossibility of keeping up an artificial state of price above the market value, by the fact patent to all, viz., the inability of the rich men of the land, the landed proprietors, with every lever at hand, to keep up the price of corn. Sir Robert Peel, one of the most able men of his age, clearly saw this; and the correctness of his judgment has not been questioned: in fact, it is undeniable, and evident to every man who will take the trouble to ascertain the truth for himself, instead of being led by others.

T. A. C.

ARCHITECTS AND AMATEURS.

SIR,—I see, by the notice paper for the next ordinary meeting of the Institute of Architects, that it is proposed to elect the Rev. John Parker, of Llanyblodwell, near Oswestry, as honorary member ("his acquaintance with the science of architecture and merits as a draughtsman fully entitling him to that position"). Permit me to say that, though I am not personally acquainted with the gentleman named, I know the scene of his architectural labours well, and so does every child who has seen it once; and that, as I am myself a legitimate practitioner and a judge in these matters, I never saw or imagined greater abominations of architectural science, as practised in ancient or modern time, than have been the result of the genius of this same Mr. John Parker. In one instance he has built a spire to his church; and, if originality be a work of genius, such originality as this deserves a statue to Mr. Parker in Westminster Abbey; for there is nothing in Heaven or earth, or in the waters under the earth, like it. Out of the fulness of "his acquaintance with the science of architecture," too, Mr. Parker has produced a school (Gothic, I suppose, of the reign of Sumiramis), which, though holding but a handful of scholars, has its wall fabulously thick, and buttresses strong enough to support Salisbury spire, but has no semblance to buildings of its usual class. As to Mr. Parker's merits as a draughtsman, I cannot exactly speak; but, if they are only on a par with his architectural genius as shown, they would give him a poor claim indeed to the knighthood of the T square, or the loose wrist either.

But why, it may be asked, should I single out this gentleman, he being only one of a hundred of such people? I answer, because he affords to my

knowledge a case in point to the matter with which I shall conclude. Now, sir, if it is, as professed, the wish and the province of the Royal Institute of British Architects to encourage the practical workers in the art as much as possible, they should be very chary of electing such men as Mr. Parker, who I maintain do more injury to the practical working of the profession than all the public ignorance so much complained of by, without giving the public something better to look at, you certainly cannot improve their taste. Let people be amateur architects as much as they like on paper, but not put up abortions to disgust the public, and at the same time deprive the regular professional man of his legitimate privileges.

M.R.I.B.A.

THE ARCHITECTURAL MUSEUM.

Sir,—I observe, in last week's *Builder*, a copy of the letter recently addressed by Mr. John Bell to the committee of the Architectural Museum, on the subject of an exhibition of an epitome of the various styles of architecture.

Mr. Bell's suggestion will be brought under the consideration of the committee at their next meeting, and, if found feasible, they will, I feel sure, be happy to aid in carrying it out by every means in their power.

I take this opportunity to mention, as our lectures are rather later this session than usual, that they will be commenced on Wednesday, January 11th, with a paper "On the Norman Architecture of Canterbury Cathedral," by Sir Walter James, bart.; and that they will be continued on alternate Wednesdays, by Mr. Godwin, "Records of Workmen: the Past to encourage the Present," Mr. W. White, "On Architectural Uniformity," Mr. E. B. Denison, "On Civil Architecture," The Presentation of Prizes to Artist Workmen; Mr. John Bell, "On the Union of Sculpture with Architecture," and Mr. R. H. S. Smith, of the Department of Art, "On Architecture, as Developed by the various Races of Man."

JOSEPH CLARKE, Hon. Sec.

WORKMEN IN THE WINTER.

SIR,—I take it that the cause of so many house-painters, and others connected with the building trade, being out of employment in the provinces, in the winter months, arises from the fact that a discerning public decidedly have an objection (and who wonders at it?) to pay a day's wage for a man who can only see to work three-quarters, that is, from light to dark, or, in other words, to give ten hours' pay for seven hours' work: as such they postpone their work until days lengthen. Now would it not be better for the men, as a body, to declare their willingness to be paid by the hour? and disadvantage to the public would at once cease (trades affected by the weather are, of course, exceptions, such as bricklayers). Well, then, I say, let masters be put in a position to say to their customers, that the length of the days is immaterial, as their men are charged by the hour, and paid accordingly; and I believe the effect would be, that the men would not have more wages than they could judiciously spend in the summer (as is so often the case with overtime), nor have to starve out an existence in the winter months for want of work.

S. C.

THE WORKMEN'S INSTITUTE AND BENEFIT CLUB.

A commodious reading-room, supplied with books, newspapers, and periodicals, has been opened for workmen in York-road, Lambeth, on payment of 5s. a year, 6d. a month, or 1d. a day. Lectures are to be delivered from time to time on matters of general interest. The members of the institute will be subject to no rules or laws whatever, except to such regulations as may be found necessary for the maintenance of good order in the club. The management will be vested in a committee composed of honorary and subscribing members of the institute. There is, moreover, a smoking and refreshment room attached to the establishment for the convenience of members. The institute will also be of use as a house of call for all trades, where the call-book will be accessible at all hours, free of charge. A benefit club, too, under the management of honorary and benefit members, will be shortly opened in connection with the institute, enabling the working man to make provision against sickness, old age, &c. The institution is intended to be self-supporting; but it requires aid at its commencement, and all who wish well to the independence of the working man are earnestly solicited to afford it

support. Another branch of the institute is in operation at 237, Euston-road, and others will be opened as soon as possible. We look at this as a "Social Bridge" of no slight value, and shall be much surprised if it be long before this be fully recognized.

BEAUCHAMP CHAPEL, WARWICK.

Do, I pray, raise your powerful pen against the destruction of the external details of one of our most beautiful perpendicular Gothic structures. Restorations have been for some years in progress. To one compartment of the parapet, just now finished, I wish to call particular attention; it is so interestingly different from any of the original. The masons may be good workmen, and the material may be all that could be wished for; still, in addition, in a work of this character, I think a tolerable knowledge of the rudiments of architecture might be beneficially employed: the work itself pleads guilty on the first examination, and without any accuser. I hope something may be done to stay the hand of the destroyer of all that is beautiful to the artist, interesting to the archaeologist and antiquary, all worth studying by the architectural student, or creditable to the conservators of the building.

HOPE.

* * * Some years ago we took occasion to protest against the course which was being pursued with the so-called restoration of this edifice.

ROYAL DRAMATIC COLLEGE COMPETITION.

SIR,—As another of the competitors for the above, I heartily concur with your correspondent of last week, and beg to enlist your ever-ready pen in favour and support of that myth, competition just-see.

We (the competing architects) have, as your correspondent observes, a duty to perform. For my part, I ask you seriously, Mr. *Builder*, if you can honestly build a series of houses in the Elizabethan style of architecture, externally clothed in red brick, and "stone quoins and mullions, substantially built" (vide conditions), each house suitable for the comfort and accommodation of two individuals not being paupers, each individual to have a bed-room and sitting-room, a kitchen, and water-closet,—all for the sum of 250l. per house? No, sir, it is too much for building nature, and in defiance of the standing orders of the conditions. My estimate was framed in accordance with my design, and the wishes of the committee, *structurally*, but *not financially*.

J. C.

EXCESS OF QUANTITIES: ARCHITECTS' CHARGES.

SIR,—I find in the last number of your widely-circulated paper an extract from the *Hereford Times*, which contains an *ex-parte* account of the result of the trial, Bolt, Thomas, and in which case I am the defendant. The *Hereford Times* in question states that on the plaintiff's side the contract I gave an assurance or guarantee of the quantities provided. My version of the transaction is that I was not present, and that the plaintiff's statement rests entirely on his own unsupported evidence, and, since the trial, been contradicted by all those who were present on that occasion.

The paragraph goes on to remark as to the plaintiff's astonishment at finding quantities deficient. I think most people will be surprised to learn that the astonishment in question took three years and a speculative attorney to bring up to action heat; and, during the whole of this period of three years, the plaintiff's evidence signified the astonishment in question to me, the principal party concerned.

With respect to the arbitration, I would recommend to my brother architects that they should, in every case in which they are concerned, insist upon reference to an architect, and not to a barrister, even of any number of years' standing. I feel perfectly confident that, had such been my case, the result would have been different. An architect not only could have personally satisfied himself upon the dubious points but would have known how to discriminate between the evidence of men of respectability and judgment, and the extraordinary evidence brought forward on the other side against me.

R. G. THOMAS.

DAMAGES RECOVERED FOR INSUFFICIENT WORKS.

BROOKS V. THE VESTRY OF THE PARISH OF ST. MARY, ISLINGTON.

This case was tried at the Court of Exchequer, Nov. 28, before Mr. Baron Bramwell. Mr. Montague Chambers and Mr. Jacobs were counsel for the plaintiff, Mr. Overend, Q.C., and the Hon. G. Deuman for the defendants. It was an action brought to recover compensation in damages by reason of some workmen employed by the defendants so improperly and carelessly altering and repairing some drains belonging to the plaintiff as to do him serious pecuniary damage; and involves a question of serious import to the ratepayers, not merely of St. Mary's, Islington, but other parishes.

The plaintiff keeps a public-house called the "Boston Arms," in Maiden-lane, and the defendants were, in the exercise of certain powers vested in them, altering or repairing some drains of the plaintiff's, and the work, according to the plaintiff's case, was so negligently performed that when the heavy rains fell some time ago his premises were completely flooded, by which a skittle-ground and a large quantity of beer and spirits were destroyed, the foundation of his house impaired, and a part of the trade to the house stopped. The question resolved itself into this:—In a pipe drain were found two pieces of old brick, forming part of the materials with which it was alleged on the part of the plaintiff the defendant's workpeople had been patching up or attempt-

ing to repair it, and that either through gross negligence or carelessness the pieces were allowed to fall in; or, from the fact that the old material employed was unadapted to the purposes of the work, the drain got stopped up, and the mischief complained of was brought about. For the defence it was said that the bricks must have been in the drain before the defendant's workmen were employed upon it, as all the material used by them was not only perfectly sound, but quite new, and therefore they were not responsible for the damage.

The jury, after a short deliberation, found a verdict for the plaintiff—Damages 125s.

COMPETITION.

Lynecombe Cemetery, Bath.—Between fifty and sixty designs for the new Lynecombe and St. James's Cemetery, were received by the Burial Board in answer to the advertisement to architects to compete. The Burial Board met, and sat during three days; and after deliberation selected the drawings of Mr. Charles E. Davis, F.S.A., of Bath.

HOUSE AGENTS' "DODGES."

I NOTICE last week another case in which an inexperienced gentleman has been obliged to pay commission on a year's rent, through having incautiously signed and filled in a circular sent him by a party who did nothing towards letting the house.* This was, of course, treated as an agreement; but why was it not required to be stamped, in accordance with a recent decision as to the memorandums signed by purchasers of houses, &c., at auction?

Q.

PATENTS CONNECTED WITH BUILDING.

BRICKS, TILES, AND OTHER SIMILAR ARTICLES. *J. Thornton, Liverpool.*—Dated March 12, 1859. This invention relates to a machine for the purpose of compressing and forming previously prepared clay into perfectly-shaped and highly-finished bricks or tiles; also for embossing, panning, or impressing architectural ornaments and enrichments thereon to any pattern required. The principal feature is in the manner of forming the mould or die, which expands at the time for introducing the rough clay, the sides remaining upright and the corners or angles remaining closed; that is, no opening or aperture takes place. This, it is said, prevents all liability of fouling by the clay, and consequently insures the well-working and durability of the machine. The object of expanding the die or mould is that it may hold sufficient clay to insure the brick being sound, firm, and hard, on the mould contracting.

APPARATUS FOR REGULATING SUPPLY OF WATER TO WATER-CLOSETS.—*A. Tyler, Warwick-lane, Newgate-street, London.*—Dated 14th March, 1859.—"When the handle is lifted, the piston will be moved towards the top of the cylinder, and the valve will be moved away from the end of the supply-pipe. The water will then flow through the chamber into the pan or other vessel until the piston is again forced down, when the valve is again forced against the end of the supply-pipe, and the supply of water stopped."

METAL BARS USED FOR STILLS, RAIRS, HEADS, AND SILLS OF WINDOW-SASHES, ETC.—*W. B. Giggell, Bristol.*—Dated 19th March, 1859.—The inventor proposes forming longitudinal ribs, flanges, or projections on metal bars used for the sills, rails, heads, or sills of window-sashes, casements, skylights, or other like framework or fittings.

OPENING AND SECURING WINDOW-SASHES.—*J. Bickerton, Oldham.*—Dated 21st March, 1859. This invention relates to windows having sliding-sashes, and consists in so fixing shooting or sliding bolts that a connection is secured by such bolts between the sliding edge or side of the sash and a fixed part of the window-frame. The sash can

* The following is the case referred to (at Westminster County Court):—That of Vincent (an estate agent in Pall-mall) v. Hamington, a gentleman occupying a house near Eaton-square. Mr. Hamington's house was to let, and he advertised it, upon which he received from the plaintiff a printed prospectus, or "terms" upon which he would let the house. This Mr. Hamington signed and returned. The terms in this case, printed in small type as a heading, ran thus, "4l. per cent. on the rent required for a year," and "the per centage is payable absolutely as soon as the property, or any part of it, is in any manner let, sold, relinquished, or otherwise disposed of by any one, or as soon as the instructions are withdrawn, or postponed, or at an end." The defendant had filled in an signed beneath as follows:—"To be let, furnished, for three, six, or twelve months; rent per week three guineas,"—merely for the purpose of reference, as he understood. Though the premises in question had never been let by the agent, nor had persons even called on the agent to inspect them, the defendant had to pay the plaintiff's claim of 8l. 14s. (being 4 per cent. on 236l.), the highest rent required for the premises for one year, as per signed terms). The Judge would not award costs, and expressed his opinion that the public might be warned by the publicity given to such cases.

+ From the Engineer and other sources.

be closed easily at will, but not opened beyond the point at which it has been fixed.

PREVENTING DOWN-RAFT OR RETURN SMOKE, INSURING UPWARD VENTILATION, AND REDUCING BLACKENING.—*C. J. Richardson*, Kensington-square.—Dated 28th March, 1859.—The contrivance for prevention of down-draft is named the "wind-cap," that for securing ventilation the "iron stack flue," and that for reducing the quantity of the smoke or blacks "the rain vase." The upper part of the flues is formed of tubing, by preference of iron in square or oblong sections. Each tube at its base is of the size of the flue in which it is placed. The tube gathers it up to a reduced size, shape, or form, and passes it in a slanted direction to the next flue, to which a similar tube is applied. When only one of the flues is in use, that is, the fire communicating with it burning, its iron tube would warm the other three, and thus an upward draft or ventilating power would be obtained in all. The rain-vase for reducing the quantity of smoke or blacks from the smoke passing into the atmosphere, and which likewise acts for the prevention of down draft in flues, chimneys, and shafts, consists of a case or capping constructed as explained.

BRICKS.—*J. Eccles*, Builder. Dated April 4, 1859.—One object is to prevent breakage or stoppage of the apparatus, when by accident a stone, piece of wood, or other hard substance gets into the pusher chamber; and the improvements consist in providing a plate, or other equivalent arrangement, so contrived as to slide or give way when any obstruction occurs. Secondly, the improvement consist in combining rollers with particular arrangements of pug-mill machinery that shall not only crush and deliver the clay to the pug-mill, but assist to force the material through the pug-mill to be expressed through the moulding orifices.

A KILN FOR BRICK AND PLASTER BURNING.—*M. A. F. Menzies*, Paris.—A communication. Dated June 16, 1859.—This invention cannot be described without reference to the drawings.

VALUE OF PROPERTY IN LONDON.

SALES BY PUBLIC AUCTION AT THE MART :
NOVEMBER.

By Mr. Debenham.—Freehold property, Nos. 100 to 102½, Dean-street, and 399, Oxford-street, let on lease at 140*l.* per annum, for 37½ years unexpired—sold for 2,500*l.*

Freehold house, No. 9, Addington-place, Camberwell-road, Surrey, let at 60*l.* per annum—sold for 875*l.*

Freehold house, No. 8, Addington-place, let at 45*l.* per annum—sold for 630*l.*

Freehold ground-rent of 20*l.* per annum, arising from a house, No. 77, Albany-road, Camberwell—sold for 570*l.*

Freehold ground-rent of 20*l.* per annum, arising from four dwelling-houses, Nos. 1 to 4, Norfolk-place, Albany-road—sold for 770*l.*

Freehold houses, Nos. 3 to 6, John-street, Blackfriars, let at 101*l.* per annum—sold for 1,250*l.*

Freehold house and shop, No. 14, John-street, let on lease at 25*l.* per annum—sold for 400*l.*

Freehold houses, Nos. 30 and 31, John-street, let at 48*l.* per annum—sold for 705*l.*

Freehold houses, Nos. 37 and 38, John-street, let at 48*l.* per annum—sold for 700*l.*

An improved ground-rent of 5*l.* per annum, term 99 years, from Michaelmas, 1814, arising out of a residence, No. 4, Gower-place, Gower-street North, Easton-square—sold for 90*l.*

An improved ground-rent of 12*l.* 14*s.* per annum, secured upon house, No. 10, Gower-place, held for the same term as last lot—sold for 215*l.*

An improved ground-rent of 31*l.* 14*s.* per annum, arising from Nos. 13 and 14, Gower-place, held for the term expiring at Michaelmas, 1907—sold for 555*l.*

By Messrs. Norton, Hoggart, & Trist.—Leasehold dwelling-house, No. 3, Grosvenor-street, Bond-street, and a warehouse and three houses and shops adjoining, being Nos. 1, 2, and 3, Avery-row, let at 335*l.* per annum, term 40 years from Lady-day, 1852, ground-rent 9*l.* 7*s.* 6*d.* per annum—sold for 3,900*l.*

LECTURE ON ANCIENT ROME.—At the Alnwick Mechanics' Institute, a lecture on 'this subject' was delivered before the members by Mr. F. R. Wilson. The lecture was illustrated by a number of drawings and photographs, of the more prominent and interesting objects taken by the lecturer on the spot during a recent visit to Rome. The audience was large and respectable.

Books Received.

Ure's Dictionary of Arts, Manufactures, and Mines. New edition, Part I. Longman & Co., London. 1859.

This is not so much a new edition of an old work as a new one based on the old. It is chiefly re-written, and greatly enlarged. The editor is Mr. Robert Hunt, F.R.S., and he is assisted by a strong corps of contributors, among whom we observe such names as Fairholt, Frankland, Herepath, Linton, Phillips, Angus Smith, &c. The work will comprise three volumes instead of two, and it is to be issued in fourteen parts at 5*s.* each. The most valuable of the matter supplied by Dr. Ure is of course preserved, and the whole is illustrated with nearly two thousand engravings on wood. Part I. ends with "Artesian Wells." It necessarily contains the word "Architecture,"—but really not much more than the word, and that is misunderstood. Utility and durability are treated of, each in half a dozen lines, as its attributes; but there is not a word of beauty, which is required to make building into architecture. The article ought to be re-written, by some professional contributor, for a new edition.

Third Report of the Vestry of the Parish of Chelsea, under the Local Management Act.

WITH appendices, this report extends to 112 pages. It contains a variety of matters of parochial interest, such as an account of local charities; sanitary affairs; public improvements,—as at the new bridge, the hospital grounds, asylum, vestry-hall, &c.

Inquiry concerning the Death of Amy Robsart. &c. By T. J. PETTIGREW, F.R.S. London: J. R. Smith, 36, Soho-square. 1859.

In this very interesting paper, which was read at the Newbury Congress of the British Archaeological Association, of which Mr. Pettigrew is a vice-president, the author makes out a strong case against Ashmole and Scott's popular version of the cause of Lady Dudley's death at Cumnor-place, Berks,—calumniously, as Mr. Pettigrew conceives, ascribed to Dudley and his agents. The paper is interspersed with curious historical documents, which bear directly on the case in point. The calumny is ascribed to Jesuitical malice. From Lady Dudley having been considered a person of "strange mind," who was heard praying to be delivered from "disperacione," shortly before the day of her death,—on which occasion she herself insisted on all the servants of Cumnor going to a fair, which was objected to, being Sunday,—it rather appears that she may have committed suicide, by throwing herself downstairs while alone. The coroner's verdict, however, was accidental death, and Mr. Pettigrew seems inclined to abide by this verdict. But whence, after all, poor Amy's "disperacione?" and whence Dudley's evident fear at the moment of being personally blamed as the positive cause of her untimely death, though separated, or at least at a distance, from her at the time? Her "strange mind" is only testified to as an opinion from hearsay, expressed to Dudley himself, by Blount, his cousin, whom he sent to Cumnor, to prepare the way for a "discreet" jury, and to inquire into the particulars of her death,—not having time, or not being inclined to ask leave of Elizabeth, to go himself, even to attend her funeral! In his great anxiety about his own "innocence" and "justification," ere there could be a moment's time for the public even to insinuate a charge of criminality against him in the matter, it is curious that, although he suggests "a chance or misfortune," and hints, with a "God forbid," at "villany," it never occurs to him to suggest the possibility of suicide, either on account of strangeness of mind, of the existence of which, in his own wife, he surely must have known, or on account of desperation of mind, of the inciting causes to which he must surely have also known. Did he not suppress his real fear that she had committed suicide, on account of desperation for which he was himself in some way responsible, and for which he was conscious he would immediately be blamed by the public, were it even suggested or known that his wife had committed suicide? And after all, had not that fear and that suicide something to do with his personal connection with Elizabeth, or with a project of marriage between them, the actual existence of which such a suicide would have tended to corroborate or confirm the belief of in the public mind, and of which, at all events, there was talk at the time, his well-enough-known marriage with

Amy Robsart being supposed to be the only hindrance? Sir Nicholas Throckmorton alludes to malicious reports, shortly after, even at Paris, "touching the marriage of the Lord Robert [with Elizabeth] and the death of his wife," and Elizabeth herself had a long proclamation issued, explicitly referring to such rumours of assassination, and denouncing them as falsehoods;—and the story of Lady Dudley's death by assassination, doubtless, was a falsehood, as Mr. Pettigrew suggests; but, if she was driven to "disperacione," and to suicide, may it not have been from Dudley's treatment of her, as an obstacle in the way of his ambition? On such a probability, one's sympathies and antipathies need not be anywise roughly unsettled by the discovery of his "innocence," except it be in favour of poor Anthony Forster, who was quite guiltless in the matter. As regards Cumnor as the price of his alleged "villany," the facts seem to have been precisely the reverse of the truth, Cumnor having previously and at the time belonged to him; and it actually was bequeathed in his will, a good many years afterwards, to Dudley himself, as his patron, upon certain weighty considerations affecting the future means and welfare of Anthony's wife and other relatives. As for that quintessential villain, Sir Richard Varney, there is no historical or archaeological evidence of the existence or interjection of any such fellow in the matter at all. As regards Dudley himself, Mr. Pettigrew has certainly succeeded in removing the position of this celebrated cause from the judgment courts of fact to those of mere probability, and has cleared Dudley of any charge of complicity in deliberate assassination, inasmuch as his wife does not appear to have been assassinated. We do think, however, and in this we differ from Mr. Pettigrew, that there is strong probability that she committed suicide from "disperacione" of mind, arising from Dudley's treatment of her and his connection with Elizabeth.

Our Military Engineers: being an Inquiry into the present State of Efficiency of the Corps of Royal Engineers. JUDD & GLASS, New Bridge-street.

In this pamphlet of eight pages complaints which have been made in our columns and elsewhere against the present condition of the corps of Royal Engineers are repeated. The writer says:—

"I believe that all difficulties may be got over by confining the corps to the practice of military duties,—which would include the construction of works of fortification, the practice of military bridges, pontooning, siege operations, light infantry manoeuvres, &c., being under the control of the Commander-in-Chief.

That the exclusively civil duties which they are now supposed to perform, and consisting of the designing, executing, and repairing barrack buildings, storehouses, the management of War Office lands, &c., be handed over to a civil corps analogous to the Military Store Department, and subject to the Secretary at War."

He further proposes to abolish the class termed "clerks of the works," considering that their employment is an inducement to the junior members of the corps to neglect their duty, having others to perform it for them.

An Inquiry into the Principles of Beauty in Grecian Architecture; with an historical View of the Rise and Progress of the Art in Greece. By GEORGE, EARL OF ABERDEEN. London: John Weale. 1860.

MR. WEALE has done well in giving the Earl of Aberdeen's treatise, originally prefixed to Wilkin's translation of Vitruvius, as a shilling volume. Although misty, incomplete, and indeed in some points incorrect, it is a scholarly and elegant production, and ought to be known to the rising generation of students. To justify our observation on the point of correctness, it is only necessary to remind readers that the noble author places the invention of the arch in the time of Alexander the Great. There have been diggers since Lord Aberdeen wrote.

VARIORUM.

MESSRS. SMITH & ELDER have published Mr. Ruskin's "Elements of Perspective, arranged for the use of Schools." The author says, "I have arranged the necessary rules in a short mathematical form, which any schoolboy may read through in a few days, after he has mastered the first three and the sixth book of Euclid." This, it will be seen, is placing the book out of the reach of many who would have welcomed it. We will give it attention before long. — The second volume of the "Transactions of the Institution of Engineers in Scotland, Second Session, 1858-59" (Mackenzie, Howard-street, Glasgow) has been issued. It contains much valuable and useful

matter, amongst which, besides the president's address, it may be well to note an account of experiments on the strength, &c., of steel and wrought iron, by Messrs. R. Napier and Sons; a paper on patent slip docks, from their invention, by Thomas Morton, of Leith, previous to 1819, by Mr. R. B. Bell; and a description of a centrifugal pump with exterior whirlpool, by Professor James Thomson, of Belfast.—Book fourth of "The Graded Series of Reading-lesson Books" (Longman & Co.) is now published. These little volumes constitute a decided sign of the times, by contrast with the old style of reading-lessons, still, however, very much in use, but doubtless destined ere long to be superseded by the new order of lesson-books, more befitting the times we live in, and a better preparative to the still more advanced era of the maturity of the rising generation. Natural history, natural science and physics, history, travel, biography, &c., form the subjects of the present volume.—"Observations on an Improved Oxhydrogen Lime Light," by A. H. Renton, C.E., in the form of a tract, contains an account of the progress made with the lime light, or Drummond light of past years, and of an improved form of it to be now brought out by a new company, who have just been exhibiting their light (successfully it appears) at the Crystal Palace. One of the chief improvements of this light consists in the inclosure of the chalk lime in a metallic cylinder, in such a way that by a rotary or spiral movement it is pressed out only as it is required, so that no renewal of the lime is requisite for a succession of nights, or even a fortnight at a time. The oxygen is got either from chlorate of potash, or by heating peroxide of manganese in a retort, when the oxygen is given off pure, leaving dextoxide of manganese as a useful product for other purposes, or, by exposure to the air, for reversion into peroxide again, and re-heating as before. The hydrogenous ingredient either consists of the coals, or of hydrogen, got from zinc and diluted sulphuric acid. For lighthouses, streets, large halls, &c., the lime light seems especially well adapted, as it is so inessential that, light for light, its comparative cheapness is unquestionable. Whether in steady continuance and facility of management it is yet all that can be desired, we cannot say.—The lecture "On Wages, Trades' Unions, and Strikes," delivered at Edinburgh by Adam Black, esq., M.P., has been published in the form of a tract, by Lockwood & Co. of Stationers'-hall-court, E.C. We have already given an abstract of this able lecture, which has created quite a ferment amongst the working classes at Edinburgh.—A lecture delivered in the Kenilworth Institute, by Mr. G. T. Robinson, architect, on "The Military Architecture of the Middle Ages, as illustrated by Kenilworth, Warwick, and Mactoke Castles," has been reproduced in the form of a pamphlet, published by Simpkin, Marshall, & Co., Stationers'-hall-court, London.—Amongst the pocket-books for the New Year, Mr. J. W. Gutch's "Literary and Scientific Register and Almanac" holds its usual good place. It is so brimful of information that it runs over on the cover.—Messrs. Vacher's "Parliament (sheet) Almanac" has at the head of it a view of St. Stephen's Hall, which shows strikingly, if nothing else, how very ill the marble statues therein agree with the structure.—Dietrichsen & Hannay's "Royal Almanac" is a remarkable sixpennyworth.

Miscellaneous.

REDCLIFF CHURCH, BRISTOL.—At the dinner of the Parent Society on Colston's day, at Bristol, Mr. Thomas Proctor read the following letter from an old parishioner of Redcliff:—

"Knowing the great interest you have taken in the restoration of St. Mary Redcliff Church, I wish to make you the medium of the following scheme, to raise the sum of 5,000*l.* for that glorious object, and you are at liberty to make any use of the offer contained in this towards securing success for the plan in your judgment. I place at your disposal an offer to contribute 500*l.* for the above purpose, conditionally that nine others will come forward with the same amount so as to make up the proposed 5,000*l.*, and I will hold open this offer for three months, which will enable the committee to push the matter forward."

S. W. LUGAS.

Mr. Hatherley, who has worked so well for the south porch, has published a letter from Lord Lansdowne, wherein that nobleman says:—

"Having recently had an opportunity of visiting the church and admiring its exquisite beauty, as an ornament of Gothic architecture, and perceiving that active exertions are making to effect a complete restoration of it, I now inclose to you a cheque for 25*l.* towards the works now in hand, as an additional subscription, and beg leave to add that I shall willingly repeat this subscription to the same amount when they are completed and the tower is commenced."

LANSDOWNE.

PROPOSED VICTORIA HOTEL AT SHEFFIELD.—A company has been formed to build a first-class fire-proof hotel, near the Victoria Railway Station, Sheffield. There is a great deficiency of good hotel accommodation in the town, and the success which has attended similar works elsewhere seems to justify the belief that the investment would pay. Messrs. Hadfield & Goldie are the architects.

THE CARPENTERS' COMPANY.—This ancient company ate their annual Livery dinner at the Albion Tavern, on Thursday, the 17th, Mr. Towers, the master, in the chair, supported by the wardens, the past-masters; Mr. R. W. Kennard, M.P., Alderman Lawrence, Mr. Lawrence, Mr. Ashton, Mr. A. F. Ashton, architect; Mr. J. B. Roshier, Mr. W. W. Pocock, architect; Mr. Lett, Mr. John Blyth, architect; Mr. Wharton, Mr. Thomas Finden, Mr. Hicks, and many others. After the routine toasts, Alderman Lawrence responded for the corporation of London; and Mr. Kennard made a vigorous little speech for the House of Commons.

CASTING OF THE COLOSSAL STATUE OF MENDELSSOHN.—The statue of Bartholdy Mendelssohn has been cast in bronze, at the works of Messrs. Robinson and Cottam, Pimlico. The erection of the statue originated with the Sacred Harmonic Society, about seven years ago. Upwards of 400 guineas having been subscribed, the task of carrying the work into effect was entrusted to Mr. Bacon. The statue is upwards of 8 feet in height, and was moulded entire. The quantity of metal used is about a ton and a half. The statue will be elevated on a granite pedestal. Application has been made to Government to allow it to be placed in the Mall in St. James's-park.

THE SALE OF GAS ACT.—The standards which the Treasury were required to provide, by the third section of Lord Redesdale's "Act for Regulating Measures used in Sales of Gas," have been duly deposited in the office of the Comptroller of the Exchequer, No. 6, Old Palace-yard, Westminster. They comprise, says the *Journal of Gas-lighting*, a weight of 62.321 lbs. avoirdupois; a bottle containing that weight of distilled water at a temperature of 62° Fahr. and a barometric pressure of 30 inches; and a King's cubic foot transferer. The whole have been prepared under the direction of, and verified by, the Astronomer Royal, assisted by Professor W. Miller, of Cambridge. It does not appear to be considered necessary at present to prepare any standard multiples or decimals of the cubic foot measure, but gas companies and others can have the indices of their own testing gasholders adjusted to the Exchequer standard, or they can procure duplicates of the cubic foot transferer and adjust the indices themselves. They may, by adopting either of these courses, ascertain at once what meters do and what meters do not comply with the tests prescribed by the Act.

BONDAGE IN THE BAKERYHOUSE.—A startling narration of the shocking state of slavery in which the journeyman bakers of the metropolis are plunged was given by Mr. Lilwall at the Bradford meeting of the Social Science Association, and is to be published in its "Transactions." For sixteen to eighteen shillings a week, these poor fellows labour at the average rate of eighteen hours a day, chiefly through the night; and the consequence is that their average health is not one-half that of artisans in general. They are so extremely sickly that Dr. Guy, of King's College Hospital, says, "No less than seventy in the hundred complained of being subject to some disease or other, of whom several were liable to more than one complaint, while the proportion so complaining among the bricklayers' labourers was 36 per cent. among carpenters, 26 per cent.; among seamen, 19 per cent.; and among the silk printers 18 per cent." Their want of mere sleep must tend to fatuity of brain. They frequently fall asleep in an instant when they sit down, and even with the food in their mouths. At area-gates, after ringing the bell, and while awaiting for a minute or so the coming of a servant, they often fall asleep, and even while wheeling their trucks or carrying their loads along the streets. A deputation of them, on the subject of their grievances is thus described:—"The effect was startling—so many shrunken, pale, anxious countenances, combined with the ghastly looks of some of them, and their dusty habiliments, it seemed more like a visit from the tenants of the tomb than from what ought to have been hearty, sound-constituted men." In Scotland, the journeyman bakers have shaken themselves free from the horrible incubus of overwork under which they also laboured: why do they not do so here?

ELY CATHEDRAL.—The fund raised for the restoration of the octagon and lantern of Ely Cathedral, as a memorial of the late Dean Peacock, now amounts to nearly 3,000*l.* The plans delivered by Mr. Scott will, however, it is said, involve an expenditure of 5,000*l.*

RE-OPENING OF YORK MINSTER ORGAN.—The organ in York Minster, which during the last six months has been entirely taken down and rebuilt upon a new principle, has been re-opened. The repairs and improvements have cost about 1,200*l.* The organ does not now contain so many pipes as it previously did. There are now 23 stops in the great organ, 14 in the swell organ, 9 in the choir organ, and 3 in the solo organ, making with the couplers a total of 75 stops, and about 5,000 pipes in the aggregate. By the alterations, the number of pipes are now fewer by 3,000, but still the instrument is superior to what it was. There were multitudes of pipes which never were and never could be played upon, but now every pipe will be "made to speak" and to perform its office when required; "dummies" no longer being tolerated. Before the improvements were commenced, the organ contained 8,000 pipes and 80 stops. The instrument has been considerably improved in its external appearance.

A HUNDRED MILES AN HOUR BY SEA.—The *Courrier des Etats Unis* publishes the following singular item:—"Mr. Millard Filmore, ex-president of the United States, has just addressed a letter to M. Rollin Germain, asking him to explain at a public meeting the principles on which an ingenious inventor believes he can build a steamship which will make a hundred miles an hour, and whose strength will resist all the fury of the ocean and even the shock of a collision with other vessels. When this steamer is laden with passengers, freights, provisions, and coal, for a voyage round the world, she will only draw, at the most, 22 feet of water, and—a singular fact indeed—the expense of the voyage will be only about one-fifth what it would be in the steamers now afloat. For thirteen years M. Rollin Germain has been secretly studying his new system of mechanism and building, and eminent engineers in the United States have assured him that his discovery is destined to make an epoch in the history of steam navigation."

THE UTILIZATION OF TOWN EXCRETA.—A pamphlet on this subject, by Mr. C. F. O. Glassford, was noticed by us in December last, with a doubt as to the practicability of the proposal. A printed note or tract has now been issued by the same gentleman with the view of simplifying his project, and in which he says:—"It has been objected to my plan, that I propose to use a water-closet apparatus which is too complicated, which would be likely to get out of order, and that the quantity of water proposed by me is too little. To these objections I have to remark:—First, that the ordinary earthenware pan and syphon, trap, so extensively and universally used, would answer all the purposes required, so that there need be no alteration whatever in that part of the present closet arrangements: the only alteration required would be the substitution of the regulator valve (described at pages 15 and 16 of the pamphlet), instead of the usual stopcock, or other water supply arrangement. This would avoid great expense, and would be equally if not more efficient than that previously proposed. Secondly, instead of limiting the supply of water to the closet pan to twelve ounces per discharge, I would now allow any quantity up to one gallon per delivery per individual,—a quantity which I consider far beyond what would, under any circumstances, be required; but in this case—as the quantity of water to be removed, collected, and evaporated, is greatly increased, the cost of apparatus, fuel, and labour would also be increased, whilst the material products would remain the same,—(the profits per annum would be diminished. At page 32 of pamphlet I have remarked, in reference to this subject, 'that for each addition of twelve ounces of water thus employed in the closet, there would be an addition of about 10,000*l.* to the cost of apparatus (works), and a reduction of about 3,150*l.* from the profits: so that the employment of one gallon of water per individual (or per delivery in closet), would have the effect only of reducing the annual revenue by about 35,000*l.*' As to the objections which may be made in reference to the mechanical difficulties of the scheme, I have to say that I apprehend no insuperable difficulty—certainly none that I should myself (although not a civil engineer) feel unwilling to undertake. In this country especially we should be under no fear of easily overcoming any difficulties of a mechanical kind."

GOLDSMITH.—Mr. Foley, R.A., has been entrusted with the statue of Oliver Goldsmith to be erected in the city of Dublin. In reference to a paragraph in the *Builder* on the successors of eminent men, which has been extensively quoted, a Dublin correspondent states, that so far as regards the race of Goldsmith, it is not yet extinct, "lineal descendants" being at present resident in Dublin.

GAINSBOROUGH CHURCHES.—The parish church and Holy Trinity have each been enriched by the addition of two stained-glass windows. Those in the former edifice are placed on each side of the chancel. The subject of the south window is "Moses lifting up the Serpent in the Wilderness," and that of the north "Abraham offering up his son Isaac." The artist is Mr. Wailes, of Newcastle-upon-Tyne. At the Holy Trinity the windows are placed in the south transept, the subjects of the western window being "The Presentation in the Temple" and "The Baptism in the River Jordan," and that of the eastern an embodiment of the sentiment contained in Matthew xvi. 13, 20. Mr. Clutterbuck, of Stratford, was the artist.

BARLOW'S BEAMS AND GIRDERS.—This invention, recently patented by Mr. William Henry Barlow, C.E., of Great George-street, Westminster, has for its object improvements in the construction of beams and girders, and is applicable to beams and girders which are furnished with one or more intermediate supports in addition to the two terminal bearings. "According to this invention," remarks the *Engineer*, in giving a detailed account of it, illustrated by sketches, "in constructing beams or girders, the depth of the beam or girder is increased over or near the piers or intermediate points of support, by which means not only greater strength is obtained over the piers or intermediate points of support with the same quantity of material in the flanges, but the radius of curvature of the upward flexure is rendered greater, that is to say, the curve is flatter, and the points of contrary flexure are thereby moved nearer to the centre of the span, so that the sectional area of metal in the flanges throughout the central portion of the beam, between the points of contrary flexure, may be considerably reduced without diminishing the strength of the beam when compared with a beam of equal section or of equal depth throughout, as heretofore constructed. And it will be seen that in large girders, when the dead weight of the centre portion of the beam is thus reduced, it also relieves in a proportionate degree the strain over the intermediate pier, so that a great economy of material results from this mode of construction." In applying Bessemer, puddled, or other steel in detached girders the patentee introduces it into flanges either at the centre portion of the girder only, or throughout. In this manner, also, increased strength may be given to continuous girders of the ordinary construction."

MEANS FOR EFFECTING CITY IMPROVEMENTS.—In a tract by Mr. Benjamin Steill, of Upper Rossmore-street, E.C., giving "some further account of the Irish estates bought of James I. by the corporation of London, and which are claimed as the private property of twelve companies, but who are only trustees on behalf of the freemen of the City," the writer goes on to state that the revenues received from these estates amount to 300,000*l.* a year, and as old leases fall in, they will ultimately realize half a million annually. The estates were purchased with money raised by a public tax of every freeman of London: their income, therefore, ought to be available for his interests, and a public statement of receipts and expenditure should be published for his satisfaction. The property consists of 500,000 acres of land, in the counties of Londonderry, Armagh, Tyrone, Donegal, Fermanagh, and Cavan. Their cost was 20,000*l.*, and that amount, besides 10,000*l.* in additional expenses, was levied on city freemen for founding and establishing a Protestant colony in the north of Ireland. Through the dexterous management of trade fraternities, placing their masters and wardens in the Corporation, the Irish estates were not under public superintendence, and all matters connected with their purchase became neglected and forgotten. From this cause, the fraternities, originally only trustees, now claim a right of inheritance to the Irish revenues as a family possession. The object, therefore, of this paper is to prove that the claims of twelve masters of fraternities to 300,000*l.* a year, without responsibility, is most unjust, and that the whole body of the freemen are the lawful owners of the Irish colony. Mr. Steill suggests that some splendid improvements might be realized in the City from these funds. This is a subject we have before brought under the notice of our readers.

PROPOSED RAILWAY THROUGH THE THAMES TUNNEL.—It is intended to apply to Parliament for power to construct a railway from the London, Brighton, and South Coast, and South-Eastern Railway, passing through the Thames Tunnel to the London and Blackwall Railway. It is proposed to purchase the Thames Tunnel, and to authorise the Brighton, South-Eastern, London and North-Western, Eastern Counties, and North London Railway Companies to subscribe to the undertaking, and to make traffic arrangements.

KENTISH TOWN.—A chapel school-room, as designed by Mr. R. H. Moore, is about being erected in Kentish-town, where a vastly increased population is but scantily provided with places of worship or of instruction. Out of a population of 1,100 souls, 6,000 belong to the working-classes; and the other charitable institutions of the parish are so onerous to the inhabitants, that subscriptions are solicited from the more wealthy metropolitan districts. This call is being liberally responded to, and but for the unhappy strike amongst the operative builders, this institution would have been roofed in, and possibly in action before the winter.

PAVEMENT TORONTO UNIVERSITY.—Sir: We observe in the *Builder* of Saturday, November 26, a statement to the effect that parts of the new University of Toronto are paved with encaustic tiles, from Shropshire, manufactured by Messrs. Minton. The pavements in question were manufactured by us, and laid by one of our own paviors, sent out from these works to Canada for the purpose. We are also engaged in the execution of some very extensive pavements (between 700 or 800 yards in area), for the principal parts of the law courts, Toronto, and several private mansions in the neighbourhood of the city, which are also being laid by our own pavior.—*MAW & CO.*

SCIENCE OF BOTANY APPLIED IN ART.—A series of class lectures on this subject, by Mr. Christopher Dresser, are in course of delivery on Wednesday afternoons at the Brompton Museum. The course is now, for the first time, made public. Hitherto these lectures have been delivered to students only, but as there were 300 seats to spare in the theatre, the lecturer requested that they might be made open. In the summer months the students are engaged in drawing flowers, so that attention to the science is postponed till the winter. The proceeds will be spent in diagrams, models, and other requisites for the full illustration of the course. The terms are, for schoolmasters and mistresses, 1*s.* the fourteen lectures; the public, 2*s.* 6*d.* for the course, or 6*d.* per lecture. Few persons who want information now-a-days can have right to say they are kept from it by want of means.

STERLING.—MEMORIAL STATUE OF SIR WILLIAM WALLACE.—Late on Thursday evening, by torch-light, the monumental statue of Sir William Wallace, presented to the burgh by Mr. William Drummond, of Rockdale Lodge, was raised to its position on the central summit of the Wallace Porch, in King-street. The work was accomplished under the personal direction of Mr. Rothead, the architect of the porch, amidst a large concourse of spectators. The statue, which is the *magnum opus* of Mr. Handyside Ritchie, the ingenious sculptor, was some time ago acquired by Mr. Drummond, who made a gift of it to a committee of the inhabitants, who undertook the cost of the erection. It was ultimately arranged by this committee that a porch should be constructed in front of the tower of the Athenaeum building, on which the statue should be placed. The execution of the work was intrusted to Mr. James Patterson, builder, Sterling.

RAILWAY THROUGH THE NORTHERN PART OF LONDON.—The necessary Parliamentary notices have been given with reference to a new railway through the northern part of the City, to connect the Great Northern line with a large and convenient terminus close to the Bank of England. It will pass by the side of Gray's-inn-road to a station at Gray's-inn; thence by a viaduct across Holborn Valley to Smithfield; thence near Barbican, with a goods station at Fore-street; and so across London-wall to a large available area at the back of Tokenhouse-yard, within 340 feet of the Bank. The route, which is brought forward with the concurrence of the Great Northern, will be above ground through the whole distance, and is selected to pass amid poor property, the removal of which will be an advantage to the metropolis. Its main recommendation consists in its direct advance to the grand centre of business, since any plan that stops short in that respect must fail to supply the long desired relief for the London streets.—*Times' City Article.*

TRINITY CHURCH, BATH.—A painted window has just been inserted in one of the south windows of this church. The design is geometrical, with lacing of ruby and blue, and alternate panels of coloured foliage medallions. Mr. Bell, of Bristol, was the artist.

ARCHITECTURAL PROFICIENCY.—At the recent annual admission of students in architecture to the Ecole Impériale des Beaux Arts in Paris, 126 candidates presented themselves, of whom 56, after a month's examination, succeeded in passing. Among this number we are glad to find that Mr. R. P. Spiers, Associate of King's College, London, eldest son of Mr. Alderman Spiers, of this city, gained the honourable position of ninth on the list in the order of merit.—*Oxford Herald.*

HASTINGS COTTAGE-IMPROVEMENT SOCIETY.—The first property of this society was purchased in 1857, and at the present time they possess about ninety houses and sets of rooms at Hastings in different parts of the parishes of All Saints, St. Clement (including Halton), and St. Mary in the Castle. The rents range from 1*s.* 6*d.* to 7*s.* 6*d.* per week. The society commenced its operations with a paid-up capital of 850*l.*, which has now increased to 6,750*l.*, divided into sixty-seven and a half shares of 100*l.* each, all paid up. The price of each share, which was at first 100*l.*, has gradually been raised to 103*l.*, and is to be increased to 104*l.* when the capital amounts to 8,000*l.* The society's first dividend, at the rate of six per cent. per annum, was paid to the shareholders in 1857; and the same rate of dividend has hitherto been paid half-yearly.

THE LIVERPOOL NEW FREE PUBLIC LIBRARY AND MUSEUM.—The building in Shaw's-brow is approaching to completion, so far as the external work is concerned; and the committee have obtained reports from the librarian, Mr. J. S. Dalton; the curator, Mr. T. J. Moore; and the Rev. H. H. Higgins, as to what they conceive to be most desirable in the interior arrangements. These reports, accompanied by lithographed plans of the interior, have been printed and circulated. The interior will consist of two stories of lofty rooms. The ground-floor will comprise about fifteen rooms, including the hall, which will be about 70 feet long by 30 feet wide, and a reading-room 109 feet by 50 feet, besides a large area which will admit of the museum being extended at any future time. On the second floor, areas are also left so that some of the places below may be lit with a dome light. On the ground-floor, the right-hand side is proposed for the use of the library, whilst three rooms are designated classrooms, a large one a student's room, and another large one the board-room. In the upper story, a lecture theatre (of special dimensions) and a lecture-room are reserved, according to the plan submitted.

THE HAWICK WATER SUPPLY.—From a *résumé* of the report of Mr. J. Sewell, C.E., on this subject, in the *Border Advertiser*, we condense the following remarks:—When the hills are the only source for the supply of pure water to a city or town, then gravitating water-works, however costly, are most suitable; but when any city or town has the drainage of a large tract of hilly country of the old formation, brought to its doors in a state of great purity, such as the river Teviot brings to Hawick, then forcing works become more suitable, and more economical, since they can combine with them other advantages not possessed by gravitating works. It is estimated that Hawick and Wilton will require about 400,000 gallons daily, and that a small steam-engine would raise this quantity from the Teviot to the proposed covered reservoir in Ladylaw Vale, about half a mile from the engine, and about 150 feet higher than the Common Haugh. The height of this reservoir is sufficient to supply both houses and factories in Hawick and Wilton with pure filtered water, whilst all surplus water may be turned into the mill lake of the Wilton mills. By adopting the Teviot as the never-failing source of supply, instead of storing up the water of any of its small tributaries or rivulets, abundance of water of the very best quality will be obtained. By adopting forcing works on the island at the top of the Common Haugh, scoring and drying works may be cheaply added. By adopting the Ladylaw Vale for the reservoir, both the required height and storage capacity will be obtained within half a mile of the engine; and by an increase of the steam-power at the works, pure filtered water for manufacturing purposes may be supplied, as well as water for domestic purposes. We trust to see this, or some as feasible scheme, quickly adopted, as no town that we know of more imperatively requires it, from its peculiar situation and crowded dwellings.

I Machine and Saw Bench in a Joiner's shop, where forty men were employed, wishes for a similar SITUATION. Five years' reference if required - Address, A. B. C. care of Mr. Hughes 60, Great Suffolk-street, Bow, London.

The Builder.

VOL. XVII.—No. 879.

M. Beulé on Greek Art.



F "there are palaces in Heaven, they are of Greek architecture." So have we heard Greek Gibson's "firm conviction" in that Roman studio which he has made a Greece revived; and so we feel sure must M. Beulé also think, when we read the brilliant series of papers with which he has of late been decorating the *"Revue de l'Architecture."*

Nothing, indeed, can exceed M. Beulé's enthusiasm, if it be not his graceful and fanciful scholarship. It is utterly delightful to go hand in hand with such a guide over such sacred ways. The landscapes and the ruins seem themselves to find a voice, and to be telling their own stories through the tongue of their eloquent interpreter. It is to them, and not to him, we seem to listen, till we feel again that strange enchantment falling over us which Grecian ruins, in their native seat, have never failed to exercise and to exhale.

This is no common guide, we say, and has, be sure, no common and trite axioms to weary with. Let us follow him awhile, though we have built All Saints', Cavendish-square. It is long since we have heard such music struck from classic stones. After all, perhaps, those Grecian temples—nearly out of fashion now—only wait their Ruskin, and who but a Frenchman should become the Ruskin of classic art?

At once antiquary, poet, and Frenchman, M. Beulé carries with him precisely the required enchanter's wand, to compel their secrets from the "Isles of Greece."

An antiquary is nothing, if not imaginative; a Frenchman is nothing, if not scientific. The Greek was both. Innately mathematical in the midst of his divine dreams, unconsciously mathematical—as music and the shapes of lilies and the frame of man; but fundamentally and essentially mathematical still.

Here, then, we have the right man in the right place. His system of Greek restoration is as bold as it is beautiful. It is, in fact, art-paleontology. He does for architecture what Cuvier did for geology. Give him the fragments of a single column, and he will tell you the period of its production; nay more, its genesis and affinities. And not only is it bold and beautiful, but it is at any rate so sufficiently accurate over the field to which he has applied it, as to make it highly valuable for all purposes of learning and teaching architecture. It is the substitution of a natural system for a mere *memoria technica*; it is for Grecian ruins what Jussieu's botany was for plants,—a real and not an artificial classification.

Such a system was much wanted for the due esteem of classic art; more than ever wanted in the present injustice of mediæval fashion. It was beginning to be felt that Greek art was too perfect, tame, and monotonous in its passionless perfection, and had, moreover, no history or growth marked in it, to secure a living sympathetic interest about it, such as the Gothic styles exhibited and claimed. People were getting tired of Greek; they said "We know all about it; one Greek temple is like another, rows of columns, with light and shade;" and there was nothing but generalization by way of answer. But M. Beulé comes to the rescue with a life and glitter

of which it is a pleasant task to give our readers some description; and throws round the immortal relics some of that *real* atmosphere of colour, fulness, passion, life, and growth, wherein we have of late seen Venice and the great Gothic churches set by our own master critic—and which is all that they need, for to see them is to believe.

Greek cities, Greek temples, Greek architecture; cold, monotonous, and tame!—nay, it is our poor, pale, ghostly, northern dream of it, and not the gorgeous, glowing, gem-like, actual fact that palls.

Look on this picture of old Greece as the Greeks beheld it, and call it tame who can. And after, see another, and another, and another picture—with M. Beulé still for guide—gleaming round all the circle of wide Hellas—home, and colony, and island—and then call it monotonous who may.

"Let us make an effort of imagination; let us free our senses from a routine which is the only source of our prejudices; let us take a point of view for the past, by the aid of science, which makes pliable and remodels our ideas."

See there Greece, Sicily, Asia, with their sky well worthy to illuminate the youth of humanity! Behold a dazzling sun which embraces all, which colours all that it strikes, and gilds the merest rocks; behold a nature where all is life, and blaze, and ardour. Around the Grecian cities—a people of mariners—the sea extends its vast and changing surface powerfully coloured. The risings and settings of the sun have a magnificence unknown in our regions; the modern Greeks call at this day the sunset "his reign," his glory, *par excellence*, *βασιλευς*. The very mountains reflect a thousand shadowy tints, varying with each hour of the day. In the midst of this nature inundated with enchanting, smiling splendours, see a population robed in vestures and draperies charming and elegant; white, relieved by vivid colours; purple of intensest fire; robes dyed and brodered by the hands of youthful virgins; crowns of flowers on every head, at every sacrifice or festival. They live in the open air, with a gaiety and vigour which plays on every face; they assemble, talk, deliberate, argue, judge, in open air: the hippodromes, the gymnasias, the palestra, the schools of the philosophers, all are open to the air. Everywhere are porticos, fountains, and places of repose, whence the idle multitudes can contemplate their well-loved town; its warriors returning from campaigns with shining arms and painted shields; its galleys furrowing the waves with crimson tinted prows, and lending to the winds their more than saffron yellow sails;—everywhere light, beauty, and colour, the light of beauty.

"Into the midst of this Grecian life, intoxicated with its own genius, with its magical heaven, with its ever-growing arts; into these towns, where all is shining and singing under the gaze of God—shall we transport wan melancholy tinted temples, whose only ornaments the first passing shower or torch smoke could efface, or whose glaring white façades would burn the eyesight when the noonday rays were darted back from them?"

Let us have more courage; let us break down our prejudices; let us declare that the ancients saw better than we,—that they were at once more bold and wise,—that they were privileged,—that their climate was admirable; and let us enjoy, at least for an hour of reverie, beauties which they created, and which we have lost. On the high hills which overlook the towns,—on the public places,—on the terraces and promontories of Greece, advancing into the midst of the sea, let us see these temples brilliant in colours, ever young because ever renewed.

The columns of a pale yellow ground lift and detach themselves vigorously from the red walls of the cella, with their capitals delicately ornamented. The sturdy triglyphs display their blue heads, and show the construction from afar. In the pediments, coloured like the sky, fight Ajax, Hector, and the Homeric heroes. The fine mouldings of the porticos and entablatures are distinguished from their backgrounds by enrichments, which

signalize them to the eyes, and give them a due value. The painted tiles glisten under the slanting sunbeams; the gorgon-headed anti-fixe, and the acroteria—griffins, with outstretched claws—crown the edifice, and colour lends to these monsters illusion and life. Their outline, profiled out against the horizon, gives to the whole building lightness and movement. Add the bandeaux and garlands of flowers, the golden shields nailed to the architraves; the inscriptions in golden letters; the lattices of bronze, the trophies, statues, altars, vases, and the innumerable offerings. Let us contemplate with a passionate attention, nourished by study,—let us contemplate within ourselves this glittering apparition of an ancient temple, and let us dare to say as some have said, that it was the work of savages!

Savages! indeed I fear that it was not the ancients who were savages. We are men full of good taste,—we are convinced of it, and it is true; but taste is a very small thing by the side of feeling—the grand feeling of art. And by what right do we—we moderns, whose degenerate senses can only support faded and sickly shades, violet, pale rose, pearl grey, light blue,—we, who have invented or rather learned in boudoirs, harmonies of colours as false as common-place, which have a deplorable influence on our schools of painting,—by what right do we say to the Greeks—to our masters, whom we have never equalled in the arts,— "You were barbaric." We are like the children of old families, who sneer before the mighty lances of their forefathers which they cannot even lift. Those lances have gained battles; and just so these colours with which the Greeks decorated their temples, have been the admiration and the joy of a whole people, far mightier than we in the arts, and comprehending with far higher grandeur the divinity of beauty.

Or turn from the Greece that was, to any one of the sweet sad pictures of her present aspects, so frequently framed into M. Beulé's style. This for an instance.

"Selinuntum remains a desolation, a desert. Her port, where of old the Greek and Phœnician galleys rode side by side, is filled with sands, and the stream which falls into it has again produced the marshes which Empedocles dried up. * * * The Fever, that mighty guardian of the ruins of Greece, has retaken possession of Selinuntum, reigns there, and drives thence all who might feel tempted to profane the solitude of those monuments and their poetry of memory."

"Nature herself seems struck with sterility, not one tree—plains all waste. On those two small promontories, where once the city stood, enormous and innumerable ruins are strewn upon the ground, just as the Carthaginian war-engines left them overturned. They lie like an army of heroes on the morrow of a defeat, each one in his rank. The traveller beholds with awe these colossi, which seem ready to lift themselves up again and await but the voice of their ancient Creator. He dares not escalate those giant fragments, the least far greater than the stature of a man."

"No evidence of history could give so striking an idea of the power of a people which grew so rapidly to greatness and fell so swiftly from it."

"All this while, a burning sun pours on your head, the sea, scarcely swaying, reflects a thousand sparkles, and takes far off the colour of intense and profound azure; the breeze which breathes from the offing comes from Africa. One perceives that indefinable perfume of adjacent land, the *'avant coureur'* of an immense Continent;—one seems to distinguish Africa just where the horizon bends and disappears;—one seems to hear the wave, as it dies upon the shore, murmur the name of Carthage. It is that Carthage is there, close by, exactly facing us, upon a promontory advancing towards Sicily;—it is there she was seated—that queen of the western Mediterranean, whom Selinuntum dared one day to fear no longer, and who avenged herself with an all-Punic rapidity and perfidy. Carthage perished in her turn, for ruins are the last word of her history; and what now remains of her? What remains of Tyre? What traces have those

great Phœnician cities left whose only genius was the love of gold?"

Surely word painting like this has been long estranged from classic art, who would not hear even an oft-told tale set to such pleasant music?

M. Beulé entitles his essays, "The Architecture of the Age of Pisistratus," and devotes the first section to "Eastern Origin."

"It is impossible," he says, "to mark in history the epoch where one art concludes,—the epoch where another art commences. The bonds which unite neighbouring peoples and contemporary civilizations are as numerous as they are invisible; they escape the analysis of the historian, who finds their traces more easily than he demonstrates their existence."

The Greeks, from scorn for other nations, or love of their own glory, have denied, in general, their relationship with the East: they attributed to themselves all inventions and all progress; they were anxious to appear the origin of all things—the very dawn of humanity. Whether or not they really thought this, posterity no longer believes them, now that archaeology has pushed its discoveries into the midst of regions which seemed engulfed for ever in oblivion. As to architecture in particular, we learn, by the comparison of monuments, that Egypt and Asia furnished more than once models to the artists of primitive times.

Colonies and commerce extended by degrees into barbarous lands the experience and customs of countries more advanced. It is admitted, since the latest scientific explorations, that in Asia are found certain elements which afterwards, under the influence of Greek genius, constituted the Ionic order; whilst in Egypt one recognizes the germs already developed, and applications already distinctive of the Doric order. I do not speak of the Corinthian style, created later, at an epoch of perfection and refinement, and which one might also deduce from the principles of Egyptian decoration, which borrowed so many details from vegetable nature."

After referring to the monuments of Upper Asia and Assyria—the proto-Doric of Beni-Hassan and "a capital from Elephantine, which cannot but strike all who recollect the most archaic capitals of Corinth, Selinuntum, and Pastum," he goes on,

"But I will not stay to examine into comparisons of which the result does not seem to me likely to be very fruitful. It is curious to surprise certain transition features, to correct history by monuments, and the witness of men by the witness of stone. But will it follow that we shall better understand Greek art and better unravel its principles? I do not think so. The Greeks themselves might have loudly proclaimed what they had borrowed, and what they owed to older civilizations; they might have established the pedigree of forms and processes, without thereby diminishing their genius or their glory. * * * All that constitutes creation, true originality, genius, belongs to them; with them commences the grand European art."

However fantastic may be the edifices of India or of China, however vast and rich may have been the palaces of Assyria, however grandiose may be the temples and the tombs of Egypt, immovable as the religious theocracy which weighed upon the country during so many thousands of years, we feel that these marvels astonish more than they touch us. The life and future of art are not there; like the civilization of which they are the work, these creations must remain a dead letter—a sterile grandeur.

Neither questions of race, nor questions of climate, nor political reasons, can explain by what divine privilege the Greeks possessed that spirit of perspicacity, of invention, of progress, of fruitful tradition, which has rendered them the worthy model for all societies which have succeeded them in Europe for 2,000 years. Great peoples explain themselves no more than great men. It is certain, nevertheless, that the Greeks, in borrowing from the Orientals all that they could, have effaced them, and if they took from them many notable elements of the Doric and Ionic orders,

it is they who made them orders. * * * They marked with their seal the common patrimony of antiquity—they may well claim all the glory.

A comparison will aid my meaning. The Greek language was not formed by itself alone; its roots, its generative laws are those of Sanscrit. Will one say, however, that Homer and Plato proceed from the Hindeos, and owe to them their greatness? Well, the elements, the forms which the Greek borrowed from Eastern architecture, are its words, the expression of its ideas; but its ideas, its power, its originality, are as incontestable as the originality of Plato or Homer."

In the second chapter M. Beulé asks the question, When did Greek art commence? And proceeds to answer it as follows:—

The ancient inhabitants of Greece, the Pelasgi, erected merely buildings of necessity, in which the beautiful had no place. Art, in the time of Homer, was entirely Asiatic. "As far as the descriptions of the poet paint objects, we perceive an Oriental civilization. Manners and industry were formed by contact with Asia * * * and when art emerges in the sixth century B.C., we find it still penetrated with Eastern traditions. The pyramids, of which the relics remain near Epidaurus and Argos, the monuments of Mycenæ, and especially the remains of decoration from the same place which have been transported to the British Museum, the tombs, and the most ancient vases the tombs contain, the unintentional evidences which escape from Greek authors—all concur to demonstrate how close a bond united ancient Greek art to the art of the Orientals."

I have chosen the sixth century for the starting-point of this history, because then, in fact, art made a decisive step; not only did it make an essay, but an independent essay. The state of society, events, the development of an increasing population, explain to us clearly the causes of this progress. * * * 'After long convulsions, the various races which peopled Greece had found their limits, their constitution, their equilibrium. The ancient inhabitants of the country, dispossessed or oppressed by the Dorians, had reconquered their influence by agriculture, commerce, and industry. They desired their share in public affairs; aided by powerful chiefs, whom they suffered to usurp the tyranny, they obtained important concessions from the conquering aristocracies, or overturned them. The old social mould was broken, and a young society, ardent, desirous to prove its power, to extend its riches, to enjoy both the one and the other, appeared simultaneously in almost all the Grecian cities. The legislators enacted wise statutes, the law of nations was recognized, and the inviolability of the seas proclaimed; the Olympic games and the national fêtes established amicable relations between peoples who had till now only looked upon each other as enemies in hand, population increased, favoured by such well-being; colonies sprang up on all sides, and spread the Greek name and Greek ideas amongst the barbarians of Thrace, Italy, and Sicily. Is it necessary to insist upon the favourableness of such a movement to the development and independence of art?

These tyrants besides, who placed themselves everywhere at the head of the emancipated peoples, desired to signalize their ephemeral reign by beautiful objects. Whether from a taste for luxury and enjoyment,—whether to imitate the Asiatic kings, or to occupy and impoverish their subjects, they undertook the great works which immediately create architects. Cypselus and Periander at Corinth, Orthagorus and Clisthenes at Sicily, Polycrates at Samos, Phalaris at Agriguntum, Theogenes at Megara, Lygdamus at Naxos, Pittacus at Lesbos, Pisistratus and his son at Athens,—all these tyrants had a taste for art, and whatever secret motive may have inspired this taste, it was none the less profitable to the progress of the sixth century."

Those who feel indignation at the sight of art flourishing in the courts of despots, should take patience and await the age of Pericles. At the time of Pisistratus, the arts increased under a despotic tutelage; in the age of

Pericles they will obtain their divine perfection in the bosom of liberty. * * *

"I have given to the sixth century, to that age of archaic attempts and naive traditions, the name of the age of Pisistratus, for a reason it may be as well to mention. Firstly, as the general form of Greek governments at that period was a usurped monarchy, i.e., the power of a single individual, it is necessary to choose a type from among these petty tyrants. I have chosen Pisistratus, not because he was much better than the others (in general the politicians of this time are at once clear-sighted, perfidious, and cruel, like the tyrants of Italy in the middle ages), but because he was an Athenian."

At all times Athens was from its position a centre for the ancient world. * * * The humane and hospitable genius of the Athenians had gathered to themselves in time past, successively deposed races. The Pelasgi, the Hæcædæ, the Ionians, had each in turn found an asylum in this poor Attica. All the colonies also of Asia Minor looked upon Athens as their mother country; and when the sacred fire became extinguished in their temples, it was to Athens, to the Prytæneum of Athens, that they sent to re-illuminate it; prophetic symbol which the arts realized at a later day."

At the same time political relations, and even disagreements, brought Athens in contact with the Dorians, till she arrived in arts as in letters, at a remarkable spirit of conciliation, uniting the opposite principles and tendencies of the two races. Thus her manners shared equally the austerity of the Dorians, and the elegance of the Ionians. On the Athenian stage were to be chanted the choruses of Sophocles and Aristophanes, in the language of the Dorians. It is at Athens the Doric style finds its most perfect expression, and the Ionic its most exquisite grace. In a word, Athens, possessed *par excellence*, and from the sixth century, the genius of assimilation which constitutes a centre—a capital. It is for this reason that I have preferred among the tyrants him who represents Athens, and have named this epoch the 'Age of Pisistratus.'"

The subject is too interesting to be dismissed in one article. We will touch it again before long.

A FEW WORDS ON THE STATUARY MONUMENTS IN PARIS.

MODERN patrons and connoisseurs of art, whatever country they may be destined to serve and to render honour to, should cherish the statues erected in the niches of public edifices, especially those of the Senate House, and of the Mansion House, or Town Hall, and those elevated in public places, in squares, parks, and in the areas surrounding cathedrals and national institutions. Let not the moderns forget the honour and the veneration paid by the ancient Greeks to the statues of their eminent men, the works of their best sculptors. Think of the almost idol that they made of the statue of Pallas (their palladium), in the temple in which they adored the Deity. We cannot have, in London, in Birmingham, and Manchester, in Bath and Bristol, nor in any of our rich and flourishing and commercial cities, too many of these monuments of the departed great: they appeal, more eloquently, to the passer-by, and fix his attention more firmly and willingly than masses of brick and stone, albeit, they be composed into most beautiful combinations. No monuments address themselves to the living and to the thoughtful with so much eloquence. They are the most instructive memorials in marble, where the forms seem almost to breathe and speak. Even the law of Mahomet could not prevent, though it prohibited, the representation of the human figure, in extraordinary events of history, and great characters who have illustrated and promoted it by their example and by their lives; and the Prophets' voice was silenced, the statues of the Mussulmans, of the Arabs, and of the Persians, were sculptured,—in a conventional manner, and to suit certain circumstances or superstitions, it is true,—but yet were sculptured, and spoke an immortal language. And as the Koran put no veto, and said not a word, against the representation and embodying, in a peculiar manner, among a peculiar people, wild beasts, hunting and drinking

scenes, and feasts, flowers and pleasure-gardens, paradises (their parks); the Mussulmans enriched the palaces of Eastern kings and Roman emperors, and threw around them such a splendour as was familiar to the eyes of an Alexander or of a Lucullus. It is true that we cannot have too many of the best statues around us, visible to us, and to be contemplated by us in our daily goings to and from our theatre of labour. The sight of them, continually and habitually enjoyed, will wear away that moroseness and hardness of the heart, sordid care, and selfishness that the too intense pursuit of business, and even of a noble profession, tends to foster. Had we more statues, by means of public contributions given in a spirit for art and a love of country, in our parks and squares, and large open-air spaces, where now there is such an absence of them, we should had the accession of the most beautiful objects of art as a boon, as a remedy, as a resource, and as a study.

And now a few practical remarks on the effects of statues to celebrated public men. Reader and brother-citizen, if thou hast never read that monitor in sculpture—that large bas-relief—on the principal front of the pedestal of the Monument by Sir C. Wren, picturing, in a variety of different groups most powerfully and graphically disposed, all the vices and sins that befall or are committed by the different employments or objects that engage the denizens of a modern Babel,—go and see, and take a lesson from it immediately. It is an exposure of, and at the same time a warning against, all temptations to depart from what is right; of the consequences of being duped or ruined by ignorance; of the tricks of trade, and all sorts of empiricism. On the other hand we have read, in a heavy folio, the following anecdote, which may, if that be wanting, support some of the remarks which we have made on the influence of sculpture on the public taste. The body of Marshal Count of Saxe (who died at Chambord), was borne to Strasbourg, and buried in the Lutheran place of worship dedicated to St. Thomas, where the king, Louis XV., erected a superb mausoleum to serve as a monument to the inestimable services that this great man had rendered to France. Two grenadiers one day visiting this house of prayer, stopped at the tomb of the marshal, regarding it in silence; then drawing their sabres, passed them gently and carefully over the monument, as if to sharpen their edges, after which they retired, their eyes fixed upon the tomb, without exchanging a single word. What eloquence in this silent praise.* There is a well-known picture by the classical Poussin: the subject is a sweet landscape of the golden age, in the foreground of which is a tomb, simply carved, with the suggestive words: *El in Arcadia ego*. Two fair daughters and their lovers, also Arcadians, who have suddenly come upon it, seem to be inquiring about this unknown but kindred one, who rests beneath, and the fate of him; doubtless he was one who, dying, breathed his last blessing on the country in which he was born, and which nourished his life like, in some respects, the patriot warrior, who, dying on his shield on the battle-field, still remembered his beloved Argos;† and like every parting soul, relying on some fond breast, and shedding some pious drops from his closing eyes, casting a longing look at the scene which is fading from them.

In Paris what an immense number of statues there are, of all kinds, at different altitudes, with different accessories; their frequent position on pedestals of balustrades to staircases in parks and gardens; in fountains, which are so numerous; on the balustrades, at intervals, above the cornices of buildings; in niches of the usual form, and busts in circular cases; statues at the end of arched avenues; the caryatides to the admired pavilion of the Louvre, on which the sculptor, Jean Goussier, was working with chisel in hand, when he fell from the scaffolding, which he overstepped, like poor Stothard and many others, and died on the spot below where he fell. Sometimes the caryatides, as half-supports, half ornaments, to entrance doors, face you, as they should do; sometimes they only favour you with a sight of their profile. The garden of the Tuileries, especially now, since the emperor's improvements to it and alteration of levels, and no cessation of groups, add circular, oblong, and barlong‡ plantations of a greater variety of trees, is a study. There are many statues modelled after the antique and some of the best modern artists. Of

the former there are "Theseus slaying the Centaur," the "Knife-grinder," "Athletes," Canova's "Boxer;" statues, symbolic of the "Seasons" and of the "Muses;" "Tragedy" and "Comedy," both looking very graceful, and set off to advantage by the boughs of the chestnut trees, the zone of verdure to the large circle of water and fountains near the entrance gates from the Place-de-la-Concorde. Bouchardon and Pradier's productions are there also. A number of beautiful statues, allegorical of the Muses, the fine arts, and of industry, have been added, with evident interest to the vacant niches of the Louvre. On entering the gardens of that favourite resort and rendezvous of the Parisians and of foreign visitors, the first object of beauty and work of fine art is a female statue on a pedestal, at the south end of the inclosure for flowers,—a model of the fair sex. Her body is in an inclined posture, her hand on her feet. We scarcely ever saw a pose so favourable for the manifestation of the beauty of the human form: it, perhaps, has delighted the eyes of a Titian, a Goujon, and a Pradier. We have admired, in the tribunal of the gallery of the Uffizi, at Florence, the Venus di Medici, "the statue that enchants the world," but this, which leaves an impression never to be effaced, does not prevent our admiration for the genius of the sculptor which the former reveals. In the centre of this inclosure, dedicated to Flora, and so well cared for, is, on a pedestal, the statue of the Apollo (Belvedere), so called from its occupying, among other *chefs d'œuvre* of sculpture, the long gallery named the Belvedere, in the museum of the Vatican at Rome. Every poet, and every artist remembers Byron's description of this elegant and proud statue in his "Childe Harold," where he is describing the monuments of ancient Rome:—

"Or, see the lord of the unerring bow,
The god of light, and poetry, and life;
The sun in human limbs array'd,
And brow all radiant from his triumph in the strife;
The shaft has just been shot, the arrow
Bright with an immortal's vengeance . . ."

At the north end of this flowery and swarthy spot is the statue of a sedentary, meditative philosopher, nude except a piece of drapery thrown gracefully over his legs, the right leg stretched out as if to rest himself, and his whole attitude as calm as if he were quite at ease, stringing his thoughts to a focus; the left leg is at an easy and obtuse angle, for the rest and repose of the body, and supports the left arm; the right hangs leisurely by his side; his intent eyes are directed to some part in advance of him, which fixes his attention. The pedestal on which he is seated in this manner is, of course, not square nor oblong; it is of the form of a rock, or of a seat hewn out, as if by the hand of nature, to induce the weary traveller or the fatigued thinker to stop and rest his weary limbs or his tired faculties. We say the pedestal, for this veteran philosopher or sage looks as comfortable as in an easy chair—more so than one made in the American style. The sculptor has skilfully admitted daylight into the statue, between his legs and the pedestals, and between his arms and the body. Between this inclosure to which we have alluded, and its pendant or opposite one, there is a large circular basin, of the same width as it, with a sufficient space for walking left all round it, which has a jet and pipe, and throws spires of water in the shape of a large *fleur-de-lys*. This, in the beautiful summer season, or whenever the sun shines and merry fables appear, is the chief and central object of admiration in the famous gardens of the Palais Royal. In the other division of these public gardens is, first among the works of sculpture that decorate it, a group representing a man holding a goat, for a child, recumbent on the ground, to suck. The attitudes are most graceful and perfect; and it is a great beauty to, and always an aim in, figure sculpture, to let in the daylight. Lightness, grace, and delicacy, are given to each and all of the separate figures that compose it. In the centre of this arranged and well-appointed plot or *parterre*, is the statue of the goddess of hunting, Diana, in bronze, which sometimes has a good effect in the open air, and against trees as a background. Her bow and quiver are hung from her right shoulder;

her left hand holds the horns of a deer; her figure wears the expression of health, strength, cheerfulness, and activity. The pedestal is very plain, and is a little higher than the statue, which is a little larger than that of nature. The statue that terminates this division is an Adonis, one not often exceeded for its elegance of proportions and for its perfection of form. Close by is the Rotunda Café and the celebrated restaurants of Véry and the Trois Frères. Here the foreigner may obtain, after his dinner, a good cigar, a cup of Mocha, and the *Times*. The two celebrated theatres are close at hand, at the two opposite corners of the gardens of the Palais Royal. This spot may recall to the traveller who has roamed through Italy the Piazza di San Marco, Venice, or Bologna with its long arcaded streets; yet this, and the Rue de Rivoli, with its pillars and its arches, and covered way, running parallel with the long avenue of chestnuts and pollards, forming vaults in the gardens of the Tuileries (with their well-tended trees and their grateful greenwood shade, and their pigeons and doves, regarded as sacred to the spot), have something more gay, more airy, more cheerful, more charming, and more distinguished by the signs of civilization, than similar covered and columnar structures under which it has been our lot to stroll in the course of our travels on foot through the countries and through the capitals of Europe. We remember a visit to the old curious town of Chester, where a street or two of houses were erected below, and the dwelling apartments which they supported built above them; the shops were sheltered from too great a glare of the sun, and protected from the rain. In Bath there are also passages and covered ways, with shops and merchandise on each side, in several parishes. We sojourned there some time, and by special favour obtained a view of Becket's Villa, and his fine collection of pictures; of that eccentric, but poetical and enthusiastic creature, who lived and travelled like a Lucullus—who wrote Vathek, and steeped his imagination in horrors (like Fuseli, the professor of painting),—who visited and wrote on the steps of the Alhambra and the scenery of Italy, and doubtless reviewed these scenes, and lived over again the past *souvenirs* of delicious travel, and could shut his mind against the intrusion of external objects; for it was his custom invariably and always to have his blinds down to all his windows through which there was any chance of his rooms or himself being overlooked. But to return to our subject. The sculptures on the east and west fronts of the Arc d'Etoile, in memory of Napoleon's battle, at the end of the great avenue of the Champs Elysées, contain subjects slightly allegorical, being respectively called, the "Departure," the "Preparation," the "Battle," the "Victory," the "Return,"—all of simple and energetic and truthful execution, and more remarkable than many groups of sculpture for unity and simplicity of composition, not only by French artists, but by artists of other countries. The gilded statue of Victory on the top of the column erected on the site of the Bastille is a fine piece of foundry work. The model of it is in the Museum of the Louvre, in the Salle de la Renaissance. Orders and commissions were given for such sorts of statues during the great Revolution; and it often occurred that the artist who produced the work, whether a statue, a fresco-painting, or a painted ceiling, had been hitherto unknown to fame, his name not ever having been heard; but that, toiling in secret and in solitude, he was one of that class of geniuses who, until they feel and know that they can make a lasting reputation, and build up an undying name, shroud themselves in obscurity, until a moment or a day, big with fate, induces them to emerge from the darkness in which they had been voluntarily enveloped.

In daily visits to the Imperial Library, Rue de Richelieu, at Paris, during a sojourn of three years there, the writer was wont to admire the statue of Cicero, on a pedestal in the vestibule, near the stairs which lead to the reading-room above. It impresses the senses, it prompts and goads ambition, by "the voice that yet speaketh,"—by its calm and commanding expression. It personifies study and contemplation. We can understand the motive for placing the statue of such a man in an institution devoted to the high and ennobling objects of literature, history, philosophy, and science; but it is injudiciously, and, for effect, unhappily placed, with its back to the wall; and the wall does not, for want of a bright white surface, throw it out in relief. You cannot walk round, as you always should be able to do with a statue so composed, in order to

* Note to "The Art of Verifying Dates: Chronology of the Kings of France," Fol. Paris.

† "— et moriens remaniscit Argos,"—Virg.

‡ Barlong, in plans of ground and plots of land, or geometric figures, is not oblong, but approximating to it more or less, and wider at one end than at the other.

* There was no permanent theatre at Florence (the city of flowers) more ancient than that of the court of the Medici, called the Uffizi, because it made part of this vast edifice. The date of its foundation is fixed by Baldinucci in the year 1581. (*Giornale Fiorentino*, a Florentine journal, vol. i. 1838.) This building occupies a great space of a grand piazza, and there is a fountain by Bernini, with sculpture by M. Angelo, Giulio Romano, and other bronzes, also the work of Lunzi; and a fine equestrian statue to Cosimo di Medici, in the centre of the piazza.

see it in all its parts and from all points of view. It is not accessible, as a statue to such an eminent Roman orator as Marcus Tullius, the representative of literature—the *genius loci* of that public library—should be made; yet observers can take a view of both sides and the front well enough from the opposite walls, the right and left hand, and from half way up, or less, of the stairs. Daylight is admitted into the figure through the right arm and the body; and the hand, holding a roll of paper, being separated from the body, and giving an interval of aperture. It is a statue with the Roman toga, that robe of dignity and insignia of power. He looks and he stands as he did in the Forum, or in the hall of the palace of the Cæsars, and in that memorable one where he was assassinated. It recalls to our recollection that awe-inspiring and subduing statue of the world's great philosopher, Sir Isaac Newton, in one of the halls of one of the colleges at Cambridge. This statue might be placed, to the greater advantage of light and observation, in the centre of the old quadrangle of this vast building, once the palace of Richelieu; or in the new quadrangle, grass-grown, which has recently been formed and railed in with an elegant iron and gilded grille, one of the happy results of the restorations it has received. The equestrian statue, the size of life, in very *alto relievo*, and in bronze, over one of the doors of the Hôtel-de-Ville, and that, of bronze also, in the recess and on the terrace of Pont Neuf; the equestrian statue to Louis XII. in the court of the old palace, near the site of the Bastille, encircled with chestnut-trees; that to Louis XIV. in the Place des Victoires; the houses designed by Mansart; the fountains, and statues of the queens of France and Italy, that adorn the gardens around the Luxembourg Gallery, these are all monuments of taste and instruction.

A statue representing a standing figure, a little larger than life, should be elevated on a pedestal about twice its height; but much depends on the distance it can easily be viewed at, or the size and importance of buildings which surround it. It is best, in general, for the pedestal to be plain, and not otherwise; for it is the statue on it that we want to look at, but not the pedestal, except to admire its due and proper height to that of the statue. But yet the pedestal should receive some study and consideration of the ornaments, of moulded panels, a frame for an inscription and for bas-reliefs (in bronze, if the statue is bronze), and divided into different stages, or a series of 1, 3, 5, less as they rise. The bas-reliefs should be on the two sides, and the name of the deceased in the front of the pedestal. Style and manner are everything in the treatment of a public statue. It should have an air of dignity, easy attitude, not encumbered with drapery; the arms and hands should be free, and shown; the forehead should not be hid; it should wear an expression of superiority; and repose and simplicity are necessary to allow it to be contemplated with ease and with pleasure. A good effect is produced in the statue of a distinguished officer or marshal, with his arm extended as far as, or a little beyond, his body, and his hand resting on his sword, which is supported on the top of the pedestal or rock. The statues of the ministers, architects, marshals, and other celebrated men, in the niches of the new Louvre, and on the pedestals of the balustrades of the projecting body of that magnificent pile—greatly indebted to the genius of Visconti and other first-class architects of Paris—are very interesting. Recently a statue, by Pradier, of an angel, has been placed on the peak of the gable of the ancient church of St. Germain de l'Auxerrois, opposite the Louvre. This church was once the sepulchre of the ancient kings of France, who were buried under the apsis. There was formerly a piece of fine sculpture, by the hand of the French Michelangelo, Jean Goujon, on a part of the church at the east end, where they chanted, called the *fontaine*; but in some revolution or sudden change in society, this was taken away, and we have not been informed whether it is in the museum founded by Lenoir, in Paris, or elsewhere.*

FREDK. LUSH.

ST. STEPHEN'S, VIENNA.—The St. Stephen's Cathedral is in a dangerous state. A commission is about to examine the venerable building, and it will have to decide whether the steeple shall be removed, or whether it can be repaired.

* From 40 to 50 statues of eminent painters, architects, naturalists, poets, philosophers, men of science, &c., have been added in the short space of five years, to the pedestals of the balustrade of the projecting arcades of the galleries of the new Louvre. Lefuel was charged with the direction of the works after Visconti's death.—F. L.

THE METROPOLITAN MAIN-DRAINAGE.

THE MIDDLE-LEVEL SEWERAGE: NORTH SIDE.*

THE particulars we have given of the intended course and construction of several of the sewers which are to form part of the scheme of Metropolitan Main-drainage, will have been looked to by our professional and other readers with such interest as belongs to the details of a great and costly experiment, and which details will be referred to hereafter as useful precedents, whatever may be the success or otherwise of the whole undertaking. Whilst the general design was under discussion, we did not fail to express our conviction that it did not offer that which we called the *solution of the difficulty*; and, without further reference to the questions which have been revived, of the utilization of the sewage, and possible effects of diversion of the ordinary rainfall, we should now observe that contrivance for ventilation of the sewers (or disinfection of sewage concentrated in the new channels) is, so far as the works are concerned, of which the details have been described by us, limited to the provision of shafts on the old principle, and refer to that which was our impression, namely, that the reliance upon copious dilution or flushing by the water of the intercepted streams would prove fallacious, and that some further contrivance would be necessary. Particulars of side-entrances, ventilating shafts, and gullies, such as were very minutely given in the drawings for the Southern High-level and Outfall Sewers lately examined, are omitted in the drawings for the Middle-level Sewer. In the specification, however, whilst gully-drains and house-drains are to be connected, side-entrance gratings and ventilating-grates are amongst the items of iron-work to be provided with general additional works, some of which will be mentioned by us shortly. For the Middle-level sewerage, of course, side-entrances and shafts in the existing system would be available to some extent. We are glad to learn, however, that new means towards ventilating the sewers, which it is hoped will answer the purpose, are in contemplation. These consist in the connection with the main sewers, of the draught of the furnaces required for the steam-engines working the pumping-machinery. It, indeed, appeared by the report of Mr. Haywood to the City Commission, as well as by much of the evidence before the parliamentary committee on the state of the Thames, that great doubt was felt by some of the best authorities touching the probability of success from contrivance of this nature,—doubt in which the late Mr. Robert Stephenson, who was on the committee, seemed to participate; but about that time, we alluded to instances of the success of the contrivance, and expressed the hope that the idea of resorting to it would not be summarily dismissed. We are glad, therefore, to find that the present intention is as stated. The matter, it must be allowed, is not yet removed from the region of doubt comprised in the fact of the number of inlets; but, it appears to be thought with reason, that the proportion of these to the main sewer might be sufficiently small not to prevent the extraction by the draught from a considerable distance, or that special arrangements might be made at stated periods. Considered as mere experiment, however, the course to be taken is necessary. The first idea seems to have been that of turning to account the furnaces of the dockyards and arsenal, as an experiment at least; but the required permission was refused, on the ground that the exigencies of the public service would not allow the facilities to be granted. With reference to one portion of machinery which has been mentioned, the body of sewage and water, which will have to be raised, as on the south side, will be enormous; and we shall shortly examine what is the machinery proposed to cope with a difficulty in part following from the level of the ground on which houses have been placed, and increased by adoption of the principle of the interception of rainfall; and on that occasion we shall probably have something to add in reference to the matter of ventilation. The provision for the escape of the extraordinary rainfall appears to be greater in the case of the Middle-level Sewer, north side, in various parts of its course, than that of the southern sewerage,—though not so much so as might be inferred from our last account, wherein what was said of the connections by iron-piping, of sewers existing at an upper level, with the new sewer where at a lower, was intended to refer to the general principle of intercepting sewage, whilst dealing with "storm-

waters," and not to such special cases of level. We may also notice that the construction of the sewers differs in some important particulars,—the Southern High-level Sewer having the invert for half-brick thickness, formed in Staffordshire blue bricks, or salt-glazed stoneware blocks of the same thickness, and the remainder of the invert in brick-work in cement and sand; whilst the Outfall Sewer, in continuation, will have the invert of the same brickwork as the remainder of the sewer—that is to say, the sewer will be built wholly with cement or cement and sand. The Middle-level Sewer, north side, with certain exceptions, will be constructed, where the internal diameter is 8 feet 9 inches or more, and the thickness of two bricks, the lower half in cement; whilst where the diameter is 7 feet, and the work one brick and a half thick or less, the sewer will be wholly in cement. In addition to the construction in cement, at crossing the Fleet Valley, the sewer will be lined with iron, as already described. The new line of railway proposed, will intersect it. There can be but one opinion as to the care and forethought manifested throughout the structural part of Mr. Bazalgette's work.

We included in the first part of our account of the Middle-level Sewerage, north side, as proposed, every necessary particular as to the route and construction of the sewer of the main line from Old Ford to the western arm of the Counters Creek Sewer, near Kensall Green. We proceed to give the particulars of the branches. The Coppice-row Branch, which extends from the junction with the main line at the Fleet Valley, already described, along part of the length of the Baginbidge Walls-road, and thence westerly for a short distance past the Model Buildings to the Fleet Sewer in Pakenham-street,—a length of 2,570 feet, throughout which the sewer will be 4 feet in diameter, and will be laid to an inclination of 1 in 913, or 5/78 feet per mile,—commences (traced upwards, with 40 feet of cast-iron piping, of 14-inch metal, with sockets 6 inches deep, put together like those described for the weir and overflow, continues along Victoria-street for 500 feet, and thence for 970 feet will be constructed in tunnelling through the blue clay; after which the open cutting will be resumed and the sewer so completed. The work will be 1 1/2 brick thick, in cement. By the junction with the Fleet Sewer in Pakenham-street, a diversion will be effected of the whole of the ordinary sewage which at present flows down the last-named sewer into the Thames. To effect this, there will be formed in the Fleet Sewer, at a point 38 feet 6 inches below that of the connection of the Coppice-row Branch, a weir 3 feet in height from the centre of the present invert,—to be coped with stone,—the flooring of the sewer being reformed of blue bricks up to it, in a gradual incline. The 3 feet of course will represent the depth of the ordinary run of the sewage; and the remaining 9 feet in the Fleet Sewer will be the depth available for any excess, or "storm-waters," for which the outlet will be the present emissary of the Fleet, at Blackfriars-bridge, into the Thames.

The Piccadilly Branch extends from the main line at the junction of King's-road and Theobald's-road, along Bedford-row, Brownlow-street, Holborn (for a short distance), and Great Turnstile; Lincoln's-inn-fields, north side; Great Queen-street, Long-acre, Cranbourne-street, Coventry-street, and Piccadilly, to Half-Moon-street, and along that street and part of Curzon-street to the corner of Chesterfield-street, a length of 1 mile 5,240 feet. For the greater portion of this distance, or 8,820 feet, ending near the point where Berkeley-street joins Piccadilly, the sewer will be executed in tunnelling through the blue clay; and here it will have an inclination of 1 in 1,320 or 4 feet per mile, and will be 4 feet by 2 feet 8 inches in the clear, and of 1 brick thick in cement. The same construction and inclination will be continued in the part to be executed in open cutting, so far as the corner of Half-Moon-street (or making the length from the starting point 9,540 feet), whence the distance 980 feet to the Chesterfield-street Sewer will have an inclination of 1 in 210 or 25 1/4 feet per mile. The Dover-street Branch, to be executed in tunnelling, and to have the same sectional dimensions as the sewer which it enters, will be in length 1,140 feet, and will have an inclination of 1 in 1,009 or 5 1/23 feet per mile. It will divert the sewage of the lower part of the King's Scholars' Pond Sewer, which it joins near South Bruton-mews. The present emissary in Pimlico, of the last-named sewer, as in the case of the Fleet Sewer, will serve for escape of "storm-waters."

The first boring for the Piccadilly Branch was

* See page 771, ante.

made at the north-east corner of Lincoln's-inn-fields; and the soil and strata were, in descending series, "made-ground," 7 feet 5 inches; loamy gravel, 2 feet 5 inches; sand and gravel, 1 foot 9 inches; sharp sand and gravel, 6 feet 10 inches; yellow clay, 2 feet 6 inches; and blue clay to the depth, 27 feet 5 inches additional, where the boring ended. Above the clay there was a copious influx of water. At the corner of Great Newport-street and Upper St. Martin's-lane, there were 12 feet 4 inches of "made-ground;" 1 foot 6 inches of gravelly clay, 3 feet 5 inches of mottled clay, and 6 inches of clay-stone above the blue clay; and in Regent-circle, there were 9 feet 6 inches of made-ground below the road-metal, 6 feet 10 inches of sand and gravel, 1 foot of yellow clay, 1 foot of loamy sand, and 1 foot 6 inches of yellow clay above the blue clay; whilst opposite Half Moon-street, in Piccadilly, the sewer-level it was found would pass into the yellow clay, which had there a thickness of 21 feet, below 1 foot of "made-ground," the same thickness of old road-metal, and 18 inches concrete and paving stones. We can, however, supply only portions of the valuable information of this character, which has been obtained; and which in addition to other results, will settle questions which our readers may recollect as to the level and position of the London clay.

In connection with the main line, there will be 200 feet of sewer 5 feet 6 inches by 3 feet, in lieu of the old sewer which is to be filled up, along Oxford-street, westward of Wells-street, besides 245 feet of under-pinning. In the tunnelled portions of the works, all cavities, however arising, are to be filled up with brickwork in cement.

The specification for this middle-level drainage, provides for a large amount of additional work,—such items as 85 tons of cast iron, 470 cubic feet of Aberdeen granite, 30,000 cubic yards of excavation, 50,000 of lias lime concrete (three shillings per cubic yard being allowed by the contractor for ballast or gravel, if obtained from the works), 300 rods of brickwork in Portland cement, and 400 in blue lias lime mortar. These items are numbered to refer to the schedule of prices forming part of the specification. Of surplus earth carted away, 40,000 cubic yards are to be charged the difference, 1s. 3d. between the rate 1s. 6d. for filling, and carting to any distance, and that for filling in only (in layers, including priming), which is 3d. The schedule extends to seven pages, and includes a great number of items. The earthwork of the tunnelling is set down at 6s. 6d. per cubic yard, instead of 5s. 6d. as in the southern sewerage: the concrete, six of ballast to one of blue lias lime, including every expense of putting in, is 5s. 6d.; and the like with Portland cement, is 13s. The manner of executing the work and the quality of the materials, are directed with great precision, as already mentioned. For instance, the lime is to be that burnt from the lower or hardest beds of the blue lias formation, to be brought on the works in lumps, fresh from the kilns, mixed on the spot in proportions of one of lime to two of sand, in small quantities as required, well tempered, and ground in a mill under edge-runners, adding the necessary quantity of water.

The contractor has to make terms with owners and occupiers, and to pay all costs and compensations, even for loss of trade. Amongst the general conditions are clauses for the indemnification of the Metropolitan Board in case of action or suit; for opening the sewers for examination after their completion; against assignment or underletting of any part of the work; for the delivery of articles of value discovered, and many others. The works are to be completed in two years and three months from the receipt of the order to commence, with the liability to pay 50*l.* as liquidated damages, for every day exceeding the time,—additional time, however, being promised in the event of strikes. The tender is to include 15,000*l.* for possible extras. The contractor is to find two sureties, who are to be bound with him in the sum of 20,000*l.* The "Articles of Agreement," in which the specification, conditions, and the schedule of prices are embodied, fill thirty-five printed pages, besides an elaborate index; and there are eighteen or twenty drawings as numbered, these, however, extending over sixty-one large sheets. The Metropolitan Board have just decided that the whole of the works of the Middle-level Sewerage, described in this article, and in a preceding one, shall be let in one contract. They have also taken steps towards the work of the Northern Outfall Sewer, eastward of the Lea, as shown by the advertisement for tenders for fencing in the ground.

We may take this opportunity of explaining,—since a question seems to have arisen with some of our readers, regarding the point of emission of the Southern Outfall Sewer, as described by the Engineer to the Board of Works,—that the description "opposite Dagenham Breach," is correct. Dagenham Breach is an inlet from the Thames on the Essex side, which may have been formed as the name suggests; and it will be found so called, on good maps, and as distinct from a Breach of the river.

THE CATTLE-SHOW.

THE FARM AND STABLE.

THE Cattle-show ought not to be overlooked by our professional readers. The improvements in modes of cultivation, farm implements, and stable fittings, ought to be known to those who pretend to design farm buildings or superintend estates. The Smithfield Club shows have done much good, and have materially aided in bringing about the change which is apparent in the agricultural mind, and the consequent improvement in farming. Who amongst the sneerers at Mechi and other experimentalists, ten years ago, would have supposed that a stall for the sale of Liebig's works on Farm Chemistry would have been a profitable holding, yet there it now is in Baker-street. We should be glad to see more drawings and models of farm buildings than are to be found there. We saw but one collection of them, half-a-dozen of executed sets by Mr. Wilkinson, none of them, however satisfactory in other respects, displaying the least attempt at architectural character. Hereafter, when the show is made in a building better adapted to it, and in which, as we have urged, art should bear its part, there will be greater inducement to send models and drawings.

As to the site for the new building, the club must be careful. To go so far north as Islington, as is being urged, would be suicidal. If they could obtain a proper footing on part of the Royal Commissioners' land at Brompton, in communication as that will speedily be with all parts of the kingdom by means of railways, the continued success of the institution would, we think, be assured. Mr. Gibbs and the committee, however, will doubtless well consider the question.

The inventions for steam cultivation are gradually improving, and at no distant day will be largely employed. Mr. John Fowler, jun., amongst others, exhibits his steam-plough and arrangements, which seem to us to have great merit. Considerable improvements have been made in the tackle since we last looked at it, and he may congratulate himself on having delayed to sell any of his machines until assured that he had pretty nearly done his best. It requires a good heart in an inventor to go on, year after year, expending large sums, to overcome and beat down objections. The fact that 4,000 reaping-machines were engaged in our last harvest should serve to show inventors that they may hope for a profitable return as soon as they get the merits of their machines, if really good, properly known and understood.

The exhibition of stable fittings is more considerable than we remember it to have been. Messrs. Cottam & Co., Mr. James Barton, and Messrs. Musgrave, of Belfast, all show some excellent works; and if we have omitted the names of any others doing so, it is because we did not see them, and not as implying any inferiority. The standings of the last-named firm, however, claim examination in particular, from the number of articles, and the cleverness of some of the arrangements.

THE "BRITISH SCHOOL" AT BROMPTON.

THE national pictures of the British School, including the Vernon Gallery, the Turner Collection, some of the pictures left by the late Mr. Jacob Bell, and the Hogarth, Wests, and others originally in the National Gallery, are now hung in the spacious apartments which have been prepared for them, temporarily, adjoining the "South Kensington" Museum; and taken in conjunction with the Sheepshanks' Collection, previously there, they form a large, valuable, and interesting exhibition. The arrangement, however, is not calculated to increase the effect of the collection: in fact, it is quite the reverse; and the sooner some general understanding be arrived at, and all the pictures there be viewed as a whole, and hung on some system and with some taste, the better. Mr. Sheepshanks, with much good sense, does not object to the distribution of his pictures in such a way as to be most useful; and there can be no reason why a host of Turner's least admirable works, which would look much better separated,—raised in some cases, and interspersed with other

pictures,—should be all jammed together in one room. Turner was a mighty master,—immeasurably the greatest landscape-painter that ever lived; but he had his weaknesses, and these require to be treated judiciously by those who would protect his reputation. The light in the large new gallery is not so good in day time as in the other galleries.

The following are the regulations for the admission of the public:—

The separate entrance to the National Gallery, British School, provided at the request of the Trustees of the National Gallery, will be open for the public on Mondays, Tuesdays, and Saturdays; and for students on Wednesdays, Thursdays, and Fridays, in the daytime only.

The public will be admitted to the National Gallery, British School, also through the Museum every day, and on those nights when the Museum is open, according to the regulations of the Museum. On these nights the National Gallery, British School, will be lighted by the Department.

Wednesday being a public day at the National Gallery, and a students' day at the South Kensington Museum, will hereafter be a students' day at the National Gallery, British School, and the public admitted on payment (6d.) to the South Kensington Museum will be admitted also to the National Gallery, British School, through the Museum only, the National Gallery students being admissible by the separate entrance.

On Wednesdays, Thursdays, and Fridays, when only students are admitted to the National Gallery, British School, the public admitted by payment (6d.) to the South Kensington Museum will be admitted to the National Gallery, British School, through the Museum only.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary general meeting of members was held on Monday evening last, at the house in Conduit-street; Mr. George Godwin, V.P., in the chair. The attendance was very numerous.

The minutes of the last meeting having been read and confirmed,

Mr. C. C. Nelson (honorary secretary) having announced the decease (already referred to by us) of Mr. George Moore, for many years a fellow of the society, said that it would be within the recollection of the members that on the 14th of April last a letter had been addressed to the secretary of the Royal Academy, conveying certain suggestions which it was considered desirable to have carried out with reference to the constitution of the Academy and architecture. Two or three formal acknowledgments had been received from the Academy, but on the 15th of November a letter had been received of which the following is a copy:—

"I laid your favour of the 9th inst. before the President and Council at their meeting held last evening, and in reference to a former communication alluded to, I am instructed to say that, pending the existing uncertainty as to the future site and extent of the Royal Academy, it would not be possible to enter into any questions affecting changes in its constitution and regulations."

Professor Donaldson suggested that as the subject referred to by Mr. Nelson was one of great interest to the architectural profession, it would be desirable that the summonses convening the general meeting (which he believed would shortly be held) should contain a notification that the answer received from the Royal Academy would be one of the subjects to be taken into consideration. In connection with this subject he might be permitted to mention that on that very evening a member of the Royal Academy was about to bring a motion forward to increase the number of associates. This, however, he (Professor Donaldson) believed would not satisfy those who had taken part in the discussions which had led to the correspondence with the Royal Academy. He therefore hoped that due notice would be given that the subject would be brought under the notice of the general meeting.

The Chairman said he had no doubt that the council would see the advisability of carrying out the suggestion made by Professor Donaldson.

Mr. T. H. Lewis (honorary secretary) called attention to several donations which had been forwarded to the Institute, including the remaining illustrations to Professor Lepsius's great work upon Egypt (presented by the Prussian Government), and a drawing of the hypocaust found on the site of the new Coal Exchange in Thames-street, presented by Mr. Bunning, the City architect, a model of which was also on the table. Mr. Lewis then referred to the library of the Institute, which now contained 2,300 really important volumes upon architecture, a circumstance which he believed, if more generally known among the members, would lead to their making more use of the collection. Mr. Wyatt Papworth and himself had lately gone through the library, and had made a catalogue with cross references, by means of which any particular subject might be found upon which information was required.

Professor Donaldson said they had reason to be

indebted to those members who had forwarded to the library of the Institute the various broadsheets relating to the works upon which they were engaged, and by means of which a record might be kept of the history of architecture in the present day. He hoped no member would be restrained by sentiments of modesty from sending in drawings or lithographs, however slight, as they were carefully preserved in the library; and although many of them might be unimportant in themselves, still they would become valuable hereafter as showing the progress of English art. With regard to the library, he thought they were bound to express their thanks to their honorary secretaries, and to Mr. Papworth, for the task they had voluntarily imposed on themselves in the preparation of the catalogue. The labours of those gentlemen had been arduous and gratuitous; they were, therefore, the more honourable, and he was of opinion that the Institute ought to testify its sense of the zeal which they had displayed in revealing the treasures of the library, and thus demonstrating to what an extent it might become useful to all lovers of architecture.

The Chairman, on proposing that the thanks of the meeting be presented to the donors of the various works presented to the Institution, reminded the meeting that the hypocast as discovered by Mr. Bunning still existed, and that the corporation felt some little disappointment that so few persons had been to visit it. It was open to view under the Coal Exchange, and any person desirous of witnessing some most interesting remains of Roman London could do so without difficulty. With regard to the large folio plates to the "Egypt" by Professor Lepsius, he had to announce that a letter had been received from the Prussian Government, intimating that the work was now completed, and that no further instalments would be forwarded.

Professor Donaldson expressed a hope that they were not yet done with the Prussian Government. They were much indebted to that Government for their liberality in forwarding the plates; but the text intended to accompany them would be most valuable, as Professor Lepsius was more learned in the archaeology of Egypt than any man in Europe, and therefore it was to be hoped that when the Institute acknowledged the receipt of the plates they would also express a hope that when the letter-press was ready they might not be forgotten.

The Chairman then said,—"Before passing to the business of the evening, I have officially to announce to you what you are already acquainted with, and which I am sure you all deeply deplore,—I mean the death of our late esteemed president, the Earl de Grey. As he told you himself on the last night of our meeting, he had filled the office of president for more than four-and-twenty years, and during the whole of that time the noble earl was always accessible to the officers of the Institute, and was ever ready to put aside his own personal convenience and to take whatever steps might promise to conduce to the interest and advantage of the society. You know on how many occasions he interested himself for us, and you know that it was mainly through his exertions that Her Majesty founded the Royal medal for architecture—a circumstance which has tended materially to advance the interests of the Institute abroad, to improve its status, and to enhance its position in the estimation of the profession and the public. You know how he annually assembled to meet the Institute the most distinguished persons of all classes, the aristocracy of rank and of intellect, not omitting that fairer half whose presence on all occasions is a stimulus, a means of refinement, and an advantage; and to his example in this respect may be attributed the fact that their presence on these public occasions is no longer the exception, but the rule. I do not think that any among you who attended at the last meeting, and saw our noble president four or five days before he died, would have supposed that he had been a peer of this realm seventy-three years, that he had sat to Sir Joshua Reynolds, and that he was in his seventy-eighth year. You all remember the hearty and genial manner in which he conducted the business of the evening, and the words of encouragement which he addressed then as always to those who were presented to him. He was kind enough, in my own case, to refer to the circumstance that he had presented me, as a student, with the first medal given by the Institute, and now, from the chair which he occupied but the other day, it becomes my duty (as president of the evening) to announce his decease. I, at any rate, shall not soon forget the coincidence. The question of who shall be his successor will come before you very soon, and

will, doubtless, receive the consideration which its importance demands. The first inquiry, probably, will be whether we should have a professional or a non-professional president. For my own part, I strongly incline to the opinion that the president of the Institute of Architects should himself be an architect. Selected, as he is, by the Government as member, *ex officio*, of Royal Commissions or Committees of Selection, it seems to me that the president should have such an acquaintance with the wants and views of his professional brethren, and such a knowledge of the art, as might be expected in a person holding the honourable position of your president. I do not think the Institute would lose in weight by electing an architect for its chief: the office would give dignity to the man. It seems to me that the presidential chair should be an object of ambition, the attainment of which every member of the profession should view as open to him on commencing his career. These, however, are merely my own individual opinions, and I venture to give expression to them in order that the subject may be well considered; but, whatever conclusion we may arrive at, I am sure, we shall all agree in saying that we shall not soon have a president who will discharge his duties with greater credit than the late Earl de Grey, whose name, I am persuaded, will long live in the grateful recollection of every member of the Institute of British Architects.

Professor Donaldson said, that in connection with this subject he wished to mention the circumstance that he had received a letter from the *Société Centrale des Architectes* of Paris, dated the 14th of December, and signed by the president, conveying, on the part of the Institute of Paris, the lively and profound sympathy which it felt at the loss which the Royal Institute of British Architects had sustained by the death of its noble president.

Mr. Garling expressed the gratification it would afford him to see some resolution placed on the records of the Institute, expressive of their regret at the death of their late president.

The Chairman said that the Council had already made a communication to the family of the deceased peer, which, he believed, would carry out the suggestion of Mr. Garling.

Mr. Nelson, having read the letter in question, addressed to the Countess Cowper (eldest daughter of the late earl),

Mr. Digby Wyatt moved a resolution to the following effect:—"That this meeting desires to record its profound sense of the loss the Institute has sustained by the decease of its respected president, Earl de Grey, and to reiterate the sentiments expressed by the Council in their letter to the Countess Cowper."

Mr. Garling seconded the motion, which was put from the chair and carried *nem. con.*

Mr. Gilbert Scott then read the first portion of a paper, entitled "Gleanings from Westminster Abbey."

The reading of the paper was warmly applauded, and at the conclusion the Chairman said, they had spontaneously shown so warmly their appreciation of Mr. Scott's labour, that they might postpone the formal vote of thanks till the paper was concluded.

Mr. Scott said that he would be prepared to resume his paper at the next meeting of the Institute (the 19th inst.), and that meantime he would prepare some additional matter. He would commence with a description of the Chapter House.

On the motion that the Rev. John Parker, of Oswestry, be elected an honorary fellow,

Professor Donaldson inquired the ground upon which the recommendation had been made. He had no acquaintance with the rev. gentleman; but he thought the more respectful course would be to defer the question until the annual meeting.

The Chairman said that the grounds on which the Rev. Mr. Parker was brought forward, were set out in the recommendation by the gentlemen who had proposed him, namely, "his knowledge of architecture, and his merits as a draughtsman."

Mr. Digby Wyatt expressed his intention to demand a ballot, if none of the gentlemen who had recommended Mr. Parker for an honorary fellowship were prepared to give an account of his qualifications.

Mr. Scott said that he had a personal knowledge of the Rev. Mr. Parker, and that the rev. gentleman had devoted the best part of his life and all his energies to old English architecture. He (Mr. Scott) did not, however, know whether he had produced any work on the subject.

Mr. Nelson said that the first recommendation

was not considered sufficiently satisfactory, and that the subject had been remitted back to the gentlemen who had proposed Mr. Parker. The recommendation was in consequence amended, and subsequently passed by the council.

Professor Donaldson inquired whether the council had considered the qualification necessary to entitle a person to become an honorary fellow, or member. According to the rules of the Institute, he must be a person "not being a British architect, but eminent for his works and scientific acquirements." Now, the question was simply this, whether the gentleman in question was a person "eminent for his works and scientific acquirements?"

After a few words from Mr. Francis, who considered that it would be invidious towards the council, who had only done their duty in bringing the subject forward, to refer it back to them,

Mr. Kerr moved that the question be postponed *sine die*, so that the council might be able to bring it forward at a future day.

The motion was agreed to, and the proceedings terminated.

AMATEUR CRITICISM ON ART: ITS RIGHTS AND LIMITS.*

THE impression of external objects being conveyed to the mind of the professional artist, through the medium of the same senses as those which serve the purposes of the civilian, he cannot arrogate to himself an intellectual tyranny, or dictate to mankind at large the metres and boundary lines of their artistic tastes and perceptions. If the philosopher, indeed, who has made the principles of an exact science the subject of a life-long study, may be able to define with precision, beyond the authority of mere opinion, the laws by which it is governed, we must ever bear in mind the grand distinction which I have endeavoured to point out between a science from which all imaginative speculation must, in the very nature of things, be excluded, and fine art, whose very foundation is imagination as applied to the interpretation of general nature. Certain points there are which the amateur must concede to the artist, and accept his dictum upon as authoritative, and the more conventional a particular section of art may be, the more frequently will such instances occur. In none of its branches is this more the case than in architecture, which, from the innumerable materials necessarily employed, and the numerous requirements of construction and arrangement, is perhaps the most conventional of any of the fine arts. Yet, in its principal features as general outline, the particular proportion of parts, the arrangement and disposition of ornament, and, in fact, with respect to all those qualities on which the artistic effect of a building is dependent, an architectural work is governed by the same general principles as apply to other sections of art.

The judicious critic will ever maintain the importance of those true and lasting principles which have ever constituted, and must ever continue to constitute, the beacons to success, in all matters wherein art and taste are concerned. And while on the one hand he recognizes and distinguishes the existence and application of these in the works of any master, from the individual peculiarities which may serve to mark the particular bias of the artist's feeling, and form as it were the true transcript of his artistic idiosyncrasy, and which, held in subordination to the few accepted canons that must universally govern the practical pursuit of his profession, give vigour and character to his work; he will also distinguish between the combination of these and the factitious whims of caprice, or the crude fashions of the day, which we now too often meet with, and which, while they ever form a blemish in what otherwise might be a creditable work of art, can never reduce it to an otherwise indifferent one, or raise it above its intrinsic mediocrity.

After all, the great leading principles which govern art are few and comparatively simple; and, by a cultivated and sensitive mind, they are learnt and appreciated without much difficulty. Much that in writing may appear abstruse, commands itself to the mind in practice as an element almost essential to the development of truth and beauty. A principle of art is not a cooked recipe for producing the strictly prescribed proportions, or scales of colour, however much some artists may be tempted so to apply them, to the disparagement of their own works and the crippling of their genius.

It will be found from the study of the works of

* See p. 772, ante.

the greatest artists, that these general principles of art, when properly understood and rightly applied, so far from cramping or checking the imagination, tend to quicken and invigorate the mind, and help the hand; and I believe that no school of art can neglect or contemn them, without practically exemplifying how essential their observance and preservation are to the very existence of fine art.

I do not now propose to enter at length into a discussion of these principles, but a few of them may be illustrated by glancing at some instances, in which certain classes of artists of the present day are most apt to violate or neglect them.

He violates these principles who in the practice of imaginative art ignores imagination and invention, its very essence;—and who for the delineation of character and beauty in their highest sense, and most exalted combinations, substitutes vulgar and commonplace types of the human form; or who in figure compositions, instead of grouping his subjects into graceful forms, adopts stiffness and angularity, without reference to the general effect of his design. The principles of art are opposed to him who practically denies the existence in nature of varying effects of light and shadow, of atmosphere and massing foliage; and who, working with opaque colours on a flat surface, gives to a landscape less actual contrast between foreground objects and the air tints of his distances, than could possibly exist in nature even on the clearest day, and much less than that which must appear to exist, helped, as the air of the landscape always is, by actual distance and aerial perspective; and he also offends against them, the scale of colour and the light and shadow of whose foreground and principal objects are feebler and less intense than those which actually appear in his original, although he has only dead white paint to exhibit in contrast as his highest light, whereas nature is illuminated by light itself, whose brilliancy immeasurably exceeds the brightest tints he can employ in imitation.

As in questions of detail and actual practice, the opinion of the artist ought to be preferred, and have infinitely more weight than that of an amateur;—so on this very account, in matters relating to art in the abstract, the accomplished amateur may probably sometimes prove the better and more unprejudiced critic of the two; as, to the latter a work of art presents itself to his eye in the first instance, in relation to the feeling which it is calculated to exercise upon the mind as a fine art, irrespective of technical elements of mere manipulation; assuming, of course, that it possess the requisite qualities of sentiment, and such a degree of masterly execution as would entitle it to be classed as a worthy work of art; while, to the artist, who naturally views it very much with reference to its execution, passages of skilful workmanship, and difficulties dexterously overcome, are apt to be too much dwelt upon, and given a somewhat undue prominence to the prejudice of the more important consideration of the real end sought to be attained,—namely, the æsthetic character and sentiment of the work, through which alone it can attain to rank as high art, or exercise any influence upon the public taste.

It is not in comparison with the works of creation alone that man's existence appears ephemeral; for how often do the works of his own hands so far outlive him that they cease to commemorate the individual genius of their designer, and are recognized by posterity as the monuments of the departed skill and taste of his time and nation merely, long after his very name has been blotted out from the annals of time. And how gently and tenderly time and vegetable nature deal with these relics of human genius, if undisturbed by the destroying hand of man himself. These seem to make the artist's works beautiful and interesting in their gradual and calm decay; and year by year we find nature delighting to decorate anew their venerable remains with her choicest verdure, and enshrining the hallowed marble and granite of former times in fresh and leafy bowers, long after "the story of the days" of their architect has been buried in oblivion.

To a susceptible mind it is impossible to limit the forms and combinations in which such associations and many others of a kindred nature, continually present themselves; and it is difficult to explain always the various perceptions and faculties which co-operate to give them birth. I think, however, we may, in viewing the matter in an artistic light, endeavour to draw a distinction between associations of *taste* and *feeling*;—the former I should define as being necessarily founded on the existence of actual beauty, enhanced and rendered

more interesting by extrinsic circumstances. Association of feeling may, on the other hand, it appears to me, exist independently of material beauty, and in this sense becomes rather a moral than an artistic sentiment.

I believe to be an incontrovertible truth that the source of true inspiration to every artist is Nature, in her intense and ever-varying beauties, in her marked and ever-enduring characteristics. There is in all art which derives its tone from an enlarged and philosophic observation and interpretation of the principles of nature, animate or inanimate, an unmistakable impress of the solemnity and sincerity of purpose which ever distinguish her works. Once neglect to study her page, and the artist will soon forget the true genius of the poetic language he professes to render through the medium of his pencil,—will lose the golden key which opens the door of those mental stores from whose mystic memories he had been wont to embellish his canvas, or infuse life and character into his marble.

We may be told, indeed, and sometimes are, that the artist has only ceased to inhale the feeling and sentiment of nature that he may the better investigate the minutiae of her detail,—that he has postponed the observation of the sublimity of a mountain landscape till he has completely mastered the peculiar stratification of detached rocks,—that he has merely ceased to admire the luxuriance and massive splendour of the summer foliage that he may examine the structure of each individual leaf. Geology has been aptly termed "the anatomy of external nature," but as the historical painter should beware lest he so far obtrude his knowledge of this (anatomy), which is a portion of the grammar of his art, into his picture, so as to override its fine-art sentiment, and to reduce it to something very like a mere lecture-room illustration of the muscular processes, no less must the landscape painter guard against allowing his pencil to be led from its legitimate use,—that of depicting nature as a whole in all her freshness and variety to a hard, dry transcript of minute detail at the expense of general effect, and consequently of the real truth and sentiment of his subject. A correct and competent knowledge of the structures of his various rocks, of the language and growth of his different trees, by all means let him cultivate and exhibit in his works; but do not let us be told that a microscopic delineation of stone formations, such as might serve as an illustration of a work on natural history, is fine art, or that a dry, flat series of spots of uniform tone and colour convey to the mind the sentiment or expression of a sunlit summer wood.

The artist and amateur alike who accustom themselves thus falsely to analyse nature, may depend upon it that they are going the surest way to destroy their perceptions of the real principles of beauty; and I should much fear that by degrees they would find their imagination so far blunted, and their minds so narrowed, that they may look upon all that is beautiful with the same jaundiced and prosaic eye, as that very personification of all that is unimaginative, narrow, and prosaic, of whom the poet has written:—

"A primrose on the river's brim
A yellow primrose was to him,
And it was nothing more."

I do not wish to be misunderstood in what I have said as claiming for all men, calling themselves amateurs or connoisseurs in the arts, an equal right to express an independent judgment, or to exercise their influence upon them. I assume the amateur to be a man of cultivated sensibility, possessing a competent education, and enlightened views on matters of art and taste: of such men it may be there are not many, yet such men, few or many, do exist; and it would not be easy to overstate the influence which they exert in the maintenance and direction of the fine arts in this and other countries. Artists do not depend on one amateur for the sale of their works, they are competitors in business, and no sorer let or hindrance have they to contend against in the daily strife, which the exercise of their profession brings upon them, than the great and increasing rivalry which is occasioned by their numbers and their divisions.

Deprived of a discriminating and independent criticism from without, and, from the same source, of some degree at least of judicious and even liberal patronage, they must inevitably languish; and under such circumstances, in fact, the practice of the fine arts must be as hopelessly paralyzed and destroyed, as would the business of the merchant who failed to find a market for his commodities, or the tradesman who was deserted by his customers.

Experience teaches us that some recognition of matters of imagination and taste; in fact, of the

fine arts generally, are almost as much the necessary concomitants of a high state of civilization, as the more ordinary pursuits of every-day life. Built upon, and developed in a greater or less degree by a general acknowledgment of their refining influences, every civilized country must, if she wishes to retain her position in the scale of social advancement, continue to encourage and cultivate, what, humanly speaking, is one of the chief sources of her elevation. Let a people be once so far raised above barbarism, as to have the skill and leisure to practise, and the wealth and inclination to patronize art and science (and their practice and encouragement are among the first symptoms of a people's rise), and so long as they continue to improve, or even retain their acquired position, their interests in these arts will increase until they become completely bound up with, and, as it were, an integral portion of their social system. The incentive once given, the inclination strengthens into habit, and can never be entirely eradicated but by a relapse into their original state of savagism.

The incitements to the cultivation of imaginative art are, in fact, almost as numerous, and as powerfully presented to the senses of a refined and intelligent man, as those tending to the ordinary concerns of civilized existence. They are suggested to him through the chambers of imagery, which thought and contemplation ever brilliantly furnish within the recesses of his own breast. They come to him in the study of the history of the past, in the exciting events of the present, and in anxious speculations as to the unknown future. The objects of nature which everywhere surround him, teem with the same teaching; inviting him to enrich his mental stores by calling her sweets; to contribute to his own and his fellow-creatures' enjoyments, by the investigation and reproduction of her beauties.

If, then, the cultivation of art is so intimately connected with a state of high civilization that the two seem almost necessarily co-existent, the duty of sustaining it in a vigorous and healthy state is as incumbent upon us as is the direction of our commercial interests or domestic affairs.

Let us bear this in mind, that however negligently practised, however ill directed, the arts and sciences will always be practised in some state or other among us, and that they will thus exercise their influence for good or for evil on the minds and tastes of the present and succeeding generations; and I think we must feel that the study of their principles should not be the exceptional thing it now is, nor their importance so little accounted of that the expression of any earnest feeling or love of them for their own sakes, apart from personal advantage or pecuniary interest, is too often, even among educated men, looked upon as highly unfashionable, or as exhibiting an extravagant amount of enthusiasm in a comparatively trifling cause.

It is much to be wished that a kinder and more conciliatory spirit could be infused into discussions upon questions and differences relating to the fine arts than is often at present found to be the case, both among artists and amateurs.

If such debates were carried on in a feeling of friendly emulation, instead of the angry and defiant tone which sometimes characterizes them, how much of mutual misunderstanding might be avoided; for the very fact of each of the contending parties maintaining earnest opinions upon their subject would seem to argue the existence of at least one strong bond of union between them, namely, the recognition of the influence and value of fine art.

Could men but bring themselves to see how often they may agree upon principles, instead of losing sight of these, and allowing their antagonistic feelings upon minor points to have the preponderance, they might be surprised to find how great were their agreements and how small the differences which had separated true friends,—friends who, had they understood one another sooner, might, with delight, have "talked down the sun" in kindly and profitable companionship.

That art in the abstract, independent as it is in material laws, supplying no bodily want, ministering to no substantial necessity, but appealing to the highest and least corporeal sympathies we possess, should hold in the hearts of its adherents the place it does, affording them as it were springs of life and feeling, which those who are strangers to its influences cannot even comprehend, seems to invest it with a character and dignity peculiarly its own.

The exotic of a brighter clime, its pleasures seem strewn around us by a Divine hand, as flowers by the way, to minister both to our solace and instruction in our passage through the scenes of time and sense.



PARLIAMENT BUILDINGS, OTTAWA.—Plan of upper part of Library.

I can never recognize the existence of high imaginative talent, that gift which enables its possessor to bring before the mind's eye combinations of ideal beauty such as the outward eye has never seen, though founded on the general principles of material nature, or in accordance with her harmonies, without feeling that it is indeed a mysterious power, and, perhaps, constitutes the highest mental endowment that humanity is capable of, and one which may be made the means to very high ends in the cause of moral and intellectual culture.

Perchance, indeed, the visions of genius may, at times, in the exercise of this magic gift, have reproduced some shadow of the glories of the unfallen world, as it first left the hands of the Creator. Perhaps, too, through the medium of the artist's pencil, the poet's pen, the musician's lyre, in their pursuit of high art's best prerogative, the combination of the beautiful and the true, we may have been vouchsafed occasional glimpses of what the face of nature shall appear, of the harmonies that shall then awake, when, her travail past, creation shall be restored, never again to fade; and man, transformed to angelic dignity, shall go forth to enter upon an everlasting sojourn, in regions of perfect beauty.

FRANCIS HORNER.

ARTERIAL DRAINAGE AND OUTFALLS. INSTITUTION OF CIVIL ENGINEERS.

At the meeting held November 29, Mr. Locke, M.P., president, in the chair, the paper read was "On Arterial Drainage and Outfalls," by Mr. R. B. Grantham, M.Inst.C.E.

The author commenced by giving an extract from Mr. Simpson's address, delivered in January, 1854, describing the general state of many important districts, in which property to a large amount was rendered useless, from the want of a proper system of arterial drainage, and of the improvement of the trunk lines, or principal water-courses. The legal difficulties in the way of carrying out works of this character led the author to think that some general legislative measure was necessary—such as Earl Carlisle's Bill, proposed in 1852, which, in his opinion, was the best that had been suggested,—before the great object of improved arterial drainage and outfalls could be attempted on a comprehensive scale, or be effectively maintained in working order.

The subject was treated under the following heads:—Firstly, attention was called to some of the evils arising from the want of a combined system of operation. Secondly, an account was given of the impediments which exist to prevent the adoption of arterial drainage. Thirdly, the class of works necessary to be carried out was described. And, lastly, some of the leading principles in the construction of drainage works, to accomplish the object in view, were pointed out.

The paper then went on to state, that there was, perhaps, scarcely a district in this country where one of two conditions did not exist: either the lands could not be drained at all, or they were injuriously affected by the drainage of those above them. Instances were given in illustration of these two conditions; and it was remarked, that, in many cases, a single person, who was unwilling to drain his property, might prevent any improvement by adjoining owners.

Owing to the extensive system of subterranean or pipe drainage, and to the field drains and ditches being better cleared out than formerly,

there had been a large increase in the water flowing down rivers, brooks, and minor streams. The effect of this was, that the water was discharged in a shorter time, causing more frequent floods, as the brooks and streams were of inadequate size; and, at other times, the rivers and streams contained less water than formerly; in many cases not sufficient for the supply of the towns and country dependent on them. To give some idea of the magnitude of this system, it was stated that, within the last ten years, about four millions sterling had been expended in the drainage of 800,000 acres, under the control of the Inclosure Commissioners of England; and it was estimated that probably twice that amount had been laid out by the Crown, by corporate bodies, and by private individuals. For full details of the progress and results of the under-drainage of land in Great Britain, the members were referred to Mr. Bailey Denton's paper, read before the Society of Arts in December, 1855.

Probably the largest work in the world, in reclaiming an extensive area of country from the effects of stagnant water and floods by arterial drainage, was that in the Fen Districts, commonly called the Bedford Level, to which attention was next directed. This enormous tract of land was originally a fresh-water estuary of the Walsh,—for many ages the sole characteristic of the Fens,—into which the rivers Witham, Welland, Glen, Nene, and Ouse were discharged. Having given the general character of the Fens, and of the rivers discharging into them, the author then described what had been their state, and the means which had been adopted to reclaim and raise them to their present valuable and flourishing condition. That the money had been well spent was proved by the fact, that land which in 1828 was only worth 5*l.* per acre, twenty years later brought from 60*l.* to 70*l.* per acre.

When Hainault Forest, lately a Royal Forest, was disafforested in 1853, the allotment made to the Crown contained about 2,000 acres. This consisted of a level plain, part of which was known as Fairlop plain, lying at the foot of a ridge of land sloping towards the south. Another ridge projected into it from the east; and, at the foot of these ridges, were valleys, which brought down the water from beyond the limits of the Crown allotment. The first operation in the reclamation was that of making the roads and arterial drains. The three principal valleys were the Dog Kennel Brook, extending from Little Heath, on the southern boundary of the allotment, to the northern boundary, where it branched towards the north-east;—the Well Ridden Brook, branching off from the Dog Kennel Brook about half-a-mile from Little Heath, and towards the north-east;—and a main drain, on the opposite side, which received the drainage of the west and north parts of the allotment, and of the lands to the north of it. In each of these valleys regular open drains had been formed, into which all the pipe drains were discharged. The Dog Kennel drain was 6 feet wide at the bottom, and from 4 feet to 5 feet deep at the outlet; the bottom width, diminishing gradually 2 feet at the upper end. The inclinations were 1 in 528 for the lower part, and from 1 in 125 to 1 in 200 for the upper part. The natural fall of the valley was steeper than this. Therefore overfalls, varying from 3 feet to 10 feet in width of opening, and from 3 feet to 5 feet rise, were constructed of brickwork at different points. These were capable of being made into dams, by inserting boards into grooves, for storing water in dry seasons, for cattle or other

purposes, and for irrigating the land on both sides. The system adopted was to have as few open drains as possible, and large mains. The area of land gained for profitable cultivation was thereby increased, and the labour of tillage reduced. It was found that the agriculturists neglected the mouths of under-drains, if they were numerous, so that it was good economy to reduce the number to a minimum. This forest, which, from time immemorial, had been almost a waste, was now a valuable farm; and what was formerly a refuge for thieves and poachers, now afforded the means of profitable employment to many persons.

PROPOSED PARLIAMENT BUILDINGS AT OTTAWA, CANADA WEST.

DESIGNS for the proposed Parliament Buildings at Ottawa having been invited, the first premium, 1,000 dollars, was awarded to Messrs. Fuller & Jones, of Toronto, and the second premium, 400 dollars, to Messrs. Stent & Co., of Ottawa. The design by Messrs. Fuller & Jones is about to be carried out. The style is the fashionable one, Italian Gothic: 75,000*l.* was the stipulated cost.

The principal front has a central tower, 180 feet high, standing before the face of the building (which is 500 feet long, and of irregular width), with carriage porch beneath, and double pavilions with high truncated roofs at each end of the front. The central tower has four gables, and a lofty roof with crown-like termination. The Legislative halls are placed on each side of the central court, which is about 100 feet by 70 feet, so that it will afford ample light and air, and from which they are separated by corridors. They are on the ground floor, and in capacity are each equal to the English House of Lords—82 feet by 45 feet. There are no rooms above the Legislative halls. The panelled roof admits light during the day, which is in addition to that supplied by the side windows, and at night the artificial light will also descend from above. The galleries, for the accommodation of the public, which are of ample dimensions, do not protrude into the chambers at all, but are situated over the corridor. The reporters' gallery is placed behind the Speaker's chair. A separate entrance is provided for the reporters, and an apartment is provided for them in which to write out their notes.

The library building is of circular shape, and situated in the rear of the main building, from which it is partially detached, as much as it can be said to be when connected by one story instead of two. It is on the plan of the new library of the British Museum, and is fireproof. It will be capable of holding some 300,000 volumes. Between the Legislative halls and the central court there are a corridor, a members' lobby at the end, and another corridor on the other side. The reading-rooms are at the back end of the Legislative halls, and the Speaker's rooms at the outer corners of the square that encloses the two chambers and the central court. It is intended to place the buildings on the bank of the river, which is some 150 feet high.

We give a view of the river front, showing especially the Library Building. The view shows residences for the speakers and the librarian. These are omitted in the plans prepared for execution, but will probably be added at some future day. The library is to be groined with marble and brick. We annex a plan showing the arrangement of the ribs. The arches, from *a* to *a*, are semi-circular, and the intersection of the arches gives the size of the lantern, each pier of which bears directly upon the crown of the semi-circular arch. The diameter of the library is 90 feet, and the height is 40 feet, to the springing of the dome. The idea of thus groining, say the architects, is not original. In Carter's "Ancient Architecture," plate 55, will be seen an example of it,—the stone groin over the kitchen of the monastery of the cathedral at Durham.

The council is determined to proceed with the works as rapidly as possible; and the terms of the contract will be to get everything completed by the 1st of July, 1862. The contractors have sent in their tenders.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fourth meeting of the session of this society was held on Wednesday night, the 30th, in the Royal Institution. In the absence of the president, Mr. William Whitman occupied the chair. Mr. Wm. Callahan was admitted a member of the society. The paper of the evening, "A Sketch on the Architectural Remains in Sussex," was read by Mr. E. Heffer.



PARLIAMENT BUILDINGS, OTTAWA, CANADA. WEST - North-east View. After Front. Messrs. Fidler & Jones, Architects.

DAVID ROBERTS'S SKETCHES IN SPAIN.

THESE charming sketches (seventy-five in number), taken during the years 1832 and 1833, are now exhibited in the German Gallery, New Bond-street. They are known to the artistic public by a set of lithographs and by engravings of them in an "Annual" some years ago; but Mr. Roberts has done quite right to let the sketches themselves be again seen, to remind the public of what he has done. They are full of beauty, and, moreover, in the face of Crystal Palace reproductions, and the works of that artist to whom the most elaborate detail is not more difficult than a plain wall, (the sun, whose powers in this way had not been discovered when Mr. Roberts made these sketches), their truthfulness is remarkable. The interior of the north transept of Seville (3), the Church of All Saints, Seville (11); the entrance to the Monastery of the Carmelites at Burgos (32); the Great Square at Seville (40); and the tower of Burgos Cathedral (75), bristling with pinnacles and honey-combed with ornaments, are amongst the most effective and interesting.

SOCIAL BRIDGES: THE MARINE SOCIETY.

It is admitted by all who have carefully thought of and investigated the subject, that proper culture, the means of prevention, and above all, affording convenience for removing those who are on the verge of crime from the circumstances which have caused it, are of far more consequence than the lessons of the hangman or the expensive discipline of the prisons: it is therefore a matter of the most vital importance that those associations which would prevent the youth of the metropolis from falling into the slough, should be well known and extensively supported.

There is nothing more painful to the thoughtful mind than to see large numbers of lads, of an age when they ought to be useful, wandering without occupation or aim; and it is certain that many of them, who are naturally possessed with the best intentions, are unavoidably driven into bad courses.

Institutions have been founded to meet those needs, that have had for many years an established reputation, and which, if more extensively supported, might be the means of increased usefulness.

Amongst these establishments, which are made with a good aim, the "Marine Society" is deserving of special notice, and yet thousands of those in influence who might assist, do not know of this society, even by name. Its merits have been so tried, that its influence should be extended. We therefore will give a brief sketch of the social bridge it affords, in the hope that it may not be without use.

As far back as the year 1756, more than a century ago, when Fielding, the famous writer, who by his position as a magistrate had acquired such knowledge that he was competent to understand the need of exertion, at the suggestion of a nobleman, collected together a number of distressed and destitute boys, who were clothed at the expense of the Duke of Bolton, and sent, according to their own wish, to serve on board his Majesty's ship *Barfleur*; then under the command of the Duke of Bolton. In those days there were no ragged-schools. Sunday schools were unknown; sanitary and all those social sciences which are now doing so much good, were then as much unthought of as were at that date the locomotive, the electric telegraph, or steam-printing machine.

From the time of the establishment of the Marine Society, in 1756, to the close of the war (which was then raging), in 1763, 5,175 boys were reared for her Majesty's ships and for the merchant service.

From May, 1760, to the 31st December, 1858, the number of poor and distressed boys fitted out and sent into the Royal Navy was 25,256; the Indian Navy, 3,640; and the merchants' service and fishery, 18,356.

Since the commencement of the establishment, up to last Christmas, 52,426 boys have been saved from the worst conditions, and placed in the way of adding to the wealth, and strengthening the resources of the nation; besides this a bounty has been given to landmen on board ships in the Royal Navy. The number thus assisted has, since the origination of the society, been 39,360; in all 91,786 lads have received the most valuable assistance.

The exertions of the nobleman above mentioned and Fielding were earnestly assisted by a gentleman (Mr. Walker, of Lincoln's-inn), who had acci-

dently met with a group of the lads collected from the streets, on their way to the *Barfleur*. By subscriptions which he promoted, from three to four hundred boys were in a short time clothed and provided for in a way most likely to render them useful and creditable members of the community.

At a meeting of merchants and shipowners, Mr. Joseph Hanway, a merchant, totally unconnected with the gentlemen above mentioned, proposed that they should form themselves into a society to give clothing, &c. to boys for the sea-service; and a proposal to form a regular society was readily adopted. This took place in 1756.

At the close of the war the operations of the society became embarrassed by some law proceedings, which were commenced for the recovery of a bequest of 22,000*l.* Three per Cent. Stock, left by William Hicks, esq., a merchant, who had for many years resided in Hamburg. By the favourable termination of the suit, the society became entitled to the interest of upwards of 17,000*l.*, producing more than 500*l.* per annum,—which is appropriated in time of peace—agreeably with Mr. Hicks's will—in fitting and placing out poor boys and girls (near upon a like number of each) to proper trades. In time of war the income of this fund, together with the general fund of the society, is appropriated to fitting out and clothing poor boys for the sea-service.

Owing to the favourable termination of the lawsuit, and the support of the public, the society was enabled to resume its operations in 1769; and was incorporated by Act of Parliament in 1772.

Various plans were from time to time proposed for the reception of the boys, in a place where they might have the opportunity of religious and professional training, until such time as they could be suitably provided for. In 1786, a proposition of Alderman Brook Watson was adopted by the society; and they procured a merchant vessel, called the *Beatty*, which, becoming decayed and worn; out in 1799, application was made to the Admiralty for the loan of a Government ship. This was complied with, and since that time the Government, in order to assist the Marine Society, have accommodated them with one of her Majesty's ships as a training vessel for the boys.

In the year 1783 the society received in trust, for the benefit of widows of captains and lieutenants of the Royal Navy, 10,000*l.* Three per Cent. Consols, the gift of Isaac Hawkins, esq.; this, together with some other sums, enables the society to make every year forty-three donations of 10*l.* each to the widows above mentioned. There is another fund entrusted to the management of the society.

A visit to the *Venus* frigate, which is moored off Charlton-pier, Woolwich, will show how useful is the working of the society, not only in saving boys from ruin and vice, but in transforming them into useful members of an important profession.

This establishment is presided over by a lieutenant of the Royal Navy, a schoolmaster, a boatswain, a carpenter, a cook, a quartermaster, and assistant schoolmaster, four boatswain's mates, and a master-at-arms. Here the boys are carefully instructed in religious and moral duties, and for their future profession of sailors; rowing in boats, going aloft, the management of the sails, knotting and splicing, the use of the compass, working the great guns, the use of small arms, and other matters.

The boys are generally under this beneficial training for three months, when they are fitted for sea; and if, after they have been apprenticed for twelve months, the masters report favourably, the committee give a new suit of clothes; and on the completion of their apprenticeship, if their conduct has been satisfactory, the boys are rewarded with a medal.

Last year, 521 boys were received: of these, 45 were sent into the Royal Navy, 69 into the Indian Navy, 273 into the merchants' service—only 3 were discharged; none had run away, and not one died. At the end of the year 1858, 140 were remaining on board the frigate. During the year 67 boys were rewarded with clothing, after twelve months' good conduct as apprentices, and 31 received medals.

The boys selected by the society are those who are destitute, without relations, without friends, and without support, or those in abject distress, recommended by governors or individuals of respectability, who have witnessed their misery;—boys who have been apprenticed, charged with petty offences; boys of a hardy, daring disposition, devoid of instruction or employment, being the sons of poor widows, or other worthy labour-

ing persons in distress who are burdened with large families, applying, with their parents' consent, to be fitted out. None are received under fourteen years of age, or older than sixteen years and six months.

These notes will show how admirably the Marine Society is adapted for the purpose of making useful and saving the very class of boys who are exposed to the greatest danger, and who cause the greatest amount of expense and trouble. Extensive as has been the good already done by the society, we would gladly see its operations very much extended, and this could easily be brought about with a trifling effort.

COMPETITION: ARCHITECTURAL MUSEUM.

It will be remembered that the committee of the Architectural Museum offered to artist workmen two sums of 5*l.* 5*s.* and 3*l.* 3*s.*, as first and second prizes, for the most meritorious specimens of carving in wood, being the enrichment of a hollow moulding, not less than 18 inches long and 7 inches wide, either in naturally or conventionally rendered foliage, with or without animal life; and that a prize of 5*l.* 5*s.* was offered by the committee of the Ecclesiological Society, through the committee of the Architectural Museum, for the competitor who should show himself most successful in colouring, according to his own judgment, a cast from a panel (one of eight) from the side of a tomb in the church of San Giovanni, Verona. This contains a draped female figure, surrounded with foliage on a flat ground in low relief, and enclosed in a narrow border. Mr. Beresford Hope was to give 3*l.* 3*s.*, in one or more extra prizes, if any works appeared deserving of being so rewarded. The committee of the Ecclesiological Society are themselves to adjudicate in this.

In reply to these offers, eleven pieces of carving have been sent in, and eight panels. The carvings are by Messrs. J. Minns, oak; Baylis (partly conventional, very carefully wrought); Harry Thompson, oak; C. E. Turner; W. Drury (a mistaken effort); J. Chapman, birds and a nest; J. Allen, a clever piece of work; J. Wills, grapevine feebly treated; Doel; and Braigman, conventional, highly sand-papered.

The coloured panels submitted are by Messrs. C. J. Lea, W. Pitman, C. Milbourn, J. Judge, E. Sedding, A. O. P. Parrison, J. Simpkin, and B. L. Spackman.

PARK SHRUBBERIES.

WHEN the dense fog of last week had somewhat cleared off, the walking public of the West-end were astonished at the thorough clearance which had been made of all the plantations and flower-borders, extending along the Green-park next Piccadilly, and along Hyde-park next Park-lane: it was but the work of a week, and desolation now reigns throughout these borders.

About three years back, under the *egis* of Sir Benjamin Hall, much expense had been incurred, and good taste displayed, in planting shrubs, and in enriching the margins of these valuable liberties with annual and perennial flowers: the nurseries had just attained a moderate growth, and reached the period of efflorescence, when the fell mandate was issued for their total destruction. We will not say that the preparation of the soil in the Green-park had been so carefully studied as to rival the blooming productions of the suburban nurseries, much less of the highly cultured parterres of the Crystal Palace grounds; but most certainly the winding walks of Hyde-park, although only of one year's standing, were so well laid out as to gratify and delight the pent-up citizens, many of whom could ill afford the time or expense of an excursion to Sydenham.

The value to the public of decorated natural flower-gardens cannot be over-estimated: the gaiety, the odour of the plants, the humanizing influence of nature's peaceful products, may be inferred from an observation made amongst the wanderers and children, who linger late of a sunny evening in May, even in the city bound precincts of St. James's.

It would be premature to infer that it is the purpose of the present Chief Commissioner to utterly devastate these borders, or to return them to the former state of squalor and unsightly waste; nor can it be believed that the havoc complained of was perpetrated "at the remonstrance of inhabitants of Park-lane or Piccadilly." The latter conjecture, although lately hinted at, is too absurd to stand a moment. No; the gratification afforded by a shrubbery, glittering in verdure and in flowers, could never have been

objected to by those whose dwellings had heretofore only surveyed a glebe of doubtful russet through an iron fence.

The intention of the actors in this raid against the general benefit may be, as it has been intimated, to sow and plant flowers again; but if so, wherefore remove shrubs just arrived at maturity and beauty?

That the freedom of parks is an indefeasible privilege, has become now indelibly impressed upon the public mind; and if that privilege be improved and enlarged, its curtailment, although only in a matter of ornamentation, is naturally regarded as an invasion of these rights.

The public or Governmental officer, placed at the head of the Woods and Forests, may, as in the instance of Lord Llanover, make himself popular and respected by unwonted attention to his duties, and by judicious concessions to the tastes and wishes of the people; but does it remain for a successor, appointed under an adverse administration, to reclaim all benefits bestowed, and with ruthless and Gothish hand to spoliage the fair work that had been so admirably accomplished?

Possibly the expense of making the improvements, now wantonly despoiled, may have amounted to some 400*l.*; and that of the conservancy, to say 80*l.* a year, for gardener and workmen. In such cases surely that draft upon the national exchequer could not have necessitated the sudden extermination of every shrub and flower that had been planted.

A great authority may have said, as it is imputed to him, that "the parks ought not to be flower gardens;" that authority (if his was the ruling dictum, which we very much doubt), might think Sydenham, or seven miles out of town, better for the exhibition of nature's bloom: still the greater part of the population do not and cannot frequent Sydenham; and even if they could, that should not justify the destruction of our urban gardens, which were no less prized by the commonalty than by those patricians who possess lawns, and shrubberies, and parterres, at their country seats.

Should the park be required as parade ground for the patriotic rifle corps, there is no British subject who would not surrender a right in common; and few who would not, if they possessed them, throw open their private enclosures for military practice; but this marginal application of outlying strips could in no degree interfere with evolutions of troops. There are designs in reserve which will interfere still more seriously with the retirement of the Hyde; for, although the flower-beds are laid waste, it is in contemplation to establish *filtering-beds* in another part of the park!

The ravages already effected have been done hastily, and under a veil of fog: as the public know their great benefactor, in these particulars, it is right that they should also learn who dictated and carried out this gross act of vandalism, or whether it is competent for an officer of the crown to outrage the whole metropolis, by wantonly despoiling public works, and that upon the impulse of his own private judgment.

An explanation inserted in the *Times*, of 28th November, states that "the flowers were removed because the drip and shade of overhanging trees was unsuited to them." This is a lame apology, for the flowers thrive well, and the shrubs were fast assuming a healthy garniture. Besides, it is not the display of valuable exotic flowers that is needed here, but the diversified and somewhat wild arrangements of the English garden—thorns, laburnums, lilacs, with the well-known native evergreens, and numerous other acclimatized flowering exotics,—these, with interspersed tufts of seedlings, scattered fitfully as heretofore,—or as in the soothing flower-walk of Kensington Gardens,—would be all sufficient. As for the geometrical arrangement of flower-beds, no lover of the picturesque values it.

One of the most marked characteristics of our times is the growing taste for flowers, and this is mainly imputable to the careful ornamentation of the parks and public grounds. The busy, the idle, the infirm, inxurate on their fragrance and their beauty. No one molests them, for they are regarded as public property; and there is scarcely one instance of prosecution against a stray child for plucking a posy.

QUONDAM.

NEW BARRACKS FOR GLASGOW.—Government have purchased the lunatic asylum at Garnavel, where new barracks are to be erected, when the asylum is elsewhere accommodated. The price is said to be 60,000*l.*

THE ARTISANS' ANTHEM.

SER.—A working man begs to submit to your notice the following verses, written in honour of his fellow-craftsmen:—

Tune—"The British Grenadier."

Though low in life our lot may be,
On us no honours wait;
Th' applauding town yields no renown
To gild our mean estate.
Our names no trophies shield or crest
Enriches with its gem;
Which rich men bear to show how rare
Their sires were to them.
We envy not the lordly ones
Their seats of velvet pall;
For honest hearts and skillful hands
Hold rank above them all.
Let the forges blow and the furnace glow,
And the strokes on the anvil sound;
It's the skill that stands in our good right hands
Which makes the world go round.

Brave are the hands that wield the sword,
May their laurels be ever green!
But what were they without the smith
To forge their weapons keen?
Honour to them that plough the deep,
And rides the billowing tide!
But some glory's mine, quoth the carpenter,
Who built the barks they guide!
And when the storm they laugh to scorn
Beneath the sheltering lee;
To whom owe they their safety then?
Cries the anchor-smith, "To me!"
Let the forges blow and the furnace glow,
And the strokes on the anvil sound;
It's the skill that stands in our good right hands
Which makes the world go round.

So some are born to rule we know,
And born to serve we wait;
It hath been since grass was green,
And so it will ever be!
Yet the best that e'er was human shape
Were men of low degree;
And cast the net, all dank and wet,
In the waves of Galilee.
Then let the small still age the great,
In Mammon's liver-dreht.
Who earns his bread, though with houseless head,
Takes pattern from the best!
Let the forges blow and the furnace glow,
And the strokes on the anvil sound;
It's the skill that stands in our good right hands
Which makes the world go round.

The high-born may the blossom be,
Of England's tree the fruit;
Yet her noble race of artisans
Are of that good tree the root!
And what the fruit and flowers would be
If the root were pure and true;
Is what the rich and great would be
Of our good help deprived!
The stones in the deep foundation set,
Though in darkness and dirt they lie,
Fill office good as though they stood
In the glittering cornice high!
Let the forges blow and the furnace glow,
And the strokes on the anvil sound;
It's the skill that stands in our good right hands
Which makes the world go round.

. It is always a satisfaction to us to give a working man an opportunity to show what is in him, and we print these vigorous lines with pleasure. Let us, however, caution the writer against the dangerous error of supposing that the "lordly ones" are necessarily bad, and poor men, as a matter of course, good. Each class has its temptations and its triumphs. Moreover, using the expression even figuratively, it is something more than "The skill that stands in our good right hands Which makes the world go round."

Without the mind of the painful student, often the man of competence and leisure working for the good of his fellow without any necessity for the labour, the skill of "our good right hands" would have but a small field to work in, and would carry us but a limited distance.

THE ARCHITECTURAL UNION COMPANY.

THE second annual meeting of this company was held on Wednesday last, at the Company's House, 9, Conduit-street, Bond-street.

The chair was taken by Mr. Tite, M.P.

The following is the directors' report:—

"The directors have much pleasure in meeting the shareholders at their second general meeting, and to be enabled to congratulate them on the completion of the several matters necessary to put the property of the company into complete working order.

The alterations are all completed, excepting some decorative work which will be done at the first convenient opportunity.

The Architectural Exhibition has terminated a first successful season.

The Royal Institute of British Architects entered upon their portion of the premises at Midsummer last; the lease having been duly executed.

The Architectural Publication Society and other tenants occupy the second and third floors.

The Architectural Association entered upon their occupation at Lady-day, but the West Gallery may still be obtained for one evening a week either on Wednesday, Thursday, or Saturday; and societies, whose objects relate to architectural matters, will be treated with for the use thereof.

The balance-sheet will show 170*l.* in hand, after payment of liabilities on the revenue account; but as this is an incomplete year, the directors suggest that it will be advisable to retain this sum in hand until next year, and not to distribute it as a dividend.

The company are now in possession of a property which has cost them about 14,000*l.* and is estimated to be worth about 16,000*l.* They are also in the receipt of an annual net rental of about 850*l.* per annum, out of which they are at present liable to pay 200*l.* per annum interest on the 4,000*l.* borrowed to enable them to do

the works, leaving, therefore, a net rental of 650*l.*, or more than 6 per cent. upon the 10,130*l.* now standing in the share register as contributed by the shareholders.

The directors cannot pass by, without an expression of deepest regret, the loss the company have sustained by the decease of the late Mr. I. K. Brunel, a member of the Board; and more recently by that of the Right Hon. the Earl de Grey, K.G., who was one of the first to encourage and to assist in establishing this company.

The following directors retire by ballot:—Messrs. Pennethorne, Jennings, Mayhew, E. B. Lamb, Nelson, Seckham, and Knowles.

Messrs. Lockyer and Cockerell retire from the office of auditors, and being eligible, offer themselves for re-election.

The capital and revenue accounts were then read. By the former it appeared that there had been expended since the last account, on account of the building fund, 4,453*l.* 4*s.* and for miscellaneous expenses, 537*l.* 4*s.* 3*d.*, leaving a balance at the banker's of 172*l.* 4*s.* 9*d.* The receipts included cash at banker's, &c., 954*l.* 0*s.* 3*d.*; calls in respect of 1,013 shares on which 10*l.* each had been paid; premium on lease of premises let to the Royal Institute of British Architects, 500*l.*; and sundries, 12*l.* 12*s.* 9*d.*; total, 5,162*l.* 13*s.* The property and assets of the company are thus described:—Estimated value of leasehold property, No. 9, Conduit-street, 14,500*l.*; arrears of calls, 432*l.*; cash at banker's, 172*l.* 4*s.* 9*d.*; total, 15,105*l.* 4*s.* 9*d.* The debts due by and claims on the company amounted to 617*l.* 18*s.* 3*d.*, which, with the sum of 4,000*l.* borrowed on mortgage, make a total liability of 4,617*l.* 18*s.* 3*d.*, leaving a balance in favour of the capital account of 10,487*l.* 6*s.* 6*d.* The revenue account showed that the total rent received for premises let since the 1st of January, 1859, amounted to 548*l.* 9*s.* 6*d.* The disbursements within the same period amounted to 265*l.* 4*s.* 9*d.*, leaving a balance at the banker's of 283*l.* 4*s.* 9*d.* Among the debts and liabilities were the following items:—Mr. Norris, for bell-hanging and other fittings done for the tenants, 65*l.* 4*s.* 1*d.*; and Messrs. Johnston, for laying on gas to upper floors, 22*l.* 18*s.* These items occasioned some subsequent discussion.

The Chairman moved that the report be received.

Mr. Billings said that he felt disappointed at the result, after the large dividend which had been promised them. He protested against the expenditure for printing and paper, which amounted to 10 per cent. on their entire income. He also complained that several items which ought to be charged to capital were charged to revenue, such as laying on gas, bell-hangings, and fittings. The cash in hand appeared to be 283*l.*, but 177*l.* had to be written off for debts and liabilities, the greater portion of which ought in justice to be charged to capital. If this alteration were made in the account, there would remain to the credit of revenue a sufficient balance to justify the payment of a dividend of 2*l.* per cent.; and he moved that a dividend of that amount be declared.

Mr. Pearce seconded the motion, and expressed dissatisfaction at the manner in which the accounts had been made up. It seemed to him that the revenue and capital accounts were made up to different dates—one to September and the other to October—an arrangement which certainly could not exhibit their true financial position. It appeared, also, that a twelfth portion of their rental had not been brought into the account.

Mr. Edmeston explained that, with regard to the charge for gas-fitting, it was included in the revenue account because the fittings, &c., supplied formed no part of the original design, but were added to suit the convenience of the tenants.

The Chairman said that the motion appeared to raise two questions, one with regard to charging to revenue what ought to be more correctly charged to capital; and the other, the payment of a dividend out of the balance. He doubted whether it was competent for him to put a motion for a dividend, unless that dividend were recommended by the directors. As far as the directors were personally concerned, they had no feeling whatever in the matter, and therefore, if the shareholders wished to have certain items removed from revenue to capital, it could be done, and there would be a larger sum to divide at the next meeting. At the same time, he was bound to say that it was an unusual thing to declare a dividend in cases where such a proceeding was not positively recommended by the directors.

After some discussion, Mr. Billings, at the suggestion of the Chairman, withdrew his motion in favour of another, to the effect that the objectionable items be transferred from the revenue to the capital account.

Mr. Mayhew, referring to the observation of Mr. Pearce, that the balance-sheet was not made up down to a later period, said it was made up

to the present time, but that the capital account could not accurately be made up until all the charges against the Company were ascertained. Mr. Edmonstone had already explained how it was that the items for gas-fitting, &c., had not been charged to capital instead of to revenue, but with regard to the capital he (Mr. Mayhew) was prepared to show that the anticipations he had ventured to indulge in, relating to the dividend, would be realized, as taking their income at 632/ a year, that sum would suffice to pay a dividend of 6 and 1-5th per cent. on the outlay.

Mr. Jennings expressed himself in favour of carrying to revenue account any expenditure entailed by a change of tenants, although in the abstract the expenditure might improve the building. He recommended the early closing of the capital account and the charging of any remaining works to the revenue account.

The motion for carrying the objected items from the revenue to the capital account was then put and agreed to *nem. con.*

Mr. Billings next moved that a dividend at the rate of 2 per cent. be declared.

Mr. Pearce seconded the motion. The motion was then put, but as only three hands were held up in its favour, it was lost.

Mr. Billings.—Then I give formal notice that it is my intention to take legal proceedings to compel the directors to divide the amount that has been earned.

The balance-sheet having been amended in conformity with the first resolution,

The Chairman moved that it be adopted, and that the balance be invested to form the nucleus of a reserve fund, for repairs, equalizing dividends, and other contingencies.

Mr. Mayhew seconded the motion, and advocated the necessity of a moderate reserve fund.

Mr. Hesketh suggested that it would be advisable not to carry so small a sum to the reserve fund, but to place it to an open account, to be used as the directors might think fit.

A desultory conversation ensued; and ultimately Mr. Godwin moved the adoption of the report and accounts without stipulating as to a reserved fund, as the most satisfactory mode of bringing the discussion to a conclusion. He must say that, having a short time previously elected certain gentlemen to be their directors, it would be unjust and ungracious to withdraw their confidence from them when no error or negligence could be imputed to them.

Mr. Mayhew seconded Mr. Godwin's proposition, which was then put from the chair, and carried unanimously.

The following directors, who retired by ballot, were re-elected.—Messrs. Pennethorne, Jennings, Mayhew, E. B. Lamb, Sekham, and Knowles. Mr. Edmonstone (formerly honorary secretary) was also re-elected a director.

On the motion of Mr. C. C. Nelson, Mr. F. P. Cockerell and Mr. James Lockyer were re-elected auditors.

A vote of thanks was also passed, at the instance of Mr. Godwin, to the honorary board of directors, secretary, and auditors, for their gratuitous services.

The proceedings terminated with a vote of thanks to Mr. Tite for his conduct in the chair.

Mr. Tite, in responding, expressed his gratification at the success of the company, and stated that he knew of no other architectural body, with, perhaps, the exception of the great one at Rome, supported by the French Government, which could boast of so worthy a home and haunt as the architects of Great Britain now could.

ASSOCIATION OF FOREMEN ENGINEERS. THE RIFLE.

On Saturday night last, the 3rd instant, at the ordinary monthly meeting of the *Association of Foremen Engineers*, a paper was read by Mr. Hayes, of the Small Arms Factory, Enfield, on the lock and stock of the rifle. Mr. Hayes is foreman of the lock department, at Enfield; and, as may be imagined, he was completely versant with the subject he had chosen to illustrate. His lucid and lengthy description of the various parts of the rifle-lock were, however rendered much more clear to the comprehension of his audience, from the fact that Colonel Dixon, R.A., superintendent of the factory, had forwarded some of those parts in various stages of progress, as also a finished walnut-wood stock, for the instruction of members of the Association. At this particular juncture any information respecting the rifle is acceptable. All that we can afford space for at present, in regard to Mr. Hayes's paper, is to say, that it was very interesting. It seems, from that

gentleman's statement, that not less than eighteen hundred finished rifles are issued weekly from the stores at Enfield, that each rifle passes through 769 different operations, and that all the parts are interchangeable, and cannot from accuracy of workmanship misfit their respective places.

Mr. Joseph Newton, Royal Mint, occupied the chair, at the Saturday's meeting, which was numerously attended, and he complimented the Enfield Peace (Peece) Society, on the number of telling arguments against war, which it was putting into the hands of our gallant rifle corps.

BUILDERS' BENEVOLENT INSTITUTION.

A GOOD MOVE.

We are pleased to learn that the directors of this much-needed and valuable charity have established, in the eastern suburbs of the metropolis, a district committee, which we hope will be strongly and numerously supported by the builders and others connected with the trade in that locality, so that by an increase of subscribers a large number of pensioners may be elected, in May next, from the numerous applicants for the bounty of the institution.

Messrs. T. Cozens, T. Stirling, and J. Williams, part of a sub-committee appointed for that purpose, assembled at Mr. M. W. Stirling's, Stratford, Essex, on the 8th ult., when the following gentlemen consented to form themselves into a district committee, canvass the neighbourhood, and endeavour to extend the interests and means of the Parent Institution.—Messrs. M. W. Stirling, C. Harris, J. Rivett, A. Savill, E. Hedges, J. Meeson, A. S. Reed, M. W. Norris, and M. W. Capelton, with power to add to their number.

This is a step in the right direction; and we hope will speedily be followed up by similar auxiliary supports in the other quarters of the metropolis.

CAMBRIDGE ARCHITECTURAL SOCIETY.

CROYLAND.

On Thursday, December 1st, the third meeting of the Cambridge Architectural Society was held in the Philosophical Society's rooms. The Rev. H. R. Luard, Trinity College, read a paper upon "Egyptian Temples," being the first of the series on the various styles of architecture.

Mr. Fawcett, Jesus College, returned thanks to Mr. Luard for his paper; after which he read the following letter from the Rev. E. Moore concerning Croyland Abbey:—

"Can I enlist your sympathy on behalf of Croyland Abbey Church? The rector and inhabitants are very anxious to preserve the building, but are quite unable unless materially assisted. The proprietors are non-resident, and have not shown any disposition to render much assistance. I have raised 150*l.* from extraneous sources. I want, if possible, to get something from our University, which owes its origin to the monks of Croyland. Will it, do you think, do anything for Joffrid's Abbey Church? How can I bring the subject favourably before the University? Will your society aid me? The 150*l.* I speak of is in addition to the 100*l.* raised in the parish."

It is earnestly hoped that funds may be forthcoming to preserve this fine old ruin from premature decay. It is the property of the Marquis of Exeter. If he allows it quietly to fall to decay, it will be a disgrace to his family which time cannot take away. The works required have been estimated by Mr. Scott at from 300*l.* to 500*l.*

OXFORD ARCHITECTURAL SOCIETY.

A MEETING was held on Wednesday, Nov. 30, the president the master of University in the chair. Mr. Le Strange, of Christ Church, was elected secretary.

Mr. Bruton read a paper on "The Value of Medieval Precedent in planning modern, secular, and domestic Buildings." The writer examined the arrangements of many of the various domestic edifices, of which examples remain from the reign of Henry III. to that of Henry VII., and described the general features, and the progressive growth of plan; and submitted that unity and balance of parts was the embodied idea in each of them. The buildings described included the Manor-house of Ashton Burnell, Somerton, Wingfield, Maxstoke, and Dacres Castle; the houses of Woodcroft and Sutton Courtney, and the keep of Warkworth Castle. The latter is a particularly fine example of careful planning and symmetrical arrangement.

Mr. James Parker said Mr. Bruton did not

seem to agree with an observation of his, which was, that the new Houses of Parliament resembled a Gothic skin sketched over a Palladian skeleton. In Mr. Parker's opinion, the Gothic architect planned his house as suited him best, and let the exterior effect take care of itself.

The president remarked that it was the prevailing opinion of the present day, that the more fantastic a building was, the more it was in keeping with Gothic ideas: irregularity was studied so far, in some recent Gothic edifices, as to destroy the symmetrical effect.

TOWN SURVEYOR FOR WAKEFIELD.

At the last meeting of the Wakefield Corporation the town clerk announced that there had been thirty applications for the vacant office of town surveyor. The General Purposes Committee recommended to the council, in order that a gentleman might be selected from them to fill the vacant office, Mr. Conyers Kirby, of Gloucester; Mr. John Richardson, of Stockton-on-Tees; and Mr. Thomas Dale, of Leeds. To these the council added Mr. Isaac Haydon, of Wakefield, and Mr. J. Phillips, of Castleford. After the candidates had been seen and made their statements, the council proceeded to vote. It was arranged that the votes should be taken by ballot, which being done, the result was found to be that there were 20 votes for Mr. Dale, 21 for Mr. Kirby, 9 for Mr. Richardson, 4 for Mr. Haydon, and 1 for Mr. Phillips. The name of Mr. Phillips was, therefore, struck off, and the ballot proceeded, the result being that for Mr. Dale there were 15 votes, for Mr. Kirby 12 votes, for Mr. Richardson 4 votes, and for Mr. Haydon 1. Mr. Richardson and Mr. Haydon were now struck off, and the voting was between Mr. Dale and Mr. Kirby. The result was 13 votes for Mr. Dale, and 12 for Mr. Kirby. Alderman Green then moved, and Alderman Haigh seconded, a motion appointing Mr. Dale as the surveyor, under the Local Board of Health, at a salary of 150*l.* per annum; his duties to commence on the 1st of December next, and the whole time of Mr. Dale to be devoted to the duties of the office. The motion was carried, and the corporate seal ordered to be attached to the appointment.

VOLUNTEER ENGINEER CORPS, SOUTH KENSINGTON AND BROMPTON.

At a meeting held in the Theatre of the Museum, South Kensington, by permission of the Lord President of the Council,—Mr. H. Cole, C.B., in the chair,

After some observations from the chairman, Mr. Redgrave, R.A.; MacLeod of MacLeod, and Mr. Burchett, head-master of the Central School of Art; and some discussion, in which Mr. Kemp, Mr. Lauefield, and others joined, it was resolved, to establish at South Kensington a volunteer corps of rifles, capable of acting as engineers, and subject to the confirmation of the Lord Lieutenant of the county. MacLeod of MacLeod was requested to take the command of the same, and to do what was necessary for its organization. About 130 volunteers from the Department and the neighbourhood have already signed their names.

It seems to us it is to be regretted, considering that a Brompton corps already exists, forming part of the South Middlesex Rifles, that the movement in the Museum has not been made in conjunction with it. The South Middlesex have admirable premises and a fine piece of ground quite handy, Beaufort House, North End, where butts, with a range of 450 yards, are being erected, and a club-room, 80 feet long, is being built. The muster here under Lord Ranelagh is already very strong: about 80 volunteers, in uniform, attended service at St. Luke's, Chelsea, on Sunday last. A meeting is about to be held in the Duke of Wellington's Riding-school, to beat up recruits. Colonel Brownlow Knox, Captain Peters, and Mr. Godwin, act as a committee for the district, and will give any information that may be required.

ARCHITECTURAL VOLUNTEER CORPS.

SIR,—With reference to your remarks upon this subject, will you give me the opportunity of stating that we number among the ranks of the "Hon. Artillery Company of London" many of the profession, and shall be delighted to count more?

My object in writing to you is to beg of you to allow me to express a hope that no gentleman will join any corps without first paying us a visit on some Thursday evening, in order that he may make himself personally acquainted with the undoubted advantages we possess over any other rifle corps. I say "rifle corps," as it is not generally known that our title as the "Hon. Artillery Company" was given to us some centuries back upon the first introduction of firearms as engines of war; but we are, in fact a battalion of infantry armed with rifles of the most

approved pattern, and with an artillery division attached thereto.

The class of men who rally round our standards is such as any gentleman can associate with agreeably and equally. We have merchants, barristers, solicitors, stock-brokers, doctors, auctioneers, builders, and well-to-do traders of various kinds engaged in business in all parts of the metropolis.

I have the honour of being a full private of some six years' standing, and hope ere long to be promoted to the distinguished rank of corporal; and a brother D.S. should have his "Eddell" in another company of the regiment, in which same company, by-the-by, a gallant F.R.I.B.A. may be seen duly "facing and wheeling."

HENRY PARSONS, D.S., South Div. of Lambeth.
P.S.—If we go on at our present rate of recruiting, I believe that before many months have elapsed we may march out with 1,000 bayonets.

GUERNSEY.

Of the islands of the Channel group, for convenience to strangers and invalids, none can rank higher than Guernsey, situated as it is, and enjoying the advantages of a daily post, a telegraph, and a suitable harbour.

Gas in the island is greatly consumed, by private houses as well as by public places: the gas company seems to be in a flourishing condition.

The fish, meat, and poultry markets are in excellent order: a vegetable market is much required, and many plans have been sent for such a desirable thing. It is really to be hoped the inhabitants of this island will set about erecting a proper one for the sale of such useful articles as vegetables. The island has a good harbour, not completely finished. A wall has been carried from the Terres to the Castle (Cortet), thus enclosing and sheltering the harbour from the detrimental south-east winds. Its efficacy was shown in the last gale, when the sea dashed against its mountain high, but inside left the water comparatively calm. There is a landing-place (temporary); a wet dock, where vessels will be able to load or unload at all times; and a dry dock for repairing vessels. The quays of the harbour have undergone alteration for the better. Churches are numerous, there being five in town and ten in the country. One parish—the Côté—has two, the Côté Church proper and Cobo Church. This latter church is a Norman edifice, by Messrs. Poulton and Woodman.

There is a college, an honour to the island and its principal. The edifice is a large one, with a good playground, railed round with balustrades, which thus open to view the passers-by when the youngsters are playing. There is a lodge, or rather two, the arch between forming the gate of the college. The Elizabeth College (such is the name) is the gift of Queen Elizabeth. The college never has flourished as it has done these few years under its esteemed conductor.

Water in the island is plentiful; but in cases of fires, unless the pumps (street) were in good order, the island might in that respect find itself deficient. On the quays water is provided for ships by tanks, the water being brought from the adjoining streams at the Terres.

A penny savings' bank is in course of being established: the committee are appointed, and it is expected that in January next the society will be in a fit state for a general working.

A new chapel is being built at the Vale, in the Gothic style; and up to the present moment all seems to go on well, if we except the misfortune which it experienced a little while back, when the roof (not tiled) was blown off. The dimensions are 53 feet by 33 feet.

Improvements have been made in the vicinity of Trinity Church. Formerly there was only a narrow road between the church and the opposite houses; now they have all been demolished, and a large space thus produced. This has done much good, for the passage was narrow and dangerous. It has been properly paved, and so as to accommodate both foot-passengers and vehicles: a foot-path close to the church has also been made.

ILLUSTRATIONS OF BUILDINGS AND IMPROVEMENTS AT MONTREAL.

The *Montreal Herald* has issued two illustrated numbers, containing numerous engravings of public buildings, stores, and other works, including views of the Victoria Bridge, and of Montreal itself, together with some letter-press details. These publications show that they know not only how to design and build in Canada, but how to photograph and engrave too. The illustrations, indeed, are remarkably good examples of what an enterprising newspaper editor and proprietor can do in this branch of art.

Amongst the principal edifices illustrated is Christ Church Cathedral, now in progress, but

nearly finished. It is this edifice which replaces the old church in Notre Dame-street, destroyed by fire three years ago.

"In order to keep up with the approved taste of the day as regards church architecture," says the *Herald*, "the Building Committee appointed by the congregation determined to engage one of the most celebrated and experienced ecclesiastical architects on this continent, Mr. Frank Willis. This gentleman's designs were approved, but unfortunately, before the foundation-stone was laid, death intervened, and Mr. Willis had not the satisfaction of seeing this, his greatest work, completed under his own superintendence. After his death, Mr. T. S. Scott, architect, of this city, was appointed to carry out the plans of his predecessor, who had left sufficient work in a crude form to enable the latter to decipher them."

The contract for the foundation-walls up to base was taken by Messrs. Brown & Watson, of this city, who completed the works with great energy and spirit. The contract for the superstructure was taken by Mr. Walter Wardle, formerly connected with the Grand Trunk Railway. Few who have passed the works during their progress but must have admired the numerous and scientific contrivances of scaffolding and tackling for the convenience and comfort of his workmen which Mr. Wardle has employed. Since the works began, not a single life has been lost at the building.

The church, cruciform on plan, consists of nave and aisles, 112 feet long and 70 feet wide; transepts, 100 feet across tower and 25 feet wide; tower, 29 feet square; and choir, 46 feet by 23 feet, with aisle appropriated to the organ chamber. The spire rises to a height of 224 feet. Internally, the nave, 67 feet high, has an open roof, the timbers of which are worked and carved.

The church is built of Montreal stone with rough quarry face, and all the dressings and other ornamental portions of light, soft oolite imported from Caen, in Normandy. The geometrical tracings of the windows attract attention. The cross and vane on the summit of the spire are 16 feet high. The roofs are covered with slates imported from Wales. The entrance porch on the Catherine-street front is, at present, in progress: it will be the most richly-carved feature of the exterior.

ARCHITECTS' CHARGES.

SIR,—It is thought generally to be the custom, and is, I believe, the established rule of the Institute, that no respectable architect should charge less than 5 per cent. on the amount of the lowest tender delivered, or on the amount of the work done. Some highly decorative schools are about to be built at the corner of Endell-street, for St. Giles's parish, London: the architect, although a member of the Institute, agrees to accept a fixed sum (less than the 5 per cent.), and find the clerk of works at his own cost. Is this the thing?

A RESIDENT OF ST. GILES'S PARISH.

THE MESSRS. WRIGHT'S BANK, CARLTON STREET, NOTTINGHAM.

THESE works, which have been in the hands of the builder for some months past, are now so far advanced as to allow the new banking-room to be opened for business. The front immediately in connection with the banking-room, is of stone, 30 feet by 26 feet, comprising one large window, divided by stone columns, whose proportions and mouldings throughout are of the Corinthian order, excepting that natural foliage is given for the caps and mouldings in lieu of that commonly used. The entablature, entirely of stone, is moulded, and carved with the leaves of trees and flowers. The windows are sub-divided into arches and semi-arches, moulded, and the whole is enclosed by a deeply moulded elliptical arch, which supports the entablature just named. The entrance to the banking-room is in the centre of this front, having two large double lights on either side, with smaller columns of serpentine marble, with stone carved caps and bases, of natural foliage supporting a circular head, the crest of the firms being carved on and forming the keystone of the same, above which is an elaborate moulded cornice dying into the sides of the large columns already mentioned. The glazed windows have mullions formed by twisted columns, with toriated caps and bases, all of iron. The walls of the bank are of rough stucco, having a dado, with moulded capping, neck, and base, of polished marble cement. The gas-fittings throughout are of ornamental foliated bronze work, made by Messrs. Thomson, of Birmingham. The floors are of Maw's, Bale's, & Minton's tessellated pavement, amalgamated. The ironwork is by Messrs. Gilbert & Frasi, Golden-lane, Barbican. The ceiling is of papier mâché and carton pierre, executed and fixed by Messrs. White & Parry, of London. The whole of the works have been contracted for, and executed by, Messrs. Evans Brothers, of London, under the superintendence of Mr. C. H. Edwards, architect, London.

PROPOSED MEMORIAL OF THE LATE MR. BRUNEL.

I WOULD ask, in noticing the "Proposed Memorial of the late Mr. Brunel," whether a more appropriate monument could be raised than one introducing the statues of the father and son in the same memorial,—two of the most extraordinary and gifted men, as engineers, of the nineteenth century? The same observation would apply to father and son in regard to the Stephensons. The circumstance is almost without its parallel, and surely merits to be recorded in both instances. The idea would be novel, but, at the same time, appropriate, and might form a most interesting subject for art; and I perfectly agree with your observation when you say, "It is to be hoped that the determination to have a visible artistic monument will be adhered to; and moreover, that it will be something more than one of our ordinary namby-pamby, portrait statues, perched upon an egg-chest." Let the pedestal be appropriate to the subject, architectural in its character, and by introducing, in *basso relievo*, subjects from their most talented works. We have seen what can be done in the form of a pedestal in the grand conception of the statue of Frederick the Great. I really believe, with the feeling of respect for these great men, there would be no lack of funds to render the monuments worthy of their names, and of the talent of the nineteenth century.

Why should not such memorials be erected in Westminster Hall, as a stepping-stone for great works of art? A SUBSCRIBER.

CONVICT LABOUR.

WILL you permit me to notice the article in your paper of the 19th ult., on "Convict Labour and our Harbours?" It is of great importance. I have long thought so, from having visited the establishments at Portland and at Dartmoor. The advantages at Portland are very fairly and clearly stated; but if you or your correspondent were to visit Dartmoor, you would see that a vast amount of profitable labour of convicts might be obtained by the preparation of granite, of which there is an inexhaustible quantity, and which may be shipped or supplied to the Government works there by a rail tramway which exists. I have been informed that able-bodied convicts would have been employed there to a considerable extent could the grant of land have been obtained on fair terms; but the demands made by the Duchy of Cornwall were so exorbitant that they only now employ invalids, &c. This might be remedied now that the Prince of Wales is of age. There is room for the advantageous employment of all the convicted rogues in England on Dartmoor.

A HUMBLE PATRIOT.

THE STRIKE.

SIR,—The attention paid to the appeal from "A Brick-layer," in your last week's impression shows that better opinions are about to prevail in connection with the builders' strike; and, although your correspondent may regret the consequences attending that event, he must, I am sure, agree with me, that it was impossible to prevent it. All the arguments that could be brought against strikes were of no avail against those who could prove that the four o'clock and the 5s. 6d. per day, both of which we at present enjoy, were obtained by the same means, or through the exert of them, and the building operatives had to try, before they could be convinced, that they might go too far even in that direction.

The greater want of intelligence on the part of the labourers has led them to use their organization in a most tyrannical manner, and the consequences of these acts will certainly recoil upon themselves in due time. Their want of principle has so disgusted the mechanics who have had to deal with them, that there is no doubt that the employers will get their sympathy and support in any future contest with the labourers.

The "document" has been successfully used as a foil to the nine-hours movement, and, having accomplished its purpose, I do hope that more generous opinions will prevail in the councils of the employers; and they will see the necessity of withdrawing that document, which, practically, will be of no advantage to them; for, should they maintain the present wide-spread organization; and it would go far to promote a better feeling between those who have gone in and those who have stood out against it.

Altering the rules of trade societies will not meet the case, because, wherever working men are associated, no matter whether it is in trade societies or anti-strike associations, they are always accessible to those who have a real or fancied grievance to lay before them; and the next zealous and persevering leader the rest.

The growth of education among working men will eventually lead them to understand the relations of employers and employed to better advantage—even yet it has led to reason and feeling, rather than to force and

violence, the determination of a man whether he should go in or remain out; but until that period arrives we shall have to put up with the present disastrous method of striking, to wit, the labour-market-juggles, the demands which are made.

J. C. ARNOLD, Joiner.

Sir,—I venture, through the medium of your journal, to suggest that something should be done, and that at once, to afford relief to the numerous distressed families during the ensuing winter months, the heads of which, without fault of their own, have been deprived of work through the lock-out during the continuance of the late unfortunate strike in the building trades. I am fully aware that it will be objected that to give the relief I propose, will only be afforded to the wives and families of these men who have been made the victims of the agitators of the unnatural movement,—"the strike,"—now fortunately in *calamitas*.

My suggestion is, that a committee should be formed composed of architects (and, as a good work, I should like to see the Institute take the lead in the matter) and master builders, to dispense the funds I hope to see raised for the object I have stated.

Architects, by aiding this fund, will show their sympathy with the building operatives; and master builders, by also, by giving a helping hand, prove that by the course they have adopted in refusing the unreasonable demands of the Paviors' Arms Committee, they have not been actuated by vindictive or selfish considerations.

CHARLES GRAY, Architect.

P.S. I shall be glad to hear from gentlemen disposed to help in this matter.

TRADES' UNIONS.

Sir,—I shall thank you for a portion of your space, to enable me to reply to "A Master Builder," whose letter, inadvertently on a statement in my speech at Brighton, and my subsequent vindication of the same, is published in your last week.

To my assailant I beg leave to observe—1. That "trades' unions" have been instituted for the benefit of the poor, not for the convenience of the masters. 2. That trades' unions are not the cause of the depression of those who belong to them. 3. That there is *prima facie* evidence that this end has been, to a great extent, accomplished, in the fact that all, or almost all, complaints against trades' unions are now presented from those who do not belong to them. 4. That it is for "A Master Builder" to prove that, as a rule, "trades' unions" do "harm" against non-society men; and—5. That "A Master Builder" in advising them to adopt the two additional rules which he is kind enough to propose, is neither more nor less than asking trades' "odious documents," a proceeding which, though very convenient for masters, would not be quite agreeable to operatives. I would further observe that "A Master Builder," besides being a little too exacting, is slightly inconsistent. In demanding that trades' unions should be as cordial in their bearing towards the sneak, the spy, or the underseller of his own labour and the consequent depreciable of theirs, as to their fellow-members, "A Master Builder" is asking from the working man an abnegation of self and an excess of charity which have not hitherto been found to exist in any other class or profession in society. Lawyers, doctors, army and navy officers, have a "black sheep" amongst them, and "A Master Builder" is far too intelligent not to know that the physician or baronet who undersells his services, is, in a manner, uncommenced, that is, regarded as a "black sheep" by his professional brethren. Something of the same feeling, if I am not very much mistaken, may be discovered amongst master builders and contractors. Why, then, should the working man be deprived of the privilege of evincing his disapprobation of the depreciable of his labour? I admit that this feeling may be employed in an illegal and improper manner; but for such improper exuberance of spirit, trades' unions are not responsible, and the member so offending is, like the rest of his fellow subjects, amenable to the tribunals of his country.

"A Master Builder" is inconsistent, inasmuch as (according to his view) "trades' unions" being already too powerful and tyrannical, he would make them still more so by investing them with the functions of an absolute dictatorship over the words, acts, gestures, &c., of their members. To secure non-society men from any species of intimidation or annoyance is beyond the power of "trades' unions." Therefore, the adoption of "A Master Builder's" rule to this effect, would be an eminently silly, because a perfectly futile proceeding.

On this point "A Master Builder" would seem to be labouring under some gross confusion of ideas. To judge from his accusations and suggestions, his opinion is that "trades' unions" ought to have for their chief object—not the benefit of their members—but the protection of non-society men! This (associations designed for the benefit of those who do not belong to them, would be an additional wonder of the world, and a proof that, Solomon notwithstanding, there is, or might be, something under the sun.

In conclusion, I reiterate my statement at Brighton, that workmen are not pressed to belong to societies, and that, as a rule, society men do not strike against non-society men. Throughout the country, there are hundreds of establishments in which both society and non-society men work together in perfect harmony. And to convince "A Master Builder" that "trades' unions" are not inaccessible to improvement, or that to advise tendered in a friendly way, I may state that Mr. Edwin James is under the consideration of the society in whose trade of regulations it is to be found. To some of the suggestions of "A Master Builder" I am of opinion that "trades' unions" would have no objection; but when he insinuates that these societies sanction the destruction of the shops or property of non-members, I can have no hesitation in saying that "A Master Builder" is making himself the vehicle of a calumny, which is both malignant and mendacious; and unless he can substantiate the charge by the adduction of a rule, or extract, from the laws and regulations of the societies, commanding or authorizing such treatment towards non-members, I call upon him as an honourable man to admit that he has been misinformed.

GEORGE POTTER.

THE GREAT BELL OF WESTMINSTER.

Sir,—On Saturday last I heard Big Ben perform for the first time since it was reported that he had been seriously wounded; and I have to state that, cracked or not cracked, his voice is neither worse nor better than it was in the very first instance, when the clock struck him to indicate the hour. In other words, the bell merely emits the same imperfect sound as before, being remarkable for metallic harshness and doleful continuity of tone.

Now, although I think this bell, like its predecessor, was designed and cast too thick at the sound-bow, to produce a rich and mellow tone, even supposing no deep crack to exist; yet, as the bell is suspended in a manner so objectionable that it has not fair play, the authorities may be advised to try the following experiment:—Release poor Ben from his present unhappy position, of which he has always bitterly complained. Then fix him to a block of "wood" of suitable form, called a stock, which must be freely suspended from a beam so as to be able to swing in some degree. If the alleged fracture be not dangerous, Big Ben the second will then give out such a sound as may agreeably surprise his audience.

Permit me to add that, when a large bell is cracked at the sound bow, it is idle to talk of applying the "drill-hole and whip-saw remedy." This has been tried over and over again in the case of church bells, though not at present in that of Big Ben,—and the result has uniformly been most unsatisfactory to a musical ear.

THOMAS WALESBY.

ARCHITECTURAL PHOTOGRAPHIC SOCIETY.

In the report of the proceedings of the special general meeting of this society, which appeared recently in the columns of your widely-circulated journal, I am represented to have stated that no exhibition of photographs would take place this year; and, as this statement is calculated to mislead subscribers, I should feel obliged by your giving publicity to your next issue to this correction. The facts are these:—Mr. Hansard's motion, as originally proposed, was to refer the whole question back to the committee without taking any active steps for carrying on the business of the society; to which I objected, that "if such a course were pursued, so great a delay must necessarily take place, that there could be no exhibition," but as matters now stand, the exhibition will take place early in the spring.

Permit me also to add, that Mr. Bury must have been labouring under a misconception when he stated that the debts of the society were 200l. the second year in excess of the business of the society; for that year, audited and signed by Mr. Bury himself, which appears in the report to the annual general meeting, held on the 13th April last, the balance was estimated in favour of the Association, 391.7s. 6d. and the property of the Association, with the balance at Mr. Bury's, was, at the previous 31st March, above 1,000l.

I regret the anonymous publication, by "one of the committees," of the very impertinent letter which appeared in your columns. "Cabal" is a hard word to use.

WILLIAM LIGHTLY, Hon. Sec.

Books Received.

Thoughts for the Thoughtless; or, Inducements for Scientific Inquiry. By Mrs. C. H. SMITH. Illustrated. London: James Blackwood, Paternoster-row.

THOUGHTS for the Thoughtful would have been a much better title for this book, and would not have stood in the way of its being selected as a present, as the authoress foresees the present title will. It is a charming and valuable little work, and is calculated to do much good. Under six heads—the Atmosphere, or the Earth, on Water, the Vegetable Kingdom, the Animal Kingdom, and on the Celestial System, Mrs. C. H. Smith brings pleasantly and clearly before young minds the whole range of the physical sciences, and that, too, not in a superficial and got-up manner, but soundly and precisely. There are a few slips here and there, such, for example, as attributing the authorship of the well-known lines,—

"The primrose, on the river's brink,
A yellow primrose is to him,
And—nothing more,"

to Mr. Robert Hunt; but these will be remedied in the next edition. A large number of our London readers know Mr. C. H. Smith, a gold medal student, who afterwards took to architectural sculpture and is to be found at most of the scientific meetings in the metropolis; and we advise them, and all who have young folks, to make the acquaintance of Mrs. C. H. Smith, through her book, as speedily as may be.

The Girl's Own Toymaker and Book of Recreation. By E. LANDELLS and his daughter, ALICE LANDELLS. Illustrated. London: Griffith & Farran, St. Paul's Churchyard, 1860.

THE "Boy's Own Toymaker," by Mr. Landells, met with general commendation as a capital mode of teaching boys the mechanical use of their hands, and instilling something like the elements of art and taste into their minds in the midst of boyish amusement and recreation. The present little volume appears to be equally well adapted to such useful purposes in the education of the hand and eye of their young sisters; and all the

more so that it contains attractions even for girls of somewhat more matured years, who will derive no little amusement themselves in interpreting the instructions of the "Girl's Own Toymaker" to their younger charges. These instructions are clear and simple; they are illustrated by upwards of 200 engravings.

The Archaeology of Berkshire: an Address delivered to the British Archaeological Association at Newbury, September 12th, 1859. By the EARL OF CARNARVON. London: Murray, 1859.

OF the very able address by the Earl of Carnarvon at the archaeological congress held at Newbury, Berks, in September last, we at the time gave our readers an abstract; and we are glad to be now able to intimate to them that the address itself, as delivered, has been published by Mr. Murray, of Albemarle-street. It is of especial value as a contribution to the archaeological history of Berks, inasmuch as there is a great dearth of topographical works on that county, so that the Earl's remarks relate to a field of literary labour as yet but little explored.

The Worthies and Celebrities connected with Newbury, Berks, and its Neighbourhood. By HENRY GODWIN, F.S.A. Newbury: printed by J. Blackett. 1859.

THIS learned and elaborate memoir by Mr. Henry Godwin, of Newbury, may very appropriately follow in the wake of the address just noticed. It contains information hardly accessible to any one besides the author and the few gentlemen who have assisted his researches with original anecdotes of local interest, now for the first time put into print.

The volume opens with the history of the Lords of the Manors of Newbury, Sandford, Speen, and Hampstead Marshall, from A.D. 821 downwards, and, of course, treats of one of the most illustrious of all England's old baronial families—the Pembroke, who held Hampstead Marshall by tenure of the Marshall of England's gold enamelled staff, and gave the name of their office to their domain. Of this family, it has been noted that owing to premature deaths, no son, for several generations, ever saw his father, nor any father of them took delight in seeing his child.

The next chapter opens with an historical account of Donnington Castle, and Chaucer's supposed connection with it. Chaucer was far too poor to have ever been lord of Donnington Castle, as has been supposed, but his granddaughter possessed it.

The third chapter treats of the battles of Newbury in the times of Charles I. and Oliver Cromwell, and of various noted families and persons connected with the locality in these and subsequent times.

In the last chapter, various other notabilities come into notice, such as the poet Penrose, Dean Brummell, Lord Stowell, Bailey the astronomer, Sir John Herschel, and lastly, the late Earl of Carnarvon.

The author has shown his taste as well as his learning in this able and interesting little book.

Boswell's Life of Johnson. Edited by the Right Hon. J. W. CROKER. With Illustrations. London: JOHN MURRAY. 1859.

HERE in ten one shilling parts, we have the best edited, best view, of one man's life and his times that was ever published, and that man the giant of his own day, and the admiration still of ours. It is a book which every one is bound to read.

The Life of Lord Byron. With his Letters and Journals. By THOMAS MOORE. Nos. 1 and 2. London: JOHN MURRAY.

THE same publisher has commenced the issue of an equally good and cheap edition of Moore's Life of Byron, to which we shall be able to refer as it progresses. It is uniform with his cheap edition of the poet's works just now completed.

Transactions of the Architectural Institute of Scotland, Vol. V. Part II. Edinburgh: printed by W. H. Lizars. 1859.

THESE transactions are in continuation of selection from the proceedings of the Scottish Institute, session eighth, 1857-58. They comprise two papers: first, "On the Water Works of the Ancient Romans," &c., by Mr. A. Thomson, of Banbury; second, "On the Application of Architecture to the Commemoration of distinguished Persons," &c., by Mr. J. Murray, M.A. The

interest of the volume is enhanced by numerous engraved illustrations, chiefly relating to the first of the two papers mentioned.

Stories of Inventors and Discoverers in Science and the useful Arts: a Book for Old and Young. By JOHN TIMBS, F.S.A. London: Kent & Co., Fleet-street. 1860.

A BOOK from Mr. Timbs one now looks forward to as one of the regular fruits of the publishing season, and one of the most palatable too, as well as nutritious for the mental digestive organs of both young and old. The present volume is particularly interesting, as indeed its title indicates and suggests to every one who knows anything of the inventors and discoverers in science and art.

Hand-Shadows. Second Series. By HENRY BURSILL. Griffith and Farran. St. Paul's Church-yard.

NOR contented with the first amusing batch of shadows which Mr. Bursill threw on the wall last year, he has worked out a fresh lot of even more elaborate character, including various portraits of the human face divine, from the Duke of Wellington to Mrs. Gamp. It will afford amusement for many evenings.

SKYRING'S "Builders, Contractors, and Manufacturers' Diary and Daily Journal for 1860," contains, with ruled pages for weekly time-accounts, its usual amount of information, including the Metropolitan Building Act.

Miscellaneous.

A STEPHENSON ORPHANAGE.—The author of a lively article in the *Welcome Guest*, on the "Stephenson Dynasty," Mr. Jacob Först, in concluding, says,—"Let us honour the father in the sons, and vote from this time and for ever the proceeds of all railways, on the anniversary of his death, to the maintaining of an asylum for the orphans of those cut short of their term of life by the hazardous nature of their employment. Let each traveller on that day give his mite, and every working man, who ever enjoys a day's excursion in the year, contribute."

THE WESTMINSTER BEIL.—"Mears v. Denison."—This cause was entered for trial for the sittings after Michaelmas Term in London, and would have been tried by Lord Chief Justice Cockburn and a special jury. Mr. Denison had pleaded a justification to the libel with which he was charged. The cause was yesterday withdrawn, Mr. Denison having abandoned his defence. The plaintiff will therefore take a judgment by default. The only matter remaining to be determined is the amount of damages, which, in the usual course, will have to be assessed in the Sheriff's Court.

THE GAS MOVEMENT IN LONDON.—A very numerous and influential deputation on the subject of the supply of gas to the metropolis waited on the President of the Board of Trade on the 30th ult. Sir J. V. Shelley introduced the deputation, stating that twenty-five out of thirty-three parishes had contributed towards this movement, and that those who had not done so were supplied with gas at the rate at which the bill proposed to supply it. The object of the deputation was to urge Government to take up the case on behalf of the metropolitan parishes, as they had no power to vote money to oppose the gas companies. Mr. Gibson, in reply, stated, courteously, that the Government would give the subject immediate attention; but that he had not yet heard the case for the gas companies.

THE ROYAL SCOTTISH ACADEMY.—The thirty-second annual report of the council of the Royal Scottish Academy of Painting, Sculpture, and Architecture, has just been issued. It states that the exhibition of 1859, taking everything into account, was perhaps the most successful that has ever taken place in Scotland. The Art-Union of London had so far extended its constitution as to enable its subscribers to select pictures from the Academy. The visits now made during the season to the Scottish Academy exhibition ranked next in number to those at the Royal Academy of London, and were said very far to exceed those of all the other picture exhibitions of the southern metropolis. The visits made in the evening alone, during six weeks of the exhibition of 1859, were not less than 50,000, being a nightly average of 1,388 persons. The exhibitions have provided funds for the commencement of an art-library, already of some importance; and for the support of a life academy and other purposes.

THE London and Birmingham Railway was the first, of any magnitude, the works of which were let by contract.—*The Engineer.*

FOREIGN SCULPTURE.—We understand that Herr Reichel will visit England in March next, with a model, one-third the real size, of his monument in honour of Martin Luther, which is to be erected in Worms. This work, of which report speaks well, includes eleven statues, and will occupy an area about 40 feet square.

WATERWORKS FOR MALTON.—Mr. Josiah F. Fairbank, C.E., has just presented a report to the authorities and the public of Malton, on the subject of a water-supply for that town. It appears that there are four methods of obtaining water to supply Malton. Mr. Fairbank on the whole gives a preference to the Nine Spring Wells scheme, as presenting the least engineering difficulties, and having other advantages. After a lengthened discussion, it was resolved the provisional committee should be prolonged, and requested to further consider the report.

CLAY, NEXT THE SEA, NORFOLK.—Sir: This magnificent church, well known through "Brandon's Analysis," Bowman & Crowther's "Churches of the Middle Ages," and other works, has lately been partially restored. The first contract for a new roof over the nave was carried out under the directions of Mr. F. Codd, of the Adelphi, but more recently the nave has been resented without the intervention of any regular architect, the result being, you will not be surprised to hear, a cheap, unsatisfactory imitation of a sketch once submitted by the architect of the roof.—A. B.

MONUMENTS ON THE CALTON HILL, EDINBURGH.—On the proposal to erect a sculptural monument on the Calton Hill, in honour of the Ettrick Shepherd, being submitted in a letter to the town council by Dr. Roger, of Stirling, says the *Edinburgh Post*, a general outburst of opposition, led by Professor Dick, broke out against the idea of permitting any more monuments on the hill, no matter of what description. Surely this is a most irrational monumentophobia, adds the *Post*: the Calton Hill is an admirable site for such monuments to public characters, provided the designs be in perfect harmony with the locality. The town council have done nothing to render the hill even decently attractive either to denizens or to strangers; and it would almost appear as if they were resolved that nobody else should have a more fortunate distinction.

A NEW PROVIDENT SOCIETY FOR WORKMEN.—In "An Address to the Workmen of the Metropolis," prefixed to the printed rules of a new Society named "The London General Workmen's Provident Society" (offices, 3, Trinity-place, Wandsworth-road), the committee say:—"In recommending for your consideration their rules, they would call your attention to the fact that, although there are a very great number of Benefit or Sick Clubs, professing to provide assistance for their members during illness of a temporary character, there is scarcely one of these societies which makes any provision for the permanent support of its members in their old age, or in the event of their being rendered by accident incapable of resuming their employment; nor do any of these societies provide any assistance for the widows and children of their deceased members." It is with the view, apparently, of obviating these defects in such associations that this new society has been instituted; and, although we are still very doubtful as to the advantage of multiplying such societies, desiring rather to see them united, we willingly bring the present one under the notice of our readers, as we have been requested to do.

THE WALLACE MONUMENT COMPETITION.—The firm to which the second premium of twenty-five guineas was awarded (Messrs. Peddie & Kinnear, of Edinburgh), being dissatisfied with the award of the first premium to a competitor (Mr. J. Rothead, of Glasgow) who had contravened the conditions of the competition, they say, by sending in a design not simply tinted with Indian ink, protested against the decision in a communication to the committee. To this communication, however, they received no answer, until, learning that the estimates for Mr. Rothead's design, which they had resolved to carry out, exceeded by several thousand pounds the sum (5,000*l.*) to which the competitors were strictly limited, Messrs. Peddie & Kinnear again wrote to the committee, urging this additional ground in support of their protest, and requesting a reply; when the secretary wrote them saying, "The committee unanimously agreed not to entertain the subject of your correspondence." This correspondence and its result, Messrs. Peddie & Kinnear remark, "adds an instructive page to the history of competitions."

TENDERS

For warehouses, Victoria Wharf, Upper Thames-street. Mr. R. L. Rounleu, architect. Quantities supplied by Messrs. Welch & Atkinson—

Lucas, Brothers	£14,330 0 0
Lawrence & Son	13,974 0 0
Mansfield & Son	13,600 0 0
Keyes & Head	13,450 0 0
Myers & Co.	12,887 0 0
Culbitt & Co.	12,838 0 0
Ashby & Son	12,426 0 0
Pritchard & Co.	12,353 0 0
Browne & Robinson	12,290 0 0
Jay & Co.	12,028 0 0
L'Anson	11,937 0 0
Sherren	11,500 0 0

For Corn-Exchange, Wellingborough; deducting value of old materials. Messrs. Bellamy & Hardy, architects, Lincoln:—

Burkitt & Co. (Wellingborough) ..	£5,528 0 0
Ingham (Wellingborough) ..	5,390 0 0
Ellis & Son (Peterborough) ..	5,200 0 0
Pepper & Dolman (Spalding) ..	4,998 10 0
King (Shefford) ..	4,692 0 0
Huddleston (Lincoln) ..	4,563 0 0
Thompson & Co. (Derby) ..	4,410 0 0
Boddington (Wellingborough) ..	4,385 0 0
Booth & Son (Boston) ..	4,000 0 0
Young (Lincoln) ..	3,700 0 0
Barwell & Moore (Spalding) ..	3,700 0 0
Watkin (Northampton) ..	3,700 0 0

* Accepted at 3,000*l.*, after reducing drawings, &c.

For re-building premises in Ivy-lane, for Mr. W. Kent. Mr. J. T. Lepard, architect. Quantities supplied:—

Lawrence, R.	£1,209 0 0
Batterbury	1,279 0 0
Macey	1,200 0 0
Porter	1,193 0 0
Lawrence & Sons	1,172 0 0
Browne & Robinson	1,110 0 0

For alterations, &c., to premises, No. 71, Watling-street, City, for Mr. Vivian. Messrs. Tilott & Chamberlain, architects:—

Fish	£1,103 0 0
Cannon	1,100 0 0
Pritchard & Son	1,098 0 0
Hocken	1,092 0 0
Turner & Son	1,048 10 0
Wills (accepted)	1,045 0 0

For alterations to house and new stabling, at Putney. Mr. Sancton Wood, architect. Quantities supplied:—

Nicholson & Son	£1,075 0 0
Avison and Son	1,048 0 0
Adamson & Son	959 0 0

For re-building the White Lion, Brook-street, Bond-street. Messrs. Finch Hill & Farnair, architects. Quantities supplied by Messrs. Wilson & Son:—

Holland & Co.	£1,694 0 0
Selleck	1,662 0 0
Patrick & Son	1,550 0 0
Elston & Son	1,418 0 0
Turner & Sons	1,473 0 0

For erecting house, reading-room, and library, in Robertson-street, Hastings, for Mr. Diplock. Mr. Newry, carpenter, of Hastings, architect:—

Baker	£1,772 0 0
Jones	1,732 0 0
Howell	1,717 0 0
Carey & Avery (accepted)	1,419 2 6

For alteration to the St. George and Dragon, High-street, Camberwell. Messrs. Tress & Chambers, architects:—

Wells	£876 0 0
Sloper	799 0 0
Coleman	786 0 0
Acock	688 0 0
Miller (withdrawn)	583 0 0

For alterations to premises on Cornhill, Lincoln, for Mr. F. Page. Messrs. Bellamy & Hardy, architects:—

Taylor (Gainsborough)	£498 0 0
Singsby (Lincoln)	492 16 0

For stables for Mr. T. White, Aldershot. Mr. F. Eggar, architect:—

Birch (Farnham)	£385 0 0
Duke (Farnham)	375 0 0
Speakman & Ames	322 12 6
Marten	288 0 0

TO CORRESPONDENTS.

BROODING INVENTORS.—BIR: Please intimate that the "Mr. Jones" now is going out as "Mr. Parry." Really he ought to be given in chief. S. J. E. I. (will appear)—P. B.—Young Beginner.—H. C.—E. C.—J. G.—C. K.—J. M.—W. H. C. great additions have been made, but the original character is preserved. Builders we depart from our usual practice under the circumstances, and point out Parker's edition of Rickman, "Attempt to Discriminate," as a book which would answer his purpose. As respects "construction," get a list of Wale's "Rudimentary Works," and look through it.—G. E. R.—J. T. J.—M. W. F.—J. T.—F. R. W.—R. G. G.—J. O.—Granite.—J. E.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

The Builder.

VOL. XVII.—No. 880.

The Teaching of the Streets.—Ghosts.



EDUCATION is to be had in many ways besides through books: and the education a man gives himself is more valuable and lasting than that which is given to him. Few, indeed, are well taught unless they are self-taught. Every place that records an interesting fact, or suggests matter for wholesome thought, is a silent teacher, and should be preserved and cared for. The materials which exist for the diffusion of knowledge might be made more use of than is at

present the case. The British Museum, the Museum at Brompton, the National Gallery, and other Institutions, are mines of the most valuable information, but at present are but partially worked: numbers visit these places with but little profit, for it requires intelligence to use these collections properly. If school children were taken there under the superintendence of able teachers, who, in a familiar way, should direct attention to objects in a manner suitable to the comprehension of each class, much valuable information would be given which would not soon be forgotten. The costly collections of the nation have not yet been brought to help as they might be to the advancement of the education of the people.

It is not only to the national schools, but also to those of a higher class, that these remarks will apply; not merely to school-children, but to grown men and women.

Besides the Museums, there are many places which might be visited in the same manner with profit; for instance, Westminster Abbey, a large part of which is free; St. Paul's Cathedral, and the Tower, where instructive historical lessons might be given, and education made a pleasure instead of a task. The portion of the ancient London wall, in which may be traced Roman and other masonry, marking various periods in the history of this great City; the Traitor's Gate, tied to so many associations; the site of the scaffold which played such a prominent part in English history; the quaint little church not far off; and the exterior of the State Prison, if properly described on the spot, would be the means of impressing the memory as to many important passages of history. On the routes to these places of more special importance, matters of great interest might be pointed out,—such as Smithfield, where so many perished in the troubled times gone by; the venerable church of St. Bartholomew's; the old gate of St. John's; houses connected with celebrated characters, and the monuments in the City churches of those who have done service to their fellows. Every street has a story. Recall the Eleanor Cross at Charing in 1294: see Charles I. stepping out of a window for the last time, not far from it, in years long after: tread again the river's strand with a noble's house here and there, and gaily bedizened barges on the "silent highway." Fleet-street will give you the Knights Templars, Johnson and Goldsmith, and a score of stirring incidents; and when you get to Cheapside you will see Edward III. holding a tournament, Queen Philippa looking on, the flat caps out in great numbers round the Cross built in the time of Edward I. by Michael de Cantuariis, and the great Conduit in the

middle of the road close to the Poultry. Bow Church, with its Norman crypt, brings before you Longbeard, Lord of London, and the siege the building sustained; while, in Cornhill, full of drapers, the serving-men are running at the Quintain, or, to come later, Poet Gray is superintending the rebuilding of the house in which he was born, No. 41, after a fire in 1748.

The world is more populous, it has been truly said, to those who can see with the mind than to those who see with the eye only. There are ghosts everywhere. Christmas is coming, and stories of ghosts are, of course, coming too. They travel together always. The spirit-rappers have vulgarized them; but there are ghosts, nevertheless, all over the country, telling of great works, commanding gratitude, and suggesting imitation. Go out on the wild moors of Northumberland, to Wroxeter or Cirencester, and there you may see ghosts of the old Romans, who brought us civilization. Nay, you need not go so far; for here, in the very centre of the trade and bustle of the great metropolis, under the Coal Exchange for example, the ghosts of the old heroes sit. On Salisbury Plain—

"What sheeted ghost is wandering through the storm?"

It is Druidical and misty. The ghost of King Alfred appears in our liberal institutions and laws. Chaucer, Spenser, "sweet Will. Shakspeare," Milton, Scott, Byron, and other choice spirits, are familiar to all. In printing-offices (where the steam-engine is whirling off millions of useful pages), in great libraries, in the den of the poor scholar, and now, happily, in the homes of the humblest labourer, the ghost of Caxton fits pleasantly about. Factories, spinning-mills, and other busy scenes are haunted by poor Crompton. Arkwright and other ghosts of sturdy aspect wander there too. The spirit of Wellington was present before Sebastopol, in the jungles of India, and is just now present in every part of the country.

How gloriously the ghost of Wren shapes itself to a Londoner's eyes! Grand in outline, elegant in detail. His remains lie in such quiet as is to be found amid the roaring of a mighty city; but his spirit roams abroad, and teaches not merely his art but the beauty of integrity. In both hemispheres, beneath the stars,—spanglets of heaven, the "eternal fields of light that lie round about the throne of God," teaching as well as shining;—Isaac Newton passes calmly; while Harvey, Jenner, and Howard fit through our hospitals and gaols. The spirit of Watt is seen in the bowels of the earth, in great foundries, on every river and every sea, advancing in a thousand ways the civilization of the world; while hand-in-hand with him goes George Stephenson, rushing by day and by night through all lands,—along the coast, deep into the bosom of hills, and through the centre of great cities,—binding together all people, disseminating knowledge, increasing the means of happiness for all.

The spirits of Reynolds, and of Hogarth, and Gainsborough, and Wilkie, and Turner, illuminate our galleries and print-books, teaching, delighting, and refining; while Flaxman, now in a teacup and then on a tomb, instils lessons on form, and preaches the Usefulness of the Beautiful.

Yes, truly, there are ghosts everywhere; and it is very desirable that we should now and then give them a little consideration, and make them aid the Teachings of the Streets.

THE GREAT PYRAMID: WHY WAS IT BUILT?

The Pyramids of Egypt have for thousands of years been "a wonder" in the world, and they still continue to be so, even in this age of steam and electricity. The base of the Great Pyramid, it has been shown, stands upon a square equivalent to the expanse of Lincoln's-inn-fields. At all events the lowest stratum of its construction, when freed from sand, is said to have been found to be 764 feet square: the perpendicular height (if topped by a pointed stone, which is no longer "the headstone of the corner," as Mr. Taylor calls

it) must have been 480 feet 9 inches: at present the height, to the three great stones by which it is topped, is 450 feet 9 inches. These extreme measurements include the casing-stones which no longer exist, having, it is believed, been removed by the Saracens 1,000 years since, as a quarry for building; but two of them were found of late years; and from these, and a socket in the rock for one of the corner casing-stones, the extreme measurements have been estimated.

The casing-stones were of a harder material than those below; and, as Herodotus tells us, were beautifully polished, and inscribed with certain sculptures.

The whole of the four faces of the Pyramid are believed to have been without apparent opening; as Strabo says that the opening was covered by a moveable stone; and even now there is a similar stone dividing one apartment from another in the interior. The joints of the casing-stones were, like those of the interior chambers and passages, so admirably fitted, that the whole appeared like a single mass of polished marble; and the cement formed a layer not thicker than silver paper, though so tenacious as to have retained fragments of the casing-stones attached to those subjacent.

The opening which leads into the interior of the mass is described by Greaves as reached by an artificial bank of earth, on the north side, and ascending to a height of 38 feet at the passage, which is straight and narrow, and at first descends like the steep of a hill, at an angle of 26 degrees. The stones even here are beautifully worked. Between the entrance and the "consecrated oratory," or "King's Chamber," in the heart of the Pyramid, there are various curious obstacles, and difficulties of passage, such as polished and slippery descents and ascents, enormous stones to scramble over, and still narrower straits to wriggle through, "like a serpent on the belly," as Greaves has it; and there are also *cule de sac*, and a deep pit or well, in the way, which pit is supposed to communicate with the Nile.

When all these obstacles are surmounted, the ante-chamber of the oratory is reached, and through that the oratory itself, which is separable from the outer closet by a ponderous moveable stone, "hanging in two mortises like the leaf of a sluice, between the two walls." If we regard the "consecrated oratory," as Greaves calls it, as an adytum or inmost cell, the ante-chamber is comparable to the outer divisions of a small temple, and, in fact, is itself divided into two,—an outer and an inner closet; the sluice-shaped stone occupying a position between the two. All these cells are formed of sacred or Thebaic porphyry, rich and speckled, exquisitely polished, and finely jointed. The king's closet, or oratory, Greaves describes as "a glorious room," ceiled with polished stones of "strange and stupendous length," like so many huge beams "supporting that infinite mass and weight of the Pyramid above." The height of the chamber is 19 feet, the length about 34 feet, and the breadth about 17 feet.

The sole *apparent* object, and central purpose, of all the vast labour expended, not only in the construction of these cells or apartments, but in the formation of the whole Pyramid of which these constitute, as it were, the very small kernel of the tremendous outer shell, is "one piece of marble, hollow within, and uncovered at the top, and sounding like a bell,"—in short, a very beautiful specimen, in porphyry, of what has been called a "sarcophagus," but by Mr. Taylor described as a "coffer," and a "meter." This coffer, or coffin, or whatever it was, stands on the floor of the "consecrated oratory" or "King's Chamber." It is 7 feet 3½ inches in exterior length, and 3 feet 3½ inches broad and deep. The interior length is 6 feet and 488 thousandths parts of the English foot in length, 2 feet 218 parts broad, and 2 feet 860 parts deep,—"a narrow space, yet large enough to contain a most potent and dreadful mummy."

It is a notable circumstance, that the Pyramid must have been built over this marble coffin, first placed *in situ*; inasmuch as the passage to the oratory is too small to have allowed it to enter. Perhaps, however, the most remarkable thing connected with the whole affair is the fact that this oratory or cell, in the heart of so enormous a mass, has been "ventilated," as Mr. Taylor remarks, "as perfectly as if it were intended for the abode of a human being." The ventilators are two very long stone-cut passages, ascending, one from each side of the oratory, in a slanting direction, to opposite faces of the Pyramid.

What could have been the purpose of so strange a structure is a question which, of course, has long and often been asked. That it was meant for the tomb of an Egyptian king is one of the most per-

* "The Great Pyramid. Why was it built? and who built it?" By John Taylor, author of "Junius Identified," &c. London: Longman & Co. 1859.

sistent ideas that have been entertained, in preference to the absurd "Pharaoh's granary" fancy. There are strong probabilities, however, even against such a notion as that it was a tomb. In the first place, there is no trace of any one ever having been entombed or buried in it: on the contrary, the tradition (handed down by Diodorus) is that, although it was meant for a burial-place, the purpose was never fulfilled,—a very unlikely story, which, however, goes far to show that, in point of fact, no one ever *was* buried in it. Had so vast and noble a structure been reared as a tomb, whatever might have happened to the kingly builder, or his body, surely his successor, or some one in his place and power, would have afterwards been buried in such a tomb. Human nature is so prone to precedent and imitation, that this must inevitably have come to pass. Why, even in our own days, have we not a Duke of Hamilton actually buried, at his own request, in an ancient sarcophagus, sacred to an Egyptian queen, and with her very name inscribed upon it? But, perhaps, one of the strongest reasons for believing that it was not merely designed for a royal tomb is deducible from the fact of the central cell or oratory, where the sarcophagus stands, having been carefully and thoroughly ventilated, so that, as Mr. Taylor justly observes, "it is not likely that the chamber was designed for the reception of a dead body." Is his own notion, however, more probable, namely, that the "coffer" was a standard Egyptian measure like the chaldron, and that it was to preserve this standard that the pyramid was erected? To us the improbabilities seem to be about equally great, that it was either erected as a tomb, or as a standard measure office. Doubtless, the "foot rule," if we may so call it, used by the builders, whether it was the royal cubit, the Karnak cubit, or any other, must frequently reveal itself to the considerate geometriean, both in the interior and the exterior dimensions of portions of the Pyramid; and we will readily admit that even the length and breadth and depth of ancient measures of capacity may thus have been rediscovered,—that the cubit according to which the Pyramid coffer, trough, sarcophagus, or bath (as it has even been called) was measured and cut by the workmen, according to orders, was probably the same according to which some grain measure, like our chaldron, was habitually cut out, or *vice versa*. But, after all, this is freely admitted, we are as far off as ever from the idea of the standard meter office. Moreover, had the sarcophagus really been intended for a standard measure of capacity, to be preserved for ages, would not some trace of its purpose have been left upon it, as in sculptured representations of measurers at work, &c.? We are told by Herodotus that onions, radishes, and garlic were represented outside, as the chief food given to the workmen, the quantities used being appended; and although it may be that the priest was wrong who so described these sculptures, still the circumstance betrays the fact that sculptured representations were in use at the time the Pyramid was built. Mr. Taylor fancies that these onions, radishes, and garlic were in truth our signs of the degrees (°), minutes (′), and seconds (″), and that the relative proportions of the exterior angles and dimensions of the Pyramid were intended to represent the relationship of the radius to the circumference of the sphere and the dimensions of the earth. Sir John Herschel, however, to whose consideration the whole subject was submitted, appears to have come to the conclusion that it was not astronomical but architectural reasons which guided the constructors of the Pyramid in the calculation and arrangement of its dimensions. Newton, too, appears to have studied the measurements of the Great Pyramid, but we are not aware that it ever struck him they had anything to do with the earth's dimensions, or with degrees and minutes.

Mr. Taylor's researches, notwithstanding, are very interesting and learned, as regards ancient measures of capacity, weight, and length. An abstract of some of the last of these may be interesting; and the passage will show how his conclusions expand into his more doubtful hypotheses:—

"The Grecian foot is 1·0125 English", the Ptolemaic, 1·0101; the foot of Darius, or Diodorus Siculus, 1·0099; and that of Ptolemy, which is properly a span, 10·366 inches. Twice this last number is the royal cubit (20·736); and twice this number is the Karnak cubit (41·472 inches). Lastly, the geometrical foot, or span, mentioned by mathematical writers in the beginning of the sixteenth century, belongs to this system (9·875 inches). Twice this measure is the Oriental cubit (19·750 inches); and two of these Oriental cubits form the Pyramid meter, which is the forty-millionth part of the circumference of the earth, in the latitude of the Great Pyramid (39·2724 inches), a measure differing from the French metre only one-tenth of an inch in 40 inches, but the better fitted for

a universal standard of international measures, since it forms an integral part of that ancient system which binds all the nations of the earth together in one common bond of reciprocal measures of length, capacity, and weight."

Mr. Taylor is of opinion that the Great Pyramid was built by the descendants of Shem, not long after the Flood.

PRACTICAL HINTS ON SUBJECTS CONNECTED WITH OUR ART. THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of the members of this Association was held on Friday evening last, at the house in Conduit-street; Mr. S. C. Capes in the chair. The minutes of the last meeting having been read and confirmed, the following gentlemen were on ballot admitted members:—Mr. Edward Alexander Wyon, Mr. Edward Wymbridge, Mr. Robert Reynolds, Mr. Morris, Mr. Wakefield, and Mr. Edward Low.

Mr. Banker then read a paper entitled "A few practical hints on familiar subjects connected with our Art," as follows:—

I purpose asking your kind attention to the consideration of a few practical matters connected with our art; and it is my intention to treat of those questions that come before us in our every-day architectural life. I cannot but feel that much of what I shall have to say is old, and known to most of you; but I do hope to throw out suggestions that some of you may think worth discussing; and, by that means, I doubt not, many of us will be able to add something to our store of knowledge. I propose, then, to speak on the following subjects, viz.—"On Taking Instructions from a Client," "On Preparing Sketches," "Working and Detail Drawings, Specifications, Bills of Quantities, Setting out and Superintending Works, Measuring up and Settling Accounts."

Having then to call your attention to so many subjects, my remarks on each must be necessarily brief. I will, in the first place, say a few words upon "Taking Instructions from a Client." I will ask you to suppose as a client an intelligent well-to-do man, who has determined to place in your hands the work of designing for him a house or villa. And I will ask you at once to dispense with the idea that as an architect you know all, and your client knows nothing about what he wants: believe me, this is an error that many fall into. Your client has, in all probability, been thinking for some time of building; he has looked at other houses and endeavoured to learn from them what he would like, and what he should avoid. Therefore, I say, be exceedingly attentive, and endeavour, by sketches made at the time, and by questions carefully put and devoid of technicalities, to ascertain, as clearly as possible, what he wants. He has probably thought over the plan so often, and so long, that he almost believes he can describe what he wants in a few words: in this probably he will find himself mistaken. It is, however, your duty to spare neither time nor trouble in ascertaining as clearly as possible your client's wishes; and, having done this, you will prepare your sketches from *his* instructions; and if, in your judgment, there is anything fatal in the plan as proposed by your client, point out the difficulties to him, and, by the aid of another plan, show, if possible, how far these difficulties may be overcome. Should there, however, be anything utterly impossible in the arrangement, point it out; and, if you have paid attention to your instructions, you will have been able to understand what is wanted by your client; and, therefore, it will not be a difficult task to get out sketches, showing how the arrangements required may be brought together in a practical manner. On the question of outlay be very particular; and, if you are instructed that a certain sum may be expended, be very careful not to exceed that sum: with care you can ascertain very nearly what will be the cost of carrying out the building as proposed. If it is impossible to do all that is required in a proper and substantial manner, be candid and tell your client so, and be sure not to involve him in expenses that, for aught you know, he is not able or willing to incur. And your client must not be misled by your drawing: be careful by actual measurement to show the sizes of rooms proposed, and explain the positions of doors, fireplaces, &c. Never mind the trouble: you will be well repaid by the knowledge that you have endeavoured honestly and faithfully to carry out the task entrusted to you. Above all, do not seek to build dishonestly; do not let your rooms be too small to be useful; and avoid the temptation of using improper construction or materials in order to reduce the cost to the sum proposed: it would be better, far better, to do nothing, than to do wrong.

I will now suppose that you have succeeded in producing plans and elevations of such a building as it is the wish of your client to erect; and I will also suppose that your sketches have honestly and truly set forth what is proposed to be done, and that you have clearly proved to yourself that all can be done for the sum agreed upon: it will then become your duty to prepare the working or contract drawings; and the first question you will be called upon to decide is, what scale shall the drawings be made to? And in order to assist you in coming to a right conclusion upon this point, let me remind you that the working drawings are for working men; therefore use such a scale as is most common and most easily applicable to the usual division of the two-foot rule: avoid scales of 12 feet to the inch, three-sixteenths of an inch to the foot, and such like: if possible, lay down your drawings to a scale of a quarter of an inch to the foot; if that is too large, try one-eighth of an inch to the foot, and endeavour never to make a working drawing less than that. I am aware that in very large buildings it is impossible to use the scales I have mentioned; but I am asking you to suppose this evening that we are about to lay down the plans for a villa, and I will at once say a quarter-scale is the best. Having determined upon your scale, and laid your paper down (this is best done by cutting off the edges of the paper perfectly straight; and then, having wetted the paper edges with a sponge dipped in clear water, the edges may be secured to the board by rubbing them with a piece of glue, previously held in hot water: by this method you may dispense with the paste and glue-pots). When the paper is dry and smooth, lay down the scale intended to be used, and proceed with the drawings. Do not advance any one drawing too much before others are commenced, or you may find some constructional difficulty occur, causing you to erase, probably, a large portion of your work already done. Let all four drawings then be carried out together: carry all your lines from the basement to the shafts: contend with all the difficulties of want of light, means of access, &c.: try out the stairs, and be sure as to head-room, the practicality of landings, &c.: avoid placing the water-closets off landings, or indeed anywhere where it is possible many persons may meet, and never construct a closet without direct external ventilation: endeavour to place a closet in such a position that its working may be unheard in any of the sitting rooms. If it is necessary to have attics, or rooms in the roof, see that you do not construct a room where it is impossible to put a bedstead: believe me, it is sometimes done. Never let the approach to one bed-room be through another. If possible, have water laid on to every floor: a few gallons of water at the proper moment may save the whole building from being consumed by fire. Never carry the waste pipes of cisterns into the D traps: take them outside the building at once into the nearest rain-water pipe; or, if that is impossible, let it project a short distance from the line of the front of building: do anything with a waste pipe but make it a ventilating shaft to the soil pipe. In order to provide for and to overcome all constructional difficulties, you must make a set of drawings of the carcass of the building, showing clearly every portion of the construction, from the footings to the gutter or chimney cap. Your sections should show the construction of all floors, roofs, and partitions; and, where necessary, larger drawings should be prepared, to show the manner of finishing ceilings, framings, &c., &c. Prepare a plan showing the footings complete; also a plan of the roof timbers. Above all things endeavour to clearly understand the whole of the construction yourself, and to make it to be clearly understood on your drawings. For such intricate portions of the work as may be impossible to be shown on the general drawings, prepare details; and what is more, prepare these details before the contract is entered into. I can confidently say from experience, that 5 or 10 per cent. can sometimes be saved by thoroughly detailing the work before contracting for the same.

In showing the drains on plan, be sure and place the pipes outside of the house as much as possible; and, where it is absolutely necessary to pass through the building, select some position where the drains are easily got at, such as a passage, &c.: this remark will also apply to service and other pipes. Always, as it were, have those portions of a building whose derangement may cause damage under immediate control. All these points may be, and should be, carefully studied and arranged for on the drawings: it should and ought to be the duty of every architect to make

his working drawings perfect in every respect, so that no waste of materials or room be incurred on the one hand, nor wants of any kind be left unprovided for on the other. I will now suppose the drawings to be carefully inked in and tinted. Your next task will be to figure them. This requires great care: you should commence upon the plan showing the principal rooms whose sizes have been determined upon: you can then figure the other plans, being careful as to the decrease or increase of the thickness of walls, partitions, &c. I do not think it advisable to figure the plan of foundations in detail, as the sections will show the sets off, and it is easy to work the same from the principal plan. All heights should be figured on the sections and elevations; and, if there is no existing line to work from on the ground, one should be fixed as a datum line, to be referred to on the drawings. Having neatly written to the several drawings, I will now suppose they are completed. Your next task will be to write the specification. Upon this subject I have had the pleasure of reading you a paper: I will therefore, not detain you longer than is required to throw out, as I hope, a few useful hints. Let your specification be written in a clear and definite manner: carefully examine each description, and try and make it impossible for any but the correct interpretation to be taken: do not attempt to describe what can be better explained by the drawings, and never let the specification take the place of the working drawings, or the working drawings the place of the specification. A specification should, in my opinion, contain such descriptions of materials and modes of workmanship as cannot be shown in drawings; and a very careful set of conditions of contract, wherein the client and contractor should be equally protected, and the power and responsibility of the architect set forth. Be sure that, in writing these conditions, you do not therein take upon yourself more than the law will allow you to enforce, for you must ever remember that that agreement only is binding which is legal.

The next question you have to deal with is, the taking out the quantities. There is, in the minds of many architects, a feeling—shall I say a prejudice?—that, by having the quantities taken out, the client has not only to pay the commission charged by the surveyor, but that he will also have to pay a larger amount of money for a given amount of work: let us examine this question, and endeavour to ascertain if there is any foundation for such an opinion. Having our drawings and specification ready, and being instructed by our client to obtain tenders for carrying out and completing the works;—you know that it is impossible to get such tenders without having the quantities taken out; and, if you apply to builders of known respectability, you will often be told they can only give you tenders upon your sending them bills of quantities: if then it is not your wish to incur the responsibility, you will, perhaps, have to apply to another class of builders, not so particular as to how they expend their time or money, so that they get work. You will then, I will suppose, have obtained tenders, and as many builders as you have obtained tenders from will have been put to the expense necessary in order to give in a price for the work to be done. Now, it is well known that many keep estimating-clerks, or have to call in the assistance of a surveyor. These have, therefore, to be paid; and, in the course of a year, a certain sum of money will have been expended in making estimates: this must, therefore, be paid out of the profits, and the profits of course represent that amount that has been realized over and above the expenses. It therefore follows that the building-public have to pay either the builders or the surveyors; because we know that, if a certain amount of labour has been done, some one must pay for it, either direct or indirect; and, if you can imagine that the item of expenses for taking out quantities could be entirely removed from a builder's books, it would naturally follow he would be able to do the work for a less price, and yet realize the same profit. If you remind me that this class of men will sometimes do the work 10 per cent. below those who insist upon having the quantities taken out, I will not deny it; but, on the other hand, the work is but too often 20 per cent. below the other in value, and for this reason: a man having comparatively but little capital is unable to take that advantage of the market for materials and labour as his more wealthy fellow-tradesmen: he can, probably, only afford to buy his timbers and deals as they require them; and generally they are worked up as soon after being purchased as possible, and consequently are not well seasoned. His men, too, are changed so often that he has

not, and cannot have, a permanent staff of hands able to execute such portions of the work as ought to be done in the best manner. It therefore follows, that in the labour and materials this class of builders cannot compete with those having the command of the market. Again, these men have to pay their surveyors for taking out the quantities. Nothing has been allowed in the estimate; therefore, in the inferior quality—and consequently decreased value—of the materials and workmanship must they look to obtain the means whereby this item can be balanced in their books. The whole question, therefore, resolves itself into this:—Is it better to employ a competent surveyor, who will supply the builders with accurate bills of quantities, and obtain tenders from respectable and responsible men, and have the works executed in a proper manner? or is it better not to employ the surveyor, and get a less valuable description of work done, and probably have a yearly outlay in the shape of repairs? It occurs to me, if you submit the question to your client in this way, he will prefer paying a direct charge rather than risk the annoyance and never-ending expense caused by the use of improper materials and workmanship. I may be asked, is it not possible by the aid of a clerk of the works to ensure good materials and workmanship? I say, not always. And I will assert, without fear of contradiction, that you are sure to get a better and cheaper building by going to first-class tradesmen, than you will obtain with your clerk of works and less respectable tradesmen. In the one case, it is possible to save the expense of the clerk of works; in the other it is impossible. I think, then, I have shown that, by obtaining inferior materials and workmanship, your client will have to pay more, oftentimes much more, than the charges of the surveyor, and the difference between the tenders submitted by the different classes of tradesmen mentioned. Again, by having the quantities taken out by a competent surveyor, you protect the interests of your client. In this way, if the quantities are taken out by a clerk of the builder, by the builder himself, or by an incompetent surveyor, errors may creep in, to such an extent, that an unscrupulous builder may prefer calling his creditors together rather than executing his contract in a proper manner. That your client's interests would suffer I need not tell you; and the delay, annoyance, &c., caused thereby, can never be forgotten. On the other hand, with correct bills of quantities, you can ask the best men in the trade to compete: they will feel that the price they have given in is obtained from calculations made upon correct data as to quantity; and therefore their only chance of loss is upon any incorrect data as to price: this may sometimes happen, but not often. I am afraid, if builders were to give their candid opinion, they would tell us their losses were more often caused by incorrect data, as to quantity or description, than in the items of costs. I have more than once used the terms—correct bills of quantities, and for this reason, that there are many incorrect bills of quantities,—incorrect as to the quantity of work, and still more incorrect as to the description of the work. None should attempt to take out quantities but those who are thoroughly and practically acquainted with each and every building trade; and those who possess this kind of knowledge, are able to take from the drawings such dimensions as will truly represent the amount of work to be done. But the dimensions are not all that is requisite: they must be coupled with such strictly definite descriptions that it shall be almost impossible for but one, and only one, meaning to be conveyed. I am sorry to say I have in the course of my own experience met with such items as "feet of Spanish mahogany handrail, French polished;"—no size, no description of the labour. I ask, how can a man tell at what price per foot the work can be done? I have seen such items as "cast-iron moulded curbs for railings;"—no weight per foot given; nothing, indeed, shown to enable one to form a correct judgment as to the value. I could multiply these examples, but forbear to waste your time; and I mention these matters that you may join with me in protesting against such items as these ever being allowed. I sincerely wish builders would take from the bills of quantities all such items, and send them to the architect, in order that he may not be surprised if the tenders sent in vary very much in the amounts. This is one of the main causes of the strange discrepancies we see in the tenders made from bills of quantities; but, in justice to surveyors, I must admit there are many instances that afford scope for speculation to such an extent as to materially

affect the tenders: with these they have nothing to do; and the builders only are responsible. Before I close this portion of my paper, I must call your attention to another system, and that is, one where the architect and surveyor share the commission; the surveyor generally stipulating that he is not to be responsible for the correctness of the quantities: the architect has half the commission for taking this upon himself. I will not enter here into the details of this dishonest practice. I content myself, however, by protesting against it in the most emphatic manner: it is a disgrace to the profession, and has been the cause of much evil. Having, then, pointed out at some length what ought not to be done, let me in conclusion say what I think ought to be done. It is this: have the quantities taken out by a competent surveyor, appointed on behalf of your client: write to respectable builders: request them to meet at your office; and insist upon their appointing a surveyor on their own behalf: it is the old system and it is the best: the expenses are not increased thereby, and all parties are represented and protected. Do not for a moment conclude from my last observation that I think no one person can take out quantities: I am certain to the contrary; but I believe, if you consulted the surveyors generally, they would tell you they would prefer, at all times, to meet a brother surveyor, than take upon themselves the whole of the responsibility. I have dwelt somewhat longer than I had intended upon this subject; but it is one that is not so well understood as it should be, and the whole system requires ventilation.

The next subject I have to bring before you is Setting out and Superintending Works. Many feel nervous when called upon to take a practical part in the realization of their designs. There are so many little matters to be attended to that they get confused, and feel, as it were, quite incapable of taking that leading part as they ought to do: at the drawing-desk it is so easy to produce the various lines shown on their drawings, but on the actual ground, where T and set squares are no longer useful, they sometimes feel as if the difficulties were insurmountable, and, indeed, as though it were impossible to begin the task. If there are any such present, who have laboured under that nervous feeling, I beg with all due deference to lay before them the following suggestions, hoping that in the time of need they may be useful. As a principle, nothing is better in setting out building works than working from centre lines. The first thing to be done is to determine the face line of work of the principal elevation. This being done, drive into the ground strong pegs or stumps, taking care that they are placed at such a distance from the site of return walls, &c., that they will not be interfered with. These two pegs being fixed, strain from one to the other a line as tight as possible. Before I proceed further I must impress upon you the necessity of having tapes, measuring rods, &c., perfectly correct. Take nothing for granted, but prove, to your own satisfaction, in any way you please, that your tape and rods are true. Having the face or finished line of the front of building before you, you must next proceed to fix the point at which the angle or quoin of the return wall must be set off; and as this, in new buildings such as we are supposed to be at work upon, is generally at right angles to the front, you must produce a line at right angles with the front. This will require a little care and attention. If the builder has a large square at hand, and you have proved it to be true, use it; if not, set off from the point representing the angle or quoin of house already agreed upon 8 feet, and strain a line from that point, and when a diagonal measurement of 10 feet falls at exactly 6 feet upon that line, then you may be confident that you have obtained a true right angle. I need hardly remind you that these figures of 6, 8, and 10 may be multiplied by any figure you please, with the same result. By this method all right angles may be produced. You must not, however, forget the principle I have laid down, viz., that of working from centre lines. Be sure when you drive pegs into the ground that you make some mark by which you may know which part you have worked to; and in all cases never fail to have the stumps and pegs fixed at such a distance from the site of treaches, &c., that they may not be disturbed by the excavator. In the foregoing hints I have spoken only of superficial setting out: with regard to the vertical work or setting out of heights, determine as soon as practicable the level of your ground, or principal floor; and on one of the stumps or pegs have clearly marked a datum line referred to in the

drawings, or a floor-level, as may be found most convenient. This being settled, it will be easy for the workmen to refer to and determine the depths of all excavations required. This work of setting out is oftentimes left to the contractor or the clerk of works; but in all cases the architect should never fail to attend and settle the principal lines to be worked and settle the principal alteration of the soil may be made with advantage; and, unless the architect is present, such advantage is frequently lost. When the works are set out, and the excavations done, the duty of superintending may be said to have fairly commenced; and, if there is no clerk of works employed, the architect must be more than usually attentive. All trenches should be carefully examined, and every care taken to ensure good foundations: if concrete is to be used, see that it sets hard and firm before the brickwork is commenced, and also that it is truly levelled on the top surface: if bricks are used for the footings, see that they are hard, sound, well bonded together, and laid in mortar as specified. Let nothing hinder you from paying particular attention to the foundations; for, if they fail, you will have a world of trouble and anxiety afterwards. Your foundations in, and walls well out of ground, your duties will be somewhat lighter. You must not, however, relax in your attentions. See that the work is carried up in strict conformity with the drawings. See that all quoins, reveals, &c., are truly vertical, and that all horizontal work is level. The contractor must not be allowed to fill in the wall with bats and rubbish: insist upon the work being solid, fair, and well bonded; and also see that all headers of facing-bricks are whole bricks. If stone walls are being built, see that bonders are put, and that every care is being taken to ensure sound and good work throughout. Examine all timbers, as to their dimensions, distances apart, and manner of framing. Be not afraid of trouble, but examine into and watch every portion of the work throughout, from the concrete to the last coat of varnish; and, above all, insist upon a fair, honest, and workmanlike interpretation of the drawings and specification, never forgetting that you are bound, not only to look after the interests of your client, but also to see that the contractor is not injured by or through the whims or caprices of your clerk.

When the works are completed, the accounts for extra works should, as soon as possible, be made up. If the quantities were taken out, the work of finally making up the accounts will be simplified, because the bills of quantities show a certain definite basis, and it is not difficult to make such deductions from, or additions to, the quantities as may have been effected. If, as I have hoped, you carefully and studiously carried out the wishes of your client, and your drawings and specification clearly and practically showed and described those wishes, the quantities being also supplied, then I have every reason to anticipate that extra works will be reduced to a minimum. If, however, from unforeseen circumstances, extra works should have been carried out, be not afraid to accept the necessary responsibility: have the accounts made up in a strictly just and honourable manner, seeking not to curry favour with either client or contractor, but striving earnestly and fearlessly to walk in the path of duty. Never forget this. There are many temptations, but heed them not; and ever remember that a clear conscience is a greater source of happiness than the acquisition of money. With these observations I must now conclude, hoping that the rough and ready outlines I have here traced may be by abler hands filled in and rendered more definite and clear than I have left them.

Mr. Goodman observed that too much care could not be taken in setting out and carrying out every building. He had himself, on one occasion, made a blunder from not testing the measuring-tape, and the consequence was, that when the roof was framed it was found to be 4 inches wrong, a difficulty which had to be got over by corbelling—an expedient which, although adding to the effect, entailed additional expense. With regard to setting out quantities, it was clear that Mr. Bunker's was a London practice; for in the country it was generally the practice to put the drawings in the hands of a few respectable builders, who made out their own estimates, and gave in their prices in lump. This might not be practicable in very large works, but he had found that, with regard to ordinary works, experience generally enabled country builders to arrive at very accurate conclusions from an examination of the drawings.

Mr. Christian thought that too much attention could not be paid to bottoms and foundations, for

no building could be a credit to the architect or the builder if these important considerations were overlooked. He had himself known a case where in excavating the foundations they believed they were working in solid soil of some depth. The soil at the bottom of the footing was solid, hard, strong loam, into which the peg could only be driven a few inches. The building (which was a church) stood well except at one corner, and there a settlement took place. The wall was then underpinned; and, on examining the foundation, it was ascertained that, beneath the surface of the trench which appeared so hard, there was, at a depth of 10 or 12 inches, a soft running sand. The weight of the chancel depressed the thin bed of loam, and hence the settlement. In that case, had the clerk of the works tried the trench properly with a bar of iron, he must have discovered the defect; but his negligence in this respect had entailed a heavy expense, which might have been saved by half an hour's well directed application. The question of soil and bottoms was not sufficiently attended to. As a general rule, the architect was satisfied when he got a hard, close clay; but it sometimes occurred, when there was great drainage from the soil, that the earth shrank, and that, where there was more clay in one place and brick earth in another, the building would settle where there was the brick earth. In these cases a strong bar of cement should be put in to equalize the weight. Then, with regard to walls, he often found that country builders were in the habit of facing their walls with stone, and filling up the centre with mortar and chips. The consequence of this pernicious system was that, when the superincumbent weight was considerable the chips would break up, and the walls would bulge, and sometimes tumble down. In church-building, in order to prevent settlements and bulging out, stone walls ought to be carried out but slowly, especially if small stones were used. It was often the custom of builders, in order to save trouble in shifting scaffolding and materials, to carry up their walls a great height all at once at some particular place. The consequence was that, when wet weather came, the portion of the building which was run up too quickly becoming saturated with water, the walls bulged out, or perhaps came to the ground. In some cases, especially in chalk and flint work, it was a different thing to get sufficient bond between hard material like flint and hassoek, which was soft; unless these inharmonious materials were well bonded together, there was risk of the walls settling.

Mr. Smith said that the consequence of running up work too quickly might be obviated by introducing courses of stone work in cement, which, while preventing sudden settlements, would also give time for the work to dry.

The chairman expressed his approval of the practical character of the paper read, and observed that he had always been an advocate for quantities being taken out, but that he generally found that country builders preferred to look at the drawings and make their own estimates. Quantities, however, were useful in the progress of the works, and saved a great deal of trouble in measuring up at the end; and, if carried out generally, would promote economy. He agreed in all that had been said with regard to the necessity of bonding and courses of cement; and, in conclusion, recommended all young architects to steer an independent course between their client and the builder, so as to act the part of an honourable and upright arbitrator between both interests.

Mr. Smith recommended architects to endeavour to learn from their clients the precise amount which they intended to expend.

The next meeting of the Association will be held on the 23rd instant, when Mr. T. M. Rickman will read a paper on "Hinges." The subject for the next meeting of the Class of Design will be an iron church for the Colonies.

WORKMEN'S INSTITUTE, 241, EUSTON-ROAD.

This will be the first building expressly erected in connection with the present movement, the upper portion being exclusively devoted to the use of workmen. The principal entrance is in the Euston-road, and a passage at the side, called Phillips-gardens, leads to the back staircase. The doorkeeper's office is on the ground-floor overlooking both entrances, whence two stone staircases lead up to the principal room on the first floor. This room, 54 feet long and 26 feet wide, is intended for a reading-room, and for lectures and kindred purposes. On the second floor another large room of the same size will be used for evening classes, and two upper stories as dormitories,

in which each lodger will have a separate compartment for sleeping. On the various landings will be lavatories and other conveniences, and provision for ventilation is said to be made on each floor.

The building is designed entirely with a view to use and economy, the application of decoration having been strictly prohibited, and externally certainly does not promise to be very handsome. This Institute will complete a very large block of buildings which have been erected by Mr. George J. Bowyer, a gentleman who has exerted himself with great perseverance for the benefit of the working classes. The first portion was commenced four years ago, and has been mentioned by us before. Messrs. Wadmore & Baker have been architects of the buildings from the commencement, and Mr. John Ashby is the contractor for the present works.

LAMBETH SCHOOL OF ART.

ENCOURAGED by the success which has attended the establishment of a School of Art in the very heart of Lambeth, inhabited by artisans engaged in the Potteries and building trades, the chairman of the school, the Rev. R. Gregory, of St. Mary's Parsonage, is endeavouring to raise the necessary funds for building suitable premises for the school, which has hitherto been held in the National School at great inconvenience. With the view of obtaining the assistance of the Committee of Council on Education, Mr. W. Williams, M.P., and Mr. Roupell, M.P., with a deputation, have waited on Earl Granville, and it is intended to form a committee of well-wishers to Art-Instruction, to promote the object, as the immediate district of the school is too poor to raise the necessary funds. It is very desirable that a proper building should be obtained.

BELPER CEMETERY, DERBYSHIRE.

THE cemetery here has just been completed. The buildings consist of two chapels 38 feet by 22 feet, with robing-rooms and cloisters connected by a central archway, which is of sufficient size to admit a hearse, and is surmounted by a tower and spire 100 feet high. The frontage exceeds 100 feet. There is a five-light window in each gable, with tracery heads of varied design. The roofs are open timbered, and covered with slating of two colours in patterns. Four kinds of stone have been used in the exterior, with good effect.

There is a residence for the sexton, with a registrar's office. These, with a detached house-house, boundary fences, and wrought-iron ornamental entrance-gates, complete the buildings, which have been erected at a cost something under 3,000*l*. The ground is well chosen, rising gradually from the front, and crowned by a plantation of trees.

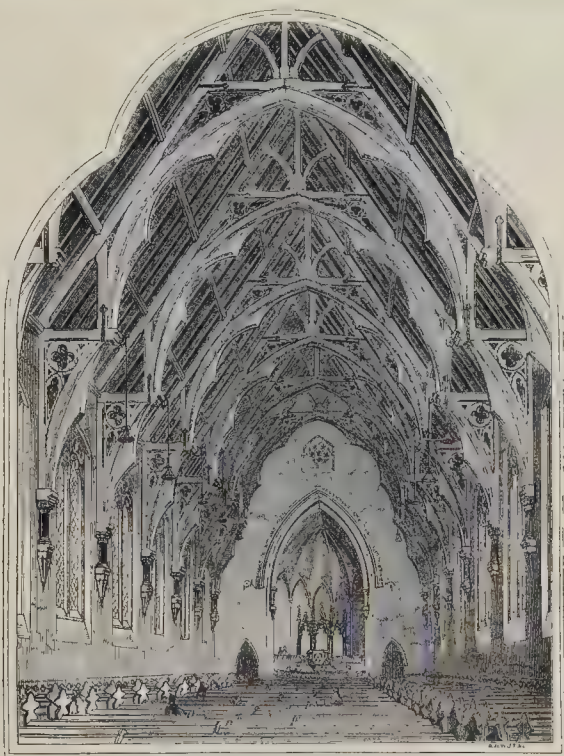
The style chosen by the architect, Mr. Edward Holmes, of Birmingham, is Late Decorated. The builder is Mr. William Freeman, of Belper.

NEW CONGREGATIONAL CHURCH, ECCLES.

THE site of this church is contiguous to the railway station at Eccles, near Manchester. The foundation stone was laid on the 22nd April, 1859. The schools are now approaching completion, and the church is just roofed in. The church is 41 feet wide, and 88 feet in the extreme internal length. The accommodation is for about 700 persons. The spire is 120 feet high. The roof is open, and all the timbers are to be stained and varnished. The corbels that receive the roof principals are of Hollinton stone, with polished red granite shafts. The apse is intended for the reception of the organ and choir. The roof of apse is to be groined. On either side of the apse are vestries, one for the use of the minister, and the other for the deacons. In the rear are five class-rooms, and over them the school-room, 27 feet 6 inches by 55 feet. The materials of construction are brick, with Yorkshire Parapet facing, and Hollinton stone dressings. Mr. Peak, of Manchester, is the contractor. The stone work is being executed by Mr. Hollins. The carving is undertaken by Mr. Nicholls, of London. The cost is expected to be from 3,500*l*. to 4,000*l*. Messrs. Poulton & Woodman, of Reading, are the architects.

GAS.—Great dissatisfaction exists amongst gas consumers at Bicester, at being charged 8*s*. 4*d*. per 1,000 feet. Some persons that would be large consumers, if the price were reasonable, are not consuming any; and others intimate that if there is not a reduction they will discontinue burning. Another gas factory is spoken of.

CONGREGATIONAL CHAPEL AND SCHOOLS, ECCLES, NEAR MANCHESTER.
MESSRS. POULTON & WOODMAN, ARCHITECTS, READING.



INTERIOR OF CONGREGATIONAL CHAPEL, ECCLES, NEAR MANCHESTER.

STAGE SCENERY.

THE painting-rooms are now in active operation. We hear of great exertions that are being made, and may hope that Boxing Night will show us something good in the way of sound painting and mechanical arrangement.

When viewing the scenes produced in our days on the stage, and admiring the in some cases artistic ability which is shown in the production of these fleeting pictures, which ought to, and do have a considerable and beneficial effect in improving the artistic taste of the community, the stage exhibitions of former times, and the various means which have led up to the present position of the art, should come under consideration.

The properties of the old English miracle plays, or mysteries, the stage decoration of Shakspeare's days, the comparatively small improvement which had taken place when Garrick trod the boards, are matters of which we have spoken recently. There are, however, a few additional circumstances in connection with this interesting subject which are worth mentioning. In all the departments of the fine arts we are indebted in no small degree to the Italians. In sculpture, painting, and engraving, the Italians have set the example of excellence; and, in addition to these, the same people have, in late years, been a means of spreading a taste throughout the country for music.

For upwards of a century, until about forty years ago, the wandering Italians were the principal showmen of England. Long before wild animals were exhibited to the public, except in the Tower of London, Italians wandered through the towns and villages with bears of various breeds, camels, dromedaries, monkeys, and other animals: the trainers of dancing dogs too were at one time all from the sunny land. The charlatan or mountebank came with his stage formed of a few planks laid upon trestles, with a painted canvas screen at the back, and sometimes smaller ones at the sides, on which were depicted dragons and other monsters. These pictures and the stuffed reptiles excited the wonder and admiration of many, and it is only by considering the effect which even rude art has upon those who are entirely uneducated in this respect, that we can estimate how valuable these were.

The peep-show and the magic lantern were both introduced into England by travelling Italians. The nightly street cry of "Galante show! galante show," although now a matter of the past, will still be remembered by numbers who in childhood were delighted by the sound. In the days of expensive literature, when good engravings were not accessible to the multitudes, those itinerants were valuable missionaries in diffusing a certain knowledge of pictorial art. The Italians travelled with these exhibitions into most of the countries of Europe, even into Russia, when it was far less civilized than it is at present; and, in parts where art knowledge is now in its infancy, these persevering wanderers are still crying their "Galante show" (galant or brave show).

The puppet show-men came from the same sunny land. In Queen Anne's days this exhibition was the rage of the town; and it is worth note that the first puppets exhibited in England were made to illustrate subjects similar to those of the old religious plays; the incidents of the early history of the world, Noah's Flood, and such like matters, being represented. One Powell, of Bath, however, created a revolution in this way, by making puppets of an increased size, which "moved" in representations which were more generally popular. Mr. Powell, who knew how to suit the taste of the times, performed "Whittington and His Cat," the drama of "Dr. Faustus," "Rinaldo and Armida," and other popular plays; and he made a large fortune by his management. After some time the fashion changed, and the puppets, though made ever so large, were considered only good enough for children and poor people: for long, however, they were played in the neighbourhood of Fleet-street and in other localities to audiences similar to those for whom the penny theatres are now provided. "Romeo and Juliet," and plays of a similar character, were performed by the wooden actors. The parish books of St. Martin-in-the-Fields record, under the date 1666, March 29, "Rec. of Punchinello y^e Italian: Popet player for his booth at Claring Cross 2*l*. 12*s*. 6*d*.; and again, 1667, June 12*th*, 1*l*.

The Fantocini may still be seen in the day, and the Chinese Shadows in the winter evenings, amusing large companies of both old and young—the last lingerings of the puppets. The Italian boy, with his board and figures danced upon a string, is not now seen in London; and even our old friend

"Punch," has almost gone out of use. We are told that only two of these exhibitions are at this time to be met with. We noticed the other day a musician who had formerly accompanied "Punch," playing most dismal music on his drum and pandean pipe. His old occupation was gone, and inharmonious and noisy notes failed to attract the notice of even the little children who were roaming close by. In days not long ago, "Punch" was the means of conveying wit and satire to the unlettered multitude.

The colossal illustrations in front of the travelling menageries, and exhibitions of giants, dwarfs, and other wonders, common some years ago in England, were an improvement on the pictures exhibited by the Italian mountebank; and it may be noticed that the hints of the Italians have in all instances been improved upon by the ingenuity of our countrymen.

The magic lantern and peep-show have been superseded by the panorama and diorama. The monster dissolving views at the Polytechnic Institution and elsewhere have completely eclipsed the old attempts in this way; and the stage has been made in some cases a great artistic teacher. We must not, however, forget that art knowledge, at the time when the simple exhibitions of the Italians were so popular, was foreign to the great masses of the multitude, and great good was effected by these exertions, which the improved skill and intelligence of this age have led us to look at with feelings of curiosity and some contempt.

The Adelphi Theatre.—Mr. Webster, in the "Dead Heart," has a part that suits himself, and other parts that suit the various members of his troop. He himself plays very admirably in it, and so do Mr. David Fisher, Mr. Toole, and Miss Woolgar. The drama presents an exciting picture of the great French Revolution, and has several very strong situations. Mr. Webster has scarcely received enough praise for his arrangements before the curtain. Seats of all prices—2*s*. seats, 1*s*. seats—may be secured by a letter containing postage stamps or cash, without extra charge, and you may walk into them at any period of the evening without the slightest trouble. Playgoers owe him thanks.

EARLY WRITERS AND RESTORERS OF ARCHITECTURE.

HANS BLOOME.

IN an leading-article of your number 865,* I observe some observations on "Old Writers on Architecture," published between the years 1500 and 1600; and also, in a late number, observations on the terms "Architecture," and "Building," &c., by Mr. Papworth; but in neither of these articles do I find any mention of the Architecture of Hans Bloome, published in English in the year 1660, under the title of "The Booke of Five Colunnes of Architecture; called Tuscan, Doric, Ionic, Corinthia, and Composita; drawn and counterfeited after the right Symmetry and counting Measure of Free Masons, gathered with great diligence by Hans Bloome, out of Antiquities, for the benefit of Free Masons, Carpenters, Goldsmiths, Painters, Carvers, In-layers, Antick-Cutters, and all other that delight to practise with the Compasse and Square."

Who the editor of Bloome's Architecture was appears uncertain, but from the initials H. W. appended to the preface, I have reason to think he was Sir Henry Wotton. Also, whether the author of the "Booke of Five Colunnes of Architecture" was a German or not I cannot ascertain; but as Wotton was ambassador to Bavaria, as well as to other parts, and had great insight into the libraries there, he might have found the work in that country, and from his love of architecture intend to publish it for the benefit of all workmen in building. I therefore conclude Wotton to have been the setter forth of this work, from the similarity of the language to that in his "Elements of Architecture;" wherein he says, "Architecture can want no commendation where there are noble men or noble minds." And in the preface to Bloome's Architecture, "I offer this book as well to noble gentlemen as rich men, and have chosen a patron that hath himself, to my knowledge, intended (if this be acceptable) to set forth the works of Sebastian Serly, and Albertus Durer, and other worthy authors," &c. Who this patron was is also uncertain, unless it might be Charles I., a prince of great taste, and an encourager of artists and learned men, and whom Sir Henry has paucely-richted enthusiastically.

It is certain, Charles I. had intended to ex-

ecute some grand designs in architecture, by the encouragement he gave to Rubens, Vandycke, Holbein, and Inigo Jones, had not the state of the times and the unhappy troubles in which he was involved totally frustrated his intentions.

The "Elements of Architecture" by Sir Henry Wotton have been highly esteemed, both at home and abroad: so much was his work valued on account of its theorems, precepts, and rules, that they were introduced into the Latin edition of Vitruvius, published by John de Laet, of Amsterdam,—a work of such importance that Goldman and Wolfius have both enlarged it, as the best edition of Vitruvius extant. This commendation will be found in "Wolfius' Elementa Matheseos."

According to "Kent's Designs," Charles I. had intended to raise a structure at Whitehall, which would have eclipsed all the modern works then existing in Paris, or perhaps any other place, but a part only of this splendid design was executed, in that pure taste for which Inigo Jones was celebrated.

These and other works by this eminent man, gave rise to the introduction of Italian architecture in this country; for although it is said, Hans Holbein had done something towards the introduction of Italian architecture, Inigo Jones must be considered the founder of that style in England.

The want of suitable works for the instruction of workmen was so much felt in England that Evelyn was deputed to translate "The Parallel of the Five Orders," a task, which after some delays, he accomplished.

The want of suitable works was also equally felt in France by the workmen employed upon public buildings there, and this gave rise to a work bearing the title of "A Parallel of the Ancient Architecture with the Modern," the author of which has given us examples of every order, supposed to have been accurately copied from the most renowned works of antiquity.

This parallel being found defective, orders were given to Desgodetz to proceed to Rome and measure and delineate all that was useful for that purpose, a task he performed in the course of a few months, and his delineations being approved, were eventually published.

The introduction of Italian architecture in Germany appears to have taken place earlier than in France or England. The clateau of Heidelberg must have presented such a façade of genius and taste as perhaps could scarcely be paralleled elsewhere; and here may be seen, in the words of Labacco, what "war, fire, and other causes have reduced to their present estate." The cities of Germany almost resemble Rome itself. The modern Goth, the invasion of the Spaniard, and the Thirty Years' War, had brought desolation to their very doors.

Of Rome itself, its fallen state has been well expressed by one of her own countrymen in the following words:—

"Alas, my country! I behold the walls,
The arches, columns, statues, silent towers,
Where once our fathers dwelt.
But where is glory fled?
I do not see the laurel or the sword
Our fathers bore: of all thine armour robbed,
Thy brow is naked now as this? Yet breast shows bare;
Alas! what woe, what blood,
What pallor brought to this?
Oh, loveliest of women! thee I see,
To heaven and earth I call! oh, speak and say,
Who brought her low as this? Yet worse; ah, me!
Behold, her arms are wreath'd with heavy chains;
And with her hair dishevell'd, face unweild,
Neglected and disconsolate, she sits
Up on the ground, and, crouching, hides her head
Between her knees, and weeps.
Aye, weep! for thou hast cause, Italia mine,
To comfort nations born
Alike 'midst adverse or 'midst smiling fate."*

Quevedo has also graphically described the state of Rome in his "Roma sepultada en sus Ruinas," thus translated:—

TO ROME, BURIED IN HER RUINS.

Stranger! thou vainly seek'st for Rome in Rome,
But Rome, in Rome herself, thou wilt not find;
Her walls are dust, the sport of every wind,
The Avestine is buried in its tomb.

Where rose the Palatine, she lies in gloom;
Her medals, with time's traces overlain;
Tell more of strife, of ages left behind,
Than bisonry triumphant in its bloom.

The Tiber but remains, whose ancient wave,
Where once it wash'd a city, weeps a grave,
And mourns the glories no one now can trace.

O Rome! of thy vast greatness, and thy grace,
All that was *fieri* has fled, and only now
Endures, the fleeting passing river flow.

Previously to the revival of literature in Italy, Rome had been slumbering over her ruins, and

* Page 577, ante.

* "The Lament of Giacomo Leopardi over the Misfortunes of Italy, her past Glory, and her present Weakness."

the cloister had scarcely preserved any note of what ignorance had destroyed. At length Italy awoke from her long dream, and some revival of arts and sciences took place. Palladio, Scamozzi, and Labbaco appear to have been foremost in the restoration of architecture, and Venice arose bearing unequivocal marks of the revival of architecture, but in a style different from the architecture of Rome. The Grecian style seems to have been almost unknown, although Venice was in the vicinity of those parts; but the Grecian, beautiful in itself, was now unsuited to the requirements of houses, palaces, and an emporium of commerce. The Roman did not suit their purpose exclusively. They therefore made use of such parts of the Roman architecture as suited their purpose, with the addition of arches, arcades, piazzas, loggias, balconies, and other parts better adapted to a state of civilization and domestic requirements; by these means arose a style which, by degrees, insinuated itself into all Italy, into Germany, France, and finally into England.

HENRY AUSTEN.

ON THE FORCES USED IN AGRICULTURE.

At the Society of Arts, on the 7th instant, a very able and philosophical, as well as practical, paper on this subject was read by Mr. J. C. Morton, who is himself to some extent an agriculturist. Of the numerous practical details into which he entered we cannot speak; but we shall endeavour to give some idea of the paper in an abstract of its more general features and results.

The three forces to which I shall refer, remarked the author in the outset, are steam-power, horse-power, and manual labour. Each of them has employment in our present English agriculture, and one object of this paper is to point out the extensive fields open, especially to the first and last of them, in the agriculture of the future. For there are three classes under which all the operations of the farm may be arranged, and they correspond exactly to these three forces which we have at our command.

In the first, where the greatest uniformity of process obtains, the greatest power is needed, and a purely mechanical force, acting through levers, wheels, and pulleys, is in this way sufficiently under our control for their performance, and this class of operations increases in extent and in importance with almost every permanent improvement of the land, *i.e.*, with everything which tends to the uniformity of its condition. In the second class as much force is needed; but rocky subsoil, awkward hedgerows, crooked roads, and scattered produce, interfere with any possibility of uniform procedure. Some machinery, more pliable than cranks and rods, is needed by which to carry out the purpose of the mind, and here, therefore, it must work by means of the teachable and powerful horse. This class of operations diminishes in extent and importance with every permanent improvement of the soil, *i.e.*, with every removal of those obstacles to which I have referred. In the third class the care and cultivation of individual life, vegetable and animal, are concerned; no great power is needed, but there is need for the constant and immediate exercise of the will, varying, it may be, at every successive moment; and here, therefore, the human mind can work only by its most perfect instrument—the human hand. It is plain that everything by which on the one hand land is brought to a uniform condition, and by which, on the other, the quantity of its living produce is increased, will extend the first and last of these three fields of agricultural operations, and will diminish the necessity of employing horses.

The forces used in agriculture, thus considered, form therefore a very extensive subject, and it is only two or three illustrative remarks under each of these several aspects of it that can be made within the hour.

In the first place, then, let me attempt a more particular comparison of steam power, horse power, and land power for the cheap performance of mere labour. An ordinary 10-horse power locomotive agricultural engine will, according to the Chester judges of the work done by Fowler's steam plough there, cost in coals and oil and water and attendance, and tear and wear of implement and engine, but excluding interest on capital employed, nearly 45s. a day, or about 4s. 6d. an hour, which is 5½d. per hour for each nominal horse power exerted; but, as the real force exerted is more often that of 20 horses in the case of a 10-horse power engine, we must really divide this by 2, and call steam-produced horse-power worth 3d. per hour.

Now the cost of horse labour on twenty-one farms in different parts of this country, of which the

particulars have been kindly given to me, did not exceed 5d. per horse for each of the working hours of the year. Those farms employ 282 horses, and they cost for food, for depreciation of value and saddlers' and blacksmiths' bills, 7,815s. a year; their implements need 870s. a year to keep them good; and the ploughmen and boys employed about them cost 4,241s. a year in wages,—about 13,000s. in all, or 46s. per horse per annum; and, supposing that there are 2,500 working hours in the year, this is rather less than 5d. per horse per hour.

Besides this, the estimated expense of Fowler's engine was, I believe, excessive, and the nominal power of it was certainly below the actual force at which it could be worked with the estimated quantity of coal consumed; for, of thirty engines tried at Chester, only one consumed the 11 lbs. of coal per hour for every horse power produced, which is the consumption named for Fowler's engine, and the majority did not consume more than 6 to 8 lbs. during that time.

Let us now estimate the cost of manual labour engaged in what I call mere work, *i.e.*, where the least degree of skill is called for. I have four facts in illustration of this point. These four cases indicate the mere force of a man at a cost of say 3d. an hour, as equal to a lift of 250, 330, 500, and 370 lbs. per minute; the two former being cases where the load has to be detached as well as lifted, and the third being performed under the influence of good harvest fare.

But now compare this even in the best case with the duty of the steam engine, or 33,000 lbs. 1 foot high per minute for 3d. an hour, and compare it with the actual average performance of the horse, 16,000 lbs. lifted 1 foot per minute for 5d. an hour. In order, at the best rate named, to do the work of the steam engine, sixty-six men would be required at a cost, not of 3d. but of more than 15s. per hour; and, in order to do the work of the horse, thirty-two men would be needed at a cost of 8s. instead of 5d. an hour. It is plain that if we can take much of the mere labour of the farm out of the hands of the labourer, and put it into the hands of steam power for its performance, there is an enormous amount of saving to be made in the cost of agricultural production. It is plain that it is mere folly in the labourer to think that, as regards the mere labour of the land, he can compete with either steam power or with horse power. It is in the cultivation not so much of mere strength of body as of skill and intelligence that the safety of the labourer lies, and in his capability of education he is perfectly secure.

As the matter at present stands, then, and confining ourselves to that large and increasing class of operations in which the power required is great and the process almost uniform, and looking only to the cost per unit of work done, we have seen that steam power stands decidedly first in the race, horse power is a tolerably good second, and the agricultural labourer is literally nowhere.

Is it not a remarkable thing, however, that agriculture, which was once wholly the work of men's hands, but which has long since given up the tillage of the soil, and the carriage of the manure, and the sowing of the seed, and three-fourths of the hoeing of the crops to be accomplished by the horse,—which has latterly given up the thrashing of the grain and the cutting of its straw to be effected by steam-power,—which is rapidly abandoning the work of reaping to the former and of cultivation to the latter, should nevertheless require more labourers than ever?—that steam being first, and horse-power second, and the agricultural labourer nowhere in the race, considering the three merely as economical producers of power, the last should nevertheless be wanted more than ever?

The explanation lies in this: that agriculture is more and more becoming the work of intelligence and skill as well as power—those parts of its processes, where intelligence and skill are wanted, are becoming a larger portion of the whole. Cultivation is more perfectly performed, and over a greater extent of land—the crops cultivated require more labour and are more productive—the stock consuming them is proportionally larger and needs proportional attendance. Probably each acre cultivated in 1759 employed more manual labour in its cultivation than than each acre cultivated now; but how many more acres are there under cultivation now than then? Each bushel of wheat grown half a century ago involved so much more labour than that 8s. was the lowest price at which it could be grown with profit; but how many more bushels per acre does land upon an average yield at present? Each lb. of beef and mutton cost more in wages thirty years ago than now; but we have a double and triple store of food for

stock; we have two crops of fattened sheep and cattle where formerly we had one, and each supplies a double quantity of meat. But, whatever the explanation be, the fact is certain that the use of steam power on a farm is a part of that system which, in agriculture, employs most labourers.

Agriculture is, in fact, experiencing the truth taught in the history of all other manufactures—that machinery is, in the long run, the best friend of the labourer. This truth is taught even more impressively by a review of agriculture generally, than it is by the case of any individual farm. Here are we, twenty-one millions of people, producers and consumers, living in this island, on a great farm, which we may, by the help of such statistics as we possess, describe as nearly 19,000,000 arable acres, and probably nearly as much grass, employing as farm labour, in-door and out, about 950,000 men and 120,000 women, besides 300,000 lads and 70,000 girls, or averaging them by their probable wages, as has been done before, let us say equal in all to 1,150,000 men, or one to every 17 acres of arable, and nearly as much pasture. We feed and use some 1,500,000 horses, of which probably 800,000 are strictly for farm purposes. We are annually inventing and manufacturing labour-saving machines at an extraordinary rate, and every year at least 10,000 horses are added to the agricultural steam-power of the country, certainly displacing both animals and men to some extent. We have taken the flail out of the hand of the labourer, and the reaping-hook is going; on many a farm he no longer walks between the handles of the plough—he no longer sows the seed—he does but a portion of the hoeing and the harvesting—and yet, so far from being able to dispense with his assistance, he is more in demand than ever.

Within the past ten years upwards of 40,000 horse-power has been added to the forces used in agriculture in steam alone. If I may single out Messrs. Clayton & Shuttleworth of Lincoln, Garrett of Saxmundham, Hornsby of Grantham, Ransome of Ipswich, and Tuxford of Boston, they alone are furnishing 10,000 horse-power annually to the farmer. Messrs. Tuxford, among the first to start the locomotive agricultural steam-engine, inform me that for the earliest suggestion of it they are indebted to Mr. John Morton, of Gloucestershire, then agent to the late Earl of Ducie, who twenty years ago recommended them to put these little engines upon wheels, thus foreseeing the fitness of these powers made locomotive to the circumstances of English agriculture. Messrs. Ransome, of Ipswich, were, I believe, the earliest to receive the commendations and the prizes of the Agricultural Society of England for their engines, and now the leading manufacturers of them, Messrs. Clayton, of Lincoln, send out ten of them each week, or 4,000 horse-power per annum.

Of reapers, again, since 1851, Burgess & Key have sold upwards of 1,900 of their improved McCormack's reaper, of which 771 were sold last year; and they now hold four times as many orders as they did twelve months ago. Cross-kills have sold 500 of Bell's reaper, and 800 of Hussey's; Messrs. Dray have sold 600 of their improved Hussey's reaper; Messrs. Garrett have sold 600 of Hussey's; 250 of Wood's clever little reaper were sold last year; and the Cutbberbs, of Bideford, who have just begun the manufacture of their equally clever machine, sold 100 before last harvest, and could have sold four times as many. In all, probably 1,000 reaping machines were at work last harvest, capable of cutting more in a day than 40,000 labouring men, and yet there never was such a harvest as the last for the difficulty of procuring harvest men. Notwithstanding all this addition to the forces and the machinery of agriculture, more labourers than ever are required, and as more labourers are not forthcoming, wages rise. Thus the increase of steam-engines and machines need create no fear for the agricultural labourer.

If fears and lamentations have any place at all, it is in behalf of the masters rather than of their men. The labouring force in agriculture is better paid than it used to be.

Tens of thousands of acres have been this autumn ploughed or worked by steam.

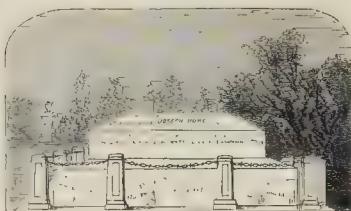
That the services of the labourer will more and more require the combination of skill with mere force, and that a larger number of well-qualified men is being, and will be needed, seems plain. That horse-power will be displaced by steam at least two-fifths, I believe, and, as there are now at least 800,000 horses used upon our farms, there is scope enough for many years to come for all our agricultural mechanics.

The grand result will, no doubt, be a continual increase of produce and fertility.

MODERN GRAVEYARD SCULPTURE.



The Tomb of John Bunyan, in Bunhill-fields Burial-ground.



The Tomb of Joseph Hume, Kensal-green.



No. 1.



No. 2.

FRAIL, in comparison, as are all earthly records, even those of the most ambitious description, we cannot but wonder at the fewness of the memorials of one century which are left to the end of the next. The sure hand of time, the never-ceasing change of fashions and feelings lead to the decay or removal of things which were looked upon by those who raised them as substantial and lasting.

When we wander now into the metropolitan cemeteries and view the sharply polished stones, the deeply cut inscriptions, it is difficult to imagine that in about a century's time, the bulk of those loving records will, according to the general order of things, have passed away. Many who placed expensive gravestones, or erected what they thought to be substantial houses, a century or two ago, little fancied that they would so soon have become unsuitable and dilapidated; and when looking at those costly and seemingly solid buildings which are springing up in so many parts of the City and elsewhere, who can say whether or not before the year 2,000 shall have arrived they may have been removed and replaced by others more in conformity with the ideas of that age?

It is curious to examine the sepulchral monuments of different ages which are to be met with in this country,—the substantial and elegant records of the period of the Roman occupation—a few fragments of Danish work—richly cut stones of the Saxon days, and stones incised with crosses and other devices of various dates—monumental brasses, and sculptured and painted effigies. Notwithstanding this variety, it may be remarked that the memorials raised in memory of the dead by the great mass of the people in ancient times have long since perished.

Those who glance at the graveyards of most parts of England and Scotland, will notice that the headstones commenced at the top with cherubs, hour-glasses, the skull and cross-bones, and other emblems of mortality which have been so much in use for nearly 200 years, are rapidly going to decay, and will (so far as the ornamentation is concerned) soon be illegible. We have, therefore, in the spirit of "Old Mortality," copied a few examples into our pages, as a record of a style of art, such as it is, which was long and generally used; and also as a means of contrast between the taste of that and other periods.



Carved Head-stones in London: 1745 to 1750.

Fig. 1 was much in use during the first quarter of the present century, and more lately, though the ornament which induced the semicircular projection at the top was discontinued, the projection was retained as in fig. 2.

The tomb of Hogarth, the painter, and that of famous John Bunyan, are characteristic examples of a more ambitious description of graveyard memorials.

At about the beginning of the present century the occupation of the head-stone carver was gone, although previously a skilful professor of the art, was to be found in most towns and districts. The oblong tombs, instead of having the rounded, Italian forms, were made square and plain; and as regards the upright stones, although the general outline and proportion were kept, the ornamental work was entirely given up.

The contrast between these monuments of the better class, and those which are now in use in the modern cemeteries, is favourable to the latter. A purer taste is evident both in the general proportion and details. The granite and other durable materials which in consequence of the increased facilities for conveyance, can now be had at a moderate cost, are an advantage, and some of the simple granite monuments, backed by foliage, have an excellent effect.

We have given the granite tomb of the late Joseph Hume, in Kensal-green Cemetery, and those in memory of J. C. Loudon, the author of "The Encyclopedia of Cottage Architecture," and Thomas Hood, who sang "The Song of the Shirt."

We have in a former paper mentioned the great durability of some descriptions of slate for monumental purposes: it has, however, a cold and unpleasant appearance, and when we notice how the most durable kinds of stone rapidly decay in this climate, particularly near large populations, it seems strange that bronze has been so little used in the graveyard monuments of the famous men of the present age, whose memory it is desired to preserve. The dullness of inscription in brass has been objected to. It would not, however, lead to great expense to get metal-plates electro-gilt, and then the lettering would tell out, and such works would be not only durable, but would also harmonize well with almost any description of stone.



The Tomb of Thomas Hood, Kensal-green.



Hogarth's Tomb, in Chiswick Churchyard.



Tomb of Robert Smirke, R.A., and of J. C. Loudon.



CHURCH ON THE BANKS OF LAKE HURON, CANADA.—MR. T. C. SORBY, ARCHITECT.

CHURCH ON THE BANKS OF LAKE HURON, CANADA.

THE accompanying engraving represents a church recently erected in Canada, on the banks of Lake Huron, for a small and scattered congregation, who were much in want of a permanent place wherein to meet for public worship. Some time since they determined to erect a small and simple structure which should meet their wants, and harmonize alike with their tenets and the surrounding country, and come within the means at their disposal. The church consists of a nave, 52 feet long by 25 feet wide, and 36 feet in height to the under side of the ridge; a north transept, in which is a room set apart for general purposes, such as the fabrication of tea for occasional tea meetings, and containing the boilers for the heating apparatus. Over this room is placed a small organ. The lower part of the tower is used as a vestry, and is 9 feet 6 inches square. The turret at the angle carries off the smoke from the heating apparatus, and is to the top of the vane 75 feet. The architect, from

whose designs and specification the church was erected, is Mr. T. C. Sorby, of Florence-street, Islington.

POWDER MILLS.

At the ordinary meeting of the Manchester Philosophical Society, held November 29th, Mr. F. O. Ward laid before the society a plan of his for diminishing the liability of powder-mills to explosion, and referred to a correspondence between himself and Dr. Faraday on the subject. The plan in question consists in supplying, to those portions of powder-mills in which the powder is treated dry, an atmosphere incapable of supporting combustion—preferably carbonic acid gas,—so as to obviate the danger of explosion so far as it arises from chances of ignition *ab extra*, as by the spark from a workman's pipe, of which an example was cited. The danger of explosions from the liberation of oxygen from the powder itself, by friction or otherwise, would, of course, remain; but this, the author inclines to believe,

is a less frequent cause of explosion than ignition *ab extra*, occasioned by the carelessness of workmen, rendered indifferent to risk by long habit, and emboldened by impunity. Dr. Faraday, in his comments on this plan, approves it as adapted to cut off one class of risks, and so to remove the point of danger further off, and also as not likely to deteriorate the quality of the powder immersed in the protective atmosphere. He points out, however, as a source of danger usually unsuspected, the possibility of the ignition of the gunpowder dust which collects on the beams of powder mills, and by which, he believes, explosions may be originated, as well as by the heating of the grains actually under trituration in the mill. Mr. Ward, in reply to Dr. Faraday, recognizes the partial nature of the security afforded by the proposed plan, but lays stress on the fact that it appears adapted to eliminate all the risks of the manufacture except those which are inherent in the nature of the material operated on and therefore essentially incurable.

THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

A SPECIAL general meeting of the subscribers to this Association, was held on Monday last, in the rooms of the Royal Institute of British Architects, 9, Conduit-street, Bond-street, to receive the report of the committee upon the state of the funds, and generally upon the affairs of the society, in conformity with the resolution passed at the special general meeting held on the 23rd of last month.

Mr. FANSON occupied the chair. Mr. Lightly (the honorary secretary) read the report of the committee, which represented that the financial position of the undertaking was most satisfactory; but that, in order to meet objections which had been made against the trading character of the Association, it was recommended that for the future the photographs should be paid for by the prints, and that a small per centage should be charged to meet the cost of distributing them to subscribers, and the other incidental expenses of the Association. It was also recommended that, in cases where subscribers might be dissatisfied with the prints forwarded to them, the committee should be empowered to examine the same (if returned within thirty days); and in cases where the complaints were well founded to return the money paid, and to deduct the same from the photographer. The report concluded by recommending that Mr. Tite should be requested to accept the office of president, and Mr. FANSON that of treasurer; and that the vacancies in the committee be filled up by the election of the following gentlemen:—Messrs. Penrose, W. Lewis, J. Morgan, G. E. Street, Whichcord, G. Morgan, and J. P. St. Aubyn.

On the motion of Mr. Hayward, seconded by Mr. Fowler, jun., the report was received.

The balance-sheet from the 1st of January to the 30th of November last was then put in. It showed that the total receipts had been 1,069*l.*, and the expenditure 957*l.*, leaving a cash-balance of 112*l.*, from which, however, some small liabilities were to be deducted. The property and assets of the Association (including the balance of 112*l.*) were returned at 442*l.*, and it was estimated that, after deducting every liability, the Association would be in possession of property of the value of about 330*l.*

Mr. Hayward inquired as to the nature of the assets, and in what manner the value had been ascertained.

Mr. Hesketh replied that the estimate was a rough one, and that the property of the Association included about 1,500 photographs, a few negatives, portfolios, exhibition screens, gold moulding, packing-cases, and such matters, which would be necessary for future exhibitions. Many of the photographs were very fine, and of undoubted value.

Mr. Hayward expressed his satisfaction at the report, and observed that when he ventured to state, at the last meeting, that the society was in a flourishing condition, and that its great success had, in a manner, encumbered it, he was met with an observation from Mr. Bury, that, so far from their being in a prosperous position, there were heavy liabilities to be discharged. Now, it did not appear, from the report or balance-sheet, that there was anything like insolvency to be apprehended; and he was of opinion that, if they had only 30*l.* worth of assets instead of 330*l.*, there would be no ground for the insinuation that they were not solvent. Some of the expenditure entailed at the commencement of their operations would not be required again, and he had no doubt that in future years their expenses would be materially diminished. He owned, however, that it seemed to him somewhat singular that the exhibition had not paid its own expenses, as the receipts were but 107*l.*, while the expenditure on rent, lighting, &c., amounted to 137*l.* He questioned whether it would be desirable to continue the public exhibition if the receipts were not sufficient to meet the disbursements.

Mr. Hesketh said that the working expenses next year would be materially reduced, and reminded the meeting that there were many expenses to be defrayed, in addition to the cost of the photographs. There was, for instance, the expense of distributing the prints over all parts of England, Ireland, and Scotland. With regard to the exhibition, it was quite true that the balance was on the wrong side; but the reason was that subscribers were admitted without payment to the exhibition and lectures, and also provided with gratuitous catalogues. With reference to the working in future years, it would be impos-

sible for them to continue their present system without the exhibition; but they might go back to what Mr. Hanson had stated in the *Builder* to have been the original intention, namely, for the Association to procure first-class negatives, and distribute the prints to their subscribers. This could not have been done in the first instance, but it might now be possible for the committee to come to some arrangement to secure the best negatives, leaving it to some person of high standing as a photographer or an architect to decide what sum should be paid for them. He merely threw this out as a suggestion, which it might be possible to carry out now that they had no pecuniary difficulties to contend with.

Mr. Bury repudiated having any hostile feeling towards the Association, to which he said he had been the largest subscriber, and expressed a hope that it would be carried on with success under its new auspices. He wished, however, to defend himself against a personal attack which had been made against him by a correspondent in the *Builder*, and which he was bound to declare was characterized by a singular absence of truth. He had been charged by that correspondent (who was the honorary secretary of the Association), with having made an erroneous statement at the last meeting of subscribers. The statement which he (Mr. Bury) made, and he was prepared to assert its accuracy, was, that in 1858, the Association was in debt to the extent of 200*l.* and he distinctly remembered that at a meeting held at Mr. Hesketh's Rooms, three members said to him, "We are in a nice mess—there is more than 300*l.* owing." Mr. Hesketh subsequently admitted the fact.*

Mr. Lightly disclaimed having made any personal attack on Mr. Bury: all he had done was to make, through the medium of the *Builder*, a counter statement; and he hoped he had done so in a moderate and gentlemanlike manner.

Mr. Hesketh said he had never admitted a deficiency of 200*l.*, for the best reason in the world, that he did not believe it to have existed. The fact was, he was very busy at the time preparing for the exhibition, and had no leisure to attend to the question.

The Chairman deprecated any discussion upon matters which did not affect the question before the chair, namely, the reception of the balance-sheet.

Mr. Fowler, jun., then moved that the report be adopted. He was of opinion that an exhibition was absolutely necessary for the interests of the Association, and if it could be obtained at so trifling a cost as 30*l.* (being the difference between 107*l.* receipts and 137*l.* expenditure), all he could say was that he thought it very moderate indeed.

Mr. James seconded the motion.

Mr. Hayward said he did not wish it to be understood that he objected to the exhibition: all he meant to convey was his surprise that the receipts had not met the expenditure. He believed, however, that next year the receipts would meet the expenditure.

Mr. Hesketh said it should be borne in mind that a great number of their subscribers—many hundreds—had been gratified by gratuitous admission to the exhibition and the lectures.

A desultory conversation ensued on the subject of the exhibition, a suggestion having been thrown out whether it might not be desirable to confine it entirely to the subscribers; but eventually a strong and general opinion was expressed that the exhibition was a most desirable feature in the scheme, and ought to be continued.

The report and balance-sheet were then adopted *non con.*

On the motion of Mr. Hesketh, Mr. Tite, M.P., was unanimously elected president, the chairman remarking that he argued the happiest results from the connection of the honourable gentleman with the Association, as he was not only an eminent and accomplished architect, but a liberal patron of architectural associations and a first-rate man of business.

Mr. Lightly moved that Mr. FANSON be requested to accept the office of treasurer.

* Mr. Bury has addressed a letter to us to the same effect. In it he further says: "As to the balance of 96*l.* 7*s.* in favour of the Society in April, 1859, I must state that half the accounts on the sheet laid before me as one of the auditors were estimates by which I had no means of knowing the real liabilities or what the debts might be at the end of the year.

I trust I may be allowed a space for this explanation, to the only desire has been to know the amount of the debts, to have them honestly paid, and above all things to have the subscribers faithfully treated by giving them what they had a right to expect for their payments; and that they were not quite so satisfied may be inferred from the statements of accounts. The receipts of the first year amounted to 1,069*l.* 17*s.* 11*d.*, and the second year to 847*l.* 1*s.* 11*d.*"

Mr. Hanson seconded the motion, which met with the hearty approval of the meeting.

The Chairman, in returning thanks for the compliment, said it would afford him much gratification to do all in his power to promote the interests of the Association.

Some formal business was disposed of, and the vacancies in the committee having been filled up as recommended, the proceedings terminated with a vote of thanks to Mr. FANSON for presiding.

THE CASUAL POOR OF LONDON.

In the huge population which crowds this metropolis it cannot be denied that there exists, notwithstanding all the wealth and wonderful display of property, an immense amount of distress and poverty; privation so great that it can be scarcely estimated by those who have not been by duty called to investigate and endeavour to relieve it. This has always been to a greater or less extent an evil in all large communities: it was so in the Scripture times, and as far back as history records: it is the same in the present day in all countries, and amongst all peoples. The great cities of the United States, the sites of many of which little more than a century ago were lonely forests or waste places, have in too many instances become blemished with a large proportion of misery and vice. The increased value of the land for commercial purposes has driven the working population and the poorer classes into tenements as bad as those which unfortunately exist in London; and it seems next to a certainty that, without the use of very vigorous measures, some terrible pestilence will be the result.

Bad as may be the condition of other cities, these must not be considered as excuses for our own neglect or imperfections: they should rather be considered as warnings, and as a means of stimulating us to endeavour to set an example in those arrangements which will have the effect of promoting the health and social position of the masses of the community who are in circumstances which need care, to prevent as far as possible the demoralizing effects of pauperism and its enormous expense.* Pauperism will not, however, be made to decline by ill treatment in the workhouses; but rather by attention to those causes which have led the larger proportion to become a public burden.

We are constantly hearing of cases of young girls and others who have been brought before the magistrates in a state of destitution, owing to their being deprived of parents, or some other cause; and yet but few of these occurrences are heard of by the public. Young girls just verging on womanhood are driven by unfortunate circumstances into the public streets, exposed to every temptation, and, in a manner, forced to crime by the most pinching poverty: houseless and hungry they apply for assistance to the parish, and are banded like a shuttlecock from one district to another by those who are experienced in staving off these claims. Now it would undoubtedly be better and cheaper (to take low ground) to gather up these unprotected children and endeavour to rear them to provide for themselves, and to be no burden to others: and it would be well if immediate provision were made to afford proper protection to young wanderers, who are placed in such a condition.

It is shown that the system of providing wards for the reception of casual paupers, as at present managed, does not work well. Some parishes altogether repudiate the relief of this class of the poor, and make no provision; and the consequence is, that in the parishes where the management is more humane, the poor are driven to them, and an unfair amount of expense falls there. The cost of providing three or four places of refuge in the metropolis, supported in proportion by all the parishes, would be only trifling; and this has been advised by some of the best and most experienced of the overlookers of the London poor. If those places were opened, and presided over by persons of ability, firmness, and kindness, the police would know where to pass needful cases to. It would be seen in what way the charitable, reformatory, and other institutions, hospitals, workhouses, &c., which exist, might be made useful in their various districts. Impostors, and those who are now the chief trouble in connection with the casual wards, would by means of this central provision, be discovered, and exposed to what would be to them the punishment of

* It was proved before one of the Metropolitan magistrates the other day that a strong able-bodied man, not yet arrived at the prime of life, had cost his parish more than 1,000*l.*

work, which would be equivalent to any benefit received. Probably such an arrangement would be an advantage to most parishes; and it would prevent the disgrace, in this rich metropolis, of persons perishing in the streets from cold or want, and would be the means of saving many from the very depths of distress, and placing them in the way of earning an honest livelihood. If the parish authorities cannot agree on this point, it should have the consideration of Parliament at once.

SCULPTURE.

LAST week Mr. Richard Westmacott, R.A., delivered a lecture before the Society of Fine Arts, in the theatre of the Royal Institution, Liverpool, on "Sculpture." Mr. Westmacott said, sculpture was not properly understood if it were looked upon only in an objective point of view—such as the making of figures or models—for that was a very low estimate to take of that art. The great value of art was to express ideas; and, when people took up art, not with any fixed principle, but merely as a mode of gratifying the senses, it tumbled down, because there was no firm foundation on which it could rest. Sculpture must be considered in a very much higher point of view than that of giving pleasure merely, for in fact it gave us the history of civilization and its effect on the human mind to an extent which no other art could give. The meaning of the word sculpture might be divided into two parts, the general and the particular. The general definition was the art of cutting, or carving, and was derived from the Latin word *sculpto*; but the particular definition of the word represented the art in form, in carving or cutting, in modelling, or in casting, which, when applied to metal, was called founding. He then alluded to the different modes of representation employed in sculpture, which were, first, a statue that was modelled or worked completely, and which was called by the craft "round;" and the other mode was in "relief;" it might be either in very high relief—*alto rilievo*, as the Italians expressed it—or a very low relief. There was also another term—*mezzo rilievo*—which, like all middle terms, was unsatisfactory. Then there were the materials of sculpture, which were either simple or mixed. The lecturer proceeded to allude to the practice of painting the works of the sculptor, and expressed his sentiments thereon by stating that, in his own opinion, sculpture was the art of representing by form, and painting the art of representing by colours. The materials of sculpture were records, hero worship, religious subjects, and also sensuous subjects merely. This latter was a sad descent in the scale of art, and it was sure to be so whenever the expression of ideas gave place to the gratification of the eye.

NEW VESTRY HALL FOR CHELSEA.

On Monday last the foundation-stone of the Vestry-hall for Chelsea was laid by Viscount Chelsea, in the presence of the members for Middlesex, Robert Hanbury, Esq., the Hon. George Byng, W. Tite, Esq., M.P., and a large number of the inhabitants of the parish.

The site selected for the erection of the new building is on the south side of the King's-road, opposite Robert-street. Our readers will recollect the competition for designs for this building. The design which is to be carried out appears to be very different from the design that was selected, but to this we can refer hereafter.

The officials and visitors went in procession from the vestry-room of Chelsea Church, and when they were all assembled,

Mr. Tite opened the business of the day by stating that he had been selected, in the absence of the chairman of the vestry, to do so. From time immemorial our Saxon forefathers were, he said, always in the habit of having their interests represented in local wardmotes and vestries, and the object they had in view that day was to carry out a purpose which would greatly facilitate a similar course of action in the present day. From the great extent of the parishes of the metropolis, and the large number of the inhabitants which they contained, the Legislature had wisely divided the administrative functions of the authorities of the parishes. To the churchwarden and overseers they had assigned the care of the poor, and to the vestrymen, elected by the voice of the inhabitants, they had delegated the control of the roads and lighting of the parish, but most of all they had entrusted to that body the cleanliness and the sanitary condition of the locality over which they presided. The vestry of that parish con-

sisted of sixty gentlemen: these sixty vestrymen had the power to elect one of their body to represent them at the Metropolitan Board of Works, and they had done him the honour to elect him as their representative at that board, and thus it was that he had been selected to represent the parish that day. He viewed the ceremony they were then engaged in as an important point in the municipal history of Chelsea; alluding to the numerical growth of the inhabitants of the place, whom he hoped soon to see possess their own Parliamentary representative. He could not refrain from adverting to the obligation the vestry was placed under to Lord Chelsea, in his having freely granted them the present site of the building. He hoped that the proposed hall would be a credit to the parish, and that he would soon see convened within its walls an audience even as large as the present.

Messrs. Hanbury and Byng next addressed the assembly, and expressed the pleasure they felt in taking part in the ceremony, and their willingness to carry out the wish of the Chelsea portion of their constituencies to possess a Parliamentary representative for themselves.

Mr. Charles Lahee (the vestry clerk) then read the following document:—"This building, the foundation-stone of which was laid by the Right Hon. Lord Viscount Chelsea, on the 12th day of December, in the year of our Lord one thousand eight hundred and fifty-nine, is intended for the transaction of the parochial and municipal business of Chelsea, which contains at the present time a population, by estimation, of 70,000. It is built by the vestry constituted by the Act for the better local management of the metropolis (18th & 19th Victoria, cap. 120), upon freehold land presented them by the lord of the manor and his heirs, from the designs of Mr. Wilmer Pocock, architect, by Thos. Piper & Sons, builders. Contract sum, 5,630*l.* Lord of the Manor, George, third Earl of Cadogan."

Viscount Chelsea then addressed the meeting, and Mr. Pocock having placed a bottle containing the document referred to above, the Act of Parliament constituting the vestry, and one of each of the coins of the realm, in the cavity of the under stone, which was covered with mortar, the other stone was let down, and Viscount Chelsea went through the usual operations in a workmanlike manner.

A few complimentary votes closed the proceedings.

THE ROYAL ACADEMY MEDALS.

On Saturday, the 10th, the medals awarded by the Council were presented to the successful competitors. The following is a list of the recipients:—

Gold Medals.—Samuel Lynn, for best historical group of sculpture; Ernest George, for best architectural design.

Silver Medals.—Alexander Glasgow, best painting from life; Richard Stihney James, ditto drawing from ditto; George Augustus Frezzer, next best ditto; Henry O'Connor, next ditto; Charles Bell Birch, best model from life; Edward Mitchell, next ditto; George Augustus Frezzer, best painting from living draped model; A. B. Donaldson, best drawing from antique; William Blake Richmond, next ditto; Robert Staniland West, best model from ditto; George Slater, next ditto; Henry M. Egton, for a specimen of sciography.

GREAT SPANS IN RAILWAY BRIDGES.

THE widest single span of any railway bridge in the world is that of the Niagara Suspension Bridge connecting the American and Canadian railways at Niagara Falls. The clear span is 822 feet. A still wider single span—one of 1,224 feet,—is being constructed for carrying the Lexington and Danville Railway, at an elevation of 300 feet, over the Kentucky river, in the United States. The next widest spans are those of the Britannia Bridge, 460 feet each. Then come the two great spans of the Saltash Bridge, of 455 feet each. The next great railway span is that of the Conway Bridge, of 400 feet. The next is the immense bridge carrying the Royal Eastern Prussian Railway over the Vistula, at Dirschau. This is an iron lattice bridge, having six spans of 397 feet 3 inches each. The Nogat Bridge, on the same line, has two iron lattice spans of 321 feet, and one span of 53 feet 6 inches. The great railway bridge recently opened at Cologne has four lattice spans of 344 feet 6 inches each. The openings of the railway bridge at Kehl will be nearly as wide. The middle opening of the Great Victoria Bridge at Montreal is 330 feet wide, the other twenty-

four openings being each 242 feet. The Chepstow Bridge has a span of 306 feet, besides three side spans of 100 feet each. The Boyne Viaduct has one lattice span of a clear width of 264 feet, and two side spans of 138 feet 8 inches each. The Newark Dyke Bridge, the largest example of Warren's trussed girders, has a span of 240 feet 6 inches. Several of the tubular bridges erected by G. Gouin & Co., of Paris, over the Garonne, the Lot, the Tarn, &c., have spans of 80 metres, or 262 feet. The Spey Viaduct, on the Inverness and Aberdeen Junction Railway, consists of a pair of box girders of a clear span of 230 feet. The tubular bridge at Brotherton has a span of 225 feet. The greatest timber span in a railway bridge, and now, indeed, the widest timber span in existence, is one of 275 feet, that of the Cascade Bridge on the New York and Erie Railway, in the United States. The Market-street (highway) Bridge, formerly crossing the Schuylkill, at Philadelphia, U.S., had a timber span of 340 feet; whilst a timber span of 390 feet, the widest ever attempted in that material, was constructed by John Grubenmann over the Limmat, in Germany, in 1794, and was burnt shortly afterwards by the French troops. Railway bridges, with timber spans of 250 feet, are not uncommon in the United States. The great railway bridge across the Mississippi River at Rock Island has five timber spans of 250 feet each, besides three others of 150 feet. The bridge by which the Ohio and Mississippi Railway crosses the Great Miami River, has five timber spans of 250 feet each; and another railway bridge, having two timber spans of 260 feet each, crosses the Delaware River, near Port Jervis, State of New York. The widest masonry span ever erected for railway purposes is one of 180 feet, carrying the Glasgow and South-Western Railway over the river Ayr. The new railway bridge being carried across the Thames at Pinckio will have four cast-iron arches of 175 feet each, the widest cast-iron spans, we believe, yet employed for railway purposes. The six spans of the celebrated High-level Bridge at Newcastle are but 125 feet each in width.—*The Engineer*.

NEW POLICE-STATION, BIRMINGHAM: COMPETITION.

IN March last, the watch committee invited competition for a new police-station, with dwellings for married constables adjoining thereto, in Ladywood-lane, when twelve designs were submitted; the one bearing the motto "Labor" being eventually selected for recommendation to the council. The council, however, not approving of the erection of dwelling-houses for police-officers in connection with the station, did not confirm the choice of the watch committee. The same architects who had competed were therefore invited again to send in plans, under different mottoes, for police-station only, when the design bearing the motto "Move on" was selected by the committee, and approved of by the council and Secretary of State. The architect is Mr. Edward Holmes, whose plans were selected in each competition.

LORD ST. LEONARDS AND THE STRIKE.

LORD ST. LEONARDS has addressed a letter to the *Times* on this subject, wherein he says,— "It cannot be denied that the present strike was commenced on false grounds, and was intended to place master builders entirely at the mercy of their workmen. The act of the masters was a defensive measure. The 'declaration' which they required might perhaps have been improved, but it does not seem to be open to any serious objection. Its meaning cannot be misunderstood. The workman is required to declare 'that he is not, and that during the continuance of his engagement he will not become, a member of or support any society which directly or indirectly interferes with the arrangements of this or any other establishment, or the hours or terms of labour, and that he recognizes the right of employers and employed to make any trade engagements on which they may choose to agree.' The conclusion shows that the workman is left at perfect liberty to strike for wages, for example, but that he must act upon his own free will, and not submit to the orders and regulations of any society. The 'declaration' has been termed an odious document, and the strike has ultimately been maintained upon the prejudice raised against it."

After pointing out that it cannot be allowed that benefit societies, sanctioned by the law for other purposes, should be perverted to the main-

tenance of wanton strikes, forced by the few on the masses, his lordship says,—

"With this preface I come to the real object of this letter. I offer a plan as a suggestion to both masters and men. Let them, before they reject it, as Hervey says, 'Ponder and pause; pause and ponder.' I propose that the 'declaration' should no longer be acted on, and that in lieu thereof a paper to the following effect shall be printed, framed, and glazed, and hung up in every shop, &c., where all may see it. It will require no signature, nor any counterfoil or number, and of course it leaves the workman's liberty of quitting his employment untouched. It is *self-acting*, and it is *mutual*. It binds both master and man. And its operation would not be limited to the present time. It is as follows:—

The law affecting masters and workmen was framed with a jealous regard to the interests of the working man. The Act of Parliament (6 George IV., cap. 129) which repealed all the former laws relative to the combination of workmen, states that combinations interfering with the free employment of capital and labour are injurious to trade and commerce, dangerous to the tranquillity of the country, and especially to the interests of all who are concerned in them. The object of the Act is then declared to be to make provision as well for the security and personal freedom of individual workmen in the disposal of their skill and labour as for the security of property and persons of masters and employers.

The Act then makes the following offences punishable by imprisonment not exceeding three months, with or without hard labour, viz., where any person shall, by violence to the person, or by threats or by intimidation, or by molesting, or in any way obstructing another,—

1. Force or endeavour to force any journeyman, manufacturer, or workman, or other person, to depart from his hiring, employment, or work, or to return his work before it is finished;

2. Force or endeavour to prevent any journeyman, manufacturer, workman, or other person, not being hired or employed, from hiring himself to, or from accepting work or employment from, any person or persons;

3. On the purpose of forcing or inducing any other person to belong to any club or association, or to contribute to any common fund, or to pay any fine or penalty, or on account of his not belonging to any club or association, or not having contributed or having refused to contribute to any common fund, or to pay any fine or penalty, or on account of his not having complied, or his refusing to comply, with any rules, orders, resolutions, or regulations made to obtain an advance or to reduce the rate of wages, or to lessen or alter the hours of working, or to decrease or alter the quantity of work, or to regulate the mode of carrying on any manufacture, trade, or business, or the management thereof;

4. Or shall force, or endeavour to force, any manufacturer, or person carrying on any trade or business, to make any alterations in his mode of regulating, managing, or carrying on such trade, manufacture, or business, or to limit his number of apprentices, or the number or description of his journeymen, workmen, or servants.

But the Act provides:—

"That any persons may meet together for the sole purpose of consulting upon and determining the rate of wages or prices upon which the persons present at such meeting, or any of them, shall require or demand for his or their work, or the hours of time for which he or they shall work in any manufacture, trade, or business; or may enter into any agreement, verbal or written, among themselves, for the purpose of fixing the rate of wages or prices which the parties entering into such agreement, or any of them, shall require or demand for his or their work, or the hours or time for which he or they will work in any manufacture, trade, or business.

This relates to men.

2. The like powers are conferred upon the masters in regard to consulting upon and fixing the rate of wages or price, and the hours or time, of working; both classes, masters and men, are under the same law.

By a later Act, 22nd Victoria, cap. 34, passed to protect the working man, it is provided that no one, whether in hiring, employment or not, shall, by reason merely of his entering into any agreement with any workman, or other person or persons, for the purpose of fixing or endeavouring to fix the rate of wages or remuneration at which they, or any of them, shall work, or by reason merely of his endeavouring peaceably and in a reasonable manner, and without threats or intimidation, direct or indirect, to persuade others to cease or abstain from work, in order to obtain the rate of wages or the altered hours of labour so fixed or agreed upon, shall be deemed or taken to be guilty of 'molestation or obstruction' within the meaning of the former Act, and shall not, therefore, be subject to prosecution or indictment for conspiracy. But it is provided that nothing contained in this latter Act shall authorize any workman to break or depart from any contract, or authorize any attempt to induce any workman to break or depart from any contract.

Such is the law which binds both classes. The masters accept its obligations without reserve, and pledge themselves to obey it both in letter and spirit. They have set forth the principles of the Acts of Parliament in order that every workman may be informed of the law which binds him. The law itself, the masters find, lays down the true rules both for them and their men: they, therefore, have 'withdrew' the 'declaration'—originally required from the men, and substitute this paper. It alone will bind the workmen who have already made or accepted the original 'declaration.'—All will be placed on the same footing. There will be between those who were now at work and those who may resume work. The masters, in the spirit of peace and goodwill, require nothing of the men but the same obedience to the law as they themselves are ready to render. The 'declaration' is, moreover, but nothing less, shall become the *Rule of Trade*.

The simple object of the masters is, that, according to the law, they and their workmen shall be free to make their own agreement with each other, without the interference or coercion of any other persons. With that object the acceptance of employment where this paper is hung up will be considered to amount to an admission by the workman that he is not at that time, and to the 'declaration' that during his employment he will not become, bound to any rules or customs which do or would deprive him

or his fellow workmen of their free liberty to accept and continue or to relinquish employment upon such terms as they think fit.

Freedom of action will place every man according to his merit, but the motto of both men and masters should be, 'Let labour be unshackled.' ST. LEONARDS.

Our readers will remember that the digest of the law forming the bulk of the matter in small type which appears above, was given in our leading article of October 1; and that on the 15th, after referring to this "digest," we gave the remainder of the matter, or the memorandum, then and now proposed, to be appended, the whole to be framed and hung up in every shop. We were then disposed to think that the memorandum and digest might be adopted by the masters; and, after the publicity given to the proposal of Lord St. Leonards, we are disappointed that it is necessary for us again to print the matter re-issued in the *Times*, and to call for due consideration of the proposal which we, exclusively, gave.

At the last meeting of the trades' delegates, held on Tuesday 13th, the secretary of the Conference said the struggle still continued, and was likely to do so, notwithstanding the repeated assertions of newspaper writers and others to the contrary. It was eighteen weeks yesterday since the "lock-out" commenced. On the memorandum of 10th of August last 10,000 men were thrown into the streets, and upwards of 5,000 men opposed to the "declaration" were now out of employment. Last week the Conference seriously considered the propriety of adopting the "declaration," although counsel had given a decided opinion as to its illegality. The Conference, after much deliberation, came to the conclusion, that the "declaration" should not be adopted, knowing well that the majority of the men would never sign that obnoxious document. The Conference resolved to send more men into the country to cause a "revival," and on Monday morning last six delegates were sent for the purpose to visit the parts of the provinces. The Conference also unanimously adopted the following resolution:—"That the labourers having failed to produce a plan and security for their future conduct, their meeting is of opinion that they receive no further dividend from the funds of the Conference; not on account of their being labourers, but because they have acted in such a violent and dishonourable manner." The fund last week—derived both from London and the provinces—only amounted to £501, and this enabled the Conference to strike a dividend of 3s. 6d. to each of 2,300 mechanics. The employers stated that 15,000 men were at work under the "declaration," and 4,000 under a shop rule. He was satisfied, however, that out of the 10,500 locked out not more than 2,500 returned to work. Most of those at work were men from the country, one-tenth of whom never saw the "declaration." It was a mistake, therefore, to suppose that the strike was at an end.

This is doubtless true as regards the men; but is it so as respects the masters? Have not masters, unapologetically, nearly reached the position we long ago foretold, namely, that if the 5,000 men, including labourers, said to be still out of work, were now to apply to be admitted to the London shops, they would find there was not room for them. The reply given to our inquiries by two or three large builders is, "We have now as many men as we can employ: the matter is over so far as we are concerned."

STW.—As you have on many occasions given a fair opportunity for the public to judge for themselves upon the dispute in the building trades, I would ask for publicity to the following remarks upon the composition of the Workmen's Committee of Management; and whatever may be their opinion upon the present state of affairs in regard to resigning the "document," or their future prospect for its being entirely withdrawn, I cannot say; but on one score, I think, is clear for them, and will soon have to be adopted, namely, the dissolution of the present Conference, from the amount of discontent that now prevails among those who were the first to originate the short-time movement, in consequence of the enormous expenses of management, and from the fact that not more than one in fifteen of the (society) carpenters and joiners are now out of employment; and if the Conference and Committee were analyzed, I think it would be found that for every non-society delegate there would be ten found who are society men. Now, if that is the case, might not those delegates ask themselves, "Are we representing the constituents who appointed us, or are we representing non-society men upon public grounds, and still remaining a burden upon our respective societies?" It is a fact which I think they will not contradict, that the great bulk of the unemployed are non-society men, which convinces me they are now in a false position, and that the time has come when these society representatives should withdraw, and their places be filled by non-society men, if they wish to keep up the agitation; then the money which has so freely flowed from a generous public will find its way into the right channel, and accomplish the desired end, and give more general satisfaction. Surely there is spirit and talent enough among the non-society carpenters and joiners to represent and manage their own business, and I may add, furnish them with the means to assist the few of their own members who are still walking the streets in idleness through their repugnance to accept that which they look upon as degrading and un-English.

A CARPENTER AND JOINER.

SOCIETY OF ENGINEERS.

On December 5th, Mr. H. P. Stephenson in the chair, a paper on Piling and Cofferdams was read by Mr. F. W. Bryant.

The author commenced the paper with a sketch of the history of pile-driving from the earliest ages, giving the value of piling for foundations, and mentioning different structures which had given way in consequence of its non-adoption—Westminster-bridge for example. He proceeded with remarks on the woods used, and the attacks of the *Teredo navalis*, or pile-worm, asserting creosote to be an effectual remedy against them,

giving proofs of the assertion. He then pointed out the importance of shoeing piles well, and gave the weights of those used in some of the principal works in England. He next described the various kinds of piling-engines that had been employed,—mentioning the application of horses for raising the ram,—and considered the ordinary crab-engine now generally adopted to be far superior to any of those used formerly. Pile-driving by steam power was next treated of, the author describing some of the principal machines which have been invented, preferring Sisson and White's, as being the most economical and practically useful. The weights of rams was the next subject—the author noticing the great increase in the weights used at the present day compared with those formerly employed.

Iron pile and plate driving, with the comparatively recent introduction of them, was referred to, and a description of those used at the Westminster New Bridge, and the method of driving them.

IRELAND.

THE railway projects, either on the *tapis* or in a state of forwardness, are unusually extensive, and, if matured, every town in Ireland of importance will be in direct communication, or nearly so. Amongst the bills for next session, are the Athenry and Ennis, Banbridge and Lisburn, Belfast and Bangor, Bagenalstown and Wexford, Carrickfergus and Larne, Cork and Limerick (direct), Dublin and Meath Extension, Dublin and Drogheda Extension, Kells and Oldcastle, Dublin and Wicklow Extension to Enniscorthy, Ennis and Galway Junction, Great Northern and Western Deviation, Galway Harbour Improvement and Fier Junction, Kells and Bailieborough, Kilkesh, Kilkree, and Pounasherry Embankment; Kilkenny Junction, Derry and Lough Swilly Extension to Manor Cunningham; Ulster Branch in Belfast, Ulster and Belfast Corporation for Local Improvements, West Cork Railways, &c.

The tramway project is again revived in Dublin, though formerly opposed by the corporation. A prospectus has been issued of a company entitled the City of Dublin and Suburbs Tramway Company, with a capital of 100,000*l*. A local journal suggests a tramway commencing at Grand Canal Docks, following the canal to Kingsbridge (G. S. and W. R.) terminus, thence to the Broadstone (M. G. W. R.) terminus, connected by rail with Northwall.

The corporation of Limerick has given permission to lay tramways. Belfast is applying for a private bill for the same purpose.

The new Provincial Bank at Templemore is said to be an important building, and is complete. Mr. Wm. Murray, of Dublin, is (we believe) the architect.

The National Banking Company are erecting a new bank at Dungan, with commodious arrangements internally, and of Italian character externally. Mr. Calbeck, architect; Mr. Alexander Rosborough, builder.

The preliminaries for the proposed McClintock testimonial progress satisfactorily.

A monument is to be raised in Finglas Churchyard, to the late Dr. Lanigan, the archæologist. Gas works are to be erected at Tuam. Vellullingar has been lighted with peat-gas.

The Magee College, Derry, designed by Mr. E. P. Gribbon, of Dublin, architect, approaches completion. Mr. McClelland, builder. This structure has been already described in the *Builder*, and is an important one, in the collegiate Gothic style. The same architect is preparing plans for the enlargement of Presbyterian Church, Ormond-quay, Dublin (originally designed by him); for additions to the monster mart of Todd, Burns, & Co.; for new Presbyterian church and schools, at Rathgar, same city, and is bringing to completion the new Scots Church, at Athlone, erecting from his designs. Mr. Smith is the builder.

New schools have been erected in Derry, close to the Catholic Church, Great James's-street, at a cost of 1,000*l*. The Christian Brothers have built a residence on the brow of the hill.

Tenders have been received for the erection of a Baptist Chapel, at Rathmines, Dublin, according to designs by Messrs. Carmichael & Jones, architects.

The foundation-stone of a new church has been laid at Ballymote, county Sligo.

The first contract for new Courts at Dublin is nearly complete. A new range, running rectangularly, and to contain courts for probate and landed estates' Judges, has yet to be commenced. The operations in the locality of these buildings are extensive, and the work is of massive and permanent character.

The Midland Great Western Railway Company are about building an addition to the Ballinasloe station. Mr. Wilkinson is architect; Mr. Francis Madden, builder. Lord Clanearly encourages building projects in that town.

Extensive works for timber-steaming, and other purposes, are to be built by the Ballast Board at the new Graving Dock, Dublin. Mr. George Halpin is engineer.

Mr. W. J. Barre, of Newry, architect, has taken the 50*l.* prize for the new Ulster Hall, at Belfast. The second (25*l.*) was awarded to Messrs. Finch Hill & Paraire, of London, architects. Mr. Barre is engaged restoring the stables and buildings at the Archbishop's Palace, Armagh, recently destroyed by fire.

A limestone building for sergeants' mess-room, &c., is being erected at the Stephen-street gateway of Clonmel Barracks. Messrs. Corcoran, contractors.

The foundation-stone of the new Roman Catholic Church, Ballybay, has been laid, and will be erected according to drawings by Mr. Hague, of Cavan, and not after those of the Derry architect, to whom the "5*l.*" prize was awarded. It will be in the Gothic style, with nave, aisles, transepts, side-chapels, porches, and tower and spire, on south elevation. The chancel will include the entire of the transepts, and be lighted with traceried windows. The west elevation will contain a triple lancet, and the aisles, double lancets. The roofs to be of open timber work, stained, varnished, and panelled.

There are 1,200 miles of railway already constructed in Ireland, at a cost of 15,500,000*l.* The average cost of construction is 15,000*l.* per mile; and the average dividend, 4*l.* per cent.

We understand that, from some unexplained cause, the portion of the buildings recently erected at Sir John Power's distillery, Dublin, in lieu of those destroyed by fire, has fallen. Mr. Caldbeck was architect to the restorations; Mr. J. Quin (a bankrupt), the builder.

The Cork and Limerick rail (direct) will be 16½ miles in length, and join the G. S. and W. rail at Charleville. Sir John Benson, C.E.

CAMBRIDGE GUILDHALL COMPETITION.

The Guildhall Committee met on Monday last, and agreed to ask Professor Donaldson for further advice. They are to meet this day, Thursday, and agree to a report to the Town Council. The two selected designs are "*Tren and Fest*," and "*Utility*." They are at present in alphabetical order. The estimate for the former is 15,000*l.*, and for the latter, 25,000*l.* The only question now remaining is as to which of these designs shall have the first premium.

SCHOOL-BUILDING NEWS.

Horton (Gloucestershire).—A school and class room, with master's residence, have been commenced at this place. The building is designed in the Geometric style, having thick walls built with the local stone, with dressings of Cross-hands quarry stone. The roofs are to be covered with red tiles from Tormarton, which are a kind of double-waved pantile, light in weight, and of good colour. Mr. Eyles is the contractor for the whole of the work, and the principal portion of the funds are being supplied by Mrs. E. Fayle, owner of the court and property adjacent. The architect employed is Mr. Philip Boyce.

Derby.—The new schools for the parishes of Alveston and Boulton, near Derby, were opened on the 7th instant. The Earl and Countess of Harrington, Lord Glenelg, and a large party, besides most of the principal families in the neighbourhood, were present. The buildings form an attractive feature on the left-hand side (leaving Derby) on the London road. They consist of a boys' and girls' school, 50 feet by 20 feet. A class-room is provided, 20 feet by 12 feet, attached to the school by a large opening, with sliding doors, so that the whole length may form one room. The roof timbers are stained and varnished. The master's residence adjoins. The principal front, or west elevation, of the buildings forms two wings with gables, connected by a centre compartment, in front of which is a covered passage, with entrances to the school and residence. Each gable end of the school-room contains a large triple-light window; that to the front being surmounted by a bell-turret, with vane. The principal feature in the east elevation is an oriel window, with embattled gable. The design of the buildings is of the Early English period of Gothic architecture, and they are of red bricks, with stone dressings. Some effect is obtained by the introduction of

black and white coloured bricks in the relieving arches, bands, chimneys, &c. The works have been carried out by Messrs. S. Thompson and Fryer, builders, Derby, from designs and under the direction of Messrs. Giles and Brookhouse, of Derby, architects.

Bradford.—The erection of new schools in connection with St. James's Church, Manchester-road, Bradford, has just been commenced, on a piece of vacant ground adjoining the church. They will be built at the sole expense of Mr. Wood, of Thedden Grange; and their cost, including all the boundaries and particulars, is estimated at from 2,400*l.* to 2,500*l.* The style of architecture adopted is the Early English. The plan includes boys' and girls' schools, each 60 feet by 20 feet, and an infants' school, 30 feet by 20 feet. Each school-room will have a separate entrance, and there will also be a special entrance, 24 feet by 20 feet. A class-room, measuring about 15 feet by 14 feet, will be connected with each school. Mr. S. Jackson, of Bradford, is the architect employed.

Great Horton (Yorkshire).—The foundation-stone of new National Schools has been laid at Great Horton, near Bradford. The schools have been for some time in course of erection in connection with the Episcopal chapel. They are being built from designs by Mr. S. Jackson, architect. The style of architecture is Decorated Gothic. The building will include a school for boys and another for girls, a residence for the master at one end, and another for the mistress at the other; and an infants' school in the rear. The schools are one story in height. The residences of the master and mistress are two stories in height. The size of each school is 60 feet by 20 feet, with a class-room, 17 feet by 14 feet, attached to each. The building will have an open timber roof. In the centre of the facade there will be a bell-turret, at about 50 feet in height; and over each school there will be an ornamental ventilator, rising to the height of about 17 feet from the ridge. The total cost of the building, including the land, will be about 2,800*l.* The stonemasons' contract is 1,200*l.*; joiners', 668*l.*; plumber's, 50*l.*; slater's, 160*l.*; iron, 100*l.*; sundries, 100*l.*; land, commission, &c., 400*l.*, &c.

CHURCH-BUILDING NEWS.

Islington.—St. Thomas's Church, Islington, the laying of the foundation-stone of which we noticed a short time since, is situated at the corner of Hemmingsford-road and Everilda-street, presenting a frontage upon the north and east sides. The plan consists of nave (with clerestory and chancel the same width as the nave), north and south aisles, and vestry, on the south side. Over the chancel-arch, above the apex of the nave roof, is placed the bell-turret: owing to the circumscribed means at the disposal of the committee, a tower could not be attempted. There are to be galleries upon the two sides of the church, and at the west end for the school children. The total accommodation provided is for 957 persons. The style adopted is the Early Decorated. The external wall will be faced with Kentish rag, and Bath stone windows and dressings from the Corsham Down quarries. Messrs. Dove, Brothers, of Islington, are the builders, and Mr. Arthur Billing is the architect, now of the firm of Newman and Billing, architects and surveyors.

Paddock Wood (Kent).—The district church has been consecrated by the Archbishop of Canterbury. The building was formerly used for educational purposes, and was erected from a design by Mr. J. M. Hooker. The interior has been fitted up from designs by the same gentleman, with open seats, and all the requisites for church worship: 240 seats have been provided, the greater part free. The expense of preparation, including the churchyard, amounts to about 250*l.*

Margate.—A new Congregational chapel is about to be erected here. The contract for the building has been taken by Mr. Young, of Oxford. It will be built of Kentish rag stone, with Bath stone dressings.

Chulmleigh (Devon).—The church of St. Mary the Virgin, at Chulmleigh, a large structure, in the third Pointed or Perpendicular style of Gothic architecture, has been for some time past undergoing considerable restorations, under the supervision of Mr. Gould, of Barnstaple, architect. The works have been carried on by the parish, in conjunction with the Rev. Mr. Bethune, the new vicar, as a token of respect to the memory of their late vicar, the Rev. G. Holl. The whole of the north and east walls of the north aisle have been rebuilt, with four three-light windows in the former, and one four-light ditto in the latter,

which is to be fitted with stained glass, by Beer, of Exeter, as a memorial to the aforesaid rev. gentleman. The chancel is to be rebuilt at the sole expense of the Rev. G. Bethune, who has succeeded to the living, and will have a large five-light window in the east wall, and a two-light in the south ditto, both of which will be filled with stained glass, probably by Waites or Hardman, at the expense of the clergy of the north division of the diocese; also to the memory of the Rev. G. Holl. The south aisle will have a new east window, with stained glass, by Hardman, of Birmingham. The vestry has also been rebuilt.

Inston (Devon).—The north aisle of the church here will have a new east window, of Dean Forest stone, of three lights, with transition tracery (decor. to perpen.), to be filled with stained glass, by Hardman, to the memory of Lieutenant Cleveland, of Tapeley Park, North Devon, who was killed in the cavalry charge at Balaklava, aged twenty-one years.

Morthoe (Devon).—The church of Morthoe, consisting of nave, chancel, south porch, tower, and north aisle, with south transept and vestry, has been restored under the care of Mr. Gould, architect. The roof of the nave, which was plastered over, has been cleaned, restored, and boarded on the back of the rafters. The chancel roof is new, and painted celestial blue between the rafters. The whole of the windows, of the Early Decorated period, are new (with the exception of an angle window on the south side, which has been restored), and have been filled with stained glass, by Beer, of Exeter, but the west ditto by Hardman. The new seats and stalls are of dark oak. In the south transept is the tomb of Sir William de Tracey, one of Thomas à Becket's murderers. It has been restored, and the bones, which were of a gigantic size, have been replaced: they were contained in a bag, and have evidently been before disturbed. The chancel is paved with a tile-floor, by Maw. The whole of the works have been done at the sole expense of the vicar, the Rev. J. Ness. The reading-desk is of oak, with carved traceried panels.

Bolney (Hants).—The church here has been altered and re-opened. The alterations consist of an addition of 10 feet to the nave, the erection of a chancel and vestry, and the entire repairing of the church. The seats are of stained deal: the pulpit, reading-desk, and altar rails are of carved oak, supplied by the Patent Wood Carving Company, of London. The church has also been fitted with apparatus for heating it with warm water, by Messrs. Kent and Dain, of Southampton, who are also about to erect an ornamental iron railing, with gates, round the churchyard. The contractor was Mr. Fielder, and the architect Mr. J. Colson, both of Winchester. The total outlay will be about 700*l.*

Newport.—A new congregational chapel, according to the *Hereford Times*, has been opened at Newport. In the design, says this paper, the architect has avoided the repetition of Gothic edifices, and produced a building that is essentially adapted for Protestant worship, and in which the whole of the congregation is enabled to see and hear the preacher. The designing and superintendence of the erection of the building were entrusted to Mr. A. O. Watkins, architect. The style partakes somewhat of the modern French. The principal façades are of Bath stone. The window heads terminate with archivolts, enriched with carved foliage. The chapel will contain 1,200 persons. There are galleries which are entered by stone staircases along each side. The front of the galleries is moulded, and the columns are iron. The windows are glazed with Hartley's plate glass. The seats, which are all open, are of stained deal, and varnished. The level of Hill-street falls so rapidly, that the architect obtained a good entrance to the basement, which contains a deacon's vestry, two class-rooms, other conveniences, and a school-room for 400 children. Mr. H. P. Bolt is the contractor. The stonework has been done by Mr. W. Williams; the carving by Mr. Mageston, of Bristol.

Little Willbraham (Cambridgeshire).—The parish church of this village has been re-opened for divine service, after having been closed for four months for repairs. The whole of the interior has been restored, by Messrs. Stevens and Hunt, of Great Swaffham, under the superintendence of Mr. R. R. Rowe, architect. The character of the ancient fittings has been preserved, says the *Cambridge Chronicle*, and as much as could be of the old oak. The pulpit and desk, which are new, are placed near the north side of the chancel arch; and the seats are so arranged that all the congregation face the

minister. An unsightly gallery has been removed from the west end of the church, and the arches of the tower are exposed to view. The west window also in the north aisle, which was blocked up, has been re-opened and entirely restored. The arches and fan have been divested of their whitewash, the old oaken door relieved of its thick coating of paint, the sittings all floored, and the aisles newly paved. The oak seats in the chancel have been furnished by Messrs. Rattee & Kett, of Cambridge.

Naseby (Northamptonshire).—The church here has been re-opened. It has been much changed and restored, both externally and internally. The chancel arch, part of south wall and clerestory, and western end of south aisle, have been entirely rebuilt. The old masonry and design have been adhered to. New tracery heads, and internal arches to the windows, new gable crosses, and new north doorway, and windows in porch, have been inserted, and all the stonework scraped and repaired where necessary. New open roofs of Baltic fir have taken the place of the old ceiling, adding height to the edifice, the aisles having also new roofs of the same material. New open seats of deal are arranged so as to gain considerable accommodation for the poor. The proportions of the tower arch will also be displayed by the removal of the wall which blocks it up. The church has been warmed, and a wooden screen placed in the north porch. The chancel roof has been panelled and ornamented with a few single designs, in colour, by Mr. Lea, of Luttermouth, and a new communion rail, and seats of oak, have been placed in the chancel. When the tower was examined it was found so dilapidated and insecure, that it was deemed necessary to pull it down and rebuild it on the old foundations, a crypt being constructed underneath it. This is accordingly being done, according to the *Northampton Herald*, which states that it is intended to complete the spire to the height which it was originally intended to be. The works have been carried out under the superintendence of Mr. William Slater, of London, architect; the builders being Messrs. Martin, of Market Harborough; and the carving being executed by Mr. E. Patrick, of Geddington.

Lincoln.—The alterations and restorations in the interior of the Cathedral continue to be prosecuted with liberality on the part of the Dean and Chapter. In the chancel of presbytery, beneath the great east window, the ornaments or woods in the spandrels of the arches, which were cut away some years ago, are to be restored in a manner to correspond with the arches under the windows in the north and south aisles of the presbytery. The *Lincolnshire Chronicle* describes a portion of the work consisting of trefoils ornamented with carved bosses and heads, executed by Mr. Sandall, the master mason, and his sons.

Great Yarmouth.—The foundation-stone of St. Andrew's (Wherryman's) Chapel, Yarmouth, has been laid. It is to be erected on a piece of ground formerly known as "Bessey's Ground," and will be 90 feet long, 75 feet wide, and about 45 feet high. It will have a turret with two bells. The contract cost is 1,050*l*. All the seats are to be of deal, and open. The building will consist of flint-stone, with stone dressings, and there is to be accommodation for 400 people. The style is to be Early English. Mr. Giles, of London, is the architect, and Mr. Stanley, of Yarmouth, the builder.

Washingborough (Lincolnshire).—The ancient church at Washingborough, dedicated to St. John the Evangelist, has lately undergone repairs at the cost of the Rev. H. Waldo Sibthorp, the rector. The chancel has been restored, and a new east window and open roof have been added. The pinnacles are of Caen stone, carved. The whole of the repairs, which have been completed at a cost of 500*l*., have been executed by Mr. Ward, of Lincoln.

North Collingham (Notts).—The parish church of North Collingham has of late been undergoing improvements and alterations. The chancel has been restored, both externally and internally, by the Ecclesiastical Commissioners, at an expense of about 300*l*. Within the communion rails, a tessellated pavement has been laid. A new kind of communion rails have been introduced, furnished by Mr. Skidmore, of Coventry. New seats have been placed in the chancel. The entire body of the church has undergone a transformation. All the old unsightly box-like pews have been removed, and replaced by uniform low pews without doors. The gallery, which formerly disfigured the west end, has been taken down, and the tower thrown open into the church. All the stonework—the arches and piers—has been cleaned and restored, and the windows on the side aisles repaired

and re-glazed. The building is now heated by means of hot air flues carried under the floor. By these alterations, 80 extra sittings have been provided. In course of the works, two curious old stone figures, of a knight and lady, were found underneath the old pews. A painted window, executed by Wailes, of Newcastle, has been inserted at the east end of the north aisle, the subject being the Resurrection of the Saviour. The contractor for the work in the chancel was Mr. Cliphams, of Norwell, near Newark. The body of the church was undertaken by Mr. Geo. Shelbourne, of North Collingham. The cost of the alterations, independent of that part which was done by the Ecclesiastical Commissioners, amounts to about 400*l*. Much still remains to be done to the exterior. The church-yard has been enlarged by the enclosure of the Vicarage-garden.

Matlock Bath.—The restoration of Matlock Church has been partially accomplished. Except the tower, the whole fabric was in a bad state. The rebuilding of the chancel was determined upon, and this has now been done, from the designs of Mr. Stokes, architect. The present restorations include the removal of the pulpit to the north side of the chancel arch, which will be thrown entirely open. The new chancel has been built in a very simple style. The roof is a high-pitched one, of stained deal. The east window is the gift of Lady Paxton, and is of three lights in the Geometrical Decorated style. It is to be filled with stained glass, representing the Transfiguration, the Resurrection, and the Ascension. There are two windows of two lights each on the south side, one of which is by Messrs. Warrington. The subject is the Appearance of our Saviour to Mary Magdalene in the Garden.

Manchester.—The new church of St. Mary, Crumpeall, Cheadham-hill, has been completed. The style is the Geometrical Decorated. The plan consists of a nave, 50 feet by 20 feet; north and south aisles, each 50 feet by 17 feet; a chancel, 35 feet by 20 feet, with south aisle, 35 feet by 17 feet; vestry and organ gallery on the north side, and a western tower and south porch. The pillars of the nave and chancel are of solid polished stone, with moulded capitals. The heads of the windows throughout are filled with tracery, and are of two lights in the north and south walls of the aisles, of three lights in the east and west walls, of four lights in the west wall of the nave or tower, and a five-light window occupies the east end of the chancel. The whole have stained glass margins and tracery, and are filled with cathedral glass. The roof timbers are arranged in ornamental forms, moulded, and are all visible from below. Care has been taken to remedy the effect of the cold down-draughts incident to these roofs, the whole of the surface between the slating and boarding having been covered with felt felting, and, as an additional precaution against draughts, double sets of doors are provided to all the entrances of the church. The pulpit is of solid stone, with alabaster shafts, and much ornamental carving. The font is worked out of solid stone, with detached alabaster shafts round its pedestal. The pews throughout the church are made of grained pitch pine, without doors. The builders employed under Messrs. Travis & Mangnall, the architects, were Messrs. Ellis & Hinchliffe, masons; Thompson, of Hulme, joiner; Ward, plasterer and painter; Kirkley, slaters; Hulme & Gaskell, plumbers and glaziers; Lewis & Hibbert supplied the gas standards, &c.

PROVINCIAL NEWS.

Chester.—Progress is being made with a new Bank in Eastgate-street, Chester. Four Corinthian pillars, each 20 feet high, ornament the front, according to the *Chronicle*, and the pediment has panelled spandrels and balustrades. The roof has been laid on, and the workmen are finishing the internal arrangements. Some discussion was excited, when this building was about to be erected, respecting preserving the descent from the rows, but this has now been provided for, and there will be an opening into the rows through a plain rustic circular-headed arch. The architect of the bank is Mr. George Williams, of Liverpool, whose plans have been carried out by Mr. J. Hitchen, of Chester, builder.

Blackburn.—The members of the Blackburn Town-hall News-room and Exchange have had a report from a sub-committee in reference to the erection of a new Exchange on the vacant plot of land opposite to the Town-hall, and within a few yards of the local office of the *Preston Guardian*, in King William-street. Two plans of the building, prepared by Mr. Patterson, architect, were laid before the meeting. It is estimated that a

building, containing one room, exceeding 500 square yards clear area for 'Change, besides other conveniences, can be erected for 5,000*l*, on 938 square yards, and that 416 yards will remain available for further extension of the Exchange area. The committee propose that a joint-stock company be formed for the purpose of raising a capital of 6,000*l*, in 1,200 shares of 5*l*. each.

THE DRINKING-FOUNTAIN MOVEMENT.

Tutbury.—The Mill Company here have erected on their premises a drinking-fountain for the use of the population generally. The design is Gothic, and the material marble. It is built into the wall, with the inscription "The cup that cheers but not inebriates;" the whole encircled by water-lilies in relief.

Sheffield.—The drinking-fountain which is being erected by Mr. Alderman Mycock, on behalf of Alderman Brown, at the top of Sheffield Moor, says the *Independent*, is approaching completion. Mr. Mycock has instructions from the teachers and friends of the Redhill School to erect another fountain in Redhill, to be called the Montgomery Fountain. The design is by Mr. R. G. Smith and Mr. T. A. Bradley, pupils of the School of Art. The base will be of blue stone, the structure of Darley Dale stone, the basin of marble, and the enlargements principally of bronze. The pedestal will be square, with moulded cornices, surmounted by a pillar in bronze, with a lamp at the top. On one side will be a medallion of Montgomery, and on the other the basin and fountain, with dog and cattle trough below.—The Churchgate Fountain, the gift of Mr. Levy, has been opened. It has been provided with a barometer and thermometer supplied by Messrs. Chadburn, Brothers. Both instruments are protected by plates of strong glass in framework.

TRADES' UNIONS.

SM.—Mr. G. Potter, in his letter of last week unreservedly states that, to ask the trades' unions to adopt rules against interfering with non-society men "is neither more nor less than asking trades' unions to become the endorsers and enforcers of the odious document."

Presuming that Mr. Potter fairly represents the unions, and that they wish to reserve their right to molest and interfere with non-society men, I see no alternative for the associated masters but to continue the "declaration."

The paper put forward by Lord St. Leonards is in substance precisely what I propose, viz., that the trade societies should conform to the spirit of the law, by abstaining from all interference with those who do not choose to be bound by their rules and practices. A MASTER BUILDER.

VICTORIA-STREET, WESTMINSTER.

SM.—Of course, you are aware that public money to the extent of 50,000*l*. has been given to the Westminster Improvement Commission for opening Victoria-street, Westminster; and, in the third report of the Metropolitan Improvement Commission, the plan for such street is distinctly laid down, and is a very gentle curve similar to High-street, Oxford.

It is unnecessary to dwell upon the great beauty of a curve for a street, bringing to the view different architectural objects in walking down the street; and this it is that renders High-street, Oxford, the most beautiful street in the world.

But Victoria-street, Westminster, instead of being laid down in accordance with the plan of the Metropolitan Improvement Commission, and for which alone the public money has been granted, is made neither a curve nor a straight line, but two angles, thus—

whereas the line which ought to have been is a flat curve.

It is not too late to assist the look of the street, and make it more in unison with the original design, as a great portion of the centre has not yet been built upon.

When the railway is open to Grosvenor Basin, the street will be the principal entrance to London from all parts of the Continent, and it would be a pity if permitted to remain in its present state.

Can you say whether the proper party to move is the Board of Works or the Metropolitan Commission? AN AMATEUR.

THE EXTRA CHRISTMAS HOLIDAY.

SIR,—I have not seen in the *Builder* any notice of the intention of the master builders to close on the Monday after Christmas.

Surely that poor, overworked class of men, builders' clerks, are not to be the last to apply for the day's holiday, which has already been granted in almost every other trade.

I think it only right to add that the firm in which I am employed (one of the largest in London) will close both on the Monday and Tuesday.

SCROOGE'S NEPHEW.

ARCHITECTS' CHARGES.

SCHOOL, ENDELL-STREET.

SIR,—Referring to a letter which appeared in your columns last week, relative to architects' charges, with reference to some new schools about to be erected in Endell-street, the erection of which has been graciously promoted by an old and much-valued friend of mine, may I be allowed to explain that, from feelings into which I do not feel called upon to enter here, I have undertaken, as a well-wisher to the work, to act professionally respecting it, receiving only a bare recompense for time and expenses. I regret to be obliged to trouble you on so personal a question, and have yet to learn that, while others are straining every nerve to help on a good work by pecuniary subscriptions and otherwise, a professional man is to be debarred from presenting his services, as a contribution in kind, to a much-needed charitable undertaking in one of the poorest parishes of London.

THE ARCHITECT.

ARCHITECT GUARANTEEING QUANTITIES.

BOLT V. THOMAS.

SIR,—Having seen in the *Builder* a letter signed R. G. Thomas, I consider it due to myself (being the plaintiff) and to my brother builders to make a few comments upon it.

In the first place, Mr. Thomas states that his version of the transaction is, that he was not present when the contract was signed, and that my statement, as to his guaranteeing to me the quantities, rested entirely on my unsupported evidence; and that since the trial such statement has been contradicted by all those who were present on that occasion. In reply, I most distinctly repeat that the statement made by me on oath at the assizes was and is true as to his being present when the agreement was signed, and as to his guaranteeing to me the quantities; and that there was sufficient evidence in support of the same to induce a special jury to believe my version.

Secondly, Mr. Thomas goes on to say that he thinks most people will be surprised to learn that my astonishment at finding the quantities took three years and a speculative attorney to bring up to action heat, and that during the whole of this period of three years I never signified such astonishment to him.

Mr. Thomas's memory must be very bad to make such statements, for he forgets that I discovered the incorrectness of the quantities at an early stage of the work, when an iron girder was required, and that I then called his attention to the fact that his quantities provided for 14 feet; but, to my astonishment, I had to provide for 25 feet—the difference being 11 feet in excess. On my remonstrating with him, he treated it as a matter of indifference, and would scarcely acknowledge that he was wrong; also, when an excess of flooring was discovered to the amount of 1,000 or 1,200 superficial feet, "That was a clerical error;" but did the builder get paid for these "clerical errors?" No! The above are only two of the very many things that were wrong in the quantities. Although treated so indifferently by Mr. Thomas, it is of great consequence to a builder, as all connected with the building trade are aware, that builders must cut their profits to a "slaving."

And now, as to the "speculative attorney." This I know, that my attorney is a respectable man, and I deny that he ever attended to this or any other business of mine on speculation.

On my applying to him, his first remark to me was, "Cannot you get it referred to arbitration, as a law-suit will be very expensive?" To which I replied, "I have spoken to Mr. Thomas myself, and I have sent him my several times, by one who represents me, from my office, and I have sent him a letter or two, but all to no effect; and his letter to me was insulting."

Thirdly, Mr. Thomas says, with respect to arbitration, he would recommend to his brother architects that they should in every case in which they are concerned insist on a reference to an architect, and not to a barrister, "even if of many number of years' standing;" as "an architect would have been able personally to satisfy himself on dubious points, and would have known how to discriminate between the evidence of men of respectability and judgment, and the extraordinary evidence brought forward on the other side against me."

In answer to this I could say, that Mr. Thomas never proposed to refer our differences to an architect, and that I cared not whether the arbitrator had been a barrister, an architect, a surveyor, or a builder, so that he were a man of skill, judgment, and integrity.

Now, as to the witnesses. Mr. Thomas's witnesses acknowledged that they were his own particular friends: one of them had accompanied him from Australia, and I am quite sure that Mr. Thomas cannot deny that he did him all the good in their power, but they failed to convince the arbitrator.

Now, as to my witnesses. One was an architect and surveyor, of Gloucester, unacquainted with me: another was an architect and builder, of Aberavenny; and there were three builders from my own town; and the arbitrator, I believe, was quite satisfied of the fact, that they were all persons of respectability and experience: at all events, on balancing the evidence on both sides, he was quite satisfied that I had been seriously injured by Mr. Thomas, and in his award he ordered Mr. Thomas to compensate me with a sum of 199l. 18s. 3d. and the law costs.

*. With this the correspondence must terminate in our pages.

Books Received.

The Construction of Wrought-Iron Bridges, embracing the practical Application of the Principles of Mechanics to Wrought-Iron Girder Work. By J. H. LATHAM, M.A., C.E., Fellow of Clare College, Cambridge.

THEORY and practice have long been, as it were, two opposite banks of a deep-flowing stream. In the classical days of old, the aristocratic men of theory, dwelling on high in the pride of their science, looked with contempt across the vast gulf, down on the workers in the opposite plains. Ages have rolled by: the much-despised workers have been toiling, toiling, toiling: pile has been raised on pile, structure on structure: slowly, but surely the work has gone on, till their bank is no longer out-topped by that of their former contempters. With wise counsel, cried these last across the stream, saying, "Let us be no more rivals: come over, ye men of practice, and help us; let us bridge this chasm, that yawns betwixt us and you: that done, what will we not effect together?" With no willing ear listened the workers to these specious advances. "We have timber, we have stone," answered they: "with these we can build: what can ye do towards bridging the gulf?" Soon comes a new material, wrought iron, into use; then it is that the practical folks see the real power of theory, and earnestly lend their aid to join the once rival forces. From that day to this the bridge has been fast advancing; and a useful addition to the structure have we to-day in this little volume before us. To Mr. Latham, a native of the side of theory, we may now look, judging from the promise of his present work, for much that will further the finishing of our bridge. Mr. Latham, though well known at Cambridge as a mathematician, is also a practising engineer, and this work may be regarded as the right-hand of fellowship held out by a theoretical man to his more practical brethren.

The Fabric Rolls of York Minster. With an Appendix of Illustrative Documents. Published for the Surtees Society, Durham: George Andrews. London: Whittaker & Co. 1859.

THE Surtees Society have made a most valuable contribution towards the elucidation of the history of York Minster,—"the House of Houses,"—by the publication of the "Fabric Rolls."

Ut Rosa flos formosus, sic est domus illa domorum.

And it well deserves every endeavour made to throw light on the circumstances which attended its gradual building up. The Rolls are exceedingly well edited by Mr. James Raine, jun., the secretary of the society, who has also sketched in a preface some of the principal points in the history of the minster.

In this he says,—

"It has been frequently asked, How is it that we know nothing of the Medieval architects? Did modesty constrain them to conceal their names, or were the plans executed by several persons, so that it would be invidious, if not impossible, to particularise any one? It is by no means easy to give an answer to this question. I am inclined to think that at York a great share of the responsibility fell upon the master mason, but he was probably assisted, to a certain extent, by the keeper of the fabric, and the treasurer." The following list of the master-masons will be of some use:—

Thomas de Fakenham.

William de Hoton.

1351. William de Hoton, jun.

1366–71. Robert de Patrington.

1399–1401. Hugh de Hedon.

1415. William Colchester.

1421. John Long.

1435. Thomas Pak.

1442–3. John Bowde.

1445–7. John Barton.

1456. John Porter.

1466. Robert Spyllesby.

1472. Wm. Hyndeley, p. m. Spyllesby.

1503. Chr. Horner, p. m. Hyndeley.

1526. John Forman.

Of these, Fakenham was a native of the south. Patrington and Hedon were probably born at the towns in Holderness which bear their names. The stately churches which grace those places are famous, not only in Yorkshire, but throughout England, and it is probable enough that the Chapter of York very gladly availed themselves of the services of men who assisted in erecting them, to superintend the building of their choir. Colchester, we may safely assume, was an Essex man, and his appointment to the office of master-mason was looked upon as an intrusion. Porter came from Lincoln, and Hyndeley from Norwich. To Hyndeley, the Minister of York is indebted for its spire and tower, and the presence of a hind lodged among the carving would seem to show that Hyndeley had had a hand in designing it as well as in executing the work. In looking over the lists of the workmen, many other names foreign to Yorkshire will be

* There was a tracing-house at York; and, if this signifies what we may fairly suppose it to be, a place for showing the working drawings, it goes a great way to show that the plan for the renovation of the minster was prepared on the spot, under the superintendence of some resident architect.

observed. Philip de Lincoln was master-carpenter for a long period in the fourteenth century. Hugh de Grantham was one of the masons. Foreigners, also, occasionally occur. On the very first page is the name of Begon Baions, who could scarcely have been an Englishman. James Dam worked the crockets, &c., for the screen.

In 1470, the master-mason was absent from York for twenty-eight days, in quest of persons who could work in marble. The bells were probably cast in York, where the founders were always an important craft; and, as a token of their gratitude, the minster was, in all probability, adorned with what is still called the bell-founders' window. One of the Friars Minors was generally sent for when the organs were out of repair."

It is to be regretted that the mode in which the works about the minster are now done is anything but satisfactory.

A correspondent, commenting on some particulars we gave recently of alterations in the organ, objects to much that has been done, in strong language; but, as we are not in a position to test at the moment the correctness of his assertions, we do not print them.

We return for an instant to the valuable volume before us, to say that we have now the materials for a popular account of the Minster, far superior to any that has yet been done.

The Rights of Labour: being an Appeal to the People of the United Kingdom, against the Tyranny, Folly, and Injustice of Trades' Unions in general. By JOHN PLUMMER. London: Tweedie, 337, Strand. 1859.

In this small tract, Mr. Plummer,* the Kettering operative, forcibly reiterates, in a new form, those objections to the tyranny of workmen over their fellow workmen, as well as over their masters, with which our readers are already familiar. As for trades' unions, "they denounce," he remarks, "all tyranny on the part of the employers, but do not hesitate to inflict it themselves! They declaim against the idea of treating the operatives as mere machines; and yet the adoption of their ideas would render every operative no better than one. The trades' union system stifles all liberty of speech, freedom of action, and independence of thought on the part of the working-man, unless they be in accordance with the wishes of the union. A more complete system of tyrannical oppression was never organized; and it is the more painful and degrading, because it is under the control of those who make a boast of their being the friends of the liberties and the rights of the working-man. The strikes resulting from the influence of trades' unions have done more than anything else to derange commercial credit, discourage and paralyse trade, encourage the introduction of machinery, increase the number of unemployed, and lower the general rate of wages. These are absolute facts; and I fearlessly utter them, because I know them to be true, and incapable of contradiction. The rules of trades' unions in general are framed on a most suicidal and short-sighted policy, for they are based on theories which experience has shown to be utterly unsafe and unsound."

Miscellanea.

CARVING AT THE ARCHITECTURAL MUSEUM.—With reference to our expression "highly sand-papered," as applied to the specimen sent by Mr. Brangan, the carver wishes it stated that the appearance is given to it simply by the *tool*, neither sand-paper nor glass-paper being used.

MONTREAL CATHEDRAL.—With regard to a recent description in our pages of the new cathedral of Christ Church, Montreal, Canada, we are asked to mention that the font was executed by Mr. T. R. Williams, of Manchester, for Mrs. Adams, a lady residing in Montreal, and that it was sent from this country. It was from the design of Mr. Thomas Scott, the architect of the cathedral. It was a little damaged in going over, through a very rough passage, but the architect expresses a very favourable opinion of it. The same sculptor has executed the Brotherton memorial in Salford cemetery.

* The writer has sent us a reply to the letter, signed Geo. Potter, on Trades' Unions, in our last, and quotes one or two strike rules in refutation of one of Mr. Potter's assertions; for example:—

"That shall a bricklayer who has at any time gone to work on a job where a strike has taken place (sanctioned by this society), go to work with members of this society, the said members may resist the same, if they cannot come to any arrangement with the said 'black,' by first making application to the foreman or master, as the case may be, for the immediate discharge of the said 'black,' and if he will not comply, the members shall be empowered to STRIKE and picket the job at the time."—*Extract from Rule XX. of the Metropolitan Society of Operative Bricklayers.* "That an annual revised black list be printed, showing the names of those who have worked in opposition to strikes, or otherwise."—*Extract from Rule XXIII. of the Society of Operative Stonemasons.* Further reply, however, is unnecessary: the truth of the case is now thoroughly understood by the public.

SOUTH KENSINGTON MUSEUM.—During the week ending 10th December, 1859, the visitors have been as follows:—On Monday, Tuesday, and Saturday, free days, 3,542; on Monday and Tuesday, free evenings, 3,067. On the three students' days (admission to the public, 6d.), 1,145; one students' evening, Wednesday, 309; total, 8,053.

GLASGOW ARCHEOLOGICAL SOCIETY.—The usual monthly meeting of this society was held on the 5th inst.: Sheriff Strathern occupied the chair. The minutes of the previous meeting having been read, and the candidates for admission having been duly elected, Mr. Neil exhibited, and presented to the society, a carved panel, from the Archbishop's castle, at Glasgow, which was taken down in 1790. Mr. John Buchanan, F.S.A., of Scotland, then read a paper, entitled "A Visit to the Wall of Hadrian," in which he traced the history of the Roman occupation of Britain, and described the remarkable line of works stretching from the Tyne to the Solway. The paper was illustrated by numerous drawings of the most interesting portions of the wall, kindly furnished for the occasion by Dr. Bruce, of Newcastle. A conversation ensued, chiefly on the state of civilization in the northern part of the island, at the time of the Roman invasion.

BOYDELL'S TRACTION ENGINE IN MANCHESTER.—Yesterday a trial journey from Manchester to Oldham was made with a new traction engine, which has been manufactured by Messrs. E. T. Bellhouse & Co. of Manchester, to be sent out to Rio de Janeiro, for Messrs. Carruthers, De Castro, & Co. The engine, weighing about 15 tons, with a train of six waggon loaded each with 3 tons of iron, making on the whole a weight of 45 tons, was taken yesterday morning from Zara-street, through the streets of the city, to Oldham-road and on to Oldham. The engine performed its duty well, proceeding at the rate of two or three miles per hour, and turning sharp corners with facility and accuracy, answering to the will of the steersman with wonderful promptness.

THE NEW BANBURY CROSS.—The new cross at Banbury is now completed. The base of the cross is 18 feet in diameter, and its total height is 52 feet. It is constructed of Box stone, with Mansfield stone steps. At its base are three fountains. It is intended to place three statues on the pedestals of the lower stage. The arms of Queen Mary, Charles I., Alexander, Bishop of Lincoln, William Viscount Saye and Sele, Sir William Compton, Sir William Cope, Knollys, Earl of Banbury, George I., Queen Victoria, the Prince and Princess of Prussia, Lord Guildford, and others, are represented in the panels of the middle stage, while the arms of Banbury are conspicuous over the buttresses of the lower. The spire is pannelled, and surmounted with a metal cross, gilt.

A STONEMASON LEGISLATOR.—"Authentic intelligence," says the *Pertshire Advertiser*, "has just arrived here, stating that a native of this town, Mr. Charles J. Don, stonemason, has defeated an official, and attained to the dignity of an Australian M.P. Mr. Don is well known in Cupar Angus; and, when resident, was a very useful member of the Mutual Improvement Society. Mr. Disraeli was telling an English audience the other day of the advantage of mechanics' institutes; and we have good cause for thinking that the schooling which Mr. Don got in the meeting-room of our Society for Mutual Improvement has helped him to his present position. We rejoice at the elevation of our old working, tramping, sleeping, and debating colleague, 'Charley Don,' and earnestly hope he will turn out a wise as well as an energetic legislator."

FATAL ACCIDENT TO A MASON.—An accident, terminating fatally, occurred to George Rodman, the foreman of masons and setter at the works in progress in the erection of a new chancel to Marham Church, Norfolk, which ought to serve as a caution to others engaged in a similar occupation. It appears that the unfortunate man had all but completed the fixing of the stone-work, and was about to put on the top-stone to a small trefoil ventilator above the great east window, when, whilst guiding the same to its appointed position, the lewis slipped out of its place, and the stone (which weighed several hundred-weight) fell to the ground (a distance of upwards of 40 feet), in its course breaking through the pulgog and planks above, and on which the man was standing, causing him to fall, thereby fracturing his thigh and breaking one arm, together with other serious injuries. Medical aid was almost instantly at hand, but he died soon after, leaving a wife and child. On examination of the lewis-hole, it was found to have been made much too large.

DRAWINGS IN THE WINTER EXHIBITION.—The drawings exhibited by the younger Mr. Solomon, although marred by eccentricity, show sufficient genius to make us augur well for his future career. 145, "Babylon," illustrating, in his way, Jeremiah li. 7, is especially thoughtful and clever. Mr. Marks has a pen-and-ink sketch of a Medieval watchman blowing his horn (120), which scarcely justifies as a title the assumption of the text, "Unless the Lord keep the city, the watchman waketh but in vain." There is a small drawing by Mr. R. Holmes (92), "The Parting of Galahad and Lancelot" from the *Mort d'Arthur*, which, as a piece of minute and painful pen-work, deserves careful examination. Mr. Holmes, if we mistake not, is of the British Museum.

OXFORD ARCHITECTURAL SOCIETY.—In the course of next Term, Mr. J. H. Parker, F.S.A., proposes to give a course of Elementary Lectures on the History of Architecture in England, addressed to the junior members of the society. These lectures will be illustrated by a large number of engravings, drawings, and photographs of the principal buildings of each century, from the eleventh to the sixteenth, including castles, houses, abbeys, and churches.

THE LIVERPOOL NEW FREE LIBRARY AND MUSEUM.—A conversation was held at the Free Public Library, Duke-street, on Saturday evening before last, to discuss the various plans suggested for fitting up and arranging the interior of the magnificent new building in Shaw's-brow, the princely gift of William Brown, esq. As the masonry is now nearly completed, and workmen will soon have to begin the inside work, the question as to what plans shall be adopted for the interior arrangement is one of great and pressing importance. The library and museum committee, which is so ably presided over by Mr. Picton, have sought counsel from every quarter, and they invited the *savans* of the town to meet them, with the view of eliciting opinions and suggestions on the subject. The attendance was numerous, and various suggestions and reports were made, which it will be for the committee to consider. It is said that the mere fitting-up of the new Free Public Library and Museum will cost 10,000*l.*, and that Mr. William Brown has also generously undertaken to bear the expense of this, in addition to the cost of the building, estimated at 30,000*l.*

SOCIETY OF ANTIQUARIES, NEWCASTLE-UPON-TYNE.—The December meeting of this society was held in the Castle of Newcastle, Mr. John Hodgson Hinde, V.P., in the chair, when the chief subject of interest was a paper by the chairman, "On the Public Amusements of Newcastle in the Olden Times." One of these old amusements seems to have been the public whipping of some poor harmless play-actors as rogues and vagabonds, in 1655. "On the 28th of December," says the "Weekly Flying Post" of that epoch (we quote from the *Gateshead Observer*), "a cluster of lewd fellows, advertising to act a comedy within the precincts and bounds of this town, daring, as it were, authority, and out-facing justice, our vigilant magistrates hearing of it, resolved to set a boundary to their sinful courses, and clip the harvest of their hopes, concluding such enormities the proper nurseries of impiety; and therefore they repaired to the place, where, having begun, Alderman Robert Johnson, Mr. Sheriff, and divers good men, stepped in to see their sport. But their sudden approach changed the scene both of their play and countenances, so that the interlude proving ominous, boded no less than a tragedy to the actors, turning the play into a tragedy-comedy. After they had done [the 'worthy magistrates' stopped, of course, to see the play!] they were apprehended, and examined before the Mayor and other Justices of the Peace, and found guilty of being common players of interludes, according to a statute made in the reign of Queen Elizabeth, and according to law adjudged to be whipped, which, accordingly, was performed in the public market-place, where a great concourse of people thronged to see them act the last part of their play, their robes of honour hanging in public view. Therefore let the nation know their names and habitations, that all that have converse with them may look upon them to be such as the law of the land concludeth them to be—rogues and vagabonds." In course of the society's meeting, Dr. Bruce read a note from Mr. William Hawkes, of Birmingham, "On Roman Bricks," which had been ascertained to be twice as strong as the best English bricks of the present day. Experiments had been made, and an American brick had been found to come nearest to them.

STABLE FITTINGS AT THE CATTLE SHOW.—It has been mentioned to us that, in addition to the firms whose names we gave, the St. Pancras Iron Works Company exhibited a very extensive collection of stable fittings in Baker-street. Knowing what we do of the Company's works, we have no doubt the show was a good one.

THE BIG TREES OF CALIFORNIA.—Mr. Horace Greeley, in a letter to the *New York Tribune*, gives an account of his visit to the Big Trees of Mariposa. Of this group he says:—"In measuring trees, it is so easy to exaggerate, by running your line round the roots rather than the real body, that I place little dependence on the reported and recorded measurements of parties under no obligations to preserve a judicial impartiality; but I believe a fair measurement of the largest trees standing in this grove would make them not less than 100 feet in circumference, and over 30 feet in diameter, at a height of 6 feet from their respective bases, and that several of them have an altitude of more than 300 feet. I believe the one that was last uprooted measures a little over 300 feet."

SELF-WINDING CLOCKS.—A suggestion was lately made in our columns that the tides might be made useful in winding the Westminster clock. Another sort of self-winding apparatus has been invented, it is said, by Mr. James White, of Wickham Market, who has now in operation "a self-winding clock, which determines the time with unflinching accuracy, and will perpetuate its movements so long as its component parts exist." This reminds us of a self-acting clock (if we may so call it) which we saw many years since, with a brass ball which traversed in a zig-zag route along a groove in a brass plate mounted on an axis, the force of the ball in motion striking a latch or check at each end as it descended, and upsetting the incline somehow, so that it just began again to traverse as before, till it struck the latch or check at the other extremity. It was said that the only unavoidable stop to this continued self-action was the wearing out of the apparatus.

BIRMINGHAM ARCHITECTURAL SOCIETY.—At the monthly meeting of this society on Monday evening last, Mr. J. Bateman exhibited designs for a chapel, intended to be erected in Broad-street, for the Unitarian congregation now worshipping in the New Meeting-house, Moor-street. It will be a Gothic edifice, with a lofty spire. The floor will seat about 500 persons, and a gallery placed over the entrance will accommodate a further number. Mr. T. Naden, jun., afterwards read a paper on "Acoustics in relation to Architecture." In the course of his address Mr. Naden said that the walls, floor, and ceiling of a room echo every sound which is produced, but unless they are 47 feet distant the echoes combine with the direct sound. Experience has proved that the voice will reach 92 feet in front of the speaker, 31 feet at back, and 75 feet on each side. Sound is deteriorated in a public lecture-room by seats which do not rise above each other. Mr. Scott Russell, to remedy this defect, has invented what he calls the *isacoustic*, or equal hearing curve. Every room has a key-note, and a speaker who can so pitch his voice as to harmonize with it is more likely to be heard distinctly.

STEEL BELL CASTING AT SHEFFIELD.—A large number of persons lately assembled at the works of Messrs. Naylor, Vickers, & Co., Millands, to witness the casting of the largest steel bell which has yet been produced in Sheffield. The bell, which was designed by Mr. Roddewig, the engineer of the firm, is to be used as a fire-alarm bell in the city of San Francisco. A large iron vessel, plugged at the bottom, says the *Sheffield Independent*, was placed in the pit, above the mould, to act as a funnel, and the molten steel was poured into it from the crucibles. The moment that part of the process was finished, the plug was drawn from the bottom of the funnel by means of a crane. The fiery liquid then ran into the mould in a copious and uninterrupted stream, and the work of casting was complete. When the metal was sufficiently cooled to permit of an examination, it was found that all had gone right, and that the casting was perfectly sound. The weight is 2 tons 12 cwt., or 5,824 lbs., and the dimensions are,—Height, 5 feet 3 inches; diameter at the mouth, 6 feet 2 inches; thickness at the sound-bow (where the clapper strikes), 4½ inches. Messrs. Naylor, Vickers, & Co. cast their first bell in 1855, and have since turned out 1,300. Steel is considerably cheaper than "bell-metal," and also stronger, so that a much smaller weight suffices for any required result, thus making the difference between the price of the two kinds of bells even greater than is represented by the difference in the cost of material per weight.

The Builder.

Vol. XVII.—No. 851.

The Drainage of Brighton.



E are all interested in having Brighton properly drained and cared for,—in seeing that what Nature has made a healthy place is not spoilt by man. Brighton, with its three miles of houses fronting the sea, is not so far from London as Whitechapel is from Hammer-smith: it is but the water-side of London, and there is no Londoner so poor but that, thanks to excursion trains, he may be all the worse for a mistake in sanitary matters made by the Brighton corporation. The town is getting into a bad state, as we have said before from personal knowledge; and those who are interested in the property there know

that we spoke the truth, and frankly said so. They are at this moment turning their minds to the subject, and inquiring how they shall best drain the town ; and they have obtained reports from Mr. Robert Rawlinson and Mr. Hawksley, and are now discussing which plan they shall adopt. Mr. Rawlinson has written them a very long and elaborate report,—indeed, so long, that it may probably damage his cause, and he starts with saying,—

"To render the town and district of Brighton unobjectionable to sea-bathers and promenadeers, every existing sewage outlet must be removed, and the *sewers and drains, and the volume of sewage must be conveyed to some point distant from any houses, as not to be a cause of nuisance, and the sewage must be so dealt with, and (if necessary) be so discharged into the sea, as to reduce any evil to a minimum.* The entire town should be sewered, and every house should be drained. The sewers and drains should be so arranged and constructed as to insure a ready and free flow of sewage at all times. Accidental obstructions should be difficult, choking impossible, means of inspection and of cleansing easy, and ventilation constant and most abundant. All ventilating outlets should be placed where they will be least in the way, and the sewer gases should be made to pass through powerful and permanent, or easily removable disinfectants, so as to prevent the possibility of contamination of the external atmosphere, or of the atmosphere within dwelling-houses. These principles are embodied in the plan and report now submitted."

Mr. Hawksley has contented himself with a very short report, and says :—

"After the fullest consideration of the subject, and whilst deeply impressed with the responsibility devolving upon me, I come to the deliberate and decided conclusion, that the *present outfalls* are in regard to position not only well adapted to effect the outfall drainage, but that if carried to a competent distance from the shore, and properly secured in their intended places, the existing causes of annoyance and complaint will cease to exist."

On this point we must rest. We care little for the other points raised in either report, but we unhesitatingly say, sooner than perpetuate the present outfalls, it will be much better that the Brighton Board should do nothing, and leave the matter to those who will come after and may have clearer eyes. The present outfalls are an abomination and a sin: they have done more harm than can be calculated; and to perpetuate them, though at a distance of 550

yards from the sea wall, by means of a cast-iron pipe, 30 inches in diameter, laid in a dredged trench, as Mr. Hawksley recommends, would be a suicidal act, but would not lead to a verdict of *felo de se*, because no jury of enlightened individuals would believe that it was done by men in their senses.

Mr. Rawlinson says.

"Any system of sewerage in Brighton must have a general fall towards the sea; but there may be several ways of disposing of the refuse at the sea margin. At present the main outlet sewer is in the centre of the town, opposite the Steine; there are also outlets at Kemp Town and at Western-street, by means of sewer trunks and cast-iron pipes, discharging into the sea. Such outlets are, however, nuisances; and, although they may be improved, the nuisance would only be reduced, not removed. On the sea-shore opposite Hove and Brunswick-square there are five cast-iron pipe sewer outlets, and there is one such sewer outlet opposite Cliftonville and West Hove. These outlets do not reach low-water line, and are like those opposite to Brighton,—acknowledgedly great nuisances.

For the sewerage of Brighton and the adjoining districts there should be one outlet, and this should be placed as far from the inhabited shore as possible. All outlets for sewage should be removed from the sea fronting the town; there may, however, be storm-water outlets,—that is, outlets for heavy falls of rain,—so as to confine the dimensions of the sewers as much as possible within reasonable limits.

The new trunk outlet, now being restored, will answer at all times to remove storm waters flowing down the Pavilion valley, and will be so far useful.

The sewerage of Brighton might be taken east and west; but, unless the sewage is to remain a source of nuisance, there must be power to go beyond the existing municipal boundaries. The height of the cliffs to the eastward is so great an obstacle to pumping the sewerage inland for agricultural use that I have abandoned the idea of making a sewage outlet in this direction; and, as the proximity of Hove and Brunswick-square with Cliftonville and West Hove prevents any western outlet being formed on the western boundary of Brighton proper, I have proposed to carry the entire sewage of the district to the end of the canal connected with Shoreham harbour."

Before any water company had existence, all fresh water was obtained from springs, or was drawn from wells, and, without sewers and surface cesspools were necessary to store the refuse for periodical removal. Since water has been partially supplied by a company, many wells have been turned into cesspools, and in other places deep cesspools have been sunk for the purpose of allowing the liquid out of the soil refuse to soak away. This is most injurious, as the subsoil rapidly becomes impregnated with refuse liable to putrify, and no mechanical filtration renders such fluid pure. Well water is therefore tainted by sewage infiltration, and no doubt is very injurious to health. There are many places throughout the town where well water is fouled by sewage, and much inconvenience is experienced by reason of foul smells from cesspools and from surface refuse. Proper sewers and drains are necessary to remedy such a state of things.

In Brighton large houses are more numerous in proportion to the population than in any other town in the kingdom, and the local rateable value of house-property is probably higher in proportion to population than in any other place. This is important when we come to consider the question of cost. Mr. Rawlinson's general proposition and estimate are thus put :

"It is proposed to sewer the municipal borough of Brighton, Hove and Brunswick-square, and Cliftonville and West Hove, by one main line intercepting the sewers along the sewer from east to west. There will be a island, a principal main along the Pavilion valley, and the sewage of the higher district in the west of the valley, and coloured pink on plan, will be intercepted from the lower level by sewers along Queen's-road and Western-road, so as to be turned into the main outlet sewer down Old Dyke-road, west of Cliftonville. There are to be 22,480 lineal yards of new brick sewers, from 6 feet diameter to 2 feet 3 inches by 1 foot 6 inches internal dimensions; and 63,896 lineal yards of earthenware pipe sewers, from 15 inches to 13 inches internal dia-

meter; as also 2,010 lineal yards of cast-iron pipe sewers, from 3 feet to 1 foot 6 inches internal diameter. A total length of 78,386 lineal yards, or 44 miles and 956 lineal yards of new public sewers, 600 manholes and ventilating shafts, 600 lampholes, and 3,000 street gullies.

Land for sewage filtration, or for means of direct application, is provided for, as also 10 per cent. contingencies.

The estimated cost of the work for the entire municipal area of the borough of Brighton, and for outlet works and intercepting sewer, amounts to 123,000*l*."

The following may be taken as an analysis of

Mr. Radclinson's Estimate.

Description of Sewers.	Length in Yards.	Price per Yard.	Amount.
<i>Brick Sewers.</i>			
Diameter.		£. s.	£. s.
6 ft.	1,830	3 10	18,975 0
4 ft. 6 in.	350	3 10	575 0
4 ft. 6 in. by 8 ft.	3,990	2 8	9,660 0
3 ft. 6 in. by 2 ft. 6 in.	1,890	2 2	3,969 0
3 ft. by 2 ft.	2,830	1 16	5,076 0
2 ft. 3 in. by 1 ft. 6 in.	8,180	0 18	7,722 0
Total brick sewers ...	22,480		
<i>Earthenware Pipe</i>		s. d.	
15 inches diameter ...	9,456	13 6	6,389 11
12 " " " "	44,436	10 0	22,215 0
Total earthenware pipe sewers.	53,892		
<i>Cast Iron Pipe Sewers.</i>		£. s.	
3 in. diameter.	73	7 0	5,350 0
1 ft. 6 in.	1,266	3 0	3,798 0
Total cast-iron pipe sewers.	2,010		
Total length of sewers or 44 miles 956 yards.	78,386		
Man holes and ventila- ting shafts	Number	23 0	12,000 0
Landing holes	6 0	4 0	2,400 0
Gulches	3,060	3 10	10,590 0
Outlet works, overflows, and extra work on steep gradients, &c., ..			5,000 0
Contingencies, includ- ing repairs, &c., of ex- isting sewers, 10 per cent.			11,178 9
Total.			122,910 9

This sounds a large sum. Let us look at what Mr. Hawksley puts the cost of his scheme at. He says:—

"As nearly as I can ascertain from the plans furnished to me, it appears that a complete system of drainage will require very nearly 70,000 yards in length of new sewers of various sizes, from a minimum of 2 feet diameter (egg-shaped), to a maximum of 5 feet diameter (cylindrical), and I estimate the expense of constructing the same, including the proposed outfalls, at the sum of 57,000."

Surely there must be some error here. 70,000 lineal yards of sewers of various sizes, from 5 feet diameter (cylindrical) to 2 feet diameter (egg-shaped) with the necessary outfalls, and all for 57,000*l*. If we were Brighton we would not adopt the scheme, even if the difference were as stated, but we have little hesitation in saying, with all proper respect for Mr. Hawksley, that he must have fallen into some error.

Here is an approximate estimate, at the same prices as in the other case, of

Mr. Hawksley's Plan.

Assumed Description of Sewers.	Assumed Length in Yards.	Price per Yard.	Amount.
<i>Brick Sewers:</i>		<i>£ s. d.</i>	<i>£ s. d.</i>
1 ft. diameter	1,000	3	2,400 0
4 ft. do.	4,000	3	8,800 0
3 ft. do.	20,000	2	42,000 0
2 ft. (egg-shaped) do.	43,000	1	22,100 0
Total length of brick sewers	70,000	2	12,000 0
<i>Cast-iron Outlet Pipes:</i>			
3 ft. diameter	550	7	3,750 0
2 do.	1,100	6	6,500 0
Total length of cast-iron pipes	1,650		
Total length of sewers	71,650		
or 40 miles 1,250 yards			
Side entrances, man holes, and ventilating shafts, say	Number	20	10,800 0
Gullies	3,600	3 10	10,500 0
Contingencies, including repairs, &c. of existing sewers, 10 per cent.			13,750 0
Total			151,000 0

This has been made out for us by one adverse to the scheme, and the lengths assumed of large sewers may be wrong. We do not feel ourselves to be in a position to adopt it unreservedly, but it certainly satisfies us that Mr. Hawksley's own estimate must be greatly under the mark.

As to the application of the sewage to agricultural purposes, Mr. Rawlinson admits its value, points out the difficulties which at present beset the question, but prepares, when the right time comes (and we will add, the right man), for its use. He says:—

"I have personally examined most of the places in Great Britain where sewage is applied to land direct, as also the places where sewage disinfecting works have been established. Such examination has shown that the only chance of pecuniary benefit lies in dealing with sewage in its liquid form. Any solid material hitherto obtained from sewage by filtration or by precipitation, is not worth the cost of the labour and materials used.

The fluid sewage of Brighton will be chemically worth applying to the land for agricultural uses, should the district be fully sewered and drained, and the use of water-closets become general."

Mr. Hawksley, on the same subject, says:—

"I am unable to recommend the corporation of Brighton to make any endeavour to utilize the sewage flowing from their town, unless in the course of the progress of science some discovery should hereafter be made, resulting in advantages of which we have no present knowledge."

The point we adhere to, however, is the outfall. As we have already said, every one is interested in the salubrity, pleasantness, and prosperity of Brighton, and in their interest as well as in that of the inhabitants of the place, we express our unhesitating conviction that the retention of the present outfalls would be most unwise and injurious, and would lead to wasteful expenditure hereafter, in a perhaps vain endeavour to remedy the error.

GLEANNINGS FROM WESTMINSTER ABBEY.*

I HAVE given my paper this title with the intention of expressing that it is intended in no degree as an historical, architectural, or antiquarian treatise on this magnificent building, but simply as a casual notice of objects or of subjects connected with it, which have occurred to me as being less known or less noticed generally than they deserve to be. I had long ago thought of writing such a paper, but during the interval my intention has been in a great degree forestalled both by my having had occasion myself, at several times, to call attention to many of the points I have now to notice; and further, by the interesting discussion introduced some years back at this Institute by Professor Donaldson, on the subject of the shrine of Edward the Confessor. Now that I have been induced to resume my first intention it has happened that my time and thoughts have been necessarily so much occupied by other matters, that I have found it quite impracticable to do any kind of justice to my subject; so much so, that I should have "backed out" again had your zealous honorary secretary have permitted; but as he is inexorable, I must even beg you to excuse the crudeness and the want of method and, with some exceptions, the want of novelty of what I have to lay before you.

Though I use the word "gleannings" I do not mean to imply that the harvest is over; on the contrary, the antiquarian and documentary part of the subject is, I am convinced, not only unexhausted, but scarcely entered upon: we really know next to nothing of the actual history of this the most nationally interesting of English churches. The information given us in the published histories is meagre in the extreme, while the public records and the archives preserved in the church searched for information as to its structural history. I earnestly wish that some of our learned antiquaries would take this interesting task in hand. It needs long and laborious research, but I feel sure that the labour would be richly rewarded.

I will here add that, since I wrote the foregoing sentence, much has been done towards this object by my friend Mr. Burt, of the Record Office, which I shall have to notice hereafter.

* Read by Mr. G. G. Scott at the Institute of Architects, as elsewhere mentioned.

All we know of the earliest history of the fabric is that there existed a church here in the days of King Offa, and that this (or a successor of it) was rebuilt, and the abbey refounded, by Edward the Confessor. One of the first thoughts which occurs to us in considering the history of our abbey is, then, the question as to what kind of church was that which preceded the present structure, and which we know to have been erected by this sainted monarch. As, for example, what was its size and form? Was it on the small scale which appears to have been common among Saxon buildings, or of the gigantic dimensions adopted by the Normans? And, again, was its architecture more on the Saxon or on the Norman type?

William of Malmesbury, writing in the following century, speaks of it as "that church which he, the first in England, had erected in that mode of composition which now nearly all emulate in its costly expenditure;" or, in other words, it was the earliest Norman church.

Matthew Paris, in the thirteenth century, merely adapts the same statement to his own times, saying that the Confessor "was buried in the church which he had constructed in that mode of composition from which many of those afterwards constructing churches, taking example, had emulated in its costly expenditure;" evidently considering its style the same as that of the Norman churches with which he was surrounded.

Sir Christopher Wren gives us, as he says from an ancient manuscript, the following particulars:—"The principal area or nave of the church, being raised high and vaulted with square and uniform ribs, is turned circular to the east; this on each side is strongly fortified with a double vaulting of the aisles in two stories, with their pillars and arches: the cross building contrived to contain the choir in the middle, and, the better to support the lofty tower, rose with a plainer and lower vaulting, which tower, then spreading with artificial winding stairs, was continued with plain walls to its timber roof, which was well covered with lead."

From the above one would by no means infer that the church was of small dimensions, and I am very much disposed to think that it may have been nearly, or quite, as large in its elementary scale as the present structure. Edward the Confessor having spent so much of his early life in Normandy, it is unlikely that he should be content with the dimensions of a Saxon church; indeed, had he been so, he had one to his hand without building a new one; and as he was greatly enlarging the monastic establishment, it seems probable that in rebuilding the abbey church he would adopt the scale which was becoming common in Normandy. Harold, we have every reason to believe, did the same in building his church at Waltham; for whatever may be the merits of the disputed question as to whether any part of his work yet remains, there can be no doubt that his choir, at least for a time, co-existed with the present nave, and agreed with it in elementary scale. Again, we have no reason to believe that the choir of Westminster Abbey was rebuilt between the days of Edward the Confessor and those of Henry III., which would have been inevitably the case had its scale been diminutive; and, if it did exist through that interval, we have full proof that it was as long as the present eastern arm of the church; for the present position of the transept we know to be identical with that of the Confessor's church, from the fact of the remains of his dormitory abutting against it in the usual manner; while the eastward extent of the old church is defined almost with certainty by the fact that the Lady Chapel was erected against it in the early days of Henry III. some years before he commenced rebuilding the church itself. The dimensions of the ancient nave are less easy of conjecture. The width, I think it probable, would have agreed with the existing one; and if the Confessor adopted, as I imagine, the usual scale of the great churches of the Normans, there is no reason to suppose it to have been much shorter than at present,—an opinion which is to a certain extent corroborated by the size of the cloister court, the north and east sides of which would have been defined by the external walls of the nave and the dormitory; and its southern limits by the refectory, in which there exist early remnants sufficient to show that it occupies its original site. The completion of the square thus marked out carries us to within three bays of the western towers; and as cloisters rarely reached the end of a nave, it leaves it as a probable inference that the old nave did fall far short of the length of that now existing.

At St. Alban's and Winchester, which were erected within the same century, the elementary scale, or width from centre to centre of the piers,

is about the same, the length of nave considerably in excess, and the original length of the Norman choir also greater. The structural choir, or eastern arm, at Westminster, is, in fact, so short, as to preclude the idea of its having been rebuilt during the later Norman period, being less than that of many early Norman choirs.

We now come, however, to surer ground. I mean the portions of the Confessor's work which still exist. These consist of the substructure of the dormitory, forming a long range of building running southwards from, and in a line with, the south transept, and passing under the library and the great school-room which now occupy the position of the ancient dormitory.

The substructure is vaulted in two spans, and is divided longitudinally by a range of massive round columns, the whole being seven and a-half bays, or about 110 feet in length from the vestibule of the chapter-house to the cross passage now leading into the little cloister, and formerly to the infirmary. This range was, probably, in the first instance, continuous and open, like that at Fontaines Abbey, but was very early divided into separate compartments, as I shall presently show. It is so seldom that we find constructive columns remaining in this country of a date earlier than the Norman Conquest, that it is an object of some interest to see what form they exhibit, though I admit that, date alone excepted, this can hardly be called a Saxon work, whilst its unimportant purpose forbids us to take it as a fair example of any style. There are only one or two of these columns which retain their pristine form, the others having been altered at subsequent periods.

These consist of a cylindrical shaft, 3 feet 6 inches in diameter, and 3 feet 4 or 5 inches high. The capitals have a vast unmodelled abacus, 7 or 8 inches deep, supported by a moulding, if such it may be called, consisting of nothing but a frustum of an inverted cone, the most primitive form, almost, to which a capital could be reduced, thoroughly efficient, but with the least possible amount of workmanship, not unlike what we may imagine may have been the first type of the Doric capital, and but one step removed from its apparent prototype among the tombs at Beni Hassan.

We must not, however, for a moment suppose that this rudely primitive form was that usual at the period, except in rough and unimportant situations. We know that in the contemporary work at Waltham, the capitals were enriched with ornaments of brass, and that much earlier Saxon capitals had enriched capitals. We must simply view it as a specimen of the honest simplicity with which they treated the less important portions of their structures. It is, in fact, only one step more plain than the capitals in the crypt at Winchester, which was constructed some twenty years later. The bases very closely resembled the capitals, but have, like them, generally been altered from their original form.

These columns carried plain groining, with square transverse ribs, partly constructed of tufa.

It is somewhat curious and interesting that, during the Norman period, the majority of the capitals have been altered and enriched in various ways. Being within reach, their massive plainness seems to have tempted the monks to try experiments upon them, and we accordingly find the original block cut into a great variety of forms, some of them of considerable richness. The state of the capitals shows that the building was already subdivided, as the alterations are often totally different on the two sides of the capital, leaving a narrow intervening frustum of the original, representing the thickness of the partition. Some are roughly chopped into a form, preparatory to the enriching process, which has not been completed.

The accompanying sketches show some of the altered forms which the capitals assume. The bases were also altered, and, in some instances at least, the floor so much lowered that the lower part of the columns had to be cased with new stone.

The first bay of this early work adjoins the outer vestibule of the chapter-house, and is imperfect, having been shortened by the later buildings which here abut against it. The capital of the column here visible is entirely altered to a round and slightly enriched form.

Next to this comes the celebrated chapel of the Pyx. This, as is well known, has long been held by the Government. It formally, I believe, contained the records of the Treasury, but now contains only empty cases and chests, with one exception, in which the paraphernalia for the trial of the Pyx are contained. I have recently,

through the kindness of the Chancellor of the Exchequer and the Secretary to the Treasury, visited, for the first time, its mysterious recesses; a formidable visit, requiring the presence of representatives of the Treasury and the Exchequer, with their attendants, bearing boxes which contain six mighty keys.

It occupies two bays of the Confessor's work, a detached column standing in the centre. This column bears marks of a partition having at one time abutted against it, on one side of which the capital has been made round and slightly enriched, while on the other it has undergone no alteration but the rough canting off of its angles as if preparatory to further alteration. The column which is partly built up in the north wall is on this side altered exactly as on the other, where it is seen in the adjoining chamber, showing that there was there no partition against it. That on the south side I was not able to examine, owing to the presses by which it is concealed. The portion of it which is visible on the other side of the wall is one of those in which I have found the capital unaltered, and I was curious to see if the opposite side was so too; but was disappointed. In one of the eastern bays of the chapel the stone altar remains nearly entire. It is perfectly plain, and has in the middle of its top a large circular sinking, apparently for the reception of a portable altar-stone; though the form is, I believe, unusual. Adjoining the altar is a detached piscina, in the form of a column. It appears to be of the thirteenth century. The windows, which are very small, and probably of the same date, are doubly and very closely grated, and well they might be so, for we learn that during the reign of Edward I. the king's treasury here was robbed of 100,000, which he had laid up here for the Scotch war, for which the abbot and forty monks were sent to the Tower on suspicion. I fancy that the chamber was brought to its present form and its security increased after that event. Of the contents of the Pyx Chapel I will speak presently. The bays of the early work beyond the cross passage to the little cloister are simply wagon-vaulted,* as is that passage itself, as well as that which is called the Dark Cloister, which I suppose to be of the same age. Of the walls of the Dormitory† itself considerable portions remain. Several of its walled-up windows are visible in the great school, and the exterior of one remains little altered excepting by decay. It has a shaft in each jamb, and is like Early Norman windows.

The only other part which is at all likely to belong to the Confessor's buildings is a part of the south wall of the Refectory, in which a round-arched wall-arcading is still to be traced. As the Confessor increased the number of monks to seventy, he would want eating as well as sleeping room in due proportion, and in the absence of opposing evidence it is likely enough that this may be a portion of his refectory.

The next building which I will notice is the chapel of St. Catherine, a work of the succeeding century. It was the chapel of the Infirmary, and occupies a position not dissimilar to the corresponding chapels at Canterbury, Ely, and Peterborough.

The usual form of infirmary of a monastery was very similar to that of a church, with this simple difference, that the quasi-nave was very long, and was divided at about one-third of its length from the east, by a cross wall perforated only by a central doorway; the western portion forming the infirmary proper, the eastern portion being the nave of the chapel, and a chancel extending still to the eastward.

This arrangement allowed the sick monks to hear the services as they lay in their beds, while the convalescent could readily transfer themselves to the chapel. This may still be traced out at Canterbury, Ely, and Peterborough; and there is a nearly similar building still in use (though unconnected with the cathedral) at Chichester; as also (with more or less variation) at Bruges, at Lubbeck, and, I dare say, many other places. Now I imagine it is possible that the Westminster Infirmary may originally have been of the same description. The chapel, of which the remains are sufficient to show its plan, agrees with it precisely; but the infirmary proper is gone, and may, I fancy, have been destroyed when the small cloister was built. If so, it, no doubt, extended westward to the wall in the Dormitory. This, however, is a mere suggestion, and would be disproved if the small cloister can be proved to be of early date,

* These wagon-vaults are formed of tufa laid in rubble-work, and still showing the impressions of the boards of the centering on the mortar.

† The Dormitory was partially burnt in 1448.

which I see that Widmore imagines it to be. In that case, I should suppose that the Infirmary surrounded it.

I have recently discovered an old hall of the date of Abbot Littleington, who is known to have built a new house for the Infirmary. It abuts upon the south side of St. Catherine's Chapel, and has a doorway into the chapel. It was, no doubt, the hall of the Infirmary's house, and was probably used by the convalescent patients. The garden, now called the College Garden, was originally the Infirmary garden.

The chapel consisted of a nave and aisles, of five bays long, with a chancel of which I cannot ascertain the length. It is of very good Late Norman, and in its details much resembles that at Ely, even to the setting of the octagonal columns, angle foremost, but it is less rich.

The west doorway is of Abbot Littleington's time (temp. Edward III. and Richard II.). I exhibit sketches of the leading parts of the chapel. The pier of the chancel arch was discovered last year while making alterations in an adjoining building, but was unfortunately destroyed before I could see it.

The hall I have mentioned had a gallery extending over the aisle of the chapel, with a fireplace in it.

I have been able to preserve and expose to view the hall with the exception of this gallery, which I was unable to save, though its fireplace still exists. The parts of the chapel which were formerly enclosed in the adjoining building, are now exposed to view.

The only other Norman remains that I am aware of are some rather rich fragments, found under the nave floor, when the new stalls were being erected in 1848. I see that in the time of Henry II. or thereabout, stalls are mentioned as being made for the "new work." This looks as if the western part (which contained the stalls), had been rebuilt; but I am inclined to think that the new work was the Chapel of St. Catherine just built, the altar of which is said to have ranked second among them all.

I must apologise for dwelling so much at length on these early features. I have done so because they are generally but little known.

I now come to the existing church, a building which does not owe its claims upon our study to its antiquarian and historical associations; intensely interesting though these must be to every man worthy of the name of an Englishman. It has claims upon us architects,—I will not say of a higher but of another character, on the ground of its intrinsic and superlative merits, as a work of art of the highest and noblest order; for, though it is by no means pre-eminent in general scale, in height, or in richness of sculpture, there are few churches in this or any other country, having the same exquisite charms of proportion and artistic beauty which this church possesses. A beauty which never tires, and which impresses itself afresh upon the eye and the mind, however frequently you view it, and however glorious the edifices which, during the intervals, you may have seen; and, I may add, which rides so triumphantly over the dishonour which, under the name, for the most part falsely assumed, of high art more modern ages have ruthlessly heaped upon it.

The period of the erection of Westminster Abbey was one of the great transitional epochs of our architecture. During the latter half of the twelfth century the Romanesque, or Round-arched Gothic, had, both in France and England, transformed itself by a thoroughly consecutive and logical series of changes into the pointed arch style, and in both countries that style had been worked into a state of perfect consistency, and in each it had assumed its national characteristics, so that the works in the choir at Lincoln, the Lady Chapel at Winchester, and the western portals of St. Alban's and Ely, all of which date from 1195 to 1215, mark the perfectly-developed Early English style, and are readily distinguishable from the contemporary works in France.

The English works of this period have, at least to our eyes, a more advanced appearance than the French. The round form of the abacus, the greater richness and delicacy of the mouldings, and generally a more decided severance from the massiveness of the Romanesque forms, give to the works I have alluded to a later appearance than what we observe in buildings of the same precise period in France. The leading characteristics were, however, much the same. The windows especially, in both countries, consisted, for the most part, of individual lights, placed either singly or in groups. The chief variety from this was when, as was usual in the triforium openings

and in belfries, two or more such lights were placed under a comprising arch, the interval below which was very usually pierced with circular or other openings. This was not, chronologically speaking, a step in advance of the detached light, but had all along been its contemporary, whether in the Romanesque, the transitional, or Early Pointed styles, and both were equally in use in France and England. In domestic work, the last-named type (that with two or more lights under a comprising arch) was always prevalent, on account of the smallness of the intermediate divisions, which, from an early period, it was customary to reduce to a thin shaft of marble or plain stone, as we see in our own country, even in Romanesque works, as at the Jews' House and the building commonly called "John of Gaunt's Stables" at Lincoln, Fountains Abbey, Richmond Castle, &c. As a general rule, however, the more detached form was, for a long time, the prevalent form in churches, both in France and England. The difference between the course pursued in the two countries was this: that, while in England the special energies of the builders were directed to the perfecting of the more usual type, the French began early in the thirteenth century to show a preference for the other, and rather to neglect the perfecting of the more typical form. Both forms were frequent in each country, but the efforts of the English were rather directed to the one, and of the French to the other. The consequence was that, while in England the grouping of distinct lights was being brought to the utmost perfection, the French were engaged, more especially at least, on a number of tentative steps towards what became afterwards the mullioned and traceried window. I will not attempt a history of this invention, but will just call attention to one or two of its steps. At Bourges we have the earlier type in its full perfection, the spaces between the comprising and comprised arches and the piercings of the head being a flat face. At Le Mans and Tours we find these spaces cut out parallel to the lines of the openings, not, however, moulded into what is called bar tracery, but as if sawn square through,—a very clumsy and crude contrivance, very inferior to the plate tracery it was intended to improve. At Rheims, so far as I know, is seen the earliest introduction of the perfected principle. We find there, for the first time, as I believe, the pierced spandril and gusset moulded as the openings themselves, and the principle of bar tracery completed, though with some remaining imperfections. It is very difficult to fix dates to these transitions. Rheims cathedral was commenced in 1212, and it is generally supposed that the first architect, De Coucy, completed the aisles in 1220 or 1225. M. Viollet le Duc, naturally enough, seems puzzled at finding perfect traceried windows at so early a period, and suggests it as probable, as the transept of the same work does not exhibit equal advancement, that the aisle windows were altered by him a little later. Certain it is that neither Bourges nor Chartres, which were built about the same time, give any evidence of a like progression; while the intermediate step at Le Mans and Tours would appear, from many of its accompanying details, to be of later date than that given to Rheims. Had Villars de Honnecourt put a date to his sketch-book, which gives these very windows at Rheims, the difficulty would perhaps have been solved.

The windows, with similar tracery in Notre Dame at Paris, M. Viollet le Duc, from internal evidence, dates from 1235 to 1240. The Cathedral at Amiens presents difficulties as to date almost equal to that at Rheims, but, in the whole, we may fairly suppose this development to have become pretty common in northern France by about 1230 or 1235, though not to the extent of superseding either the detached light or the plate tracery. Pierre de Montereau, the architect of Sainte Chapelle in which the perfected tracery prevails, built also the refectory of St. Martin aux Champs, in which it does not appear at all.

During the same period the peculiar, and afterwards stereotyped, French arrangement of the Chevet, or the Apse with its group of radiating chapels, had been brought, by many steps, to its final development.

Radiating chapels, growing out of the main apse or its aisles, had been early used. In this country we find them at Gloucester and Tewkesbury, and in the foundations recently excavated at Leominster, all of the Romanesque period; and later we find them at Pershore. The French characteristic, however, was the arranging of them in polygons fitting to one another and to the sides of the polygonal aisle of the main apse,—a sort of corona of little chapels mathematically

fitted together and their axes radiating to the centre of the apse, at or near which the high altar was usually placed. This we find in many tentative forms, but the system appears to have been brought to perfection at Rheims and Amiens, —the latter of which churches appears to have henceforth been taken as the type, on which, in the majority of cases, though subject to some varieties, the grouping of Eastern chapels was founded, as at Beauvais, Cologne, Altenberg, and a host of other instances. The two German apses last named, I may mention, however, seem to have had Beauvais rather than Amiens for their immediate type.

There can be little doubt that King Henry III. during his sojourns in France, became enamoured of this arrangement, which, in its perfected form, he may have seen in course of being carried out at Amiens, Beauvais, Rheims, and elsewhere. It would naturally strike him as well suited to the reconstruction of the eastern portion of a church, already possessing an apse with a continuous surrounding aisle. Whether this project had been formed when the Lady Chapel was built in 1220, it is impossible to ascertain. This was begun in the same year with Amiens Cathedral, and eight years later than Rheims; so that it is not impossible, though the extreme youth of the king would in that case compel us to transfer the originating of the scheme from him to the abbot. However this may be, it is probable that it fell readily into the subsequently adopted plan, as we find no disturbance of the regularity of the division which would otherwise have been the case.

Judging from internal evidence, which is all we have to go upon till the public documents and the archives of the Abbey are more thoroughly searched, I should imagine that an English architect, or master of the works, was commissioned to visit the great cathedrals then in progress of erection in France, with the view of making his design on the general idea suggested by them. Would that, like his contemporary Villars de Honcourt, he had bequeathed to us his sketch-book!

The result is precisely what might have been expected from such a course. Had a French architect been sent for, we should have had a plan really like some French cathedral, and it would have been carried out, as was the case with William of Sens' work at Canterbury, with French details. As it is, however, the plan, though founded on that common in France, differs greatly from any existing church, and it contains no French detail whatever, excepting the work of apparently one carver. I have sometimes fancied that I could detect a French moulding in the water-table of the external buttresses, but there are themselves restorations, and are so decayed that I cannot make sure of their section. If it be so, it is just one of those exceptions which prove a rule.

The architect, however, in imitating the great contemporary churches in France did adopt another of their great characteristics,—the bar tracery of their windows. I am not aware that it exists in a perfected form in any earlier English work, though often closely approached. It is said that Netley Abbey was erected about 1240, and the Eastern part of old St. Paul's is said to have been consecrated in that year; and as both of these contained perfected tracery, the substantiation of those dates would establish for us an earlier claim; but, on the whole, I think we may fairly yield this development to our neighbours, and consider this to be about the period at which we borrowed it, though so perfect is the catena of transitional steps that, had it not been from external evidence, we should have had no difficulty in tracing out the history of the development from English examples; the only step which I miss in them being that which I have given from Le Mans and Tours, on which, however, I have never heard any stress laid.

This church is, then, remarkable as marking, first, the introduction of the French arrangement of chapels which, however, failed to take root here; and, secondly, the completed type of bar tracery, which was no sooner grafted on an English stock than it began to shoot forth in most vigorous and luxuriant growth.

Though the French type was, as a general form, adopted in planning the chevets with its circlet of chapels, I know of no French church from which the actual plan could have been taken.

The simplest mode of setting out the chevets with its chapels, is that adopted at Rheims, which is effected by simply describing a semicircle upon the transverse line passing through

the easternmost of the main range of columns, and of a diameter equal to the width from centre to centre of those columns, and inscribing in it a semi-decagon, whose angles will give the centres of the piers, the same operation being repeated for those of the aisles.

At Amiens the system is different, the two semicircles are described; one for the piers, and the other for the aisle; and about each of these it would seem that the normal idea was that a portion of a decagon should be circumscribed; but in fact the sides are a little less than those of that figure.

On the outer circuit of the aisle, seven angles of the quasi-decagon represent the centres of the piers between the radiating chapels, while on the inner circuit, five angles of the smaller quasi-decagon represent the centres of five of the piers of the apse; the two remaining piers being placed at the points where the transverse line which cuts off the seven sides of the outer apse, intersects with the longitudinal lines which pass through the centres of the main ranges of piers.

It will be seen that this gives a bay of a width intermediate between those of the apse and those of the main arcade, but in a line with the latter. The chapels are alike in the width of their arches, but differ in the westernmost sides of the western chapels, not radiating in a regular manner.

The Chevets at Beauvais and Cologne differ from that at Amiens in this, that the decagons are inscribed instead of circumscribed. It follows that only five of the angles of each decagon represent the angles of the outer or inner apse; the remaining angles of the former are found by spreading the figure outwards, till it intersects with the line of the wall; and those of the latter, by drawing a transverse line from these points to its intersection with the longitudinal lines of the main range of columns as before. The consequence is, that the first side of the apse has a slight inclination instead of being parallel to the axis of the church.*

The chevets at Westminster differs greatly from any of the above. The sides of the apse are five in number, as at Rheims, but instead of being five sides of a decagon, the three easternmost are sides of an octagon, and the others incline but slightly from the sides of the church. The great peculiarity, however, is in the chapels, which occupy so much more than the semi-circle as to do away with one of the non-radiating chapels, reducing the space it usually occupies to an irregular pier, and introducing opposite to it in the aisle a bay, of very irregular form. I had long noticed this peculiarity, though I had thought it an irregular contrivance, to give greater size to the apsidal chapels; but from finding the setting out of the work remarkably exact, I was led to think that some mathematical principle must have been acted on, and having had most careful measurements made and tested in every way, I find this to have been the case.

The system is this: the two semi-circles are drawn as before, the diameter of the inner one being the width from centre to centre of columns. A semi-octagon is inscribed in this; three of its angles give the centres of the piers of the outer and inner apses, the remaining sides of each apse being formed by spreading them till they meet the main longitudinal lines. It most resembles the principle followed at Beauvais, but differs from it (besides the smaller number of the sides), in the outer and inner apse being exactly alike in principle, and all their sides equal, and both set out in regular radiating lines, instead of using the transverse line adopted at Beauvais. This system has great advantages; it avoids the narrowness of the apsidal bays so apparent in most of the French examples; it gives a beautiful gentleness of transition from the main arcades into the apse, and it also gives a great boldness and expanse to the chapels,—advantages purchased cheaply at the expense of one of the square chapels on either side, and a certain degree of picturesque irregularity in the aisles. It should be mentioned that the setting out of this church is remarkable for its regularity and exactness, though the drawing of an intricate mathematical figure on the ground, some 120 feet wide, necessitated some trifling deviations from absolute precision.

The section of the church also differs much from that of the great contemporary buildings in France.

The earlier French Pointed churches had retained the Romanesque system of having, not a mere triforium, but a distinct upper story over the aisles, often with a second range of vaulting. The

same occurs (though not vaulted) in many of our own Early Pointed churches, especially where they resulted from the piecemeal reconstruction of their Norman predecessors. At Amiens and Rheims as at Salisbury, Whitby, Rievaulx, and indeed the majority of our churches of the thirteenth century, this second story was represented only by the space intervening between the roof and vaulting of the aisles. At Westminster, however, for some special reasons, the second story, which we know to have existed in the Confessor's church, was continued in its successor, probably to admit more numerous spectators on grand occasions, such as coronations and royal funerals. It was obtained not so much by increasing the height of the triforium arcade as by flattening the aisle roof so as to allow of a wall of considerable height to the triforium, the story being lighted by short windows of a quasi-triangular form filled in with cusped circles.

The spaciousness of this upper story is quite surprising to those who see it for the first time. It is capable of containing thousands of persons, and its architectural and artistic effects as viewed from different points are wonderfully varied and beautiful.

I have sometimes doubted whether, however, this arrangement was contemplated when the building was commenced. There is about the intersection of the aisle roof with the flying buttresses a want of system which does not seem of a piece with the studious exactness of other points of the design, but is more like the result of an alteration of the design during its execution. It gives also to the transept elevation a high-shouldered look, which is detrimental to its elegance, and, while it adds to the external importance of the aisles, it rather takes from the dignity of the clerestory by concealing its natural spring from behind the abutting roof of the aisles.

I may mention that the very same arrangement was followed in the contemporary work in the north transept at Hereford; indeed, the very cusplings of the circular windows which I have recently discovered there seem to be exactly copied from those in the same position at Westminster.

Of the mathematical proportions on which the design of the church has been founded it is hardly safe to speak. This is a subject on which so much uncertainty, and consequent difference of opinion exists, that it would be unwise to be dogmatic, or to adopt any theory too positively. The proportions are, however, so pre-eminently satisfactory to the eye that it is not unprofitable to examine into them; for, whether the result of accident or intention, the lessons to be learned are the same: indeed, it is perhaps almost more instructive to find that proportions arrived at by tentative experiments and a correct eye coincide with some mathematical principle, than, after trying many geometrical formulae, to find one which gives a result satisfactory to the eye. That beauty of proportion may be reduced to mathematical principles I have no doubt, but as mathematical forms are of infinite variety, and of very unequal beauty, while the reasons why one is more pleasing to the eye than another are, to say the least, very occult, it seems to follow that the laws of proportion must be investigated by a process partly tentative and partly geometrical; the proportions dictated by the eye and those resulting from mathematical forms being mutually tested the one by the other, till we are able to determine which set of geometrical proportions is most beautiful, and which among the forms which please the eye are capable of being reduced to mathematical proportions.

As an illustration of this, I remember, many years since, while looking at a plate in "Britton's Antiquities," in which he gives internal arches from a number of our cathedrals, I set myself the task of determining which were the most beautiful in their proportions. To my surprise I was compelled to choose the two which apparently most differed the one from the other, in fact the tallest and the shortest of the set. I was perplexed at so contradictory a result, but, as I could not go against the dictates of my eye, I endeavoured to investigate the cause, and had much pleasure in finding that both (as shown in the drawing at least) might be resolved into equilateral triangles, the Westminster arch having three, and that from Wells only two of them in its height. I have somewhere heard that in an old work of the Freemasons it is said that good proportions may be obtained from the square, but better from the equilateral triangle, and I have little doubt that it is true.

If the principle of the triangle is applied in the present case, the main section may be said to have a height of three equilateral triangles described

* These definitions are open to some modifications for irregularities admitted in the setting out.

upon the transverse width of the church from centre to centre of the columns, which dimension seems in all churches to have been taken as the elementary scale on which the proportions were founded. Another proportion common in old works is derived from the diagonal of the square of this measure. Both have been claimed as the system made use of at Westminster; but the more closely one examines into it, the more clear it is that the equilateral triangle is the figure actually made use of. I have made careful measurements and find it fully established that this is the case. I find that the elementary width is about 5 inches greater in the transept than in the choir and nave. Possibly it had been affected in the latter case, as it would appear to have been in the aisles, by some particular cause, for the difference is clearly not accidental, being most systematically carried out and adhered to throughout to a fraction. If we take the larger of these dimensions it will be found to agree very closely indeed with the different parts of the church. The height of the nave exceeds the three triangles only by about 8 inches. The height to the triforium string course exceeds half that dimension, or the three triangles of the semi-scale, by only 4 inches; and the height of the triforium itself is 4 inches in excess of one of these minor triangles: differences so small as to be invisible in so great a height. This agrees with the theory laid down by Professor Cockerell, in his excellent paper published by the Archeological Institute in their Winchester volume. He defines it in this way: that if you assume double aisles to the nave (i.e. if you triple the elementary width), the equilateral triangle described on this width will give the height of the vaulting. In the ichnography the proportions are far less exact. The idea would appear to be that the length of the church should consist of four, and the length of the transept of two of the heights of the great triangle last named. This is however by no means exact, and one cannot lay much stress upon it.*

I may here mention that the same system holds good in the Chapter-house, of which the height agrees with that of an equilateral triangle described on its diagonal, or, more properly, each of its arches from the central pillar to the angle-shaft has the height of two triangles, or of a regular vesica piscis.

The details of the internal design greatly exceed in richness those of French works of the same age, excepting only in the extent to which the capitals are foliated.

The arch mouldings are peculiarly beautiful. The triforium arcade is as beautiful as any which can perhaps be found. That to the eastern part of Lincoln may be almost richer, but its proportions yield in beauty to those of Westminster. The richness of the whole is also vastly increased by the wall-surfaces between the arches being enriched with a square diaper. The wall-arcading is of exquisite design, and the spaces over it were filled with most beautiful foliage with figures interspersed, while the spandrels of the cusping were filled with ornamental painting. When, to the richness of architectural detail, we add that of material—the entire columns and all the subordinate shafts being of marble, and the remainder of stone of several different shades of colour,—the magnificence of the internal design must have greatly exceeded that of its French prototypes. The only one point which strikes the eye as looking less rich is the use of merely moulded capitals to the main pillars. This, however, arose from their being of Purbeck marble. It is true that at Ely and elsewhere, as in our own Chapter-house, the carved capitals are of this stubborn material; but its use may, nevertheless, be accepted as a fair excuse for moderating the workmanship. The internal designs of the transept ends are truly magnificent; indeed, I doubt whether their equals can be found elsewhere. The manner in which they continue the lines of the general design, and yet add diversity to the forms, is truly artistic.

It is most unfortunate that the great rose windows have lost their original character. I have, however, a strong impression that the old ones may have, in their leading subdivision, resembled that now existing in the south transept, and that the design has been simply translated from that of the thirteenth to that of the fifteenth century. I have attempted in the accompanying drawing to translate it back again;

and you will see that it makes a very fine window, in perfect accordance with the character of the church, and very much like several existing specimens. You may say that this is pure conjecture,—and so it is: but it is a conjecture not devoid of some collateral corroboration; for, singularly enough, there exist in the Chapter-house some encaustic tiles of a pattern evidently copied from a rose window, and agreeing precisely in its divisions with that under consideration, representing even the shafts, with their caps and bases. It will be seen that my translation of the existing window into Early English almost precisely resembles the pattern given on those tiles. The square form in which the circle is inscribed seems to be original, from the systematic way in which the vaulting is accommodated to it; but it must be admitted, on the other hand, that there are, in the eastern jamb of the south window, some indications of the design having been altered from the original intention; though, as I think, this was an alteration made during the progress of the work, as neither the opposite jamb of the same window nor either jamb of the opposite window shows any such indications. The south window was, I believe, renewed in the fifteenth century, and again in the seventeenth century. Sir Christopher Wren informs us that it had been renewed about forty years before the date of his report.

The north window received its present form in the eighteenth century, and in no degree resembles its predecessor. Whether that which Sir Christopher Wren reports to be in a dangerous state was the original one, there is no means of telling.*

THE MAUSOLEUM AT HALICARNASSUS.

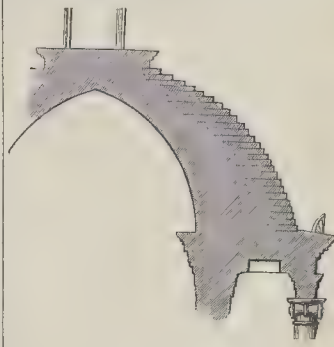
In the lecture which Mr. Newton delivered on the 8th ult., at the Kensington Museum, on the result of his excavations at Halicarnassus, he admitted that his researches had not sufficed to enable him to restore the Mausoleum in all its parts; or, to speak more correctly, he showed that all Pliny's dimensions had been recovered except one, but that one is so important that the want of it renders the form of that celebrated structure still unintelligible.

First, let me explain what his excavations have made perfectly clear. He has recovered the entire Ionic order, and found that its height agrees as nearly as may be with the 25 cubits or 37½ feet assigned to it by Pliny. He has found that the twenty-four steps of the pyramid were each about 1 foot in height, and the quadriga almost exactly 14 feet; again making up the 37½ feet given by that author, and, as the whole building is said to have been 140 feet in height, this gives 65 feet for the elevation of the basement or podium. On this the pteron or peristyle stood. With regard to horizontal dimensions, the whole area of the foundation was found to be a square of 126 feet by 107 feet, on which the mausoleum stood, measuring, as nearly as can be calculated, from the steps of the pyramid, and other dimensions found, rather more than 112 feet by 93; and the circumference, therefore, again brings out the 411 feet of Pliny, while the cella or tomb itself measured 63 feet by 46 feet. So far all is satisfactory; but we now come to the one difficulty of the case: a certain number of the steps of the pyramid have been found; these all measure in height 11 inches, or, with the joint, say 1 foot; thus agreeing exactly with Pliny's measurement. But the upper surface or tread has hitherto been found of only two dimensions, 1 foot 9 inches and 1 foot 5 inches; and, moreover, a corner-stone has been found with these two dimensions on its opposite faces: thus showing that they were used in one course; and these two dimensions represented the corresponding proportional lengths of the sides of the pyramid.

Nothing could at first sight seem to be more satisfactory than this discovery; but when it came to be protracted, it was found that steps only 1 foot in height, and 1 foot 9 inches or 1 foot 5 inches in width, formed a pyramid so flat as to be, to say the least of it, very ungraceful; and what was worse, it spread the base of the pyramid so widely, that a distance of about 22 or 23 feet was left between the centres of the columns and the walls of the cella; a space so wide that the constructive means of neither ancients nor moderns was equal to cover it, by any known expedient of marble architecture. This is the difficulty above alluded to, and which has hitherto been unsolved. As soon as Mr. Newton's, or rather Lieut. Smith's, restoration was published in the Blue Book in the beginning of last year, it occurred to me that the solution

probably lay in the words of Pliny, who, in speaking of the pyramid, describes it as "*in meta cacumen se contrahens*." If it had been a straight lined pyramid, like those of Egypt, this qualifying phrase would not have been required, but certainly meant something; and the meaning appeared to me to be that the roof or pyramid was curvilinear. I came to this conclusion, because all the meta or goals with which I am acquainted terminate in a curvilinear form upwards; there may be exceptions, but I have never met with them in any sculptural or painted representations of these objects. As this theory solved all the difficulties of the case, I got Mr. Penrose to write at once to his friend Mr. Pullen, the architect of the expedition, who was still at Budrum, and to request him to search for, and measure every fragment of roofing stones he could find, in order to settle this question one way or another. He found nothing, however, bearing on the subject, and it was only about a fortnight ago that I met Mr. Newton, on the eve of his departure for Rome, and mentioned my theory to him. He had never heard of it before, but at once admitted its probability; and more than this, told me that there were two roofing stones in the British Museum, the treads of which were 9 inches and 6 inches respectively, but that they had been put on one side, as not according with the received theories of restoration.

I have since then seen these stones. With regard to the 9-inch one, there is no doubt. The 6-inch stone wants the usual ridges, but from other circumstances, appears certainly to have been a roofing stone; but this is of little consequence. The existence of one stone of a third dimension proves incontestably that the pyramid was not straight-lined; and as I have no doubt but that many more exist of other dimensions, no further proof is needed, and all that is now required is to determine what the curve of the roof was. This can only be determined by a more careful investigation than I have yet had time to attempt; but in the meanwhile the annexed diagram will explain, perhaps, better than words, what I conceive to have been the general construction of the roof of this celebrated monument.



It will, no doubt, be suggested by some, that this is an ungraceful form; by others, that it is unlikely, because unusual. With regard to the first, I would only remark that it is a matter of taste, and that when the curve comes to be properly investigated, I, for one, feel convinced that it will be found far more graceful than any straight-lined form. With regard to the second objection, I would remark that it appears almost certain that the cella was roofed with a pointed arch of horizontal construction. This mode of arching was so usual in that part of the country at that time, that it could hardly fail to be adopted, and it is, consequently, more than probable that the external curve would follow the internal. True construction would almost require it.

It must also be borne in mind that all the true Lycian tombs adopt the curvilinear pointed form of roof externally, and consequently, that form was not only usual, but appropriate, and the one most likely to be adopted in these parts. But these arguments are beside the subject. We have to deal with facts, not with opinions or theories. So far as I can understand the matter, it appears that the artistic requirements of the building would, most probably, suggest the curvilinear form of roof. The constructive necessities of the case seem imperatively to demand it; and what is of more importance still, the stones themselves prove, beyond a doubt, that this was the form adopted; at least so it appears to me, and so I fancy it must stand till some one can

* From further examination since writing the above, I believe that both in the aisles of the nave, and in the lengths of the church and of the transept, the proportion reached to the centres of the walls, instead of (as was more usual, their internal face; if so, the last-named proportions would be almost exact.

* To be continued.

propose a theory more in accordance with the words of Pliny, or with the result of Mr. Newton's explorations. J. FERGUSON.

CHRISTMAS.

THERE are several points of view from which this period of the year, with its home-comforts, bright decorations, and family unions, has a right to a passing word in our pages. None, however, more obviously than the point of view charitable. There is need for all the kindly hands that can be stretched out. There are hundreds of poor misguided men, with their wives and children, who, according to accounts which have reached us, and those that are published, are half-starved. "It is most heart-rending," writes one on the part of the labourers, "to behold the once strong man (with poverty depicted in his emaciated features) starving in the streets of London. Look into his desolate home, and behold his wife and children badly clothed and worse fed." Let those who have it in their power seek to alleviate the distress which evil counsel has caused. There are many public institutions, too, which should be aided at this time of the year.

In the churches, in our great cathedrals, in the venerable abbey at Westminster, the day is observed with solemn reverence. In the latter place the service is singularly impressive, aided as it is with the associations of the spot; associations which a paper in our present number will revive. What pictures come to mind of former Christmas observances—the rude feasting of the Saxons—the more courtly graces of the Norman festivals—the masking of Queen Elizabeth's days. Notwithstanding the alterations in time and circumstance, the friendly spirit of this season has not been lost. In the workhouses, in reformatories, in ragged schools, there is much decking with holly and evergreens, and extra fare is provided. At the Foundling Hospital, and a hundred other institutions, Christmas-day is not forgotten. In the picturesque old hall of the Charter House there will be found a picture which has little varied in its aspect for 300 years. Even in the prisons the day does not pass without note. In Windsor Castle, as has been the case for centuries past, in its kitchens, a busy scene of preparation will be presented; and there, while refined delicacies have been introduced, the "Roast Beef of Old England" has not been allowed to fall out of fashion, and the huge "baron," which takes two nights and one day to roast, is as superior in size and quality over that which was obtainable half a century ago, as the English ox now is to that of France.

The decoration of the shops at this time of the year suggests considerations. Some few give evidence of an amount of artistic feeling and ability which, if training had been afforded, would have enabled the persons by whom those displays were made, to have taken positions in some recognized department of the arts.

An ordinary wanderer in the London streets cannot fail to mark the great difference observable in some of the shops which meet the eye, though he may regard the effect produced as the result of chance. A more careful observer notes in the windows of the linen drapers, silk mercers, milliners, and others, that it is by arrangement the attraction noticed is produced. There is a shop on Ludgate-hill, for example, where in the spring time the window harmonizes with the season. Primrose tints, delicate greens of many hues, the bluishings of colour are shown by proper contrasts. In the summer, in the autumn, in the winter, that shop exhibits a correspondence of tint. Even changes in the weather are duly considered: if the summer sun shines brightly, the most cool and refreshing colours meet the eye; if clouds prevail, more enlivening tints appear.

In several London shops, notwithstanding a general uniformity, there are great varieties in detail observable. In one shop the artist seems to have been endowed with the spirit of Titian: rich, full, yet harmonious colours are set forth. In another a Watteau-like spirit prevails. Another artist, guided, perhaps, in some measure by the nature of his materials, affects a Rembrandtish arrangement: deep and solemn tints obtain, which set off with great brilliancy the sparing bit of bright colour.

In a mercantile point of view, the architectural decoration of the shops and the tasteful display of the goods are of vast importance, and it is surprising how much attraction and effect can be given by the general arrangement, which may be considered similar to the composition of a picture, and by this harmonizing and judicious foiling of colours.

We believe that this talent is appreciated in trade, and that the Titians, Correggios, and Rembrandts of this art are highly esteemed. They are not so numerous as they might be. If men likely to be engaged in such trades were to study the theory of colours, and get a knowledge of art generally, they would find that knowledge a power, and a paying one too.

It is a genial and well-disposing time this Christmas: and whether we inquired of our royal party at Windsor Castle, of Lady Vere de Vere in the baronial hall, of Mr. and Mrs. Smith in their little box at Clapham, or steady John Plane, the joiner, in his less comfortable two rooms, we should discover many kindly things done, and learn that the poorer were not forgotten. The hobby-horses and the dragons have disappeared, but the best spirit of the "old times" still animates the New.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual meeting of members was held on Monday evening last, at the house in Conduit-street, Mr. Hussey, V.P., in the chair.

The minutes of the last meeting were read and confirmed.

Mr. C. C. Nelson (Hon. Sec.), read a list of donations to the library.

Mr. G. Gilbert Scott then read the second portion of his paper, entitled "Gleanings from Westminster Abbey," which we commence to give elsewhere in full.

At the conclusion the Chairman said, he feared that little time remained for any lengthened debate upon a paper suggestive of so much interesting matter. He was sure, however, that they were all deeply indebted to Mr. Scott for the labour and research which he had bestowed upon the subject.

Mr. Godwin observed that, although time might not permit any lengthened discussion upon the elaborate and admirable account of Westminster Abbey delivered by Mr. Scott, still there was one point which he thought ought not to be passed over without some expression on the part of the meeting, which might have the effect of strengthening Mr. Scott's hands; he meant with respect to the restoration of the Chapter-house. No one could see the casts of its exquisite ornamentation, and the view on the wall showing the present condition of that beautiful apartment, even if he did not know the building itself,—no one could reflect on its present condition, chopped about and destroyed,—its pavement hidden,—its proportions obscured with presses and enclosures, without expressing a hope that speedy means would be taken to restore a work of so much interest and beauty. The water-colour drawings exhibited in the room showed the Chapter-house in all its beauty and magnificence of colour and carving; and the mere act of restoring it would in itself be the means of strengthening that school of decorative art which they were all so glad to see again springing up in England. Under these circumstances he thought it would be advisable that they should pass a resolution, at some proper time, calling upon the Government to assist the Abbey authorities in restoring it to its original shape. He would not trespass further on their attention at that moment, but conclude by moving that the thanks of the meeting be awarded to Mr. Scott, for his admirable paper, and its beautiful and instructive illustrations.

The Chairman said it would be impossible not to concur with Mr. Godwin in the great importance of rescuing from further decay so beautiful a specimen of early art as the Chapter-house at Westminster; and, if any representations of theirs could induce the Government to move in the matter, he was sure they would not be wanting.

In reply to a question,

Mr. Scott explained, that the mode adopted by him of hardening the stone, in cases where internal decay had set in, was by the use of shellac in a solution of spirits of wine, applied with a syringe.

Mr. C. H. Smith said he wished to say a few words with regard to the materials used in the construction of Westminster Abbey. There was no building with which he was acquainted in which so great a diversity of materials appeared to have been used. The early portion, constructed in the reign of Henry III., was built with the green sand, or Godstone. The stone gave the name to the place. A large portion, including the Jerusalem chamber, was made of this stone, which was similar to our common "hearth-stone." Then there was Purbeck marble used in the interior, and Caen stone. In some of the old cloisters magnesian limestone, similar to that in

the new Houses of Parliament, was found. Dean Buckland appeared to have doubted this, but he (Mr. Smith) convinced him of the fact. Sir Christopher Wren, who restored a portion of the Abbey, found that these stones had decayed four inches from the original surface, and he repaired them by using stone found in Gloucestershire. The whole of the building, from the northern transept to Henry VII.'s chapel, and thence to Poets' Corner, was restored with Gloucestershire stone. In later times, Henry VII.'s chapel was restored with Coombe Down Bath stone.

Mr. Scott said that in the old bills of particulars, preserved among the muniments of the Abbey, the stone was stated to have come from Reigate (Godstone was not mentioned) and from Caen. Among the items was a payment to a man for finding a new quarry. The Abbey people, it would seem, worked the quarry themselves, and fashioned the stone, which appeared to have been deposited at a place called "the Garden" at Battersea. They had stone also from a place called Beer or Bur, and from Stapleton, which he supposed was near Pontefract. A good many entries also appeared of what was termed "North stone," probably meaning Stapleton.

Mr. Smith said that Reigate and Godstone stone were substantially the same. He begged to know whether the bills of particulars referred to by Mr. Scott were in English or Latin.

Mr. Scott said they were in Latin, but that English words were sometimes made up into Latin in a very off-hand manner. The English term wainscot was used to denominate oak or boards, a very early instance. With regard to the paintings on the walls, &c., they appeared to have been done in oil or varnish. This seemed to have been the opinion of Sir Charles Eastlake. There were many entries in the old bills of particulars of cash paid for oil and varnish, and there could be no doubt that resin had been added to the oil, as described in some of the old receipts.

Mr. Lewis inquired whether Mr. Burt, the keeper of the records, had discovered any trace as to who had been the architect of the building.

Mr. Scott said he thought not; but that as Mr. Burt was present, he would, perhaps, answer for himself.

Mr. Burt said he had not been able to discover any entry or allusion to any architect engaged on the building. There was nothing but bills of particulars, which referred to mouldings and architectural details.

Mr. Scott said that, in the latter part of the reign of Henry III., there appeared to be a change in the name of the master mason; but whether the master mason meant the architect or not, he could not say.

Mr. Burt said the works at one time appeared to have been under the supervision of Adam de Stratton, a person who got himself, afterwards, into trouble, on account of some peculations of which he had been guilty. The master masons appeared to have been changed every two or three years; and, judging from their names, they were probably Englishmen.

Mr. Ferrey inquired whether there was any means of ascertaining how the masons set out their work. He had lately been engaged in the restoration of Christ Church, in the south-west of England, and, on examining the plaster of an apartment which probably was used by the master mason, he found the lines of a regular window set out. Upon examining the plaster carefully, he found the complete outline of a beautiful geometrical window, with its mouldings all marked complete. Upon taking the dimensions and comparing them with an opening in the south aisle of the nave, he found the window to correspond exactly, and the mason was now making a new window from the original tracing on the plaster. He had never met with the outline of a window traced in so complete a manner.

Mr. Scott said he had not been able to find anything of the kind at Westminster Abbey, but suggested that if the record-chests in the triforium were ransacked they might find the original drawings of the abbey.

Mr. Ferrey expressed his hope that a search would be made, and that the result might be communicated to the Institute. He also asked Mr. Scott whether he had discovered any building so like Westminster Abbey as to warrant the opinion that the same architect had designed both. He had been struck with the close resemblance between the mouldings at the church at Farnham and those at St. Cross, near Winchester. They seemed to have been worked from the same moulds.

Mr. Scott said the nearest approach to Westminster Abbey he had seen was the north tran-

sept at Hereford Cathedral, which, however, was not equal in merit, although there could be no doubt that the architect of the latter had seen Westminster Abbey.

Mr. Burt said that in the accounts preserved in the muniment-room there were several notices for small buildings for the use of the masons; but, whether they were external or mere temporary workshops, there was nothing to show; but there could be no doubt that the architect erected buildings for the use of the masons, and as places of residence.

Mr. Scott said it was remarkable that in England no original drawings were to be found, with the exception of some small drawings for the tower of King's College, Cambridge.

Mr. Ferrey seconded the vote of thanks proposed by Mr. Godwin, and observed that it was impossible to over-rate the value of such a communication.

The Chairman having put the motion, which was carried by acclamation—

Mr. Scott returned thanks for the compliment; and, reverting to the observations of Mr. Ferrey with reference to the restoration at Christ Church, Hampshire, said that a parallel case had occurred at Amiens, where the vaulting was set out on the pavement of the church, with the sections of the ribs, &c., complete.

Mr. Smith said he had seen the same practice pursued at Rouen, by the masons of the present time.

The following gentlemen were balloted for and elected:—

Messrs. W. A. Boulnois, already associate; J. Edmeston, associate; James Ferrusson, associate; J. M. Lockyer, associate; G. W. Mayhew; E. Nash, associate; Joseph Peacock, associate; William Slater, associate; G. E. Street; and William White, as fellows; and Messrs. Henry Dawson, F. Judge, and C. J. Knight, as associates.

Professor Semper, of Zurich, was elected honorary and corresponding member.

The next meeting will be held on Monday, the 9th of January.

MILFORD HAVEN.*

THE singular natural advantages of Milford Haven as a harbour of refuge are well known to mariners; and since 1814, when the dockyard establishment near Pembroke was commenced, these and other advantages of the locality, in regard to the public service, have been growing in appreciation of the Government. The Report before us, addressed to Col. the Hon. R. Fulke Greville, by Mr. Page, aims at showing that the Haven possesses still further advantages, such as are greater than those of Liverpool and Southampton for passenger traffic, and greater than those of the arsenals and dockyards of the south coast for use in time of war.

The conditions that would have guided selection of sites for a port, or a dockyard, have become greatly altered through the progress of invention in recent years. Mr. Page has gone elaborately into discussion of the changes wrought by steam, as applied to locomotion by land and sea, and has examined the probable effect in any future contest, of the inventions of a warlike character. The result is the demonstration of new conditions, which are answered by Milford Haven, as the locality beyond all others for a port for ocean steam-vessels, as well as for a station and arsenal for ships of war.

The advantages of the Haven, in the consideration of safety and time, are shown whether as compared with Southampton or with Liverpool, and whether for the metropolis, or for the manufacturing district of Lancashire—with the formation of sixty additional miles of railway. Even as compared with Galway for American steamers, it is shown there would be a saving in time. The reasons for the preference over Southampton, for passenger traffic and expensive merchandise, are, in the first place, the same as those which caused the change to Southampton from London; and, secondly, the close vicinity of the Welsh coal-field, added to the area at low-water of the Haven itself. The great rise and fall of tide also, gives an advantage for graving-docks; whilst, through the excellent beaching-grounds, large iron ships could be examined without expense of going into dock. The reasons in favour of the station for ships of war, are the same vicinity of the coal-field, the area, and the distance of the anchorage from the entrance of the Haven. The

positions of Dover, Portland, Portsmouth, Devonport, and other harbours, are compared in the report, with the positions of the chief naval stations of the French; and the vulnerability of the former, and the comparative safety of the latter from natural advantages (except Cherbourg, which is most strongly fortified), are shown.

An early port, and a quick transport from the steamer to the railway, especially considering the class of steamers now built, afford the greatest safety and the time economy. Consequently, the conditions of a port for ocean steam-ships, putting the heads partly in our own words, are:—

1. Easy access and departure in all weathers.
2. Ample depths of water at all times of tide.
3. Facilities for speedy and economic supply of coal.
4. Direct communication with the metropolis and the manufacturing towns.
5. For ships bound west or south,—the most rapid communication with the Atlantic—saving sea distance and dangers, at the expense of railway communication.
6. Distance from a hostile coast.
7. Security from any sudden attack.

These advantages might be secured, in the first instance, by little more than the construction of a pier into deep water, at Newton Noyes, near Milford, and the connection with it of the railway, as appears from the result of Mr. Page's examination of the northern shore of the Haven. We may advert, however, to the circumstance, that greater depth of water than is provided under this arrangement would be needed for coaling the ships of war; since, whilst the opinion is given that it would be dangerous for a three-decker to lie at anchor in a gale of wind with less than 5½ or perhaps 6 fathoms of water, the end of the pier immediately proposed would terminate in 5 fathoms. Doubtless, however, the requisite depth might be secured at Newton Noyes, or contingently.

The Report goes carefully into the comparison of the relative naval powers of England and France—giving the superiority for the steam navy, as well as the navy generally, to England, both in vessels and guns; considers the progress made with heavy ordnance of long range, and destructive engines of new character; and, altogether, comprises a great body of information bearing upon the points in question. Seeing that there is reason for the assertion of the Report, that Sheerness, Portsmouth, Devonport, and Keyham dockyards could be set on fire in a night attack, even within an hour, there can be no doubt of the importance, just now, of a due consideration by the Government, of the matter which Mr. Page has advanced.

HOGARTH.

MANY visitors to the National Gallery will regret the absence of Hogarth's pictures, and it has been suggested that a collection of the whole of the works of this painter, which are scattered about in the Soane Museum and elsewhere, would make an exhibition of very great interest and use.

At the present time, the works of one of the greatest English painters are not properly appreciated: his name and reputation are familiar to all; but it is rather as the great moralist and satirist that he is famous amongst the multitude, than as an artist of very high class: for minute detail, effect of light and shade, harmony of colour, and other qualities, several of the pictures of Hogarth will bear comparison with the finest works of other schools.

In Oxford-street, nearly opposite Rathbone-place, there is one of the old signs which once formed an important feature of the streets of London, but which are now rarely to be met with. It excites some curiosity, not only from the peculiar nature of the subject, but from it being supposed, on good authority, to have been the work of Hogarth. This street picture shows a stout old gentleman, with large, patience-tried features, dressed in the costume of about a hundred years ago, carrying a box on his back: the lady has a monkey on her arm; there is a cat and dog fighting, and other unpleasant matters; and below are the words,—"A man loaded with mischief." The colour, effect, and drawing of this sign are excellent, and serve to show that in those days gone by they were not mere daubers who were employed in this department of art.

Hogarth took much interest in the London signs; and, notwithstanding his great industry in his art, delighted to wander in the streets of the metropolis. Mr. Dawes, a pupil of Hogarth, mentions that, when the great painter had his "Analysis of Beauty" in contemplation, he had more than once accompanied him to the Fleet-market and Harp-alley, adjacent, which were in those days the great marts, and indeed exhibitions, of

signs of various descriptions, barbers' blocks, poles, &c., and which were then in much request. In these places it was the delight of Hogarth to contemplate the works emanating from a school which, he used emphatically to observe, was truly English; and frequently to compare them with, and prefer them to, the more expensive productions of those he used to call the "Black Masters," a name that he applied to the smoky productions which were then so much in fashion, in the times mentioned; and are perhaps so at present. Bad copies of Italian and Flemish pictures were regularly manufactured, and annually sold, obscured by dirt and smoke, and accumulated down with asphaltum.

It was the delight of Hogarth to consider the blocks, which used to be ranged in these shops in great order, one row above the other, like the spectators in the galleries of a theatre at different points of view; to remark on the different characters which the workmen had bestowed upon their countenances; and to endeavour to guess from their appearance at their dates, and to detect the effect which they would have if decorated with the various wigs which the fashions of different periods might have clapped upon them.

In 1762 Mr. Bonnet Thonny projected an exhibition of signs, to this, however, Hogarth appears to have been but a trifling contributor. Amongst the heads of distinguished persons were those of the King of Prussia and the Empress of Hungary. Hogarth touched with chalk and altered the cast of their eyes, so as to make them look significantly at each other. The sign of Camden, the historian, with those of other worthies, found a place in this curious exhibition.

THE DRAINAGE QUESTION AT LEAMINGTON.

"The rainfall to the river, and the sewage to the soil." At a recent meeting of the Local Board of Health, Mr. Hitchman proposed the following resolution:—

"That an offer be made to the Earl of Warwick of the sewage of Leamington for a term of years, to be transferred to a tank, in a suitable state for agricultural purposes, conditionally that he erect his engine and pumps, and lay a pipe for the conveyance of the same on to his land, as the basis of an agreement to be entered into between the board and his lordship."

In course of his remarks, the proposer of the resolution urged that they had the evidence of other towns that the deodorizing works were losing concern; that, at Cheltenham, where were the most efficient, they scarcely paid their working expenses. So, if they were going to lay out several thousand pounds in deodorizing works and filtration beds, he thought they would incur much loss.

A previous agreement having been entered into with Lord Warwick, on the basis of the deodorizing system, as to which Mr. Austin, C.E., has been employed to carry out a plan, this fact was urged in opposition to Mr. Hitchman's proposal, which was finally, after some discussion, rejected by a considerable majority of the members present, although it was stated that there was good reason to believe that Lord Warwick was willing to consider the new proposal, if adopted by the Board and submitted to him.

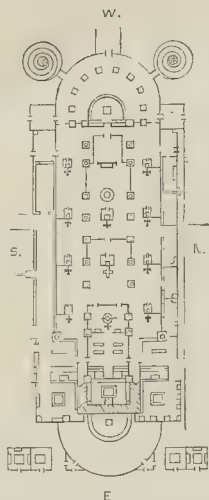
In a letter to the *Leamington Courier*, Mr. Hitchman says of his plan for the disposal of the sewage (which, in fact, is just that embodied in the axiom,—"The rainfall to the river, and the sewage to the soil"),—

"I believe that, in order to render the sanitary arrangements of towns perfect, and to extend the utilization of that important part of the refuse which is so valuable as a fertilizing agent on the land, it is absolutely necessary to have three distinct conduits ramifying through them, instead of the two usually employed,—namely, 'a pipe,' 'a drain,' and 'a sewer.' It would tend to the simplification of sanitary science and to the welfare of the community, if, in this vocabulary of sanitary nomenclature, the distinction between them, both in name and use, was always strictly preserved. The term 'pipe' should only apply to the pipe to convey the pure water-supply. The term 'drain' to the drain only to convey the rain or surface-water from the town to the river as the natural water-course. And the term 'sewer' to the sewer only to convey the valuable house sewage, mixed with the water-supply in closets, &c., into its tank, in as suitable a state as possible for application to the land, to fertilize it. A main-drainage system ought to be confined to the removal of the surface-water. A main-sewerage system to the removal of sewerage."

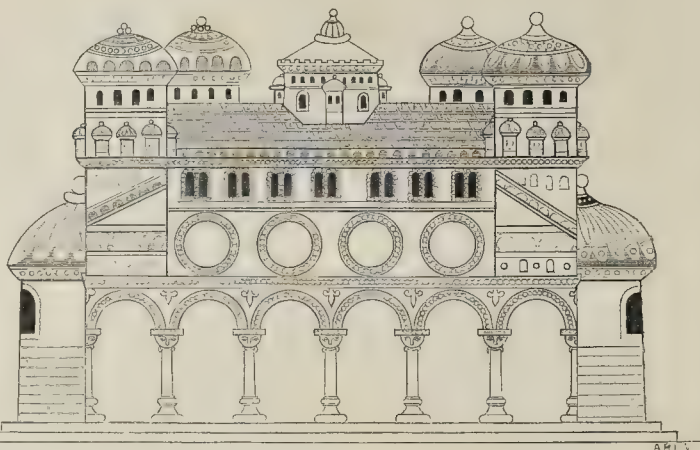
Mr. Hitchman is quite correct in insisting on strict definitions. There is one word, even in his own statements, which is used erroneously,—namely, "sewerage." Removing the sewerage of a town, strictly speaking, signifies despoiling the town; not removing the sewage or sewer contents. "Sewage" and "sewerage," though frequently used by Mr. Hitchman as synonymous, are words with very different meanings, and ought not to be indiscriminately used.

* Report on the Eligibility of Milford Haven for Ocean Steam Ships, and for a Naval Arsenal. By Thomas Page, Civil Engineer; Member of the Institution of Civil Engineers; Fellow of the Geological Society of London. Late Acting Engineer of the Thames Tunnel. 4to., pp. 62. Three Plates. London: 1859.

ANCIENT DRAWINGS.



Church of St. Gallen, Switzerland. A.D. 820.



A. LE VENGUEUR.

RESEARCHES IN LIBRARIES.

I. ANCIENT ORIGINAL DRAWINGS.

St. Gallen (Canton St. Gallen), Switzerland.
Library: * *Design of a great Cloister.*

ALTHOUGH this important and oldest design is, I think, well known to the archaeological world, I still deem it necessary to remark upon it.

It bears date in the year 820, and represents the design of a great cloister for the Benedictine Order. The name of the originator is unknown. The original is drawn in red lines on four parchments sewn together, while the explanation of all prominent and particular portions is written in black, in Latin hexameters.

The entire arrangement of the cloister buildings represents a perfect little town, with the church in the centre.

[See the figure: a representation of the whole plan would occupy too much space in your journal, even on a greatly reduced scale, but an accurate fac-simile is in my possession for the benefit of those interested in such matters.]

Two round towers are placed at the west end of the church [detached from it], one to the south the other to the north, the former of which has the significant inscription, "*Altor similis*," and the purport of them is quoted to be, "*Ad universa superinspicenda*." These towers being placed in the west and the principal altar in the east, prove the consecrated direction "west to east," although, in the plan, the longitudinal direction is expressly marked "*ad Oriente in Occidentem*." At the west end of the church is further shown a second choir, with apsis [in the plan called "exedra"]. This singular arrangement occurs again only in Germany, and we shall, in our following sketches, have very interesting examples. The west apsis is surrounded by a concentric colonnade—the east one with a concentric wall. The enclosed space is named "*Paradisus*."

Stuttgart (Kingdom Württemberg), Germany:
Royal Public Library, in Neckar-street.

I FOUND there, executed on parchment, in red and black + colours, and pasted to the inner side of the back-binding (Bibl. fol. No. 57.; Ex Bibl. Zwifalten, Sæc. xii.) a very interesting elevation. The accurate illustration of it speaks for itself.

[A fac-simile of the original is in my possession.]

Berlin (Kingdom Prussia, Germany) Royal Library. (MS. Germ. Oct. 109.) *Life of Maria. Poem (last quarter of the twelfth century).* By SCHOLASTICUS WERINHER, of Tegernsee. († 1197).

THIS epic poem is illustrated with eighty-five pictorial representations. In the works of this

* With regard to pictorial and ornamental objects, which I found in this and other libraries, I shall refer to these further on.

† In our fig. all lines, &c., drawn in pale colour, are on the original in red colour.

‡ Tegernsee is a monastery in Bavaria.

period we seldom find a proper arrangement of groups; the heads are somewhat large, faces, monotonous, and the position of the bodies sometimes distorted, i.e., in these representations we see that the artist's knowledge of the structure of the human body was very limited. The figures and objects are drawn in outline in red and black, the flesh is always in black, red is applied to distinguish the clothing from it, and to mark the difference of clothing in groups. The cheeks are marked by red spots, and the under-lip by a red line.

But amongst the whole there are two representations (the lamenting Mothers of Bethlehem and the Damned), which, considering the age, surprised me by their power and clearness.

In the group of the lamenting Mothers of Bethlehem, notwithstanding faults of drawing, the fall of drapery is grand; the expression of grief in the countenance, and the various attitudes, are remarkably fine.

Had Werinher had the means at our command, what might he not have accomplished?

A. LE VENGUEUR.

NEW STAFF COLLEGE AT SANDHURST.

THE first stone of the projected college for officers of the army who, having served a probation in regimental duties, seek by a higher course of training to qualify themselves for Staff appointments, was laid at Sandhurst, on the 14th, by the Commander-in-Chief, the Duke of Cambridge.

The new Staff College will be situated on a gentle slope, from half to three-quarters of a mile to the eastward of the Cadets' College, and within the spacious grounds attached to the last-named establishment. The new edifice, the foundations and basement of which are already laid, up to within a foot of the ground floor, is expected to be completed in eighteen months. When finished it will afford accommodation for forty students. The building will be 265 feet long, 110 feet broad, and 55 feet in height, its style of architecture Modern Italian, and the material brick and stone. The main entrance will be by the western front, and over it the Royal arms will be emblazoned, surmounted by the crest of the college. At each end will be a tower, rising about 20 feet above the rest of the building. The principal apartments will comprise the great hall, lecture-rooms, study-halls, libraries, and mess-room. The hall will be approached from the front by a vestibule, and communication will be had to two spacious quadrangles by lengthened corridors. A stone staircase will lead up to the first floor, and on the landing there will be an ornamental balustrade surmounted by Ionic columns.

The contract also includes the erection of suitable residences for the commandant and adjutant of the college, together with stabling for a stud of forty horses. The works are under the direction of Colonel Chapman, C.B., of the Royal Engineers,

assisted by Captain Gray and Lieutenant Bowdley, Royal Engineers. Mr. Myers has the contract. The completion of the building is estimated to cost from 40,000*l.* to 50,000*l.*

SOCIETY OF ENGINEERS.

At the recent annual dinner of this society, the honorary secretary, Mr. Alfred Williams, gave a general review of the society from its commencement, and stated that it was originated in the year 1854; that in 1855 it consisted of only twenty members; that from that date it had gradually increased in numbers, and at the present time there were upwards of 150 members belonging to the society; and that the attendance of members at the monthly meetings had increased from twelve to seventy-five. He also stated that the society included civil engineers, engaged professionally on their own account, assistants and pupils of engineers, manufacturers, and scientific men, connected collaterally with the profession; and the subscription being only the nominal sum of 10*s.* per annum, he anticipated shortly a large increase of numbers. At present, the society held their ordinary meetings in the Lower-hall, Exeter Hall; but, with largely increased numbers, and an addition to the finances hereafter, in the shape of an admission fee, he thought it not improbable that in a few years they might be able to meet in a house of their own.

ST. THOMAS'S CHURCH, WELLS, SOMERSET.

THIS church was erected by the late Mrs. Jenkins, in memory of her husband, the late master of Balliol College, Oxford, and Dean of Wells. It is built of stone of two colours, quarried from the neighbourhood. It consists of a five-sided apsidal chancel, a nave, and north aisle, a tower surmounted by a spire standing at the east, and a south transept. The interior is ashlar with stone: the shafts of the columns of the arcading are of blue lias stone. All the fittings are of oak. The chancel, of which the interior is represented by our engraving, is divided from the nave by a breast-wall of stone, has five two-light windows, the subjects of which are types of the old and the antitypes of the New Testament. These windows were executed by Wailes, and presented by the members of the University of Oxford. There is also a three-light window on the south side, the subjects of which are from the life of St. Thomas, to whom the church is dedicated. The reredos is of stone and marble, enriched with mosaics and polychrome, enclosed by an altar-rail of brass, by Skidmore. The whole of the roof is enriched with a polychromatic decoration and gold. The stall-work is of oak, carved. The pavement is in stone and encaustic work. The pulpit is of stone and marble, with some metal-work in connection. Mr. S. S. Teulon, of Craig's-court, was the architect.



ST. THOMAS'S CHURCH, WELLS, SOMERSET.—MR. S. S. TETTON, ARCHT.

CAMBRIDGE GUILDHALL COMPETITION.

THE premiums for the Cambridge Guildhall have been thus awarded:—

First premium—"Utility"—authors, Messrs. Peck & Stephens, of Maidstone.

Second premium—"Treu und fest"—authors, Messrs. John & Wyatt Papworth, of London.

The following is the Referee's report on the first selected design:—

"The hall and assembly-room is from north to south, on the first floor, and is 113 feet long by 54 feet wide, exclusive of an organ recess. The whole of the ground-floor is appropriated to store-rooms, except next Butter-row, where are the town clerk's offices.

Next Wheeler street is the entrance for the musicians, with a living-room and bedroom for the hall-keeper, and a room for the ordinary musicians, with separate staircase up, and on the first floor a room for the superior musicians.

The access to the assembly-room will be by the staircase of the stair-hall building, in one width, communicating by a bridge across Butter-row.

This arrangement is very simple, and forms a very fine plan; but the present assembly-room is not sufficiently made use of.

In order, however, to provide accommodation for the library and reading-room and school of art, the plot next Pens-hill is appropriated *provisionally* for these purposes; the reading-room and free library being on the ground-floor, and the art department on the two upper floors. This arrangement is itself *unexceptionable*, but it will absorb some hundreds of pounds, as the building will hereafter have to be removed to make way for the corn market, which is proposed to be 76 feet by 66 feet.

The styles free Italian: the masses are well grouped, of the finest class of design, and effective, as contemplated to be ultimately carried out. The whole forms a noble mass. The interior is gracefully designed and the assembly hall striking in its appearance, being without galleries, but the details are too clumsy and heavy.

The estimate for the present buildings is 6,000*l.* By a clerical omission of the amount, the calculation of ultimate expenditure is not stated."

(After this was printed, a paper was sent in by the authors, stating that the ultimate expenditure is estimated at 25,000*l.*)

The following tabulated statement of the accommodation provided by the two designs was drawn up for the committee by Mr. Rowe:—

	Size of School of Art in feet.	Size of Free Library in feet.	Size of Public Reading Room in feet.	Number of persons to be accommodated in Assembly-room, allowing 4ft. superficial for each.	Estimated Expense.
Utility.	26 feet by 20 feet.	27ft. 6in. by 12ft. 6in. temporary. 26ft. by 20ft. permanent.	32ft. by 21ft. 6in. temporary. 28ft. by 27ft. permanent.	1,261. (The room is 97ft. by 32ft.; but it is figured 113ft. by 54ft.)	£25,000.
Treu und fest.	60ft. by 28ft. 6in. and a second room, 33ft. by 18ft.	40ft. by 24ft.	37ft. by 24ft.	1,465.	£15,900.

CAMBRIDGE ARCHITECTURAL SOCIETY.

On December the 10th, a meeting of the society was held, the Rev. H. R. Luard in the chair. Mr. J. W. Clark, Trinity College, delivered a lecture "On Greek Temples," illustrated by photographs and engravings. After a short discussion, the meeting adjourned. The report of the society for the years 1858, 1859, says, *inter alia*,—

"Among the restorations lately completed in the University and town, that of St. Edward's Church undoubtedly holds the first place. We would especially commend the western door, and the window to the town, designed by Mr. Brandon. The idea of an internal porch, there being no room for an external one, is original, and fairly executed. With regard to the interior, while no one can fail to admire the great change for the better in every way, we are sorry that we cannot give increased praise to the restoration on which so much care has been spent, and to carry out which so many difficulties and vexatious annoyances have been overcome.

At Queen's College, a thorough restoration of the hall, chapel, and other buildings, is in progress, under the care of Mr. Borley, an example which we hope other colleges may follow as judiciously."

THE MANCHESTER ASSIZE-COURTS.

We are informed that the site selected for these courts has been cleared of the remains of its former buildings, and a contract entered into with Mr. Robert Neill, of Manchester, for the construction of the foundation-walls of the new assize-courts.

The work has now been for some time in progress. It has been found necessary to sink the walls to a considerable depth, in order to secure for them a perfectly firm, solid bed. The footings of the walls are all hard flag landings, from 6 to 8 inches in thickness; and both the footings and the brickwork above are set in mortar, made from Ellis's "Barrow Lime."

Meanwhile Mr. Waterhouse, the architect of the works, is actively engaged in completing the details of his design, which are expected to be finished by the end of January next; when the committee of magistrates intend advertising for tenders for the main works above ground, which, it is understood, will be comprised in one contract. Yorkshire stone has been selected by the committee, as that best adapted on the whole for the exterior of the building.

MANCHESTER NEW ASSEMBLY-ROOMS.

THE new assembly-rooms, erected in York-street, Cheetham-hill, close to the town-hall, were opened on Tuesday, the 13th December, when the first assembly was held. The new rooms, of which we have already given some particulars, have cost, we understand, about 14,000*l.*, and have been erected by a number of shareholders, the shares being 100*l.* each; and, of course, only shareholders, or those introduced by them, will have the right of *entrée*. The building is perfectly plain in its exterior. The ball-room is 61 feet long, 40 feet wide, and 40 feet high. The ceiling only has yet been decorated; the state of the work not justifying the present decoration of the walls. The ceiling is in three compartments, each having a domical centre 25 feet in diameter, filled with human figures in low relief and arabesque ornaments. The groundwork is here of azure blue; the figures and ornaments being in light prismatic colours, relieved with gilding. The ornamental framing of the ceiling has a cream white, with colouring in the grounds, the ornaments and mouldings being gilt. Between the ceiling and the cornice there are twenty-four semicircular lunettes, containing each a group of figures playing musical instruments. These figures, which are in bold relief, are painted white, the ground behind being a rich blue; while the spandrels between are finished in maroon and gilt. At each end of the room, and in the centre opposite the orchestra, are mirrors nearly 20 feet high, in frames; beneath being divan seats, covered with crimson silk damask, with seats to correspond in other parts of the room. The floor has been laid with solid parquet flooring, by Messrs. Arrowsmith and Co., of New Bond-street,

after a handsome design. The same manufacturers have laid the chancel floor of the new church of St. Peter, Bellisize-park, with this flooring, which has attracted much notice; and it has also been brought into use by them in several other churches throughout the country, as in St. Gregory's, Cheltenham; Ezra's Church, York; Mickelover Church, near Derby, &c.: it is said to be much liked by the clergymen, being warmer for the feet. The architects of the Assembly-rooms are Messrs. Mills & Murgatroyd; the general contractors, Messrs. D. Bellhouse and Son. The painting and decoration, as well as the furnishing, have been carried out under the direction of Mr. Crace, of London: the three principal gaseliers have been made by Messrs. Radcliffe, of Birmingham; the others being the production of Messrs. Perry & Verity, of London. Throughout the building are instances of the use of cast iron for purposes of ornamentation. Messrs. Edward T. Bellhouse & Co. were the sub-contractors for this department.

WELL-BORING.

AN artesian well, of large size, has been completed for the Woodcock-street baths, Birmingham. According to the local *Daily Post*, when the corporation advertised for tenders, the contract was taken by Mr. Greenley, a metropolitan well-borer. The diameter of the well was not specified; but, as Mr. Greenley had recently commenced working some much-improved machinery, he was anxious to show to what extent the old dimensions could be exceeded, and undertook the construction of the well for a sum much below what he believed it would cost him. The diameter fixed upon was the large one of 26 inches. The work was commenced in November, 1858, in the belief that it would be finished in three or four months, but the difficulties encountered were so great that the well was only completed a few days ago. More than one stratum of running sand was encountered; and, to pass through these, iron cylinders had to be sunk and fixed. But for the nature of Mr. Greenley's machinery the well would have proved a failure. The instrument now used in making artesian perforations is very different from the old machine employed in boring for coal, &c.,—a series of iron rods screwed together and forced down by repeated blows with a mallet. That was a costly and tedious operation. Mr. Greenley's machine, however, is simply an improvement upon an instrument which has been used in China for two or three thousand years. It consists of a very heavy bar of cast iron, armed at its lower end with a number of cutting chisels, and suspended by a rope, which is in connection with a steam-engine at the mouth of the well. As it is wrought up and down by the engine, the torsion of the rope gives a circular movement to the bar of iron sufficient to vary the position of the chisels at each stroke of the instrument. The apparatus of some well-borers has around the chisels a cylindrical chamber, which, by means of simple valves, receives and retains the abraded portions of the rock. This chamber, which would not hold many pints, had of course to be raised to the surface at short intervals for the purpose of being emptied of the *debris*, thus involving much loss of time. Mr. Greenley, however, performs this important operation in a very different way. He employs a cylinder eight or nine inches in diameter, having a piston fitted to it, so as to form a pump, with one valve at the piston and another at the bottom of the cylinder. When the pump sinks to the bottom of the well, the piston, by its own gravity, sinks also to the bottom; and, by suddenly reversing the engine and drawing up the sucker, not only is the crushed *debris* drawn up, but also pieces of rock six or eight inches in diameter. When the workmen came to the running sand, therefore, instead of bringing up a few quarts at a time, this pump enabled them to raise six or seven tons per hour. The sand, however, was not the only difficulty. Hard clays had to be cut through; and then, at a depth of 75 feet, the old red sandstone was reached. It proved to be as hard as Aberdeen granite, and infinitely worse than flint, because flint would crack and split, whereas this had to be ground as in a mortar. Though the contractor did not expect his machine would have such a crust as this to bite, he persevered month after month in the tedious work, and at length, having penetrated the sandstone to the depth of 145 feet, he reached the goal specified in his contract. Numerous water fissures were met with in the formation, and if Woodcock-street had not been 40 or 50 feet higher than Allison-street, the stream would have been

PROPOSED SCHOOL OF PRACTICAL SCIENCE IN CAMBRIDGE.

ENGINEERS' PUPILS.

Mr. G. ROBERTSON, resident engineer at the Leith Docks, remarks on this subject,—"From 1847 to 1850 I was educated at Putney College, and there acquired information, useful to a civil engineer, which I should never have obtained afterwards on works, or found time or opportunities to study in private.

The great mistake made by Putney students, and which accounts for so few being heard of in the profession, was attempting to start on their own account as civil engineers, only on the knowledge acquired there, without having passed through a pupillage. Trying to climb over the wall, instead of going in at the door.

A lower premium, and perhaps shorter pupillage, are concessions which civil engineers would be wise to grant to well-educated men, instead of setting their faces against college education. They would get lower premiums certainly, but better men.

The great obstacles to the combination of a scientific education with a practical one are the expense and the *apparently* late period at which the student begins to earn his living. I say *apparently*, because it is really early in comparison with the 'learned' professions. Besides, as a general rule, when a salary is to be got in a profession at an early age, as in Government offices, promotion is slow afterwards; and, in this case, it is not 'the early bird that gathers most straw.'

I would strongly urge the importance of giving the scientific education *first*, and the practical one afterwards; not only because a man should learn the reasons of things first, but because pupillage is the door into the profession which it is unwise ever to shut afterwards. The premium is given not only for information but for patronage and connection."

by this time leaping forth from the mouth of the well.

The machinery employed is said to be the invention of Mr. Allison, who had the superintendence of the work under Mr. Greenley.

FALL OF AN ARCH. FISHMARKET, NORWICH.

AN inquest has been held in Norwich, before the city coroner, on the body of a workman, William Powley, who was killed by the fall of an arch in the new Fishmarket there. At an adjourned meeting on the 15th inst., Mr. M. D. Wyatt, who was examined, said,—Premising that the information I have received, with respect to the arch that has fallen, is correct,—that is, that it was in a very wet condition,—I consider that the striking of the centre prematurely while the arch was in that state was the cause of the arch falling in. If the mortar had been allowed to harden, I think there was no reason why the arch should have fallen. Considering the state of the arch, I attribute its fall solely to the removal of the centre whilst in that condition. The materials used are fully equal to the average class of materials of which that kind of arch is constructed. My attention was drawn to the part of the building which has been secured by iron rods and bars; and I attribute the necessity for these rods to the omission of the lintel, which should have been inserted over the window, and of the discharging arch which should have come over it. The omission of the lintel, primarily, was the fault of the builder.

By the Foreman.—The centres should have been struck gradually under any circumstances. If the arches had been built with cement, the centres might have been struck sooner; but even then they ought not to have been struck until the abutments were finished.

Cross-examined by Mr. Carlos Cooper.—These arches had been exposed to the weather very much. The mortar in its present condition appears to have but little lime in it, and certainly exhibits signs, from the interstices being open, of being very much washed, and must have stood a very hard chance of getting dry at all. The lime used, also, is slow-setting lime, and unless there was good reasonable protection, the mortar would not harden.

A Juror asked what proportion of sand would have been sufficient in the mortar?

Mr. Wyatt.—Two parts sand and one part lime? The specification was referred to, and it appeared that it stipulated that the mortar should be composed of "one part well burned lime, and three parts of sharp clean sand, well mixed and worked together."

Mr. Wyatt said,—I stated that the proportion should be two parts of sand to one of lime; but of course, in cheaper work, a smaller proportion is used. That is a matter of economy. Some lime will take a great deal more sand. Supposing the sand is sharper, and of a better quality, it will do with less lime; so different quantities are used in different parts of the country; but the proportion usually employed in London is two parts to one.

Mr. Miller.—If you had been consulted, would you have passed the plans of this building?

Mr. Wyatt.—The building is not one of an expensive class, and I presume that economy was a great consideration. If money had been of no object, you would probably have made a handsome and more durable building, by expending double the money; but I consider the building answers the purpose, and is fairly designed and built, and evidently with considerable attention to economy, which I presume was a great object.

Mr. Henry Robert Abraham (the architect engaged by the jury to inspect the building) said,—In the absence of violence or any specific cause unknown to me, I should say that the fall of the arch in question arose from a very unfortunate combination and complication of circumstances; certainly from no one individual circumstance. I had an excavation made at the north springing wall of the arch which had fallen. I found that the soil at the bottom was very wet, and of a compressible character, and likely to be altered and affected by saturation, and particularly if there were any motion in the water,—that is, if, from any large quantity of rain coming down, the water rapidly found a level and carried the sand away with it. I also found that there was no concrete foundation, which would have remedied such a condition, nor could I discover any drainage. The walling itself was of different heights and weights, and, therefore, the higher and heavier portion, and the more bulky portions—such as

those which contained chimneys—would necessarily subside lower than the lighter portions, and I found unmistakable signs of their having done so. I also found that the building had been erected partly on new and partly on old foundations, which, in itself, would almost inevitably cause fracture. I next examined the arches which had fallen, and I perhaps should render what I have to say better understood if I produce one of the bricks. [Portions of bricks produced.]

I may say they are of as good a quality as is necessary for the work. The mortar is composed of rather a loamy sand, softer and less silica in it than in those sands used in the neighbourhood of the metropolis and elsewhere, and evidently of unequal quality and ill-made. The lime is not properly diffused through it: in some parts it has great tenacity, as may be seen by these bricks, while in others the bricks come out quite clean from it. With regard to the stability of the arches, it has always been my practice to avoid so close a proximity to danger in the rise of arches—considering what duty such arches have to do in a public thoroughfare—unless the arches were turned in cement, with a different character of brick, when, in point of fact, the character of the arch is lost in one large homogeneous structure, which becomes a floor rather than an arch. As to the walls, my opinion differs from that of Mr. Digby Wyatt. I always find that it is dangerous to carry up arches for floors simultaneously with the other work, and particularly where the walls are of different weight, and the foundations are not uniformly solid. I think the walls should be carried up to their heights, so that all the abutments should be at once perfect. They should then settle for a sufficient period, and then, when the arches are turned, you may turn them almost as flat as you please, if they are properly built. Now, I do not consider that these arches are properly built. I think that two rims, particularly with such materials, would not form a solid and safe arch; and I consider that all the arches in this building are insecure, unless they are bonded together. It is evident that the two rims have separated in this building. I think that is one of the combining causes of failure; and I feel it my duty to say that I believe every arch in this building is liable to fall if they have been constructed in the same way. I think that when the hot summer weather comes, and the water is out of the foundation, there will be further symptoms of failure in the building. There is one part of the building which I consider now to be so highly dangerous that I thought it my duty to beg that some immediate steps be taken to secure it.

The Coroner.—It has been said that it is not safe to strike a centre when the mortar is hard? Is it safe to strike a centre when the mortar is hard?

Mr. Abraham.—I am afraid I shall be considered to be propounding a different theory to that which other people hold. I always have my centres struck when the mortar is soft. I do not think the principle of an arch can otherwise be realised. I never allow the mortar to get hard: I ease the centre; because the principle of the arch is its squeezing itself into the mortar, so that if you allow the mortar to get hard, and then remove the centre, it is sure to drop, and fracture must occur, particularly if the arch is turned with two rims; but if you allow it to be squeezed by its own weight into its own mould, and keep it there, you have a perfect solid arch and equilibrium. This arch, I believe, has had its death-blow by some weight or other being placed on it—some knock which will never be known. I think the accident may fairly be attributed to a combination of circumstances, which could not very well have been avoided; and, therefore, I do not say that blame can fairly be said to attach to any one. I have seen a great many accidents in buildings, and I was indicted myself at the Old Bailey for manslaughter, though I was absent when the accident occurred. I noticed some iron rods put up at the corners of the building; and, if anything would throw down the walls, these rods would; for the brickwork will settle, while the upright rods will be rigid.

The Coroner having summed up, the jury retired, and, after more than half an hour's deliberation, returned the following verdict:—"That the deceased, William Powley, met his death by the accidental falling in of one of the cellar arches of the new Fishmarket, but the jury consider, from the evidence of eminent architects of London and builders in Norwich, that the buildings are in an unsafe condition, and require the immediate attention of the corporation in order to ensure the perfect safety of the public."*

* A fuller report will be found in the *Norfolk Chronicle* of last week.

CHURCH-BUILDING NEWS.

Shelsley Walsh.—The church at Shelsley Walsh, Worcestershire, has just been entirely restored from the designs of Mr. George Truett, architect. Lord Ward, Sir John Walsh, bart., M.P., Rev. D. Melville, Rev. W. Griffiths (the rector), Mr. Smith, Mr. Haywood, and several others, have liberally subscribed towards the work, which the local papers speak well of.

Blackpool.—The design for the new Union Chapel, Blackpool, executed by Mr. Robinson, of Burnley, has been decided upon as being best adapted to the requirements. The building will be of patent bricks with stone facings. The two principal entrances will be at the end fronting Abingdon-street. The interior arrangement comprises two galleries; the one opposite the pulpit in a half circle, corresponding with the seats beneath; and the organ-gallery at the west end over the vestries and vestibule. The chapel will hold about 600 persons. Arrangements are being made to begin the building early next spring.

Preston.—The new Congregational chapel, Grimshaw-street, has been opened. The chapel has been built at a cost of about 3,000*l.*, towards which over 2,000*l.* have been contributed. It will seat about 900 people. It is 79 feet long, and 47 feet 6 inches in breadth. The style of the front of the building is Early Decorated, and it is executed in Longridge stone walling, with wrought stone dressings. In the centre of the façade, under a four-light window, three doorways lead to the entrance corridor, at each end of which are the staircases to the galleries and entrances to the body of the chapel. The chapel is lighted by the large four-light arched window in front, filled in with tracery, and by ten two-light arched windows on each side of the building. The works have been executed from the designs of Messrs. Bellamy & Hardy, of Lincoln, by the following contractors:—Messrs. Cooper & Tullis, masonry and brickwork; W. Pyc, carpentry; G. Pyc, slating and flagging; Park, Low, & Co., plumbing, painting, and glazing; and E. Shaw, plasterer.

Naseby.—The *Doncaster Gazette* notices the re-opening of Naseby Church. Both externally and internally it has been entirely renovated, the chancel arch, part of south wall and clerestory, and western end of south aisle, being entirely rebuilt. The old masonry and design, however, have been adhered to. New tracery heads, and internal arches to the windows, new gable crosses, and new north doorway, and windows in porch, have been inserted, and all the stonework scraped and repaired where necessary. New open roofs of Baltic fir have taken the place of the old ceiling, and the aisles have also new roofs of the same material. New open seats of deal are arranged for so as to give considerable accommodation for the poor. The proportions of the tower arch will be displayed by the removal of the wall which blocks it up. The chancel roof has been panelled and ornamented with a few simple designs, in colour. When the tower was examined it was found so dilapidated and insecure that it was deemed necessary to pull it down and rebuild it on the old foundations, a crypt being constructed underneath it. There will be new floors of oak laid in it. It is intended to complete the spire to the height originally contemplated.

Newcastle-upon-Tyne.—The foundation-stone of Christ Church, Shieldfield, has been laid. The new edifice will be situated in Shieldfield-green, parish of All Saints, or between Henry-street and Albert-street, immediately contiguous to the schools known as the All Saints' Parochial Schools. The style adopted is the Early Decorated Gothic. In plan, it consists of nave and chancel, with north and south aisles to each, a vestry at the east end of the former, and a tower and spire at the west end of the latter aisle. At the west end of the church the deviation to the north-west has suggested to the architect the idea of projecting the end of the nave in advance of the north aisle, and the tower similarly in advance of the south aisle. The west end presents a varied outline, with the principal doorway under a crocketed canopy, and above it a five-light window, with tracery within a moulded arch. At the north-east corner is a porch, triangular in plan, to suit the obliquity of the ground, also enriched with canopies, niches, and carved foliage. The jambs of the doorways are intended to be filled with detached shafts of marble, or coloured stone. The interior dimensions are as follows:—Nave, 61 feet by 23 feet; north aisle, 52 feet by 10 feet; south aisle, 64 feet by 10 feet; chancel, 29 feet by 15 feet; chancel aisle, 29 feet by 13 feet. The piers will consist of clustered shafts with capitals of carved foliage

of the oak, ivy, thorn, maple, vine, &c.; and will support arches of moulded stone. The chancel arch will be similarly treated, and will be 30 feet high. The nave and chancel, and their aisles, will be covered with triple pointed roofs, and be lighted by three-light windows, with varied tracery. The church will afford accommodation for 500 worshippers; and its cost will be 3,250*l*. The architect is Mr. A. B. Higham, of Newcastle. The builder is Mr. Robson, also of Newcastle.

STAINED GLASS.

St. Mary Redcliff (Bristol).—A stained glass window has been lately placed in the north transept of the church of St. Mary Redcliff, in memory of Mr. William H. Wyld, alderman of this city, senior vestryman of the parish of St. Mary Redcliff; also of Mary, his wife, and four of their infant children. The window is of three lights, each light consists of two medallions containing figure subjects on a foliated background, with borders containing inscriptions referring to the subjects they enclose. The subjects illustrated in the four medallions of the two side lights are taken from the Lord's Prayer, viz., "Our Father which art in Heaven," "Hallowed be Thy Name," "Give us this Day our daily Bread," and "Deliver us from Evil." The whole of the Lord's Prayer is inscribed as a bordering round the two side lights. The centre light is arranged in a similar manner to the side ones. The subject of the lower medallion is "Our Saviour blessing little Children." The general design and arrangement of the window is by Mr. J. H. Hirst, architect; the working cartoons were prepared, and the figure subjects drawn, by Mr. Maycock, of Clifton. The execution of the stained-glass work was entrusted to Mr. Bell, of Bristol.

St. Mary's, Shrewsbury.—For a considerable time past, says the *Shrewsbury Chronicle*, the east window of St. Mary's has been undergoing enlargement, alterations, and improvements, under the direction of Mr. S. P. Smith, architect. The contractor was Mr. John Cross, builder, of this town, who completed the masonry of the window, the style being Gothic. The window originally contained the glass that adorned the chancel of St. Chad's Church, having escaped the disaster which happened to the other part of that fabric, when it fell in 1788. The subject is the genealogy of Christ, from the root of Jesse. The patriarch occupies the lower portion of the present window, being depicted as reclining, in a gentle sleep, with his head resting upon an embroidered pillow, and supported on his right hand. From his loins the promised stem ascends upwards, each circling limb enclosing within its intersections a king or prophet immediately connected with the series from which the Saviour of the world, as the son of David, sprang. In the old window, altogether, there were forty-six figures. The new window, however, has been very considerably enlarged,—as much as 16 feet in height, the breadth being 25 feet. The entire height is about 35 feet. The replacement of the old glass, and the addition of new, were entrusted to Mr. David Evans; and he and his son, Mr. Charles Evans, according to the *Chronicle*, have performed their task with skill and taste. The additions, which are extensive, harmonize well with the old work. On the upper portion of the left compartment are the figures of St. Matthew, and Joseph, the husband of the Virgin; on the right, the Virgin and Child, and St. Luke. In the apex of the right side is a representation of the Nativity, and on the left the Baptism of Jesus. In the upper part of the entire window is the Crucifixion. The vine is continued through all the intersections of the window to the new additional figures.

Bicester Church.—A memorial window to the memory of the late Brevet-major Coker is placed in the west side of Bicester Church, opposite to the family vault and p.w. The window is of the Early Decorated style, and has painted glass, by Mr. O'Connor, of London, with three scriptural designs. The two chief groups are Jesus rescuing Peter, and Peter baptizing Cornelius, and together they contain nine figures, surmounted with an angel bearing a scroll. Below the window, within the church, is a brass plate, containing the inscription.

All Saints', Southampton.—Stained-glass windows have now been placed in the chancel of this church. They were designed by Messrs. Guillaume & Co., of Southampton. The window on the right was the gift of the present mayor (Mr. F. Perkins) and Mrs. Perkins. It contains allegorical representations of St. Matthew and St. John; the whole surrounded with a border in blue and

gold. The window on the left is somewhat similar to the former in design, except the colour of the body glass, the one on the right being of a deep ruby, and the other of an orange. The allegorical representations of the latter are those of St. Luke and St. Mark. The iron frames and wire-work for protection from stones were executed by Messrs. Kent & Dain, of Southampton. The glass was from Messrs. Chance, Brothers, of Birmingham, and the glazing was done by Mr. Buchan.

Christ Church, Yardley.—The east window of Christ Church, Yardley Wood, has been filled with stained glass, as a memorial of the late Miss Taylor, of Moor-green, Moseley. The window, which was executed by Mr. Holland, of Warwick, is of Early English character, and designed with a view to illustrate objects to which Miss Taylor devoted her time and means. The illustrations consist of medallions piercing a ground of scroll pattern, and are drawn from Mark x. 13, and Matthew xxv. 35, 36.

Llanfyllin Parish Church.—A stained-glass window has just been placed in the parish church here. The subject selected is St. John the Evangelist, with his usual emblems of an eagle at his feet and a chalice in his hand with a serpent issuing out of it. The window is the gift of a townsman, Mr. John Pugh, solicitor. The whole was designed and executed by Messrs. Smith & Taylor, of Whitechapel.

Chester Cathedral.—For some time past operations have been going on in the Lady Chapel which will materially contribute to beautify it. A new painted window has just been put into the east end, on which various incidents in the life of our Saviour are painted, by Mr. Wailes, of Newcastle. The window is in five lights, and is lancet-pointed. The incidents are twenty-two in number, in addition to which there are two medallions. The stonework of the window is Early English in style.

St. Thomas's, Birmingham.—A stained-glass window has been placed in the east end of this church. The work has been designed and executed by Messrs. Gibbs, of London. The subject chosen for illustration is that portion of the Gospel narrative in which the apostle Thomas—all his incredulity having vanished at the sight of his risen Master—utters the sublime declaration, "My Lord and my God." Peter and John, with two other of the apostles, form a group in the background. The figure of the Saviour is 7 feet in height, and draped in a purple robe, with a flowered border, while Thomas is clad in a blue under-dress and ruby-coloured mantle. The size of the window is about 18 feet by 6 feet. The artists have been required to occupy a considerable space with ornamental work.

Parish Church, Edgbaston.—The three painted windows lately erected in this church, are designed to correspond with the period of the building, namely the fifteenth century. They contain three principal events in the history of our Lord,—His Crucifixion, Resurrection, and Ascension. The centre window, the stone-work of which was designed by the architect, Mr. Fiddian, with reference to the subject, consists of two lights, and a large circular piece of tracery. In the upper compartment is the figure of our Lord ascending in glory amidst adoring angels; while, in the two lower compartments, kneeling around the mount, are the Apostles looking up towards their departing Master. These windows were executed by Messrs. Hardman, of Birmingham, after designs by Mr. Powell, of the same firm.

Manchester Cathedral.—A large stained-glass window has just been placed at the east end of Manchester Cathedral, above the Communion. The window consists of seven principal lights, with canopies and tracery, the subjects being taken from the life of the Saviour, and comprising "The Agony in the Garden," the "Bearing of the Cross," "The Crucifixion," "The Resurrection," &c. The three centre lights form one subject, "The Crucifixion," with St. John and the centurion on the right, Mary Magdalene in the centre, and the three other women on the left. Above the principal lights are fourteen angels, two above each light, who bear emblems typical of the passion of our Lord. The tracery above is filled with foliage and flowers, with the lamb and flag at the top. Messrs. Hardman, of Birmingham, designed the window. It is the gift of a gentleman who is at present one of the visitors of the Cathedral School, and who was formerly a teacher, and previously to that a scholar. The owner of the Chetham Chapel, beneath this stained-glass window, intends, says the *Courier*, to complete it in harmony with a general design, which, when completed, will make the Manchester Cathedral

one of the most richly adorned of our ecclesiastical structures.

Skerton Church (Ulverston).—A window of painted glass has just been erected in the east end of Skerton Church. The window is of the Early English period, and consists of three lights. In the centre opening, which is much longer and wider than the sides, are introduced the three principal incidents in our Saviour's life, viz., the Nativity, Crucifixion, and Ascension; and in the side openings are the four Evangelists. The window has been designed and executed by Mr. F. Burrow, of Sandside, Milnthorpe.

St. Mary's, Limerick.—The Stafford Memorial Committee have put up a stained glass east window in St. Mary's Cathedral, Limerick, as a memorial to the late Augustus O'Brien Stafford, M.P. It was designed by Mr. William Slater, architect, and the stained glass was executed by Messrs. Clayton & Bell. The committee had to replace all the stonework of the window, and to put a new roof over the chancel, the old roof being in an advanced state of decay; and they are anxious to finish the reredos and chancel floor. The works done have fortunately led to an effort to extend the restorations, and Mr. Slater has been commissioned to prepare a design for the purpose.

PROVINCIAL NEWS.

Great Bridge (Staffordshire).—The chief stone of the new Wesleyan schools here has been recently laid. They comprise boys and girls' school, 49 feet by 22 feet, together with three class-rooms, each 18 feet by 15 feet. There is a detached residence for the master. The buildings are in red bricks, relieved with blue and white bricks, in strings and patterns. The elevation is plain Gothic in character. The main roofs are constructed with hammerbeams, and ceiled on the underside of the rafters. The works are being carried out under the superintendence of Mr. Edward Holmes; the builders being Messrs. Cox and Son.

Seaham.—The foundation-stone of new blast furnaces has been laid at Seaham by the Marchioness of Londonderry. The furnaces are to be erected by her ladyship on a piece of ground lying about a mile south of Seaham Harbour, called Nose's Point. The plan comprehends four blast furnaces, 120 coke ovens, and calcining kilns for the iron stone. The works will extend over twenty acres, and are expected to be completed in ten months, when between 200 and 300 men will be employed. The ore will be obtained from Cleveland, her ladyship having acquired a large tract of ground at Boulby, where it will be shipped and brought to Seaham. After the laying of the stone about 100 gentlemen adjourned to a luncheon, at which the marchioness presided, and where she made a speech and proposed a toast. It is believed that when these furnaces are at work about 80,000*l*. a-year will be expended in connection with them for the advantage of the district.

THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

THE only notice I have received of the proceedings of the "Architectural Photographic Association" has been through your columns: whether or not those gentlemen who undertake the duties of local honorary secretaries should not have been consulted in some way or other, I leave your readers to judge.

I am, however, glad to find that the Association is re-organized; and I only trouble you with this note to point out where I think an improvement might be made in the mode of procuring photographs, that will be required for the subscribers next year.

I think the best ones that were shown at the last exhibition were those of Tintern Abbey, by Bedford; and I would strongly advise that arrangements should, if practicable, be made with that well-known artist, to photograph some of our cathedrals each year; not merely purchasing the negatives, but contracting for the positives direct from Mr. Bedford, who will then do full justice in printing from the negatives for his own credit's sake.

By this plan we should have no complaints as to inferior positives, which should be rejected by a few subscribers who might be selected as inspectors, for their knowledge of practical photography; for none else could judge of the probability of a photograph fading or otherwise.

I know nothing of Mr. Bedford, except from his excellent photographs, which, I think, for beauty of execution, and the judgment shown in the selection of his views, are second to none:

doubtless, other parties might also be found who would agree to a similar arrangement; and I think you will agree with me, that there are few subscribers who would not prefer a uniformly printed set of photographs, say 12 inches by 10 inches, from such a glorious building as Lincoln Cathedral (not to mention others), than a mixture of subjects from all countries, of all sizes, colours, and qualities.

If this suggestion were tried, even to a limited extent, I think the choice shown by subscribers at the first exhibition they were produced would convince the new committee of the policy of the plan.

A PHOTOGRAPHER AND A LOCAL HONORARY SECRETARY OF THE ASSOCIATION.

DAGENHAM BREACH.

In a recent number, page 805, you say Dagenham Breach may have been formed as the name suggests. Perhaps you are not aware of the interesting and scarce book, "An Account of the Stopping of Dagenham Breach, &c., by Captain John Perry, London, 1721," "which (Breach) happened by the blowing up of a sluice in the levels of Dagenham Beam, not three and a half years since," &c. After many unsuccessful attempts, Captain Perry succeeded in stopping the breach, which, by the scouring of the tide in and out of Dagenham Levels, had got to a great size. At last, after spending upwards of 25,000*l.* (in five years), Captain Perry attained his object.

You also quote the *Engineer*, that the London and Birmingham Railway was the first of any magnitude let by contract. It may have been the first railway; but poor Captain Perry took his job by contract, and found out that contracting is not always the way to wealth. Having lost much money by it, and having taken the work from trustees, appointed by an Act of Parliament to stop the Breach, he hopes (in his book) the trustees will apply again to Parliament to reimburse him his losses.

Such a request now would be read without much effect at a railway shareholders' meeting! The way in which Perry succeeded was very ingenious. W.

"HANS BLOOME."

Will you please inform Mr. Henry Austen that an edition of "Hans Bloome" was published in London in 1635, "printed for William and Robert Peake, at their house, near Holborne Conduit." The title-page says it was "translated out of Latine into English, by J. T.—" The editor's name was Hans Wottnell, and he dedicates the book to his "especial and kind friend M. John Land, merchant, and true favourer of art." In his address to the reader, he says he has chosen a patron that hath himself, to his knowledge, intended (if this book be acceptable), to set forth the works of "Sebastian Serly and Albertus Duree." From this it is probable there was a much earlier edition of "Hans Bloome," for the noble volume of the five books of Serlio, properly illustrated with wood engravings, many of which would not disgrace the present day, was published in London, 1611. My copy wants the title-page, and the last page of the fifth chapter. The title-page of the second chapter is as follows:—"The second book of Architecture, made by Sebastian Serly. Translated out of Italian into Dutch, and out of Dutch into English. Printed for Robert Peake, and are to be sold at his shop, near Holborne Conduit, next to the Sunne Taverne, anno Do. 1611," and the tail piece, that it was published at the charge of Robert Peake, for the benefit of the English nation. Albert Durer's work was probably the one on perspective, published at Frankfurt in 1546. This I believe was never translated into English. C. J. R.

THE VENTILATION OF THE ARCHITECTS' INSTITUTE.

When admiring the other day the fittings and arrangement of the interior portions of this building, I regretted to notice the evident want of ventilation, particularly in the staircases and lobby. A damp, deadly smell seemed to pervade the atmosphere, which cannot be wholesome. Having noticed the same effect in several of the large houses built about the same date as this, I thought that, by mentioning the circumstance, connected with a place in which so many professional men congregate, some remedy might be suggested for the imperfection.

Is the evil caused by damp and ill-ventilation of the underground parts, or by the want of

attention to the opening of the windows? It is to be noticed that, while the glazing of the meeting-room is well managed, that of the staircase leading to the rooms does not admit of being opened.

In the library there is an interesting autograph of Sir Christopher Wren. It is a note on the back of an old print, mentioning the particulars of its purchase by the famous architect. This is carefully glazed on each side; but, notwithstanding, the ink is so much faded, owing probably to the absorbent nature of the print paper, that the writing is not easy to read. It would be well worth while to make a correct copy of this before it gets more indistinct, and place it in some part of the frame. AN ARTIST.

THE CHURCH OF CLEY-NEXT-THA-SEA.

SIR.—A statement signed "A. B." having appeared in the *Builder* of the 10th inst., with references to the above church, I feel it incumbent upon me to notice it for the following reasons:—Because the information it makes public is false. Because it involves an unjust reflection upon a worthy and aspiring local architect. And because it has a tendency to injure the project which I have at heart, viz., the complete though gradual restoration of my magnificent church.

"A. B." states that the new roof over the nave was carried out under the directions of Mr. F. Codd, of the Adelphi, but that the recent reseating of the nave has been done "without the intervention of any regular architect," and consequently in a "cheap and unsatisfactory manner."

Now, as regards the reseating, this is utterly false; for, not only that part of the recent restoration, but the scraping, cleaning, paving, &c., have been carried out under the constant and careful supervision of a local architect, and in a manner corresponding with the architecture of the edifice, creditable to the contractor, and satisfactory to the parishioners.

"A. B." alludes to the roof as certainly an unfortunate one, as it appears to be the only part of the restoration which has been objected to.

Nearly 600*l.* have of late been expended upon the church; and I beg to assure those friendly at a distance, especially Mr. C. Buxton, Esq., M. P., Sir Thomas Fowell Buxton, Lord Calthorpe, &c., who have magnificently contributed to the restoration fund, that their money has been properly laid out. And in taking leave of A. B. I would admonish him for the future to back his statements by his proper name and address, and pay more regard to truth and charity.

I trust to your sense of fairness for the insertion of the above in your next number. THOMAS J. BEWSEMAN, Rector of Cley-next-the-Sea, Norfolk.

THE LATE MR. VERELST, ARCHITECT.

We hear with great regret of the death of Mr. Charles Verelst (formerly Mr. Reed), of Aston Hall, near Rotterdam, which took place suddenly on the 13th inst., at his residence in Birkenhead. Mr. Verelst came into possession of the Aston estates in 1851, but, in consequence of the heavy settlements with which they were encumbered, he has not until lately derived much benefit from them. He was the architect of St. John's Church, Grange-lane; of the Manor-house, Cloughton; and of many other buildings in Liverpool and the country round. The Liverpool Architectural and Archaeological Society was especially indebted to him in its earlier days. At the usual meeting of that society held last week, Mr. H. P. Horner, who was in the chair, submitted the following resolution, agreed to at a meeting of the council of the society, and it was at once passed *sub silentio*:—

That the president be requested to convey to Mrs. Verelst the respectful and heartfelt condolence of the society under the sudden and irreparable bereavement which has befallen herself and her family. This meeting desire also to record their deep regret for the loss which the society has sustained by the removal of one who shared in its foundation, who manifested throughout its whole subsequent progress so constant and active an interest in its welfare, who was an ornament to his profession, a cordial friend, a cultivated, courteous, and upright man.

The meeting then adjourned without transacting further business.

TRADE UNIONS.

THEIR USES AND ABUSES.

This question formed the subject of a long debate at the Maidstone Corn Exchange, on Wednesday evening last week, between C. Buxton, Esq., M. P., who had invited the discussion, on the one side, and Mr. Gant Facey, an operative connected with the building trade, on the other. The body of the hall was crowded, chiefly by working men, and the platform was occupied by many of the leading tradesmen of the town. The proceedings, which lasted three hours, were throughout of a very quiet and orderly character. The Hon. Mr. Denham, M. P. for Tiverton, and of the Home Circuit, was appointed by Mr. Buxton as his chairman, or rather introducer: Mr. Sturgeon, also a member of the bar, acted in the same capacity for Mr. Facey; while Mr. Shackell officiated as referee between the rival parties.

Mr. Buxton, after remarking that he had devoted a great deal of time and attention to the study of this question, proceeded to observe that he was quite ready to admit that these trade unions were in many cases doing considerable good; and that, if they were managed wisely and temperately, with a due regard to the independence of the individual artisan, they would become a source of strength and well-being to the working men of England.

It was a good thing that they should be knit together by as many ties as possible; and, no doubt, there were many masters of a grasping, tyrannical disposition, who, if they could do so, would be tempted to trample on those beneath them, withhold their due from them, and, in fine, treat them not as men, but as beasts of burden. It was well for the working men to present a united phalanx against such oppressors of the kind; but the main good resulting from these trade unions was that they were calculated to promote habits of frugality and forethought. At the same time, even in this point of view, the attention of those who belonged to unions ought to be called to the evils that might arise if great avarice were not exercised. It was a question whether it would not be more judicious for the working man to put his money into the savings' bank, where the cost of management was nothing, and he received interest on his principal sufficient to double it in fifty years, if allowed to remain undisturbed. He would next consider whether the natural freedom of the working man was not too much trampled upon by the minute and stringent regulations of the trade unions. And in addition to the printed rules, which in themselves were a heavy encumbrance on the working man, the district committees were in many instances empowered to add bylaws, which were not printed, and which were often most arbitrary and mischievous than those made public. For instance, there was no rule in any trade society against the introduction of machinery, and yet numerous were the strikes which had taken place from that cause. In another case, he wished to apprentice a lad in whom he was interested to a particular trade, but was informed that no apprentices were allowed except the sons of mechanics. There was no regulation to that effect in the printed rules, but he had already been shown how the private code. He would admit that in this respect several of the unions were under wise government, and had avoided the mistakes into which some others had fallen; and he would add, in support of his opinion, that others might follow their example. By the regulations of the Amalgamated Engineers' Society, rather a fine specimen of its class, its members were liable to be fined for sixteen different offences. An able mason in London who took less than 8*d.* a day, was deemed a "black," and was subject to a penalty of 5*s.* He had with him a printed list of "blacks," not negro slaves, but Englishmen who had infringed the rules of the unions. For example, he had stated that he thought he would agree with him that, under the existing rules of many of the trade societies, the working man was not able to regulate his actions according to his own private view, but he had to be guided by the rules of the union, and, if he was wrong, he was liable to be fined and right, he was exposed to punishment, rendered the more severe by the fact that the committees of the trade unions had it in their power to refuse the benefits of the society to any member who refused to accept of this submission. In conclusion, the hon. gentleman referred to the evils which a strike in any particular branch of trade incidentally inflicted upon large numbers of others who were not concerned in the question at issue. For instance, the number of men recognised by the United Trade Conference on strike in August last was 7,000, but the number actually thrown out of work was 10,000. So in the case with the Lancashire spinners, the operatives who struck were not a tenth of those deprived of the means of earning their bread; while, in another case, through the striking of 600 men, 8,000 persons lost their employment, and were sunk in universal and intense suffering.

Mr. Facey commenced by observing that he stood there in a responsible position to argue in favour of those legal and moral institutions which the working classes had established for themselves for the purpose of providing for future necessities in case of accident, sickness, old age, and death. The hon. gentleman in thus coming forward to discuss this question had set an example which might well be followed by others of his class. Proceeding to review the objections of Mr. Buxton in detail, the speaker observed that with regard to the working man placing his savings in a bank instead of contributing to a society, the hon. member ought to have known that time would amount to a man could individually put by, taking into account casualties and times when he was out of work, would not be sufficient to provide the same amount of benefit that was conferred by associated societies. The hon. gentleman had also stated that the hon. member was sure, which had been circulated as to the power exercised over the members of the unions by the trade committees. The fact was, no more power was delegated to them than to the directors of any association. Of course it was necessary that some body should have the power to settle petty disputes which arose; but in case of any alteration of the rules or of the disposal of the funds, the regulations of the society necessitated the committee to call a meeting of the general body, so that every member had a voice in the consideration of the question under discussion. A general meeting was also held every year to revise the rules; and a special meeting might be convened on the requisition of seven members, at which a committee could be appointed for the consideration of the particular subject under consideration: so that in this respect he thought they would agree with him, that no undue power was possessed by the committee.

It was impossible that such societies could be regulated without rules and restrictions, or even fines. To say that the trade unions exercised a despotism was not true, seeing that those who belonged to them were parties to those rules which were binding on the whole. He defied Mr. Buxton or any one else to produce those secret rules to which he had referred. That was an old invention which had travelled down from Adam Smith in its infancy, and which Sydney Smith invested it with ten thousand more horrors. As to piece-work, there was no rule prohibiting it, though in the carpenters' society its avoidance was advised. And it was for this reason—that as there was no set price for different descriptions of work in the carpenters' and joiners' trades. The employer would seek to take advantage of the necessities and jealousies of his workmen, and compel them to accept of a price to offer, and therefore it was not natural that the men should endeavour to stave off piecework. But he might say that if a certain number of employers would consent to meet an equal number of working men, who would be selected on each side, and a surveyor from the Board of Works as referee, to agree to a scale of prices which would be fair to both parties, the men would then be willing to accept piece-work, but until that was done they dare not do so. Then Mr. Buxton said that the societies tended to keep the skilled workman down to the level of the unskilled. Why, what nonsense! The rules only referred to the minimum rate of wages, but did not confine the amount. The men were glad to see their more skilled fellow workmen obtain

in 1859 than in 1801. The other article of which the title has been given, could not fail to be interesting and valuable. Those who are acquainted with the growth of questions of capital and labour during the last quarter of a century, will have a lively recollection of a little book entitled "The Results of Machinery," which had an extensive sale at a period of national alarm, and was followed by a tract called "Capital and Labour." These two parts, having been meanwhile incorporated under the latter title in Knight's Shilling Series, appeared with additions, in 1855, as the work, "Knowledge is Power." On the score of authorship of these productions, as otherwise, there is no one at the present juncture whose services to the working classes give him better claim to be listened to, than the author of the article in the "Companion." Mr. Knight regards all the forms of combination, whether as "against the aggressive selfishness of capital," or of monopolies by individuals or corporations, as a league of producers against consumers, sure in the end to fail. Whilst the struggle goes on, the real capital is unimpaired, or is only diverted. But Mr. Knight does not examine into the contingency of its diversion to foreign countries. He shows, however, that increase in the capital of the community of late years, has been the occasion of increased capital employed in building; and which has at the same time, in spite of the introduction of machinery, increased the number of the employed,—and without diminution in their rate of wages, but the reverse. The tenor of the article is to the effect that the strike in London, of workmen in the building trades, is eminently suggestive of the necessity for some elementary instruction in political economy; and to show how such instruction might be given on the plan adopted in the "Birkbeck" schools, established (with the exception of that of the London Mechanics' Institution) at the expense of Mr. Wm. Ellis, who has been selected by the Queen to instruct her own children in similar subjects. Recollecting "The Results of Machinery," the article is not all that we ourselves should have desired from Mr. Knight. It leaves unsolved some points in the present stage of the capital and labour question that must occasion difficulty with many readers: it may be sufficient to refer to the fact that, whilst Mr. Knight writes that principles if understood "would show that strikes must fail," Lord St. Leonards began his late letter by an admission that strikes "may at times become expedient;" and that what the working man wants just now, is an explanation of such seeming contrariety of opinion and advice. The following portion of the article may be usefully quoted:—

"We have termed the builders' strike the most remarkable manifestation of ignorance of economical laws that was ever exhibited by skilled workmen. The organizers of this strike have proclaimed what their Trades' Union has resolved upon as elementary truths:—

1. If, as the political economists maintain, the rate of wages depends upon the proportion of the number of workmen competing for employment to the amount of capital out of which wages are to be paid, a general resolution to work only nine hours instead of ten, the daily wages remaining the same, will produce the same effect as if one-tenth of the aggregate number of workmen were withdrawn from the competition for wages.

2. To carry forward the same principle to the same result, it is necessary that the workman should not do as much work as he can, but as little as he can; that to counteract the abundance of labour its efficiency should be lessened; that the bricklayer should never put his trowel out of his hand to lift anything requiring two hands; that to break down the distinction between the industrious and the lazy workman, the skilful and the unskilful, there should be no piecework and no overtime; and that to mark the line of demarcation between employer and employed, and to prevent any stimulus to industry under the master's eye, the man is never to work by the side of his master.

3. That machinery has diminished the amount of human labour required to produce a given quantity of work; and that the saving in the cost of production ought therefore to be for the benefit of the labourers, and not for the consumers of the thing produced.

It is always difficult to overstate the aggregate folly of a class, whether an upper or a lower class, when it is bent upon accomplishing some object by coercion, and resorts to what it terms argument for its defence. The protectionist class, that used to coerce society by legislation, has come to an end; its enactments are no longer binding, its rhetoric is no longer heard. The trades' union class is rampant in its power of coercion over other workmen, and its rhetoric is unopposed by law and defeat. The wives and children of builders out of employment are dying around them, suicide suggests itself to the unhappy husband and father, and yet the leaders of the "society men" cry out to persevere. For what? To maintain the doctrines which we have set forth above,—fallacies which a child in a Birkbeck school will reject as assuredly as the most enlightened teacher of those great natural laws of industry, a knowledge of which would save many unhappy men from misery and ruin."

The other articles in the first part of the "Companion," are,—*"The Patent Office, and Patent Museum,"* by George Dodd, detailing the exten-

sion made since the date of our notice, which first directed attention of architects to the subject; but also showing the lamentable restrictions of space which cramp Mr. Woodcroft's exertions;—*"The Naval Force of the United Kingdom;"*—*"The National Collection of Sculpture"* (a clearly written and succinct account), by James Thorne; *"A History of Comets,"* by J. R. Hind, in continuation of a former portion; *"The War in Italy, and its Antecedents;"* and *"The Wreck Chart, and the National Life Boat Institution;"* besides the tables relating to the Funds, and Rate of Interest at the Bank, and the Average Prices of Corn.

The article on Architecture comprises twenty-nine pages, besides a lengthy rejoinder to some remarks at the Royal Institution, by Mr. Denison, upon the last year's article in the "Companion," wherein its writer had referred to a private arrangement for rebuilding the Doncaster Church tower in a different character of architecture, as though the arrangement had not been fair to the subscribers, now showing that he based his remarks upon Mr. Denison's words in a letter in our last year's volume respecting the Taunton tower. The general article contains a considerable number of items of information as to the works in progress during the year, and some judicious opinions; and is improved in character in most points. We must, however, except the illustrations, which are, several of them, bad as those of last year, and therefore prejudicial to any object. There are some errors; and we may also say, we notice (though we are aware we are here not in agreement with the writer) a rather free use of what has appeared in our columns; and that the time has really arrived when the article on Architecture, in an organ of so much importance as the "Companion to the Almanac," should be made to present something more than what it has too much become, a catalogue of the names of buildings, rather than an annual review of the state of the subject whereof it treats.

We are sorry to be obliged to revert to inaccurate information given in the "British Almanac"—or first part of the volume. That Sir George Grey, having been recalled from the Cape of Good Hope, is again governor, we are aware, though we suspect the compiler is right by accident; but certain we are, that Professor Donaldson is not, as last year, Dean of the Faculty of Arts, &c., at the London University, and that the officers of the Institute of British Architects are not as the names are set down. There appears to be an increasing tendency for errors of this character to remain stereotyped in year-books,—which goes to destroy all their value for the object of their publication. Our contemporaries fail to notice them,—so that works which have acquired reputation, abuse it by holding the ground against other works prepared perhaps with greater care or conscientiousness. We must not ourselves imitate this abandonment of duties by our contemporaries,—even though our plain-speaking should come forth on the occasion of noticing a work still in many respects so excellent as the "British Almanac and Companion."

Childe Harold's Pilgrimage. By Lord BYRON. Cheap Editions. London: Murray. 1860.

THE way to prevent the servants from going to the table-beer barrel is to put a cask of ale by the side of it. The way for owners of copyright to prevent infringements is themselves to issue editions at a price that cannot be competed with; and this Mr. Murray is doing. Here we have a shilling edition and a sixpenny edition of Byron's exquisite poem, with the notes, and in the first case, illustrations. These books will provide for Childe Harold (the architect's poem *par excellence*) a new and enlarged public.

Sussex Archaeological Collection, relating to the History and Antiquities of the County. Published by the Sussex Archaeological Society. Vol. XI. London: John Russell Smith, Soho-square.

THE new volume issued by the Sussex Archaeological Society contains some interesting contributions to the history of the county, the point properly aimed at, particularly an account of Paxhill and its neighbourhood, by Mr. Blencowe, with views of the house and of others at Lindfield, Holmesdale, and Chaloner; the defence of Sussex from invasion in 1596, by Mr. Blaauw; and extracts from the "Diary of a Sussex Tradesman" a hundred years ago, by Mr. Blencowe and Mr. M. A. Lower. The account of Pynham Priory, by the Rev. Edward Turner, with a very clever little woodcut, should also be mentioned. The Society

appears to be weakest in respect of architectural writers; descriptions and elucidation of the many interesting structures in Sussex, when given, often displaying less of the knowledge and force to be found in other departments of the journal than is desirable.

Examples of Modern Alphabets, Plain and Ornamental. Collected and engraved by F. DELAMOTTE. London: Spon, Bucklersbury, 1859.

THIS collection of alphabets in modern use, including Riband, Rustic, Old English, &c., is intended by Mr. Delamotte for the service of draughtsmen, surveyors, masons, decorators, and others, and will be found useful.

Miscellaneous.

DEATH OF THE CHIEF COMMISSIONER OF WORKS.—We regret to have to record the death of the Right Hon. H. Fitzroy, First Commissioner of Works, which melancholy event took place on Saturday last at Brighton. Deceased was son of the second Baron Southampton, by his second wife, second daughter of Lord Robert Seymour, and was heir presumptive to the Barony of Southampton. He was born in London, in 1807.

THE ROMAN VILLA AT CARISBROOK.—A flight of stone steps, leading under the bath, has been discovered at the Roman villa at Carisbrook, in the Isle of Wight. They are supposed to lead to the flue under the floor of the hypocaust, says the *Hampshire Advertiser*, and may probably be in communication with a furnace. The villa, after all, is not to be roofed. It is proposed to place two slates on the top of the chalk walls, and a quantity of shore-sand at the base, for the avowed purpose of preservation. The work has been carried on under the direction of Mr. Millins. A gentleman has promised to contribute 400*l.* for the ruins to be properly put under cover.

METROPOLITAN BOARD OF WORKS.—At the last ordinary weekly meeting of this Board tenders for the general works in the western division north of the Thames were considered, and the tender of Mr. Thirk, being the lowest, was accepted. It appeared, however, that it exceeded by two per cent. the estimate made by the engineers of the Board. Mr. Leslie objected to the public paying two per cent. more than their own engineers had decided was a fair price to be paid for the works. A long discussion ensued, after which the following resolution was carried by a majority of sixteen to twelve:—"That, when this Board shall apply to Parliament for further amendment of the Metropolitan Local Management Act, a clause shall be introduced to empower the Board to assess the different sections of the metropolis for payments on behalf of the Board in such amounts as it may deem equitable, without being obliged to follow the basis of the county rate or rates; and that it be referred to the main drainage committee to report in which way it would be best carried out."

THE LOCH KATRINE WATER SCHEME.—In addition to the first sum of 700,000*l.* which was deemed amply sufficient for the completion of the new Glasgow Water Works, including the purchase of the old stock, &c., the commissioners in Glasgow, who have charge of these works, says the local *Gazette*, found it necessary, last year, to go to Parliament for a further supply of 200,000*l.* This was also deemed to be amply sufficient to finish the works. But this year we have another application, adopted by the commissioners at their meeting on Thursday, for a further sum of 350,000*l.* sterling, and it is not stated now that even this will be sufficient. The water was promised to be introduced to the city some weeks ago. It is very much wanted.

ROYAL CHARTER.—In respect of the destruction of the *Royal Charter* and other vessels on a lee shore, it has struck me very forcibly that an available means of safety is possible in many, if not in all, these disastrous cases. To be lost on a lee shore implies that the wind blows from the sea to the shore. Now what in effect would be easier than to construct an extemporized kite, by means of a couple of sticks, arranged like the letter X, and to stretch on these a napkin, a silk handkerchief, or a fragment of sail? what boys term a bellyband is then to be attached, a tail also to steady the light machine, and a cord—and it is complete. An hour elapsed from the time the *Royal Charter* struck till the ship parted; but during that hour extemporized kites might have secured safe and certain communications, one or more, with the shore, and the lives of hundreds—for the interval was not a stone's throw—might have been saved.—HENRY MCCORMAC, M.D.

The Builder.

VOL. XVII.—No. 852.

Social Bridges:—The "Foundling" and the Arts.



UESTIONLESS the Foundling Hospital, notwithstanding great mistakes made at starting, has effected much good, and deserves the support of the community. Its connection with the early cultivation of the fine arts in this country and the foundation of the Royal Academy gives it additional interest in our eyes. The hospital was founded in a great measure by the energetic exertions of a true-hearted and business-like man, assisted by one of our greatest English painters, and one of the most eminent musicians that the world has yet seen,—one who was so much associated with us that we may almost claim him as a countryman,—Coram, Hogarth, and Handel.

Viewing Mr. Calder Marshall's well-sculptured statue of the founder, Captain Thomas Coram,—an excellent work of art, showing the man as he appeared when devoting a large portion of his life to this good cause,—the observer is at once led to think of those days in George II.'s reign, when Captain Coram resided at Rotherhithe, and was obliged by his avocations to go early into the City and return late. The change that has taken place in the road between Rotherhithe and the centre of the City is great: instead of presenting lines of houses and brightly lighted streets, it was a comparatively desert spot; and here the observing wayfarer frequently saw young children exposed, sometimes alive, sometimes dead, and sometimes dying. The kindly-hearted man who had interested himself for the benefit of infant colonies which have since grown to colossal proportions, and in other ways assisted his fellow-men, could not look at these abominations and disgraces without endeavouring to find a remedy. "He saw," as Mr. Brownlow mentions in a well-drawn-up volume on the Hospital, which will supply us with facts, "this calamity in its proper light, and, like an honest and worthy man, thought it would do honour to the nation to show a public spirit of compassion for children thus deserted through the indigence or cruelty of their parents." For seventeen years, with invincible perseverance, with scarcely any other assistance than his own private fortune, which he entirely expended, he laid the foundation of this charity, and showed what good can be effected by the earnest energies of one person. We have not space to mention the other claims which Captain Coram has upon the national gratitude, and intend merely to glance at the difficulties which were to be encountered in order to make this a useful and permanent institution.

In the first instance, the ideas in connection with the charity were too much extended, and abuses took place which in the end pointed out its proper vocation. When it was known that a house for founding children had been established in London, where infants could be received without inquiry, children were sent from all parts, and most serious evils followed. Nevertheless this system was continued for a period of fifteen years, viz., from 1741 to 1756, during which interval 1,384 children were received, or, upon an average, ninety-two annually. Contrary to the opinions of Captain

Coram, the managers determined to open the hospital on a most unrestricted plan. By aid from the House of Commons this was effected on the 2nd of June, 1756; and on the first day of general reception, 117 children were given up to the institution. A basket was hung outside the gates of the hospital, and an advertisement publicly announced that all children under the age of two months tendered for admission would be received. Mr. Brownlow remarks, that though the governors of the charity, in anticipation of parochial interference, had armed themselves with the special power of the law for their protection, yet they discovered that no authority, however great, could prevent parish authorities from emptying their workhouses of the infant poor, and transferring them to this general sanctuary provided by the Government.

In the first year of this indiscriminate admission the number of children received was 3,296, in the second year 4,085, in the third 4,229, and during less than ten months of the fourth year, after which this system of admission was abolished, 3,324 children were left. Various causes produced such a great mortality that out of the 14,934 received, only 4,400 lived to be apprenticed. Such a state of things, of course, could not possibly last long. Parliament, which by its inadvertence had promoted the evil, withdrew its sanction thereto, by declaring—"That the indiscriminate admission of all children under a certain age in the hospital, had been attended with many evil consequences, and that it is to be discontinued."

The present practice of the Governors is to decide each application for the admission of children on its own merits. There are, however, certain preliminary conditions required; the absence of any one of which is fatal to the petitioner's application, except in very peculiar cases.

With these preliminary notes we walk across the spacious playground which lies between the street screen and the main body of the building, the trees, and shrubs. The time of our visit being during school hours, the place has a quiet appearance. The hospital has not much architectural beauty; but with the old-fashioned lamp-pillars and the groups of green trees, it presents a quaint and characteristic example of the style in fashion at the period of its erection. Directed to the office, in which are shelves for boxes, labelled "Indentures," of various dates, and other businesslike arrangements, we are soon introduced into the sanctum of the secretary, who is thoroughly in earnest in his difficult duty. In this room is the famous picture by Hogarth, of "The March to Finchley," a picture of rare excellence, and so well known as to need no description, though so filled is it with matter of interest, drawn from careful observation and study of nature, that a long article might be written on it. A professed connoisseur in painting, once, as he thought, found a blemish. He said that Hogarth had been "most absurd in introducing a couple of chickens so near a crowd; and not only so, but see! their direction is to go to objects it is natural for them to shun. Is this knowledge of nature? Absurd in the last degree!" And here, with an air of triumph, ended our judicious critic; but how great was his surprise, when it was pointed out to him that the said chickens were in pursuit of the hen which had been put into the pocket of a soldier!

In this room are portraits of Ben Jonson, Shakespeare, and others, with various pictures of most interest.

The court-room is an apartment which is worthy of note. Over the mantel-piece is a very beautiful *basso-relievo* by Ryssack, representing children engaged in navigation and husbandry, being the employments to which the children of the hospital were supposed to be destined. The ornamental ceiling was executed by Mr. Wilton, the father of the sculptor. Two fine antique busts, one of Caracalla and the other of Marcus Aurelius, and a third of our present Queen, must not be passed over. There is also an excellent bust of Handel, who was a great benefactor to the hospital (this is by Roubiliac), and busts of other supporters.

Most of the portraits of benefactors are admirable as works of art, each painter having seemingly exerted himself to the utmost on the works intended to adorn these walls.

The majority of the pictures which are here preserved, have a peculiar interest in connection with the history of English art, for before the founding of the Royal Academy these were the first objects of this nature which attracted public attention. The artists, says Sir Robert Strange, "observing the effect that these paintings produced, came in the year 1760 to a resolution to try the fate of an exhibition of their works. The first public exhibition of paintings in London was opened on the 21st May, 1760, in the great room belonging to the Society of Arts, Manufactures, and Commerce, in the Strand, on which it will be sufficient to observe that the success was equal to the most sanguine expectations." Another writer remarks, "that as the income of the charity could with no propriety be expended on decoration, many of the principal artists of that day voluntarily exerted their talents for the purpose of ornamenting several of the apartments of the hospital, which would otherwise have remained without decoration. The pictures thus produced, and generously given, were permitted to be seen by any visitor upon proper application. The spectacle was so new, that it made a considerable impression on the public."

Hogarth, as we have said, was amongst the first to come forward to the assistance of the founder of the hospital. The great painter subscribed his money, attended courts and meetings, painted a shield for the front of a branch nursery in Hatton-garden (which has unfortunately been lost), and engraved some useful plates. In May, 1740, seven months after the granting of the charter, Hogarth presented the full-length portrait of Captain Coram. This is a fine work, truthful, harmonious, rich in colour, and excellent in light and shade and execution; the tints of this picture are seemingly as pure as they were when it left the easel. Some of the critics of the day annoyed Hogarth by abusing his portraits. On this point the painter said:—"If I am so wretched an artist as my enemies assert, it is somewhat strange that this which was one of the first I painted, the size of life, should stand the test of twenty years' competition, and be generally thought the best portrait in the place, notwithstanding that the first painters in the kingdom exerted all their talents to vie with it." The rival portraits hung near by are by Shackleton, Reynolds, Hudson, Ramsay, and Wilson.

Following the example of Hogarth, a number of artists agreed to furnish pictures for the adornment of the hospital, and for a long time the artists appear to have held convivial meetings at the hospital, and in the year 1760, a number of them arranged to appear at their 1761 festival in uniform clothing made by the children. Here is a list of those who agreed, December 7, 1760, to do so:—

Chrisr. Seaton, John Seaton, Jerh. Meyer, John Gwynn, Wm. Chambery, Edwd. Rooker, Richd. Dalton, W. Tyler, Jas. Paine, Js. McDardell, K. Coase, W. H. Spang, Saml. Wale, Fra. Milner Newton, Nath. Honey, G. M. Moser, J. Reynolds, T. Hayman, T. White, G. Whitley, P. Sandby, T. Major, Thos. Brand, C. Hollis, R. Hayward, Josh. Wilton, John Lockman, Richard Yeo, E. Wilson, Thos. Chambers, Wm. Ryland, Henry Morland, Richd. Franklin, George Evans, L. D. Roubiliac, John Lockman (for Mr. William Deard, at his request), Mr. Dubignon, Wm. Fletcher, S. Ravenet, Frs. Reibenstein, W. Thomson.

As the donations of pictures increased in number, they attracted daily crowds of spectators in splendid equipages, and the Foundling became the most fashionable morning lounge in the reign of George II.

Hogarth's picture of the "March to Finchley," already referred to was, after its completion, put up for raffle. A number of the tickets not being taken, the painter placed them to the name of the hospital, and one of them fortunately turned up a prize. The next work which Hogarth presented was "Moses before Pharaoh's Daughter." This

was painted expressly, and appears to have originated in a conjoint agreement between Hayman, Highmore, Wills, and himself, that they should each fill up one of the compartments of the court room with pictures, uniform in size, and of suitable subjects, taken from Scripture. It is a general impression that Hogarth's Scriptural and historical pictures are contemptible as works of art. It is not so in this instance: this painting has some very high qualities. The other pictures presented at this time, are "Hagar and Ishmael," by Highmore; "Little Children brought to Christ," by Wills; and the "Finding of the Infant Moses in the Bull-rushes," by Hayman. Amongst other pictures, are the well-known cartoon by Raffaele, "The Murder of the Innocents," which was for some time lent to the National Gallery; "A Landscape," by George Lambert; "Elijah raising the Son of the Widow of Zarephath," by Lanfranco; "Portrait of Handel," by Kneller; "The Offering of the Wise Men," by Casali; "Sea Fight," by Luny; a good "Portrait of Chief Justice Wilmut," by Dance; and others.

In the rooms in which the paintings are hung there are some curious things. Amongst them may be noticed many of the little objects left as marks with the children. Some are of small value, others are of gold and silver; some are little engraved gems of a heart, and other shapes, with initial letters cut upon them; some have a name and date carefully engraved on brass, and other labels. There is an old silk purse, a silver coin (foreign), value sixpence. In 1757, a lottery ticket was given with a child. It is not known if it proved a prize.

No account of this hospital, however brief, would be satisfactory, if mention of the assistance of Handel were omitted. In May, 1749, the famous musician attended the committee at the hospital, and offered a performance of vocal and instrumental music, the money arising therefrom to be applied towards finishing the chapel. The Prince and Princess of Wales and a large number of persons of quality and distinction attended at the chapel to hear this performance. The music of the late "Fire Works" and the anthem on "The Peace," and select pieces from the oratorio of "Solomon," &c., were performed. There was no collection, but the tickets were at half a guinea, and the audience above a thousand. During every year after this, until his infirmity obliged him to leave the profession, he continued those annual performances of the oratorio of "The Messiah," which brought to the treasury of the charity not a less sum than 7,000*l*.

On the 1st of May, 1750, Handel presented the governors with an organ, which he opened on the above day. The concourse was so great that 800 coaches and chairs were required to convey the audience. At the death of this world-famed musician it was found that he had made the following bequest in his will:—"I give a fair copy of the score and all the parts of my oratorio called 'The Messiah' to the Foundling Hospital." This relic is carefully preserved, together with autographs of Hogarth and the founder.

The chapel of the hospital was built by subscription, in the year 1747, on the plan of Mr. Jacobson. The interior is spacious, and has a good effect; the music-gallery rises from the floor to a great height; the windows are filled with stained glass; an altar-piece by West is a pleasing feature; the subject is "Christ presenting a little Child." This picture, having been injured in consequence of want of care, West had it taken to his studio, and retouched and finished it with great care. The artist also intended to have provided pictures of sacred subjects for two panels on each side. This good intention, unfortunately, was not carried out. Mr. Brownlow remarks:—"If, perchance, any modern artist should read this, and have a laudable desire to establish his fame, he cannot do better than carry out the intention of West; and the paneling, on the sides of the lower area forming the basement of the colonnade of the chapel, being of regular design and suitable proportions for pictures, would, at this favourable period for the advancement of fresco painting, become peculiarly appropriate for a partial, if not entire, application of them to Scripture subjects." The cost of the chapel was 6,490*l*.

At his own request, Captain Coram was buried in the vault below the chapel.

So entirely had Captain Coram devoted his means for the purposes of the hospital, that he was left in his declining years without provision. On it being known that Captain Coram was quietly suffering distress, Dr. Brooksbury applied to him to know whether a subscription being opened for his benefit would offend him. The doctor received the following answer:—"I have not wasted the

little wealth of which I was formerly possessed in self-indulgence and vain expenses, and am not ashamed to confess that in this my old age I am poor."

Leaving the chapel, we are guided through the long gallery used as a play-room when the weather is too wet for the outside. On the panels useful texts are painted, and other parts are nearly covered with the names of benefactors; the dormitories are clean and orderly, and care seems to have been taken to heat and ventilate them as well as the evil construction of the building will admit of. In the kitchen is a busy scene of preparation, for it is not a small duty to prepare dinner for this numerous family; many of the elder girls are at work in the kitchen, scullery, and laundry, under the superintendence of able persons. The girls, when they have arrived at a suitable age, are put to various duties for one month;—so many are in the kitchen, so many in the sleeping-rooms, laundry, the housekeeper's room; they are thus enabled to undertake places of service, and this, together with the advantage of a good practical and moral education, enables them to begin the battle of life with a fair prospect of success.

Some years ago, Dr. Burney endeavoured to found a school of music here; this was not successful; but in 1847, a Juvenile Band was established from amongst the boys, and the result has proved highly satisfactory. During the period, 100 boys have received instruction, and 20, at their own desire, have been placed as musicians in the bands of the household troops. At the commencement of this experiment it was feared that the use of wind instruments might be injurious to the health of the boys; experience, has, however, shown that the reverse is the case, and as it is with the arms of blacksmiths and the legs of pedestrians, the organs are strengthened by exercise.

It is generally said that the Foundling Hospital is possessed of great wealth, and does not require assistance from the public. When we state that at present there are 288 children in this house, besides 132 other children nursing in the country, and that this number is as many as the present state of the funds will admit of being received, and that during the last five years the average number of admissions per annum has been 37, while the average number of applications annually is 206, it will be supposed that this is not the case. It seems that the chief of the numerous donations which are recorded on the walls were wasted in consequence of the Parliamentary arrangements justly complained of.

In the published memoir of Captain Coram it is clearly shown what property he had acquired was consumed in pursuit of his philanthropic projects, and that he had no wealth with which to endow an institution of this nature; the hospital had, therefore, nothing to depend upon but the donations and legacies of the benevolent.

In 1741, the governors being in search of a salubrious site for erecting an hospital, fixed upon certain fields in the neighbourhood of London, deriving their name from "Lamb's Conduit" (in extent fifty-six acres), belonging to the Earl of Salisbury, who agreed to sell them to the charity for 5,500*l*. The lands of the hospital in the parish of St. Pancras belonged to the prior of the House of the Salvation of the Mother of God, of the order of the Carthusians. The same was granted by Queen Elizabeth, in 1552, to Vaughan and Ellis. As London increased it approached this property, and the governors were induced, fifty-five years after, to turn it to the pecuniary advantage of the charity. From this circumstance the governors derive, from ground-rents alone, an annual income equal to the purchase-money. This income is secured by building-leases of ninety-nine years' duration, of which there is an unexpired term of thirty-three years. It is, therefore, on these ground-rents, and the interest of certain stock, which has been nursed with great care by the governors, to the pew-rents, and contributions at the chapel-doors, and other such casualties, the hospital depends for support, and will do so until the leases fall in. The deserving cases have far exceeded the present means of relief; it is, therefore, evident that bequests and donations will be the means of extending the usefulness of the institution.

In connection with this hospital, it should be borne in mind that its responsibilities, like its objects, differ almost from every other charity in London. Other institutions receive their children for limited periods only, requiring guarantees for their removal. Here they are received by adoption, and become more or less chargeable upon the governors, until they are of age, and even

during the whole of their lives, should infirmity of mind or body prevent their being placed out in the world.

We may not, however, stay longer within the precincts of the Foundling. With fifes and drums playing, the boys march to attack the dinner. They are soon arranged around the table, at the head of which the schoolmaster sits, who causes silence; then the music plays a solemn strain, the hands of all are joined, and a blessing asked upon the food. May the future career of all these be more fortunate than the commencement of their lives!

GLEANINGS FROM WESTMINSTER ABBEY.*

These works undertaken by Henry III., and completed in 1259, terminated immediately to the west of the crossing: the line of junction can be readily traced. I think the older work may have included one bay of the great arcade and aisles, or, to say the least, some of its details were continued in that bay; but in the first clerestory windows of the western arm the change is clearly seen in the diversity of its eastern from its western jambs.

The five bays west of the crossing are the work of Edward I.

They differ chiefly from the work of his father in the plan of the columns, which have four attached and four detached shafts (the latter in most instances secured by fillets of brass); in the greater number of the ribs of the vaulting; the substitution of shields for carved enrichments in the spandrels of the wall-arcading. The rib-moulds of the vaulting are also different: the capitals of the wall-arcading are moulded instead of being carved; and the triforium has no enrichments in its arch-mouldings; but in the main the design may be considered to be the same.

In both, the carved foliage is at the point of transition from the conventional to the natural. It is not in any degree intermediate between the two, but they stand on equal terms side by side, each in its integrity, and each excellent of its kind.

Unhappily, however, the sculptors of more recent times, convinced that Gothic architecture is discordant with their own "high art," have shown such praiseworthy determination in destroying, root and branch, the discordant element, and the destructive atmosphere of London has even as strongly prevailed with the practitioners in high art, that, between the two, we have little left of the carving of the lower parts (on which the greatest amount of study had been expended), but a few mutilated and crumbling fragments:—"the gleaming of the grapes when the vintage is done."

These melancholy relics are, however, sufficient to show us the value of what we have lost.

I have before mentioned that the hand of one French carver may be traced in the work. This is the case chiefly among the capitals of the wall-arcading. Many of these are of the English type of the period, but amongst them are a few of which the work is distinctly French. The one is the crocket capital, the stalks of which are terminated, not as in English work with conventional, but with exquisite little tufts of natural foliage, such as are seen in the wall-arcading of the Sainte Chapelle and many other French works of the period. In the other, natural foliage is introduced creeping up the bell and turning over at the top in symmetrical leaf. In both the foliage is smaller and less bold than in French work, and the architectural form of the capital is English.

The spandrels over the wall-arcading are exquisitely beautiful. Some are only diapered in square diaper like the spandrels of the triforium; some with conventional and some with natural foliage, with or without figures; and some with subjects. Those in the western arm contained shields of a large number of the great men of the day. The spandrels over the triforium have been modernized, but the few which remain are nobly executed. They are curiously hung by the armstaps to projecting ledges. In those parts of the triforium which cross the aisle, the figures in the spandrels are in all the spandrels. Of these, the two central ones in the north transept are gone, and the corresponding figures in the south transept are much decayed, but those in the angles of both, being executed in a superior material, are more or less perfect. They all represent angels censuring, and are exceedingly fine, after making due allowance for the height at which they were intended to have been seen. I exhibit casts of two of them, which are, however, some what roughly taken, and do not do them justice; also sketches of the other two.

Below these, in the north transept, there are figures in the window jambs, and busts of angels in medallions in the soffits of the window heads. They are shown as bearing musical instruments, &c., forming what is called a "Divine liturgy." They seem to have been well executed, though now much decayed.

The losses of the vaulting are generally very nobly executed, particularly those over the choir (I mean Edward I.'s work, west of the crossing), some of which are among the finest I have ever seen. Several bosses in the western aisle of the north transept contain well-executed figures and groups surrounded by foliage.

Of the original details of the exterior it is nearly impossible to form anything like a correct idea. The whole was entirely consumed in the commencement of the last century, and was replaced, almost throughout, with Oxfordshire stone, by Sir Christopher Wren and his successors; the details being altered and pared down in a very mercenary manner, and the renewed work has since again become greatly decayed. There is, in fact, scarcely a trace of any original detail of the eastern portion of the exterior left. The modeller employed by Sir Christopher Wren seems to have had more respect for the details than his master; for, while the latter has destroyed the external shafts of the windows, and represented their capitals by huge ungainly acorns, the modeller has in several instances shown the originals quite faithfully.

The exterior is thus described by Keble in 1693:—

"On the north side you rather behold the skeleton of a church than any great comeliness in her appearance, being so shrivelled and perit by the continual blasts of the winds, and while she stands exposed, as also the continual smokes of the sea-coal, which are of a corroding

* See p. 834, ante.

prints or description, which would aid in the recovery of the design. Since writing the above, I have spied out from the window of a neighbouring house a small portion of external tracery, which I had not seen before.

The records are now in great measure removed, and soon will be entirely so. Let us hope that the Government will recollect the condition of five centuries back,—that they should keep the building in repair, and that they will give it up to the Chapter, with a reasonable fund for the purpose, to the extent of the dilapidations and the merits of the building. I have omitted to mention that the Chapter-house is raised on a crypt, which is vaulted like the superstructure on a central pillar. This pillar is round, and, curiously enough, is carefully hollowed out at two stages, as if for the concealment of valuables. The crypt contains a recess for an altar, with piscina locker, and the marks of a screen. The crypt was filled up some feet above its natural level with earth, but I have lowered this to the original level. I mentioned just now the two doorways which open (or once opened) from the outer vestibule, and the chambers into which they led. Allow me to describe these chambers.

The one is now mistakenly called the Chapel of St. Blaize; but in the older accounts is denominated the Old Revestry. It occupies a space which is very frequent in abbeys, intervening between the transept and the entrance to the Chapter-house, and often called by the expressive name of "the slype." It is little known by visitors to the Abbey; but it is most picturesque, and, as I think, beautiful room, and the skill shown in rendering so irregular a space slightly, and in vaulting it methodically, is very remarkable. Its main approach (now its only one) is the doorway in the centre of the south transept. This doorway, we are told by Dart, was "enclosed with three doors, the inner cancelled, the middle with a key-hole, thick, lined with skins like parchment, and driven full of nails. These skins they, by tradition, tell us were some skins of the Danes tanned, and given here as a memorial of our delivery from them. The doors are very strong, but were, notwithstanding, broken open lately, and the place robbed."

Of these doors one only now remains; but we see the marks of the other two. The outer door of the other the doors of sacred treasures with leather, made, not I conceive from the skins of Danes, but from those of persons executed for sacrilege, was no doubt, intended as a means of terrifying less hardened depredators, but was not always effectual.

As this chamber is lofty, and intervened between the dormitory and the church, it was necessary to provide means for the monks to cross it, to get to their nocturnal services. This was effected by a kind of bridge, at the west end of the chamber, from which the doorways are still visible which led from the dormitory and into the church, from the latter of which there was a detached winding staircase in the corner of the transept, the tower Roublaire's, monument to the Duke of Argyll stands. It is shown in all the old plans, and was probably rendered to make room for that monument. The western division of the chamber was clearly the vestment room, as Dart's time, "a set of cranes of wood, swinging, as if in a rack, on which formerly the copes and vestments in common use were hung."

There remains still, or did lately, in a forsaken vestry at Aylesbury church, racks of a similar description. In the triforium there is a quadrant-shaped coke-box, probably belonging to the revestry. There are several aumbries in the walls. The eastern portion was, however, clearly a chapel; indeed, the vestries of our old churches were generally chapels, as is shown by the piscina, almost always, and the altars, occasionally, remaining in them. The altar step and some trace of the lower course of the altar still remain. The former has a curious semicircular projection in its centre.

Over the altar still remains a full-length figure painted on the wall. It is a female figure, crowned, holding a book in one hand, and in the other carrying a staff, with a griffin: immediately below it is a small painting of the Crucifixion, and on one side is the figure of a monk in the attitude of prayer, from which, in the direction of the principal figure, are painted the following lines:—

"Me, quem culpa gravis premit, virgo suavis;
Pro mihi placuit Christum, delectum in amorem."

Whether the "culpa gravis" consisted of a disregard of the human hides placed, in *terrorem*, upon the door, and this painting was the penitential offering of a pilfering monk, I leave others to judge. I have never been able to discover what the figure represents, nor the meaning of the badge which she wears. It is the whole fairly drawn, though unduly elongated, and appears to have been painted in oil.

To the south of this altar are the borrowed lights from the inner vestibule of the Chapter-house, already mentioned; the adaptation of the vaulting to suit these windows is exceedingly skillful and elegant.

This most interesting room has, unhappily, been long used for the reception of all sorts of odds and ends, to its great disfigurement and injury. It was there that the ironwork, torn down from the royal tombs at the time of the coronation of George IV., was deposited. Of this I have had the happiness of restoring a considerable part (that to the tombs of Queen Eleanor and of Henry V.) to its place, but some yet remain.

The other chamber I wish to describe is a very different one. It is a low vault, forming an imperfect portion of one of the bays of the Confessor's work, already described, and containing a portion of one of the Saxon columns. Within it, however, is a separate structure of new cur'd date, and long used as a storeroom. This structure is built up to the old vaulting, but has a low and sloping covering of stone. When I first entered this place I was much perplexed to know its meaning, but, after some somewhat long and tedious consideration, it occurred to me that it was the substructure of the original stairs to the monks' dormitory, which idea agreed well with the existence of a walled up doorway opposite it in the cloister. I about the same time happened to notice in the manuscript Lives of the Abbots, preserved in the Library, that one of them (Abbot Byrcheston) was said to be buried opposite the vestibule of the Chapter House, and near the entrance to the dormitory; a definition of their relative positions which at once confirmed my idea, and to the same time pointed out a walled up doorway, close to the portal of the vestibule, as having been the entrance to the dormitory.

I obtained leave of Dean Buckland to make an opening in the wall by which the doorway was locked up, but was at first impeded in my examination by finding that the space within the door was filled completely up with useful material technically known as "dry rubbish," which, on the perforation being effected, came down like

an avalanche into the cloister. After taking out some cartloads, we came to the sloping platform from which, however, I was disappointed at finding that the steps had been removed, excepting a portion of the bottom one, which still remained in its place, and was of Purbeck marble.

The sill of the doorway was worn deeply with the feet of the monks, and more so on one side than the other, showing that only one leaf of the folding-doors was generally used.

In the dry rubbish were many interesting fragments; among which were some embossed and coloured mouldings, like those in St. Stephen's Chapel. The now forms, once more, the entrance to what was the dormitory, but is now the library.

But let us return for a few moments to the chamber below.

On the inner side of the door, I found hanging from beneath the hinges some pieces of white leather. They reminded me of the story of the skins of Danes, and a friend to whom I had showed them, sent a piece to Mr. Quechett, of the College of Surgeons, who, I regret to say, pronounced it to be human. It is clear that the door was entirely covered with them, both within and without. I presume, therefore, that this, too, was a treasury, and I have a strong idea that it then formed a part of, and that its door was the entrance to the Pyx Chamber, and it is possible that, after the robbery of the chamber, before alluded to, the king, finding that the terror of human skins offered no security, remodelled the chamber, and intrusted the safety of his treasury to the less offensive, but more prosaic defence of massive and double doors, and multitudinous locks.

I have one more tale to tell about this chamber of mystery. One of the letters on the wall which carries the stairs and the wall of the chamber itself a long and very narrow interval, just wide enough to squeeze through. When I gained access to the chamber, now more than ten years back, I found it in a state of great confusion, and the floor heaped up several feet deep apparently with stones and rubbish. While standing on this heap, I was puzzled by finding it spring beneath my feet, and stooping down and clearing away, I found what was my astonishment at finding that I was standing on a heap of parchment rolls! It proved, however, to be less of a find than I at first hoped, for it consisted, mainly, of packets of ancient writs from the courts of justice, interesting only from their age, which, I think, were deposited here by Henry VII. There were, also, a number of fragments lying about of little turned boxes of wood. An unhappy accident intervened. I happened suddenly to be called from the room, and, on my return, I found the door open, and, forgetting to lock the door, a party of Westminster school-boys got in, and, unmindful of the human skins, made free with the parchments. A little disturbance ensued; so, as a pedagogue was shortly afterwards put to the door, and I have been excluded for ten long years from my treasury, though, as I understood that the parchments had been cleared away, I soon ceased to stand discomfited at the gate of this dusty Eden.

While preparing the present paper, however, I again obtained admission, when, to my surprise, I found my old friend the parchment heap still where I had left it in 1849. I now examined it quietly, and succeeded in turning up a few more fragments than I had before discovered. These are fragments only. They are small turned boxes of poplar, or some other soft wood, not unlike an ordinary tooth-powder box, but a little larger. The covers are sewed on with a leather or parchment strip, and the inside of the lid is usually written a few words describing the contents. On opening them I found that each contained one or more little parchment deeds, with seals attached, which seem to relate to the affairs of the abbey, and I think of great interest in the earliness of their dates, which vary, so far as I have ascertained, from the time of Henry III. to that of Edward III. They are many of them, in a perfect state of preservation, and the handwriting is all new, and are beautifully written, and the seals are often very good.

Amongst the parchments were lying fragments of encyclical letters, of beautiful parchment, similar to those in the Chapter-house, and the glaze so fresh as to lead one to think they had never been trodden upon.

Since writing the above, the whole mass of parchments, &c., by the direction of the dean, has been removed into the Abbey Library, where they will be duly examined and cared for. The lower part of the heap was one mass of debris. I have no doubt that they had in former times been stowed away in the dormitory, but, being the dormitory stairs, had been turned out, and this was converted into a wine-cellar; which, by the dates of the lots of wine chalked up over the bins, was at least sixty or seventy years back.

The next work in date to that of Edward I. seems to have been the rebuilding of the refectory, and the completion of the eastern walk of the cloister. Of the former I can find no record. The windows and doorway are of good Middle Pointed character; but of the latter we have a full account in the fabric rolls, showing that it was erected in and about the year 1345, by Abbot Byrcheston. It comprises the rich vaulting over the outer portion of the Chapter House, with the very remarkable window opposite it, and the adjoining bays as far as the end of this side of the cloister. The vaulting of the principal bay was richly decorated with gold and colour, and the bay beyond it, which was reserved for the choir, was sent century the pulley for raising a light in front of the Chapter-house door.

The completion of the cloister was commenced in 1350, by Abbot Lillingham, and was continued by his successor, Abbot Lillingham, in 1366, under whose direction, indeed, while prior, the previous works had been carried out. The work of 1345 is the purest Flowing Decorated; but the remainder is very early Perpendicular, so far as we can see, for the tracery is gone from the southern or earlier range. This side we have seen in hand in 1355, and one of the two doorways in it (I think the smaller) was inserted in 1363; but even taking the year in which it is distinctly stated to have been completed, 1366, we have a remarkable example of the early Perpendicular style in its character, though of very superior character, and very elegant in its mouldings.

During the reigns of Edward II. and III. it does not appear that the rebuilding of the church proceeded with; indeed, we find many entries of small sums expended on repairing its windows, &c., and on whitewashing the interior of the old Norman nave. During the reign of Richard II., however, the rebuilding was proceeded with. We find entries of the cost of

breaking down the old walls, and considerable outlay for stone, marble, labour, &c., and showing that the work proceeded vigorously. About the same period—indeed, commencing in the latter part of the previous reign—most extensive works were then carried on in the monastic buildings. These were for the most part paid for out of a bequest, and, perhaps, out of previous gifts, from Cardinal Langham, who, as we have seen, had been absent here, and made the fabric of the abbey his residence in the last years of his life. The works in question were carried out by his very active successor Abbot Lillingham, in whose time were erected (besides the south, the west, and the remainder of the north walls of the cloister, which were the last of the work of his time) the abbot's house, including its hall and great chamber (the former now used as a dinning-hall for the King's scholars, the latter well known as the Jerusalem Chamber), the sacristy, cellars, and infirmaries' houses, and a number of other buildings.

From this time the nave slowly progressed till the dissolution of the monastery, the west window being finished by Abbot Estney in Henry VII.'s time, and the western towers left unfinished by Islip, the last abbot worthy of the name. The most remarkable characteristic in these later works is their continuing the general design of the earlier portions, not copying their details, as was done in the cloister, but applying details of their own period to the general forms of the preceding age. So, that, to a casual observer, the building presents throughout its interior a homogeneous appearance.

There is one portion of the work of the older portion of the fabric which I have not yet more than cursorily alluded to,—I mean the gallery in which the archives of the church are kept. It occupies the space above that portion of the cloister which passes through the aisle of the south transept.

It is approached by a door opening on to the roof of the cloister to the south of the transept. The first bay you enter has, as I have said, been indolently by time, and partitions, plastered over to form a room for the more important monuments. On this plastered partition is a large outline painting of the White Hart, the badge of Edward III. The bay next is a vaulted space, and the other two bays, to form a gallery or upper aisle, open to the church. The details of the upper portions of the aisles may be advantageously studied from this gallery, and, on a fair account of it, the eye has become accustomed to the details of the architecture, and the other two bays, to form a gallery or upper aisle, open to the church. The details of the upper portions of the aisles may be advantageously studied from this gallery, and, on a fair account of it, the eye has become accustomed to the details of the architecture, and the other two bays, to form a gallery or upper aisle, open to the church. 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merit of its kind. It stands in the centre of the convent, and, as Brosset describes it, cannot fail to strike the most unpoetical eye by its outline, its sombre tint, and its harmony with all that surrounds it in its isolation.

The most immediate point of difference between the Byzantine style proper and its Armenian variety is the cupola; which, in the latter, presents invariably a straight-sided fluted cone, like a stunted steeple, upon a lofty drum. The whole of the detail, however, of the Armenian style is of a peculiar character, only to be described by illustration, but of which blank arcades of long reed-like pilasters, connected by arches of the same character, is the chief external ornament. minutely chiselled shelves to their openings, of an antique Oriental type, but of small merit as art, are another feature of the style. As a connecting link between Sassanian and Russian, it becomes of interest; but it is totally wanting in those elements of excellence and capacity for further development, which would alone allow it to rank with styles of importance. In its completeness it includes about four centuries—from the tenth to the thirteenth—and the city best known to travellers as its representative is Ani, in Northern Greece. Its oldest building, dating by an inscription from 1010, has pointed arches and coupled columns; whereas a later one, at Dighour, presents round or horse-shoe arches, with columns of a debased classical form, and a general character much allied to European Romanesque. "These and other examples," says Ferguson, "go far to prove that the pointed arch was used by the Christians in the East almost as early as the time of Constantine, and was abandoned for the round arch, as in France, at a period when the Mahometans were carrying its application to the greatest degree of perfection. Much, however, remains to be done, before the history of the pointed arch, as existing before the Gothic styles, can be written with anything like certainty." Numerous plans of churches are given in the works of Dubois and Brosset, in which the square, the circle, and the polygon present themselves in various modifications, though all following a general type and displaying the same leading characteristics.

As we before observed, the Byzantine architecture of Asia presents a wide field for future explorers, but few travellers having as yet turned their attention to the specimens available for a better knowledge of that particular branch of the subject.

We cannot pause to investigate the influence of Byzantium upon the Persian and Saracenic styles. The Persians and Assyrians appear to have possessed an indigenous architecture of their own, as exhibited in the remains of Persepolis and Nineveh. The same natural genius was afterwards displayed in adaptation; and in the commerce that ensued between Persia and Byzantium a reciprocal effect was exercised upon the architecture of both nations. The artists and scholars of Byzantium were in as great request in Asia as in Europe; and, on the other hand, the employment of Persian architects at Constantinople could not fail to impress a Persian influence upon the architecture of that city. The disappearance of Susa and Babylon, Seleucia, and Ctesiphon, and the other great cities of Asia, leaves us but scanty means for a knowledge of Persian art until the Mahometan invasion, and it is in its Mahometan architecture that the influence of Byzantium can now alone be traced.

To follow the Mahometan, or Saracenic style, through Syria and Egypt, Persia, India, Africa, Sicily, Spain, and Turkey, for the purpose of observing the Byzantine element in each separate migration, would lengthen a sketch already longer than originally intended, and in which the exposition of that element in the styles of Teutonic origin was the chief object of the writer. In a word, wherever the Saracens established their dominion, their edifices display the Byzantine and Persian elements that form the staple of their composition. So also did the Mogul branch of the Tartar race, upon establishing their empire in India, reject the forms indigenous to that country, and imitate in their mosques and mausolea the airy arches and lofty cupolas of the Persians and the Greeks.

With the various modifications in the form of the arch in the Greek empire, and thence imitated in the Italian cities connected with it either by commerce or fealty, a corresponding development was exhibited in all those countries that owed the Moslem rule. The capricious complexities of the Mahometan arch were but exaggerations of the simple forms originated in Con-

stantinople. Thus did the pointed arch run through its various mutations until it arrived at its most fanciful and beautiful application in the ogee, the form most favoured in Mahometan India. Thus did the semicircle run through its more limited varieties until it found its most fanciful, if not most beautiful, application in the horse-shoe, the form best developed in Mahometan Spain. Thus, too, did the Mahometan cupola derive its outline and character, whether low or elongated, from the fashion furnished by the Greek metropolis.

"Thus," says Hope, "on the wings of Mahomet's spreading creed, waited from land to land by the boundless conquests of his followers, the architecture of Constantinople, extending one way to the farthest extremities of India, and the other to the utmost outskirts of Spain, prevailed throughout the whole of the regions intervening between the Ganges and the Guadalquivir: in every one of the different tracts into which it was imported, still equally different from that of the aborigines or early possessors,—in Asia-Minor, from that of the ancient Sardis and Ephesus; in Egypt, from that of Thebes and Memphis; in Persia, from that of Istakhar and Nacksi Rustem; in India, from that of Gnatio and Benares; and in Spain, from that of Saguntum, by the side of which it rose; and in each, still resembling its own more remote ramifications in every other country enumerated, or its common stock in the mother soil."

For the same reason, want of space, must we pass over the hybrid architecture of Russia, a strange mixture of Byzantine and Mahometan, wherein the equal-armed cross, the bulbous cupola, and the minaret-like steeple declare the presence of the Greek, the Arab, and the Persian; races whose architecture, so distinct in their development, yet owned a partial descent from a common source. From Byzantium the Czars of Russia took their creed and with it their architecture. Various have been the mutations of the seat of the Russian government, from the time that the first Christian churches were built at Kieff, in the Greek style, after the conversion of the Princess Olga, in 964, and various have been the nationalities of the architects who have adorned or disfigured, as the case may be, these several capitals down to that of St. Petersburg; but still the Byzantine Greek element has preponderated, and the original descent of the Russian style from Constantinople and Armenia is apparent no less than historical.

Before considering the amount of influence which the architecture of Byzantium has exercised over that of European Christendom, or, in other words, those styles formed by the union of Roman and Teutonic elements, we will briefly investigate the gradual growth of those peculiarities, either of mass or detail, which make up the aggregate of this singular and isolated style. Freed from the restraint which example and tradition had imposed in the ancient capital, and thrown upon their own resources both for forms and materials, necessity became a stimulus to invention, "and a style arose which lacks, indeed, the simplicity and elegance of heathen Greece, the awful majesty and vastness of Medieval France and England, but which must be allowed to possess, in the highest degree, a character both original and enduring, vigorous alike in intellectual conception and mechanical execution."

The dome had, indeed, already had its precursors in the Asiatic tops, and the Sassanian cupola, the Greek tholos, and the Roman temple; but the addition of the cylinder as a means of obtaining light, was one of the first steps taken in the development of the greatest of Byzantine architectural features. The growing differences of the churches were reflected and symbolized in an increasing deviation of the Greeks from the Latin types of church construction, and solid vaults soon took the place of wooden roofs, and gables and pediments being no longer necessary were abolished. A plain square mass, indicative of a flat concealed roof, finished by a meagre cornice or coping, and surmounted by a small dome, or rather lantern, represents the general outline of the early façades. Square-headed doors, with relieving arches, circular-headed windows, either single or in pairs, and single or triple apses, generally circular, though sometimes polygonal, were the only relief to their monotony, save what might be derived from the joints of the brick or stone when in regular courses.

With the building of Sta. Sophia a fresh inspiration was given to Byzantine design, and from the sixth to the eleventh century the style exhibits its finest features. The multiplication of domes, as shown in the monasteries of Mount

Athos, and in several specimens at Constantinople, even to placing one over the entrance porch, as at the Theotokos, was one of the first results. The domes of this period are in general but small, and the greater number of them assume that peculiar form which we see in the Kapnicarea and Catholicon, at Athens, and which results naturally from the process of converting a circular drum, terminating in a hemisphere of equal diameter, into a polygonal one, by cutting the former into the required number of sides, and letting each find its own termination as regards its junction with the hemisphere. Another thought from Sta. Sophia was the dispensing with a wood roofing to their tunnel-vaults, by applying the covering of tiles or lead at once upon their outer surface, and thus making their shape apparent externally as well as internally. This system of roofing gradually extended over all the principal members of the building, such as the naives, narthex, and chapels, until the whole outline of the roof expressed the form of its section, as instanced in the *Moski Kioi* and the Pantocrator, at Constantinople, and St. Mark's, at Venice.

The next step in the Byzantine style was a manifest improvement upon the last, and as Lenoir ingeniously supposes, may typify the periodical attempts made by the Greek Church to conciliate the Latin. It consisted in the external expression of the Latin system of roof, though the vaulting still remained beneath, by a return to the use of the tympanum and gable; and the principal churches of Greece present this Western form in great variety.

The east façades are of more importance than the others, as containing that most picturesque feature—the apsis. The circular churches, before Justinian, were accompanied by a projecting apsis, as shown in that at Salonica, and when they became rectangular the apsis still formed the leading feature of the east front. The apsis of the reign of Justinian was always single, and generally semicircular, and formed a relief to the square, cubical aspect of the building generally. The polygon next became the fashion, and in the larger buildings variety was obtained by adding a smaller one on each side of the central one.

The windows of these apses were of various descriptions, and, allowing for the absence of tracing and mouldings, and limitation to the one form of arch, effects of great beauty were obtained. The second range of windows of the principal apsis was sometimes replaced by a row of semicircular niches, displaying a more complicated decoration of bricks than in the other parts. More picturesque still are the small apses, some specimens of which, from the Morea, are illustrated by Lenoir, supported on brackets, and projecting like a bay from the building. There is an elegance about them that argues much for the capability of the style.

The most picturesque features in these buildings are the windows, which are either single, double, or triple, and arched in the Roman fashion with single or double courses of bricks or tiles. The double window, divided by a small column, and enclosed in one arch, is the most common arrangement. The triple window, divided by two small columns, headed by three stilted arches, the centre one being the highest, and all three enclosed by one semicircular relieving arch, is the most striking. A quarter circle often forms the head of the outer divisions of a triple window, the crown of which abuts against the piers of the centre one at or beneath its springing, and the same, when not pierced, forms a favourite accompaniment to the principal window, enclosed as before by the usual relieving arch. A moulding, much allied to a Norman one, encircles the whole, and is used as a string where required, and sometimes even as a cornice beneath the eaves. These features in various modifications form the staple of the Byzantine window, and it is the system of grouping them which alone distinguishes them from those of our own Norman churches. The enclosures or casements were of stone, pierced to various patterns, and as far as they excluded wind and rain, so far did they probably obscure light also.

The stilted arch is one of the most marked features of the style, and the horse-shoe by no means uncommon, and even the pointed arch is occasionally found as an exceptional ornament, though not influencing the building where it occurs.

The Byzantine door presents far less character than the window, being in general a poor imitation of the Classic, and often presenting nothing more than a plain stone architrave, with, perhaps, a cornice over, and surmounted by a relieving arch. There are many modifications of this type, but

an extreme simplicity characterizes all the existing specimens of what might nevertheless be worked into an imposing feature. Contrasted in size or proportion with those of the temples of ancient Greece and Rome, and in decoration with the profuse but bewildering ornamentation of those of the middle empire, the Byzantine doorways, after the time of Justinian, convey a greater impression of feebleness of invention than any other part of the edifice. The semicircular tympanum was sometimes ornamented with sculpture, as in the Catholicon; sometimes with painting, as at St. Philip's; and was sometimes open, as at St. Theodore's;—all at Athens. The doors of the finest churches were sometimes of bronze, as those of Sta. Sophia, executed under Justinian. Wood encased with ivory and precious metals also was used for the doors of the chief buildings. The custom that prevailed in the Latin Basilicas, of covering the doorway during the day with a richly embroidered curtain, also obtained in the Eastern churches. Veils suspended from bars, between columns and piers, were much used to separate the narthex from the nave, the nave from the choir, and the choir from the sanctuary.

The disposal of bricks and masonry in straight or curved lines, as a means of external decoration, is a great characteristic of the style. Paintings in fresco, or mosaic, upon the façades, are presented in numerous examples; and the church of St. Mark, at Venice, may serve as an illustration of them. The subject of mosaics and frescoes opens a field upon which we dare not enter, but the pages of Ciampini, Furietti, Muratori, Lindsay, Hope, Wyatt, and other essayists without number, supply all that need be said upon the matter. With Constantine and his court many workers in mosaic emigrated to Byzantium, and decorated his first Christian temples. The Oriental taste for gold and tinsel soon superseded the purer practice of the Romans, and Byzantine glass mosaic started into life. "There seems every reason to conclude," says Mr. Wyatt, "that for many centuries the Greeks remained almost the exclusive workmen and designers in mosaic, and through them Italy and Sicily stand pre-eminent in churches and baptisteries, whose walls are adorned with the gilded ground and gorgeously draped and swarthy-visaged saints peculiarly Byzantine." Of the many noble specimens of mosaic that the eastern provinces of the empire must have possessed, but few have survived the ravages of the elements, wars, fires, and Mahometan whitewash. "In connection with this branch of the subject," says the same author, "the interesting question arises, respecting the influence that the early decorative processes may have had in determining the subsequent character of conventional ornament in all styles. Thus, the Arabs having at first adopted the general scheme of Byzantine architecture, and among its processes that of mosaic, the style, from want of drawings of detail and of Greek architects, declined in its integrity; while the mechanical processes, being retained traditionally amongst the workmen, this very mosaic work, at first only a subordinate means of decoration, would become a leading element in the minds of the Mahometan designers. From experiments and combination with small geometric cubes of glass mosaic, they would be led, not unnaturally, to that elaborate and intricate style of pattern which, when they emerged at length from the influence of Byzantine tradition, became an essential characteristic of their compositions. Thus, also, no doubt, did the ancient predilection for mosaic modify most materially, not only the plan and whole structure of the churches erected in Italy down to 1200, but even the minor details that characterize and constitute the style of those monuments."

Byzantine details and ornamental sculpture have a character as peculiar as the broad features of the style itself. The Corinthian capital became bastardized until its original form had disappeared, its concave profile became convex, and its sculpture lost all but the memory of its descent. The Ionic longer retained its Classic shape, but in a deteriorated form, and well nigh eclipsed by the heavy abacus that formed so pronounced a feature in every capital. In Sta. Sophia all that is most elegant in internal Byzantine architecture was already attained. The arch springing from column to column had displaced the horizontal entablature, and the spandrels filled with incised ornaments of great beauty displayed the peculiar bias of the Greek in the art of decoration. After the time of Justinian, the capitals assumed and retained that peculiar cushion form afterwards adopted by the Lombards; mere blocks, indeed, tapering from the summit to the necking of the shaft, and

faintly ornamented with foliage, or an imitation of basket-work in low relief. The shafts and bases retained, more or less, the old classic proportions and outline.

The history of the arch of Byzantium is essentially that of the semicircle. Exceptional cases there were, however, of many of opposite curves meeting at an angle; but in their development these varieties became the property of other nations, and the soul of other styles. The Byzantine arch, then, semicircular, stilted, segmental, and horse-shoe, ranked with the cupola in importance; and in its various beautiful combinations set an example that the architects of the West were not slow to imitate. The arched window, in especial, subdivided into two smaller arched openings by a colonnette, as in San Vitale, became a favourite form with the Lombards.

The influence of Constantinople upon architecture generally was first felt upon the Italian shores of the Adriatic. Ravenna, the chosen residence of Honorius and his successors till the close of the Western Empire; next, the capital of the Gothic kingdom of Italy; and finally, that of the Exarchate to which it gave its name, first exhibited its influence in San Vitale. Its octagon form, tiers of arcades, square capitals, and mosaic enrichments, establish its relationship with the Byzantine type. Upon the same model was the cathedral of Aix-la-Chapelle, afterwards erected by Charlemagne. Under Justinian many new basilicas were erected at Ravenna, in which that Byzantine element was introduced which was afterwards destined to exercise so wide an influence.

Venice, offspring of Aquileia, Padua, and the other cities of Venetia, whose inhabitants fled before the sword of Attila, first a city of the Western Empire, next of the kingdom of Italy, and finally a dependency of the Eastern Empire as a city of the Exarchate, presents a still more striking specimen of Greek architecture in the cathedral of St. Mark. Not only is the building purely Byzantine, but the whole of the decorations are so also, and are unlike those of any other church of the West. It presents in its plan the perfect form of the Greek cross, over the centre and lateral divisions of which rise five domes of almost equal size. The porch, which encloses three sides of the nave, was probably of a later date, as were the ogee canopies and pinnacles surmounting the vaults, which latter are of florid Italian Gothic. The profusion of gold mosaics inside, and marble columns outside, and the peculiar character pervading the whole building, render it unique in its way.

Torcello, the island in the lagoon to which the unfortunate Aquileians first betook themselves, displays another Byzantine church, surmounted by a dome, in Sta. Fosca.

Ancona, noted in the wars between Belisarius and Narses and the Goths, and afterwards a chief city of the Exarchate, presents a fine specimen of the Greek cross in San Ciriaco. Westward in Italy the Byzantine dome in its varieties is imitated in Padua, Parma, and Piacenza, at Verona, Como, Pavia, and in numerous instances throughout Lombardy united to the Latin cross. In France we find it at Avignon and at Angoulême; in Germany, in the Rhenish cathedrals of Worms, Spire, Mayence, Andernach, Boppard, Bonn, Gelnhausen, and Coblenz; and Cologne alone presents four fine specimens of the same in the churches of Sta. Maria of the Capitol, the Apostles, St. Gereon, and St. Ursula.

From the destruction of the Gothic kingdom of Italy to the coronation of Charlemagne, the Lombards hold the foremost place in its history. Bringing with them no architecture of their own they adopted the Romanesque as they found it, and by harmonizing its yet disjointed parts, and adding new features and new details, they endowed it with a connected system of forms, infused into it a new life, and, in short, originated a style which prevailed wherever the Latin church spread its influence.

Based upon the beauties of the Basilican and Byzantine styles, whilst producing numberless examples of excellence in the more immediate circle of its operation, it gave birth to an offspring far more glorious than all, in the noble churches of Rhenish Germany. Amongst the forms of Lombard invention, the Campanile, or bell-tower, must ever occupy the most distinguished place: amongst the features, the profuse employment of sculpture, historical, legendary, and chimerical, both detached and in bas-relief, and of surface ornament, wherever an excuse for its application could be found, is eminently characteristic of the style.

For the domical churches of Aquitaine, the

work of De Vernail should be consulted. The existence of a Venetian colony at Perigueux, and subsequently at Limoges, occasioned the introduction of the numerous purely Byzantine churches that cluster round St. Front, that of itself a close copy of St. Mark's at Venice. Turning to the south of Italy, we find the Normans, in the eleventh and twelfth centuries, masters of Apulia and Sicily; and there they adopted the Saracenic pointed arch, which probably became thus transmitted and applied by their brethren in France and England. The various specimens of Romanesque in the south of France we cannot do more than allude to. In the north and west, and especially in Normandy, the Romanesque churches bear an original impress which has justified the application of the term "Norman;" and at Caen the noblest examples of the style are presented to us. A somewhat different development of the same style thence grew up in England, and to which the same comprehensive title is applied.

Such is a slight sketch of the different varieties of Romanesque which bear an impress from Byzantium in a greater or less degree.

The duration of Romanesque architecture in its many varieties comprises a period in history so eventful as to yield in interest to none. In the dawn of the style to which modern ingenuity has applied so suggestive a name, we see reflected, as in a mirror, the first symptoms of the decline of Roman art. In the Basilican architecture of Constantine, the struggles of the early Christians and low state of the arts are vividly portrayed in the adaptation of old forms and materials to the necessities of a new worship, resulting nevertheless in a form of temple never afterwards abandoned. In the architecture of Byzantium, the union of the East and the West is plainly typified; and when gazing with awe upon its mighty examples in Venice, Sicily, and Constantinople, its long ages of misfortune, resulting from the ill-assorted union, pass before us like the incidents of a troubled dream: In the Romanesque of Italy, or Lombard style, we read the record of that race of northern warriors who, invited by Justinian to cross the Danube and check the power of the Gepidae, afterwards passed the Alps, and pushing their conquests from city to city, finally remained possessed, during two centuries, of a large portion of Italy, until the mighty Charlemagne, first of the Teuton Cæsars, revived once more the Empire of the West. In the Romanesque of Germany, as illustrated by the magnificent churches of the Rhine, we are reminded of the part played by the successors of Charlemagne in their prolonged contest for the dominion of Italy, and their incapacity for realising his noble conception of a revived empire. Finally, in the Romanesque of northern France and England, the eventful history of the Normans in those countries, and their still stranger adventures in Sicily and Apulia, come before us with all the poetry of romance,—with all the vigour of reality.

Of such times is the history of Byzantine and Romanesque architecture the exponent.

We have already briefly traced the leading phases in the decline of Greek literature, as represented by that of Byzantium, until the final destruction of the empire. We have also alluded to the Latin literature of the Augustan age and its two succeeding centuries. During its "silver age," so styled, taste had gradually declined. The long residence of Hadrian at Athens had implanted in that monarch a partiality for its language and learning; and the royal example acting upon the national predilection, the language of Rome became Hellenised. Yet, though the great writers of the Augustan era were not replaced, there were not wanting authors of talent, and many of these were Christians. How far literature was affected by Christianity is a question often discussed, but its decay was independent of such influence. In the early days of Christianity the writings of Lactantius and Tertullian might alone redeem the charge; and, at a later period, such men as Ambrose of Milan, Sulpicius Severus, Augustine, and Jerome,—the latter placed by Erasmus on a par with Cicero,—might well contest the palm with their heathen contemporaries.

But the empire had become unwieldy and heterogeneous, and the influence of the capital was not felt in the distant provinces; and, though schools were established and professorships instituted, yet, by foreign admixture, the language became infected by barbarous idioms, and lost its purity.

For several centuries Latin was the language of the court, the government, and the higher ranks of Constantinople; but from the reign of Justinian its gradual oblivion amongst the Greeks may be dated. To the people and soldiers of his Asiatic pro-

vices it was unknown, and even by his ministers of state but imperfectly understood; and his Institutes, Code, and Pandects, which had been composed in Latin, were, after a short conflict, translated into Greek, and the original forgotten. In the reign of Leo III., and during the continuance of the empire, although the Hellenic race formed but a small proportion of the population, and the name of Greek was only applied to the lower orders of the Hellenic Themes, the Greek language alone was used throughout the state. Yet, in their lowest degradation, as in their highest prosperity, it still was the custom and pride of each subject of the Byzantine empire to style himself a Roman.

The separation of the Greek and Latin churches followed closely on the restoration of the western empire by Charlemagne. On the one hand, superiority of the Greeks in knowledge, ecclesiastical and secular, possession of the language of Scripture and philosophy, and exasperation at the preference of the Latins for foreign rather than Greek alliance; and, on the other hand, the contented tenure of the apostolic traditions and horror of Greek subtleties and heresies, all contributed to the mutual dislike so palpably evinced throughout their eventful history. Prosperity made the Greeks reject the Romans; necessity made them concede and solicit; hope made them temporize; and the true principle that guided the last Greek emperors in their negotiations with the Pope can be nowhere better illustrated than in the advice of Manuel to his son John Palaeologus, in presence of the historian Phranzes.

And here we must leave the subject of Byzantium, its history, and its arts. With each succeeding century its scene becomes darker and more contracted; and the line of empire defined by the laws of Justinian and the arms of Belisarius recedes on all sides from our view, until the Roman name is at last represented by a strip of land, a lonely city, and a scanty and hybrid race. Its fate, however, connected as it is with the most important of the world's revolutions, must ever occupy a prominent page in history. Its architecture, impressed more or less upon succeeding styles, albeit the amount of its influence has possibly yet to be defined, must ever present an episode of singular interest in the history of art.

"Alas! for proud Byzantium: on her head
The fire may smoulder, and the foe may tread;
Yet, with heroic look and lovely form,
She mocks the deep, unconscious of the storm
Her footstool is the shore, that hears the moan
Of dying waves: the mountain is her throne.
Her princely minarets whose spires on high
Gleam with their crescents in the cloudless sky;
And the dark cypress, sombre and erect,
Which hunts cold sleep, the longest, and the last,—
Each scene around this haughty city throws
A mingled air of action and repose:
Each feature speaks of glory wrapp'd in gloom,
The feast, the shroud, the palace and the tomb."

LEGISLATION AS TO DWELLINGS FOR THE INDUSTRIAL CLASSES.

In no particular is there a distinction more marked between the various classes inhabiting large cities than in the character of their dwellings: one occupies a structure of many rooms, immense in size, splendid in adornment, and complete in those tributaries to luxury which art and science have supplied; another squats in a chamber, imperfect in its structure; stinted in size, filthy, ill-ventilated, and pervious to every alternation of climate. The mansion is but the temporary abode of a family having other residences: the hired room is the bidding-place of labour, the only shelter for a leisure hour, the only refuge in sickness or in health: the former is occupied only one-half the year: the latter is ever full of the business of life: all the offices of humanity are performed there; and there, too, the behests of death await the tenant, should it so happen that sickness had not withdrawn to an hospital the lingering sufferer.

In a primitive state of society, the lot of labour stands not in the same ratio of disparity as we find it in great communities: it is not necessary to argue back to the times of Elizabeth, and to the origin of Poor Laws, to prove the fact. The great Republic is sufficient evidence: there, in the first settlement of trackless forests, labour asserted its independence: the luxuries were fewer; but, in the open fields of creation, all possessed the abundance which, under Providence, industry created. Australia lastly proves it, for there labour is respectable; and it is only in cities, where population is over aggregated, that

want and misery stimulate beings who were originally endued with the attributes of human virtues, to acts of outrage and crime. In these British colonies there are no poor; that is, there are no paupers. In America there are none, except only in the great cities.

The advance of science and of arts, the rapid progress of improvements in architecture, and the embellishment of the metropolis, would appear to provide no remedy for the abatement of those evils which condemn the millions to incarceration in cells worse than those of their predecessors, and more intolerable because of the increased comforts, and improved structural pretensions of the high-class residences which surround them.

One tenth of the whole population occupies two-thirds of the area of London: a small tribe owns the whole and receives the rental thereof: ninety and nine out of the hundred are sojourners and lodgers. It is, therefore, only in the sense of the holder of a stall in a theatre, or of a seat on a transitory journey, that a Londoner can call the house of his location his castle.

There are certain rights under law to which every tenant can lay claim: immunity against nuisances, and undisturbed possession so long as he pays his rent and taxes, are of them. How far the first is secured to him by the officers of executive justice is matter of question. A tenant may be (according to the notions of refined society) uninhabitable: the walls and fittings may be old, dilapidated, filthy: it may be infested with vermin; the sewers may reek in pestiferous vapours: all the diseases incident to impoverished swarms, huddled together in foul and disgusting chambers, may seize their victims and decimate them year by year; but the tenant has no redress, he has no law, because he has no alternative: if he fly from the plague of one quarter of the city, there is none other to which he can retreat (at least none within reach of his avocation) where any accommodation can be had that is accessible to his means.

Lodging-houses, on the model plan, have been built, in various parts, to accommodate say, at most, 10,000: other houses have been purchased or rented, and improved by either humane or speculating projectors; but all these together would not house 20,000 out of two millions and a half of souls. Therefore, for the toiling multitude, they are as badly off, as they were twenty years back,—nay, worse; for the thronged centres are now cleared out, grand lines of modern houses are constructed upon their ruins, the tide of industry ebbs outward to remoter pools, and the contrasting luxury and magnificence of renewed districts make their chronic endurance the more intolerable.

Whilst public works are going on; whilst the foundation of majestic buildings, and squares, and streets, are extending the city on all sides, and illustrating the interior, to rival the majesty of Paris; still the population rolls on; and, as it rolls, poverty is on the increase. How then is the condition of the millions to keep pace with the upward tendency of the higher classes—the "excessives?" This is a vital question.

Times have been, when, in cases of epidemic contagion, the whole energy of Government has been taxed for the redress of a great public calamity. Under such a visitation the calamity was general: the remedial aids were therefore, of necessity, general also: every parish, every district appointed its own overseers, and officers of health. The universal evil was met by universal ministrations: nothing less could stem it.

There is now an epidemic malady that rages throughout this metropolis: it is the desolation of families by the thousand; involving not only their health, but their moral and social state of existence. That desolation has its source in the narrow, squalid, and unhealthy lodgings, wherein they live, and move, and have their being.

To grapple with this wide-spread and growing evil, the best energies of the legislature are first required, to authorize every parish and division of the bills of mortality to visit, search out, and report the state of their respective wards; and to apply summarily, and without respect to interests, the remedies which the sanitary laws provide, in every case.

The first regard should be paid to sewerage, the next to ventilation, then to the provision of all those accessories of domesticity,—a proper water supply, and the easements which modern usages make requisite; and lastly, to the extent of space and breathing-room proper for each inmate, according to received authorities.

It is not enough that the police should be empowered to limit the numbers in common lodging-houses: every house in which apartments

are hired ought to be open to the domiciliary visits of proper officers, to be constituted under the Act of Parliament sought.

Aristocratic residences in squares and private streets might be very fairly left to their own guidance and discretion on these points; so of large magazines and houses of mercantile business; but 100,000, at least, of the 300,000 houses of London, are let out in diverse or numerous occupations; and of these 100,000, at least one-half are badly constructed, dilapidated, ill ventilated and drained, as well as obnoxious to the charge of crowding together families who are constrained to herd six or more in one chamber!

Private charity has done much; philanthropists on speculative principles of moderate remuneration have also added something; but legislative authority and municipal interposition only can meet an evil which has so increased as to menace the well-being and the character of the State.

THE LATE MR. THOMAS LITTLE, ARCHITECT.

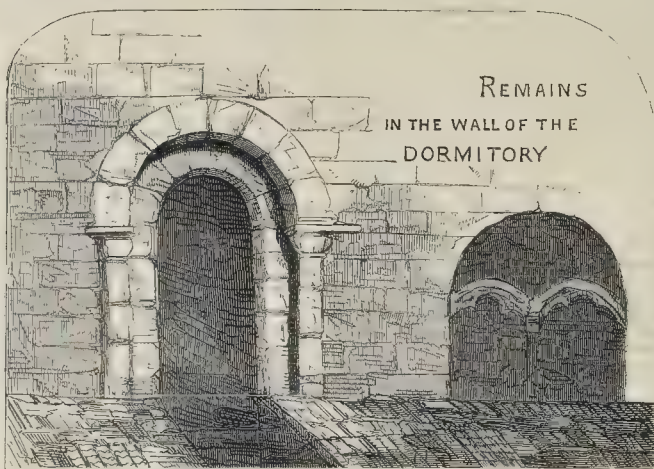
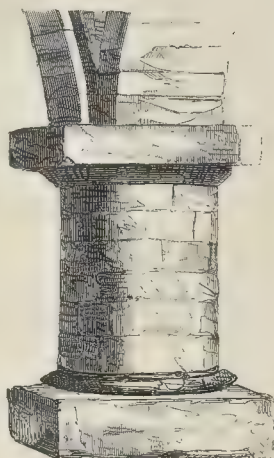
MANY of our readers will participate in the great regret with which we announce the death of Mr. Thomas Little, on the 20th inst., at 9:15 p.m., after an illness of six weeks. Mr. Little was born in February, 1802: he was consequently in his fifty-eighth year. He was a pupil of the late Mr. Robert Abraham. In his early days he practised as an architect and surveyor, but laterly has confined himself to architecture only. Among many other works (some of them illustrated in our pages) he erected the churches of St. Mark, Regent's-park, for the site of which he presented the parish of St. Pancras with the ground on which it stands. He also built All Saints' Church, St. John's-wood; St. Saviour's, in the Warwick-road, Paddington; the houses and manufactories of Messrs. Gillow and Messrs. Collins, in Oxford-street; the church of Fairlight, at Hastings; and the mansion, 13, Hyde-park-gardens. Mr. Little was the successful competitor for the chapels at the Nunhead Cemetery, which were carried out under his superintendence; he also erected the chapels in the Paddington Cemetery, near Willesden. His last work was the erection of the girls' and infants' schools for the parish of St. Marylebone, in rear of the church in the Marylebone-road. He contributed on several occasions to the *Builder*. He was much esteemed by all who knew him; an excellent draftsman, and a man of great talent and perseverance. He was much appealed to as an arbitrator, his strict honour and integrity being known. Mr. Little's loss will be greatly deplored by a large circle of friends.

THE COST OF CONVICT LABOUR.

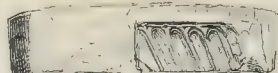
We have admitted letters from various correspondents at different times, urging that convicts might be usefully employed, more extensively than is now the case. That they should be made in some way or other to maintain themselves appears most desirable; and, in order to arrive at right views on the subject, certain information is requisite. If we remember rightly, a statement was made at a meeting of the Institution of Civil Engineers to the effect that the labour of convicts at Portland was of no value when the expense to which the contractor was put by the necessity for so conducting the operations as not to imperil the safe custody of the prisoners was taken into account. A correspondent on the subject says,—“It has always appeared to me to be the weak point in the estimate of the cost of convict establishments that, while there is every temptation to exaggerate the value of convict labour, there is no very good means of checking such valuation by applying a test to it. On the other hand, I have had some proof that convict labour is valuable. At Gibraltar, not long ago, I found two of the Government departments contending for the convicts, and each very jealous lest its rival should obtain a greater number than that allotted to itself. Again, when I was in Ireland, I took great pains to verify Captain Crofton's estimate, and was satisfied that he had not overcharged it.”

Some of our readers may, perhaps, be able to assist us in arriving at the truth.

RENTAL OF EDINBURGH. —The rental of Edinburgh for the year 1859-60, as made up by the assessor of the burgh under the Valuation of Lands Act, is £20,690, 19s. 6d. The rental for last year was £17,326, 10s. 4d., showing an increase of 13,364, 19s. 2d.



REMAINS
IN THE WALL OF THE
DORMITORY



REMAINS OF SAXON ARCHITECTURE, WESTMINSTER ABBEY.

SAXON ARCHITECTURE IN WESTMINSTER ABBEY.

To illustrate the first "Gleanings from Westminster Abbey," given in our last (p. 834), we have engraved sketches of the Saxon portions therein described—the work of Edward the Confessor. The columns, from the substructure of the dormitory, are 3 feet 6 inches in diameter, and 3 feet 4 or 5 inches high. The capitals have a large unadorned abacus, which has been altered and enriched in the Norman times in various ways. Some are chipped into a form preparatory to cutting an enrichment; and, in others, as the sketches show, ornaments of considerable richness are carved.

One of the walled up windows of the dormitory is given: it has a shaft in each jamb, and is similar to Norman windows. We shall shortly illustrate the Chapter-house.

ECCLESIOLOGICAL SOCIETY. THE COLOURED PANEL.

A COMMITTEE meeting was held at Arklow House, on the 7th inst., Mr. Beresford Hope (the president) in the chair.

Routine business having been transacted, Mr. Burges met the committee and consulted it upon the arrangement of Brisbane Cathedral, for which he is preparing a design, to be built gradually. He also exhibited his drawings for the restoration of the fragment remaining of Waltham Abbey, and for a new parsonage at Bewholme, Yorkshire.

The committee proceeded to examine some alternative sketches by Mr. Street, for a monument in Lichfield Cathedral, to the memory of Major Hodson, of Hodson's Horse. It is proposed to place this tomb next to the monument of his father, Archdeacon Hodson, in the south aisle of the choir; and a question has arisen as to the treatment of the arcade. It was unanimously agreed that it would be desirable to give a bas-relief of the capture of the King of Delhi, whose sword it is proposed to suspend as a trophy over the tomb. Various other architects submitted their designs for the opinions of the committee.

The committee then adjudicated the Colour Prize offered by them at the Architectural Museum. Eight competitors presented themselves. The first prize, of 5*l.*, was awarded to J. Simkin, of 2, Palace-road, West Lambeth; and Mr. Beresford Hope's supplemental prize of 3*l.* was adjudged to A. O. P. Harrison, of 337, Euston-road, who gained the society's prize in 1858.

DEFENCE OF MILFORD HAVEN.

FROM a paragraph in the newspapers, we learn that fortifications for the protection of Milford and the Royal Dockyard at Pembroke are in contemplation, in addition to some which are in progress. The contracts, indeed, have been entered into; and the ground has been partly cleared and levelled. The assertion that these fortifications will command the entrance to the Haven, however, we should judge from the map, cannot be correct. One of the principal sites chosen is nearly opposite the town of Milford: and others are much within the Haven mouth. If the conclusions in Mr. Page's report be correct, fortifications would be most required at the mouth of the Haven, certainly not adequately protected, and would be of very inferior value elsewhere.

PALACE OF FREDRICKSBORG, DENMARK.

OUR readers know of the destruction by fire of this palace, but are scarcely aware any more than the public generally, of the loss thereby sustained. The following extract from a letter to Professor Donaldson from Madame Jerichau, wife of the President of the Fine Arts, Copenhagen, will make this evident. "I cannot help mentioning," says the lady, "a great trial which we have endured in Denmark, which will find sympathy wherever there are high interests. Perhaps you may have seen the notice of the noblest of all Danish palaces burning, three days ago. Fredricksborg was the name of this palace, which was one of the most interesting and original buildings, on account of the northern Middle Age architecture, exclusively belonging to Denmark (Christian

IV. style). Various and most precious collections of art, Denmark's best treasures, were altogether reunited in this palace,—the king's residence at this time,—and now, with some few exceptions, all is burnt. It is a national sorrow, and every man here feels deeply this dreadful incident."

DURHAM CATHEDRAL.

DURHAM Cathedral, "huge and vast," which, as Scott says, "looks down upon the Wear," had long been disfigured with unsightly patchings of the central tower. It was covered with cement, and otherwise degraded. The cement has been removed, and the decayed stone replaced with Prudham stone from the quarries near Hexham, Northumberland. The works have been undertaken by Mr. Winter, builder, of Durham, who contrived a simple and effective apparatus for hoisting men and material. The statues removed and deposited in one of the vaults, though much mutilated will be replaced, as far as possible. The works are carried on under the superintendence of Mr. Robson, architect; Mr. G. G. Scott being also consulted by the dean and chapter. We have engraved a view of the Cathedral, showing the central tower restored. The works were commenced in the spring of this year, and have progressed with great vigour up to the present time.

The body of the Cathedral is of the Norman period. The first stone was laid August 11th, 1093. Ralph Flambard, bishop 1099-1128, finished the nave to the vaulting, and the whole of the aisles, which were vaulted by Algar, prior 1109-37. Geoffrey Rufus, bishop 1133-43, built the Chapter House. Hugh Pudsey, bishop 1153-95, built the Galilee. Richard Poore, bishop 1228-41, built the nine altars and the central tower to the first story, which was finished in the fourteenth century. Melsomy, prior 1232-44, made the groining of the nave and south transept. Between 1388-1437, the cloisters were completed, and in 1380, Lord Neville erected the altar-screen.*

* Walcott's account of the cathedral.



DURHAM CATHEDRAL: THE CENTRAL TOWER RESTORED.

HINGES IN COMMON USE.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of this association was held on Monday evening last, at the house in Conduit-street; the President, Mr. Penfold, in the chair.

Mr. Hughes, of 8, Danes-inn, Strand, and Mr. Clever, of Dalston, were nominated for membership.

Mr. Rickman then read a paper on "The Hinges in Common Use."—

"At the head of the ironmonger's estimate comes very naturally the schedule of butts and screws. To begin with the commonest. Iron butts, cast or wrought, are, in the trade, of one class only; the several makers differing very slightly, if at all, in the weight of metal or value of workmanship in those brought into the general market: they are made principally in Westbromwich and in the 'black country,' and Kenrick and Baldwin are among the best makers. Wrought-iron butts are by far the strongest, as cast-iron hinges are liable to snap; but the joint, ground to fit the knuckle, of a cast butt, is more neatly worked than the common joint of a wrought butt. The difference in price of cast and wrought butts is considerable: 3-inch cast butts are worth 4d. per pair; wrought, 8d. per pair.* The screws, which cost from 1s. to 1s. 6d. per gross, will add 1½d. to the cost of each, thus making wrought butts twice the price of cast: on the other hand, the expense of fixing is equal. Iron butts are made in various sizes up to 5 inches, measured always by the extreme length.

Backflap hinges are made in wrought iron, but not in cast: the price of them differs from that of butts of the same dimensions, exceeding it at least twofold, on account of the increased width given to the flanges of the hinge.

Brass butts are of different weights, and in specifying them it would probably be worth while to describe the weight per pair of metal for some one size, requiring the others to follow suit. Thus, good 3-inch brass butts should weigh 10 oz. per pair, and be worth 1s. 8d., while a lighter hinge would equally pass as a '3-inch brass butt,' and cost less than half the money to the builder. The number of screws to hinges is usually three up to 3 inches, and above that four, with an increase so as to give about one screw to each inch in length.

The first improvement upon the common butts to be noticed is the hollow joint for the knuckle to work in. This is only introduced in brass hinges (except in some of cast iron), as the labour of forming it in wrought iron would increase the cost up to that of the superior metal. In brass they are also made with a slight projection of the knuckle, so as to clear the door of the architrave; and, as the thickness of the knuckle is increased, a moulding is formed in the inner face so as to make the outer face of the hinge nearly lineal with the outside of the knuckle, leaving only the projecting lacquered part beyond its diameter. In describing them it is desirable to give the sizes of the hinge when open, as 4½ by 4½, and the want of projection required for the door to clear. The weight of such a hinge should be 2lb. 9oz. per pair, and this superior class of hinge is always made of sufficient substance. The amount of projection given is various according to order.

The hinges last described show the joints in the knuckles when thrown open. Upon such hinges is often worked a stop at the back, which adds a great finish to their appearance.

It is sometimes required to throw the door, when open to a right angle, clear of the opening. The 'knee butt' is used for this purpose.

All the above-described hinges would drag upon the door, if there be any carpet or unevenness to be met with on opening. The rising butt hinges are contrived to obviate this defect. The common form is made with a hollow knuckle in the door wing, and a pin fixed to the other, usually with a moulded head, showing when the door is closed, but covered by the knuckle as the door rises; the joint when the two knuckles meet being formed with an inclined plane. Such hinges are made in brass and in cast iron, the prices in ordinary sizes being about as 10s. 6d. to 2s. In the cast-iron hinges the bearing surfaces must soon wear; but in the brass butts those parts are made of steel and the back of the knuckle is usually armed with a stop.

In houses of the commencement of last century brass rising butts are to be found, where no steel is used in the bearing surfaces: they are consequently much worn. In them the slope is con-

tinuous across the knuckle on both sides, and flat: hence, as there are five divisions of the knuckle, there must be two open spaces between them to give room for the rise to play.

The 'new show butt' is that described previously, and is subject to the disadvantage of allowing the door to fall when quite open: this is avoided by 'Redmund's show rising butt.' In this the lift is given rapidly to the door; and on arriving at a certain point it will work horizontally till stopped by the wall in which it is hung: here the lift is still given by the sloping faces of the knuckle.

In the screw rising butt the lift is given by a screwed pin and rifled knuckle, but the look is not quite so satisfactory as when the faces are still left in contact.

This brings us, however, to a new class of hinges, where the spindle is employed instead of the jointed faces of the knuckle to carry the weight, and a valuable improvement made in this respect is the application of the ball and socket principle—'Collinge's patent hinges,' with steel centres. These, of course, are not capable of being applied to rising butts. Since the death of the inventor, and the lapse of his patents, Collinge's patent hinges are made by many manufacturers; and among other of the most valuable applications of the principle is that to gate hinges: these are commonly made in cast-iron. The hooks are applicable either to posts with plates, or to stone piers with V pieces let in. This hinge was constantly used in turnpike gates.

A modification by Mr. Gollop has conical meeting faces instead of spherical, the oil in both cases being applied from the top.

To return to common hinges. Parliament hinges are projecting hinges for external shutters. T hinges are made in sizes from 4 inches to 6 inches; and the same hinges above that dimension are called cross garnets, made usually in sizes from 8 inches to 20 inches long. H hinges are made in standard sizes, from 4 inches to 8 inches long. H— hinges are made from 6 inches to 10 inches long. H hinges are also made with a pin, so as to allow the door to be lifted off. New hinges are usually dipped in oil, to preserve them from rust.

A variety of butts is made for bookcase doors where it is desired to have two doors hung with their heels close together: this is the pillar butt. It is not often that hinges of this kind are required for heavy doors, but instances have occurred of the use of them. This form of hinge is ascribed to Mr. Nettlefold, of Holborn.

The 'tumbler flap hinge' has two pins and knuckles touching each other, and the middle joint only connected with both: this is used for counter-flaps, &c. Another variety, made by Mr. Hart, has a triple thickness of metal, enabling screws to fold either way. Redmund and Govil also apply a somewhat similar arrangement to spring butts for double action.

One advantage of the skew butt is, that it gives the door a lead towards closing; but this is insufficient for swing doors; and, in order to meet the requirements of such, many devices have been had recourse to under the name of spring centres. Morris's centres had a coiled spring within a box, round which were coiled two chains working on a quadrant, and, in some cases, ropes only were used. Subsequently, in Smith's patent, to the box was attached a lever, and to the pillar of the spring another, and thus the outer part of the spring was brought to bear upon the door in one direction, and the inner part in the opposite. A hinge, called the 'ne plus ultra,' still continues the use of this principle; but in this instance the levers are at bottom instead of above the spring. In Turner's centres, used at the British Museum, the spring is of 6 or 7 feet in length when expanded, and to the old arrangement is added a ratchet wheel, enabling the fixer to modify the strength of the spring.

The second class of these spring centres have levers connected with the centre by wheels and an eccentric, and upon these levers racks are cut, the notches of which form recipes for the ends of springs, of which several are used in each hinge. These, again, divide themselves into two classes, as the spring is opened or closed in opening the door. Hart's and Smith's expand a horseshoe spring: Gibbon's closes the spring, which has returned ends.

A third-class use the longitudinal pressure of a coil of helical spring. In Redmund's there are two springs, one for each direction of swing. They lie athwart the door, which, as it opens, compresses one of them. In Greenway's 'climax centres,' there are eight springs, parallel with the door, which, by an ingenious arrangement of

levers and one wheel, are all expanded on opening the door. In a new hinge, sold by Gibbon, a somewhat similar arrangement is found with plates, bent and flat alternately.

There are several points to be attended to in judging of these centres. Some of the springs are highly charged before being set in their place, as Gibbon's horseshoe, and all the watch springs and helical springs, and in others they are only charged sufficiently to make them retain their places.

Again, in the application of the spring to the door, its force is in some cases strongest when closed; which effect is aimed at in all those now pressed forward, and the force regulated by an arrangement of the internal working surfaces. In other hinges the force is much the greater when the doors are thrown open. In the old watch-spring arrangement this is the case; and, from the differing strength of the outside and inside part of the spring, as applied, the door has greater force on one side than on the other.

Another matter wherein these hinges differ is the complexity of the parts. The fewer bearing points the better, and the more readily the springs can be taken out the greater the advantage of the arrangement. The old spring is an expensive article; and, from its being perforated in two places, for the attachment of the levers, it is very liable to break. Those which require a high charge before they can be fixed effectively (including the helical springs) are of course more difficult to repair than others. The horse-shoe hinges, including Fry's, have the advantage of having the spring readily replaced, but from their stiffness are liable to snap through the frost. In Smith's last hinges the brass plate can be repaired without unhooking the door.

There is a spring hinge which combines some advantages greater than that last described—'Redmund's double-acting rising spring hinge.' These are made as rising butts with a pillar enclosing a compound helical coil. They are subject to the disadvantages of the highly-charged springs, but even when the spring should be broken the rising joint will continue a bias to the door.

Gerish's spring butts have a helical coil spring, but this is not placed within the knuckle, but at right angles to the hinge, sunk in the door or jamb: the pressure thus comes upon the spring lengthwise, and the connection between the spring and the opposite flange of the hinge is formed by a chain. In this case, as in the last, the spring is at its weakest when the door is closed.

The horse-shoe centres have an advantage over the spring butts in this, that from an arrangement of the levers they can be made generally to stand open when carried out to or beyond the right angle.

There is a considerable variety in the method in which the upper centre to a swing-door is managed by the different makers. The projecting pivot is usually let into the head of the doorcase, with a lever at back and screw to drive it up or down. Frequent difficulties arise from these pivots getting fixed in their positions. In Mr. Fry's centres there is only a socket in the doorcase, and the centre forms a flush bolt, with a slit and screw in the back of the door fixing it in its place.

In fixing swing and other folding doors, it is often desirable to make both doors open on one being pushed: this is accomplished by a subterranean connection between the centres forming what are called sympathetic hinges: this may be accomplished either by an endless chain crossing in the middle and wound round barrels on the centres, or the centres may be connected with a stiff rod working on cranks attached to them. It is usual in hanging swing doors folding to round the edges and hollow the jambs, that the daylight may not be seen between the jambs and doors, and that the meeting styles may pass each other. When, however, the doors are of considerable thickness, and rebated on meeting styles and hung in rebates, it is necessary to give one of them a start of an inch or two, that they may not bind in opening: this is done by varying the lengths and position of the cranks before mentioned. The variation in position gives the lead, and the variation in length gives the backward fold a more rapid movement, so as to bring them both out to a right angle together.

The jointing of gates with their hanging parts, especially in fine metal-work, is often a task of very great nicety. The hinges employed for the entrance gates at the British Museum, executed by Messrs. Walker, under the superintendence of Mr. Sydney Smirke, are among the most elaborated specimens of this art: they have self-acting rising-stops, and are both opened together by a winch:

* The prices here given are such as to allow the builder from 10 to 15 per cent.

the hanging is so contrived that they show a rule joint when open, continuing the mouldings on the quadrant, and are much to be admired.

Mr. Cockerell, at the FitzWilliam Museum, at Cambridge, has also introduced some admirably-hinged gates, though of simple arrangement.

I have to thank most of the manufacturers I have named for their courtesy in giving me information and lending me the various samples; and specially Mr. Gibbons, for the great pains he has taken in preparing for me a full selection of the current varieties of hinges.

At the conclusion of the paper, which was illustrated by a great variety of specimen hinges, the peculiarities of which the reader described at some length, contrasting modern improvements with the more primitive inventions of the last century; the chairman expressed the satisfaction with which the meeting had listened to the paper. For his own part, he could say that he had learned more about hinges than that evening than he ever knew before; and he was persuaded that architects were too much in the habit of putting, in specifications, three or four inch butts, as the case might be, without inquiring further as to the advantages of particular forms which the intelligence of the age had brought into use.

A vote of thanks was then passed, and the meeting adjourned.

It was announced that the next sketch for the class of design would be a drinking-fountain.

GENERAL MEETING OF INSTITUTION OF CIVIL ENGINEERS.

At the annual general meeting, held on the 13th, Mr. Joseph Locke, M.P., president, in the chair, the report of the Council, which was read, noticed briefly, in accordance with the usual practice, some of the works in progress, or which had been completed, during the preceding twelve months.

Commencing at home, the state of the works for the Main Drainage of the Metropolis, under Mr. J. W. Bazalgette, was first described. Attention was then directed to the progress in improving the Railway Communications of the Metropolis, including the Metropolitan railway, and the Victoria station and Pimlico railway, both under Mr. Fowler; the Charing Cross railway, under Mr. Hawkshaw; and the Twickenham and Kingston Branch Railway, under Mr. Errington.

Passing from railways to docks and harbours, the extension works of the Grand Surrey Docks, under the joint charge of Mr. Bidder and Mr. Joseph Jennings, were described. An outline was then given of works of this class, recently completed under the direction of Mr. Abernethy, including the new docks at Swansea, a dock at Newport, a pier at Silloth, on the Solway Frith, where there was also a dock, and a pier and breakwater at Blyth. In all these cases hydraulic machinery, constructed by Sir W. Armstrong & Co., was employed for working the coal-drops, lifts, dock-gates, cranes, &c. At Penarth, near Cardiff, the conversion of the River Ely into a tidal harbour, and the construction of a dock there, with a railway to connect it with the Taff Vale line, had been carried out by Mr. Hawkshaw and Mr. S. Dobson. At the Southampton Docks, extensive works have been completed by Mr. Giles; and at Southport, an iron pier by Mr. Brunlees. The Norfolk Estuary works had also been progressing under the care of Sir John Rennie and Mr. Fowler; whilst at Eastbourne waterworks had been completed by Messrs. McClean & Stileman.

The railway system of Ireland; of submarine electric telegraphs recently laid; the Egyptian Railway, between Alexandria and Suez, including the extensive wrought-iron bridge across the Nile at Kafr Zayat; and India Railways were referred to.

It appeared from a return made to an order of the House of Commons, that the Indian Government had guaranteed about forty-one millions sterling, for the construction of public works, principally railways, in that empire. The amount of the guarantee was, in nearly all cases, 5 per cent.

Turning to the continent of Europe, the railway system in Spain was analyzed.

In the Brazils, four commercial cities on the sea-board had been selected as the starting-points of railways, to proceed into the interior, viz.: Recife, or Pernambuco, Bahia, Rio de Janeiro, and Santos. The Bahia Railway, which was 80 miles in length, was under the direction of Mr. Vignoles, and the immediate superintendence of Mr. Hutton Vignoles, the contract for the works having been taken by Mr. John Watson. The

first section would probably be finished by Midsummer, 1860, and the entire line in 1863. Both the Pernambuco and the Bahia Railways were designed to terminate, ultimately, at the river San Francisco, about 300 miles from the mouth, at or near the point where navigation ceased. The surveys and explorations for the railway from Santos, better known as the San Paulo line, had been made, under the direction of Mr. Brunlees, by Mr. Fox. Several hundred miles of macadamized roads had been laid out by Mr. Hutton Vignoles, through the province of Bahia, partly in connection with the railway. These were fast approaching to completion by Mr. Watson, as contractor.

The total number of members of all classes on the books was 894.

The financial position of the Institution continued to be very satisfactory.

After the reading of the Report, Telford Medals were presented to Messrs. M. Scott, R. Mallet, H. Bessemer, and W. J. Kingsbury; a Watt Medal to Mr. J. W. Jameson; Council Premiums of Books to Messrs. T. S. Isaac and M. B. Jackson; and the Manby Premium, in books, to Mr. W. J. Kingsbury.

The thanks of the Institution were voted to the various officers.

The following gentlemen were elected to fill the several offices on the Council for the ensuing year:—G. P. Bidder, President; J. Fowler, C. H. Gregory, J. Hawkshaw, and J. R. McClean, Vice-Presidents; Sir William Armstrong, J. Cubitt, J. E. Errington, T. E. Harrison, T. Hawkley, G. W. Hemans, J. Murray, J. S. Russell, G. R. Stephenson, and J. Whitworth, Members; and W. Bird and Captain Huish, Associates.

On January 10th, the discussion upon Mr. Grantham's paper, "On Arterial Drainage and Outfalls," will be resumed.

EXECUTION IN SCULPTURE.

In the course of Mr. Westmacott's second lecture, delivered in the Liverpool Royal Institution, the lecturer said we were getting too much into the way of admiring execution. Now, there was no greater trick in art. He had had the advantage of living amongst great men,—Canova, Flaxman, his father (Sir R. Westmacott, R.A.), and others; and he might be allowed to say, that he had learned from them the principles of true art. Execution was not an art for the sculptor, but for the carver. You might represent an inanimate object with the greatest facility. A carver could execute a white handkerchief in marble so closely that you could not distinguish it from a real one; but tell him to make a hand holding it, and he could not do it. Now, he would explain to them a trick in art. He would take a napkin and fold it in any form, and then make a mould of it, like moulding a jelly. He would then take a piece of marble, point it, and a skillful carver would place it and the mould before him, and he would go on with chisels, and files, and sandpaper, until you would not know his imitation from the real napkin. Therefore, do not let their attention be called away by trash; let them give every possible credit to talent in execution, but not to be carried away by the accessories of art. The statues of the ancients were beautiful and perfect in their simple draperies, but these were never allowed to interfere with the divine part of art. There was a wonderful thing of that sort in a veiled figure in a church at Naples: you could positively put your fingers through the meshes of the net; but, after all, it was simply a wonderful piece of mechanism. This accounted for the difference between fine art and fine artizanship: it made the distinction from the fine art master to the mere mechanic. Execution should always be kept subservient to the greater objects,—first, the sentiment; and next, the human form divine. Without deprecating the French school, he must say that, although as early as the seventeenth century there were some men who took a very prominent place, they were all affected by the influence of the revival of antique art. We had done nothing much in this country, because, until very lately, foreign opinion in our courts and governments had gone for everything, and English ideas for nothing. But where Englishmen had had the opportunity of showing what they could do, there was nothing for their countrymen to be ashamed of. He did not know that any works of higher quality in their class had been produced than the works of Sir Christopher Wren. Art was not yet much more than one hundred years old in England; but see what had been produced in that short period, considering that, when we began, art upon the Continent was old.

Charles I. was the first to give a stimulus to art in England, but his tragical death and the sale of his effects, gave little encouragement to such pursuits, for men's minds were bent upon more serious things. But we must give credit to that great man, Cromwell, for his efforts on behalf of art. As a proof of the condition of art in this period, they might remember that, when the royal effects were sold, the cartoons of Adria Mantegna, now at Hampton Court, were sold for 2,000*l.*, while those incomparable works of Raffaele, bought by Rubens for Charles I., were actually knocked down at 300*l.* The lecturer then minutely described the process of the art of sculpture from the embodiment of the design in a miniature clay figure to the building up of the figure at working size; the modelling in plaster; the application to the pedestal of an instrument called a "standard," with radiating arms for measuring and registering the proportions of the figure; the transference of this standard to a similar pedestal on which the block of marble is fixed, and the gradual working out of the design. After the carvers had done their part of the work, he said, the master hand put the finishing touches, that is, supposing an artist really had a hand in his own work; but he understood that sculptors now-a-days were not even troubled that far, as they had got over that sort of thing. There were three great names that had exercised influence on art in modern times, and of the three he was very much disposed to place an Englishman at the head. When art was at its very lowest point, the first men to give it an impulse were Canova and Flaxman,—Flaxman, whose purity of design was better than his execution. His conception was never surpassed by any man; he was a truly religious man, and there never would be a great artist unless he was a deep feeling man, whatever church he belonged to. He had to bow to his day in costume statues, for artists who had to live must bow to the fashion of their day. But in the best of his works you would find all that was good in art. Thorwaldsen was another who exercised the best influence on art. He wished to say, in conclusion, that in the few words he had used he had endeavoured to convey to them, that they were not to look upon art merely as a pleasurable pursuit, but as a matter of deeper interest, particularly his own art of sculpture. It was a virtuous art, and could not be playing pranks: if it did, it lost its character.

HIGHGATE CEMETERY.

WITH many painful recollections of those terrible graveyards of London, some of which were so constantly worked that scarcely a blade of vegetation broke the surface of yellow clay mixed plentifully with more offensive materials, it is comparatively a pleasure to wander occasionally in the suburban cemeteries which have wisely been set apart for the reception of the dead.

It does good to those who are struggling and bustling in the throng of this great city to visit occasionally those solemn yet pleasant resting-places. It is also useful from time to time to view the progress of art as exhibited in the multitude of memorials which have been affectionately reared in those places over the graves of relations and friends. Having already given some notice of Kensal-green and Norwood cemeteries, we will progress from Islington up the still rustic-looking road which passes through Holloway to the Highgate cemetery. Getting away from the thick population, and travelling past snug villas, beautifully clean, and bright and gay with flowering plants, those of an antiquarian turn will note the houses of various dates there erected, and the Whittington stone by the wayside. This, whatever may be said in disproof of the favourite and ancient legend, has a general interest. In spite of evidence to the contrary, the eye naturally turns down the hill in search of the city churches, and one likes to fancy that the famous Mayor of London did sit on this spot and listen to the voices of the bells. The scene has, however, changed since that time, and almost uninterrupted houses and other buildings stretch from Bow Church to this spot, a distance, "as the crow flies," of about four miles. In the stillness of night the city bells may be occasionally heard from this point; but in the day-time, never.

There is much to be seen during a walk in this direction; but we will pass on, without further remark, to the cemetery. Here the landscape gardener has well planned his work, and the design has been most carefully carried out. In the summer, when looking at the luxuriant masses of foliage of varied shades, at the clusters of red and white roses, and other flowers, and the clearness of the sky, listening to the singing of thrushes,

sky-larks, the humming of bees and other rural sounds, it is difficult (but for the peeps of the city through the trees) to fancy oneself so close to such a vast population.

Nature has here provided a spot suitable for the purpose to which it has been put, and we may walk long admiring the varieties of surface, the different shades of light marble, bright in the sunlight, relieved by intense depths of greenery.

As in all combinations, either of nature or as shown in art, the mind and eye travel from the more general masses to the details, and here are to be discovered matters of different interest which exhibit many shades of taste and artistic skill. It is, however, gratifying to notice that a distinctly-marked improvement is going on in the department of monumental art. It has become the fashion at the present day to curtail the former useless waste and extravagance exhibited at funerals. But little disposition is shown to spare cost in the erection of monuments; it is, therefore, not so much the want of money as it is the want of a true appreciation of what is tasteful and appropriate which causes the erection of unsightly and unmeaning objects.

There are in the Highgate Cemetery an unusual number of pillars broken, at various heights; some of these entwined with flowers: there are also pillars complete, surmounted by urns of classical shape; in one instance the shaft has been broken and the remainder left close by in a ruinous form. The broken pillar is a good emblem, but the numerous repetitions of the idea show a great lack of invention.

Amongst the large monuments in these grounds is one of severe Egyptian form, surmounted by an urn of proper shape, which has a bold effect. There are some others of large proportions which are of outrageous shape; it is, however, more agreeable to turn to those tombs which, although of less pretence, are appropriate. Here is one to the memory of a child four months old. On a pedestal of architectural design is a dove picking off the leaf of a lily from its stem; below, in a wreath, are the words, "Not lost for ever." On another memorial, of pure white marble, in a small oval, are roses, rose-buds, and lilies, partly cut through by a sickle, surrounded by the words "Omnipotent and immense is the Great Creator." The lines below scarcely are in keeping:—

"Life's like a winter day,
Some only breakfast and away;
Others to dinner stay, and are full fed,
The older ones but sup and go to bed.
Wretched is he that lingers out his day;
He that goes soonest has the least to pay."

At some distance below this are the well-known words from Gray's *Elegy*:—

"The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea;
The ploughman homeward plods his weary way,
And leaves the world to darkness and to me."

Some monuments, although of unassuming shape, convey words which are the more impressive in consequence of their close proximity with the decaying human dust. It is not wise to pass by without heed such advice as this from the *grave*:—

"Whatever thy hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom, in the grave, whither thou goest." (Eccles. ix. 10.)

This on a stone to the memory of a man who had worked usefully in this generation in promoting the public good.

On a lofty monument of Gothic design, to the memory of Mr. John William Griffith (architect) and his wife, "erected by their affectionate children," is, "The dust shall return to the earth as it was, and the spirit shall return to God who gave it."

A dove, sometimes with an olive-branch, and at others holding a scroll on which is quoted some Scriptural text, is a device much used. Both here and in other cemeteries, urns of Etruscan and other styles, surmounting bases of many shapes, are commonly used. We can trace the fashion of covering the vases to different degrees, until at last the object supposed to be covered presents a shapeless and unsightly mass.

The tombs of plain and polished granite are numerous. Amongst these may be noticed a plinth, surmounted by a dual coronet, to the memory of William Aubrey de Vere, ninth duke of St. Albans, who died November 26th, 1849. Not far from this, on a very large oblong base of white marble, is a colossal sleeping lion: this is the grave of George Wombwell, of menagerie celebrity. In another place, on a pedestal, is a horse carved in stone; the bridle is, however, of leather: this covers the remains of a well-known horse slaughterer.

Amongst the monuments which attract most

notice, is one formed of a small base, with inscription, which is surmounted by a female figure rather larger than life, resting mournfully against the stem of a sculptured tree. The carving of this figure is good, but it wants the high qualities of art which would produce in a spectator those feelings which are necessary to give to such a work a proper character. We are told that this is a very correct likeness of the sister of the deceased; but in this instance, instead of a memorial of the dead, we have a representation of another person which attracts all the attention.

On the grave-stone of Joseph Goodyear, the historical engraver—erected by a numerous body of friends—is his medallion, cut on marble, and covered with glass. In this instance, the framing is clumsily managed, and interferes with the effect; in other cases this has been better done. Over one grave is a square upright shaft, on which are busts in *bassi rilievi* of those who are there buried. There is another flat stone of a delicate gray colour, to the memory of a lady, in which is inserted a beautifully executed medallion cut in cream-coloured marble. The delicate contrast, and yet harmonious combination of the two kinds of stone, are pleasing to the eye. This is also covered with thick plate-glass, which must render such works very permanent.

Some of the Gothic tombs are well worthy of notice, particularly one recently erected. This, both as regards design and execution, is not equalled by any monument in those grounds. From a large flat slab, this rich and artistic design rises to a considerable height. The ground plan is of right-angular form, presenting at each corner a gable surmounted by a *fleur-de-lis*; below each of these are figures of Faith, Hope, and Charity. In the centre of each of the other faces are smaller gables, in which are angels in devotional attitudes; below is a string-course of exquisite carved flowers; in the centre of each of those three faces, are designs cut in bold relief of the Birth of Christ, the Raising of Lazarus, and the Resurrection of our Saviour from the Tomb. The whole design is surmounted by a floriated cross. The grouping, cutting, and design of this monument, are of a high description of art, and encourages us in the belief, that we shall ere long have the very highest order of talent employed in raising out of doors monuments to the memory of the dead.

Close to a hawthorn—which, in the spring-time is white with blossoms—is a plain granite stone, inscribed thus:—

"To the memory of
Gilbert Abbott i. Beckett.
Who died at Boulogne-sur-Mer, August 30, 1845,
Aged 45 years.
Endowed with a genial, manly spirit,
Gifted with blubst powers of Wit and Humour,
They were exercised
to the healthiest and most innocent purposes.
As a magistrate,
His wise, calm, and humane administration of the laws
proved that the
Fulfillment of the gravest duties
is not incompatible
with sportsiveness of literary genius.
'His place knows him not,'
but his memory is tenderly cherished."

Mention is also made of i. Beckett's son, who died at the same place, aged 9 years and 3 months, both victims, no doubt, to the ill sanitary condition of Boulogne-sur-Mer.

In this part of the cemetery the attention is caught by a stone of a remarkable design. It consists of an eagle forcing open the tomb from within. The flat cover, on which is the inscription, has been partially driven to one side, and the eagle is rushing forth with two banners in his talons. The inscription begins—

Here rests
All that is mortal
of
Albert Durasey,
Lieutenant of the 6th Regt. Army,
Knight of the Order of Military Valour.

Stanilaus Worgell is also commemorated. The inscription mentions that on account of the deserts of those patriots and their toils in the public cause, their countrymen in exile, and other well-wishers to the cause of Poland, erected this. The name of Charles Stolzino is also inscribed, who was buried in Cumberland. This record is concluded with—

"For our liberty and yours."

We wander to other parts of the grounds, and gradually ascend the terrace towards the north. From here the view of London is magnificent: churches so numerous, that one fails to count them; prisons, hospitals, and crowds of public buildings, rise above the mass; but above all, and grander than any, is the dome of St. Paul's. Here in the foreground peacefully rest the dead; among that huge mass of dwellings, which lie like a

map below the eye, what cares, what hopes, what pleasures, and disappointments! Every day on an average 156 dead bodies are carried from the living mass to their various graves. A bright ray of sunshine lights up the river Thames, and its crowds of shipping, Shooter's-hill, and other distant parts of the view, and reminds us that active energies are at work, which will effect much good.

Although the cemetery at Highgate does not contain the remains of many celebrities in literature, art, or science, there is much to be seen which will pay for a visit.

IMPROVED DWELLINGS AT LOW RENTS IN EDINBURGH.

HOUSE accommodation of all kinds is at present scarce and dear enough in Edinburgh, says the *Scotsman*; but none is, we believe, more in demand than such as is suited for the families of the superior class of workmen. Knowing the great demand of such houses in Edinburgh, we are glad to find that some addition will soon be made to the supply, and that in a manner fitted to serve in every way as a model and example to others. Every traverser of our streets, in passing across the North Bridge, must have noticed from its eastern side a brick-built tenement which, within the past month or two, has been slowly rising story above story in the immediate neighbourhood of the classic locality of Ireland's Woodyard. It is a "land" of such houses as we have referred to. English in design, the building is characterised by several Scottish features. In the treatment of the window and other openings, with firebrick dressings, variety has been slightly but judiciously introduced—the upper story being generally marked by arch-headed windows, decorated after the "Dormer" style. From the rapid slope of the ground, the structure necessarily consists of three, four, and five stories; and is divided into separate "houses," each couple of houses having a common passage or entrance. Each "house" contains a kitchen, parlour, and closet suitable for a bed, all lighted, and none entering through the other, but all by separate doors from an inner lobby. Every house is also fitted with gas and water, with sink, and water-closet. Those houses on the upper floors are entered from galleries, ingeniously constructed, and so projected from the centre of the building as to break agreeably the line of wall, while affording that separation of entrance to which we have alluded. The average rent of each separated "house" or dwelling will be about 8l. 10s. per annum, and at this rate the building is expected to yield, when fully let, a return of fully 8 per cent. to the benevolent and spirited proprietor, Mr. Milne. The builders are Messrs. Sanderson & Muirhead.

ABATOIRS FOR MELBOURNE, VICTORIA.

THE corporation of Melbourne having advertised for plans for abattoirs for the city, fifteen sets of designs were sent in, and were afterwards exhibited on the walls of the Town-hall. The *Australian Builder*, in criticising these designs, points to one with the motto "Palman qui meruit ferat" as decidedly the best; but the first of three that were selected by the market committee was one with the motto "Eureka;" the second was the one alluded to; and the third was "Si je puis." The three competitors, whose designs were thus selected, were afterwards invited to the Town-hall, to expound their respective views before the members of the corporation and a sort of jury of master butchers, when the butchers unanimously, and the market committee with one exception, voted in favour of the author of the design "Palman qui meruit ferat," namely, Mr. John Millar, F.S.A., engineer-in-chief to the Geelong Water Commission.

The *Australian Builder* thus describes Mr. Millar's design:—

"Palman qui Meruit ferat, two sheets.—The character of this design is after the Greco-Egyptian. The plan is upon the radiating principle, and is worked out with great skill, combined with clearness and engineering precision in small matters. The centre of the plan comprises a rotunda and butchers' exchange, in which is fitted a revolving turn-table. From this building diverges a number of tramways, leading to the triperies and melting-houses. The idea of draining each radiating department into manure pits, outside the building, is also very good. The space adopted is half an inch to ten feet, which would represent a square plot of 500 feet to be covered with buildings. Great praise is due to the author of this design, which evinces engineering as well as architectural ability. As a necessary precaution, the author has planned it perfect in each compartment, seeing it would be preposterous to expect the whole could be carried out for less than double the specified amount."

The author has himself since forwarded to us a printed report on his plan, addressed to the city corporation.

By the advertisement inviting designs, the corporation announced their intention to give the ultimate carrying out of the chosen design to the author; so that Mr. Millar will probably be the architect employed to carry out the proposed abattoirs, as those best adapted for the climate.

READING.

On Saturday morning the side of a house occupied by Mr. Justins, brewer, London-street, fell out, carrying with it a chest of drawers, which was placed against the wall of a bedroom. A house, which formerly adjoined Mr. Justins's, was recently pulled down for the purpose of forming a new street, and the wall left was unable to sustain itself when deprived of extraneous support. Fortunately no person was injured.

The progress making in the Abbey Ruins, notwithstanding the inclement weather, is very considerable; and several noble portions of the old walls are now fully developed which for many years have been completely blocked up with unsightly buildings.

We hear a rumour that it is proposed to destroy the ancient Abbey gateway; but, after what was said on the occasion of the visit of the British Archaeological Association, can scarcely bring ourselves to believe it. We must learn something more on the subject.

ART IN THE PROVINCES.

LEEDS.

At the annual *soirée* of the Leeds School of Art on December 19th (the Mayor of Leeds in the chair), the president of the School of Art, Mr. P. O'Callaghan, read a report of the present condition and operation of the school. In it he spoke of the extraordinary increase in the demand for art-education which was evident in Leeds and its locality. From Leeds, Halifax had been evangelized in art matters, and a flourishing school established. Huddersfield, Bradford, and other surrounding towns owed the advantages of art-instruction by competent masters to the enterprise and colonizing spirit of Leeds. Up to a short time ago Leeds had only one master in the School of Art; but the committee of management had recently appointed three additional masters to supply the increased demand for art-instruction. Several advanced classes for the instruction of the highest students had lately been established, which were in the most flourishing state. Among these were the modelling-class, and the class of drawing from the life. These, as well as the other advanced classes, had been put under the charge of Mr. Walter Smith, who had been appointed head master conjointly with Mr. Ryan. Mr. O'Callaghan described fully the state of the school, noticing the great increase of interest lately taken in it, partly through the establishment of the new classes. He had pleasure in announcing a present of a masterly picture by Hunt from Mr. Ruskin. He had also to announce ten guineas for prizes from Sir E. B. Lytton, and eight guineas from several inhabitants of Leeds.

The mayor then distributed the prizes, consisting of eleven medals, fifty-two advanced and seventy-three elementary prizes. One prize studentship was also announced.

After the meeting had been addressed at considerable length by Mr. E. Baynes, M.P., and Mr. J. Hope Shaw, ex-mayor, the resolution of the evening was moved by the Rev. A. Barry in a very eloquent speech. The resolution was as follows:—

"That art-instruction has strong claims upon the support of the public generally, and especially of all interested in the progress of education and the improvement of manufacturing industry."

The resolution, he said, included two statements which were implied, and one which was asserted. The two implied statements were, that art-instruction had an important place in the process of education, and that it had an important bearing on the progress of their manufacturing industry; and the assertion was that, this being the case, it had strong claims on the support of the public generally. Of these implied statements, the first was theoretical and the second practical; and as with the former he could claim no acquaintance, he must ask their indulgence while he offered a few remarks on the latter, although he had recently, on two occasions, expressed his sentiments on the matter. A few years ago education and artistic tastes were supposed to be things which were not exactly antagonistic, but which had very little in common, and which observed a

sort of friendly neutrality towards each other; but in the present day they had been taught to look at human nature more as a whole, and to remember that education was the development of that whole, and that, therefore, any education which developed one of the faculties into a morbid activity and left the others to be stunted and pining, was not a true education, and was unworthy of the name. They had learnt that man had not only an intellect, a conscience, and affections, but also the faculty of imagination, which brought into play the several parts of the mind, instead of leaving them, as it were, in pigeon-holes, unexercised and undeveloped.

Mr. Walter Smith seconded the resolution, and, after speaking of the practical advantages of art education, especially to the value of the instruction imparted at a school of art to the textile manufactures in which Leeds was so greatly interested,—he said, art-education in such a town as Leeds was to be regarded from three points. Firstly, in its relation to manufactures; secondly, in an educational point of view; and thirdly, as an æsthetic study. In the heart of manufactures, as at Leeds, it was hardly necessary to remind the meeting how immensely important it was to foster a spirit of perseverance among the workmen engaged in manufactures,—a spirit which would tend to develop the latent taste of the designers who made our manufactures attractive and tasteful, as well as substantial and valuable. The educational aspect of drawing was so hackneyed a subject that he would not dwell upon it, except to say how valuable an element the best schoolmasters had found drawing, as teaching proportion and writing, which was another phase of drawing. As an æsthetic study every one must agree what a delightful study even elementary art was. The happiness of a man consisted in the power he had of deriving beautiful thoughts from that which surrounded him. Drawing would give him this power. Therefore, in every aspect, drawing, he considered was worthy of general support.

PROVINCIAL NEWS.

Maidstone.—An abundant supply of chalk spring water, notwithstanding all the difficulties in the way of the Maidstone Spring-water Company, is about to be produced, according to the local *Journal*, for the use of the inhabitants. The old company makes way for a limited liability company, which has been formed, and is about to be incorporated under the Joint Stock Companies' Acts. The works have been commenced by Mr. Docwra on the Grange Farm, Boxley, belonging to the Earl of Romney.

Bardfield.—A new townhall has been opened in Bardfield, Essex. The structure is of red brick. It is square in plan, with an octagonal roof coiled. The principal timbers are stained. The large room is 54 feet by 24 feet 6 inches, with raised platform at the end; and the committee-room, 18 feet by 16 feet, opening into the hall, capable together of holding 500 people. The total height is 25 feet. The total cost has been about 700*l*. The architect was Mr. H. Stok, the Essex county surveyor; and the builder, Mr. James Brown, of Braintree.

Leeds.—The Leeds Townhall is approaching completion, and it is expected that in about a month there will be no necessity for workmen to be longer permanently employed on any part of it. This last week the dome of the vestibule has been re-decorated, under the superintendence of Mr. F. Jackson; and the statue of the Queen has been replaced in its original position.

Hull.—It is intended to build a new gaol for the town and borough of Hull, at an outlay of 45,000*l*. The site at present thought of is on the east side of the town. It takes the form of a cross,—thus, $\begin{smallmatrix} b \\ a \end{smallmatrix} \times \begin{smallmatrix} c \\ d \end{smallmatrix}$; *a*, the female prison wing;

b and *c*, male prison wings; *d*, wing containing general offices for the working of the prison. The residences of the governor and chaplain are to the front, also the principal gate entrance. Accommodation is given for 300 felon cells. The drawings have been prepared by Mr. Stead, under the directions of Mr. David Thorp, surveyor to the corporation.

Thrumpton (Notts.).—These schools were opened last Tuesday. They have been erected at the sole expense of the Hon. Mrs. Byron, of Thrumpton Hall. The style is geometric Gothic, with simple stone tracery windows. The end window is filled with stained glass, by Messrs. Hardman of Birmingham, representing a child and guardian angel. The building is of red brick, in bands, with coloured brick quoins. The roof is a high-

pitched open-timbered roof, covered with blue and green slates in courses, surmounted by a stone bell-turret with ornamental cross. A small statue of the Virgin and Child is placed under a canopy at the east end. Mrs. Byron's private entrance from the park is through a timbered porch. The house for the teacher is connected with the schools, and is in keeping with the other part of the building, the whole forming a very effective group. The chimney-piece is of stone, ornamented with glass mosaic by Stevens of Great Queen-street. Mr. R. C. Sutton, of Nottingham, is the architect.

THE IPSWICH PENNY READINGS.

MR. T. S. GOWING, to whose energy the inhabitants of Ipswich have often been indebted, originated the idea of establishing weekly penny readings in the Lecture Hall, Tower-street, and, in conjunction with Mr. Sulley, of the Ipswich *Express*, is carrying it out in a most successful manner. On the closing night for the present season, Friday, the 23rd, a report was read, wherein the managers, with the view of aiding others who may desire to make a similar attempt, stated the following to be principal points, which their experience warrants them in considering as essential to success:—

I. That the pieces should be varied in character; complete in themselves; and so arranged as to afford, by contrast, mutual relief.

II. That no piece should exceed half an hour in length, while the majority should be much shorter.

III. That purely didactic pieces should be introduced either at the beginning, when the senses of the audience are fresh, or towards the middle, when a certain amount of repose may be advisable.

IV. That learned and far-fetched allusions should be resolutely sacrificed, as well as all unnecessary or questionable passages.

V. That everything should be read with well-considered expression, so as to bring out clearly the descriptive beauties, the passion, the pathos, or the mirthful excitement characteristic of each selection.

VI. That the aim should be to reach men more through the imagination and the feelings than by direct didactic instruction.

VII. That it is inexpedient to introduce more than two or three untried readers on the same evening.

By the balance-sheet it is seen that these Penny Readings, unlike most schemes of the kind, instead of having to depend on external pecuniary assistance, have enabled the managers to defray all expenses connected with them, and yielded a good profit besides; so that instead of paying to the Mechanics' Institution the sum of 9*l*. 15*s*., the amount agreed on for the hire of the room, they had the pleasure of contributing to its funds the sum of 25*l*.

A few seats are set apart at 6*d*.

The last programme will serve to show the character of the pieces selected:—

SUBJECT.	AUTHOR.	READER.
The Hermit	Parnell	Rev. Robt. Perry.
An Alpine Adventure	Leisure Hour	Mr. J. E. Ransome.
Ye Mariners of Eng.	Campbell	Mr. T. S. Gowing.
The Raven	Poe	Mr. J. Spilling.
Misadventure at Mar.	Barham	Mr. J. Pearce, Jun.
Le Fevre	Sterne	Mr. T. S. Gowing.
Soldier on Death	Shakespeare	Mr. C. Sulley.
Dread Swan	Hawthorne	Mr. C. A. Head.
Mrs. Caudle on Shirt	Jerrold	Mr. C. Sulley.
Buttons		

The example should be followed.

THE POTTERIES MECHANICS' INSTITUTION, HANLEY, STAFFORDSHIRE.

The building for this purpose, now in course of erection at Hanley,—the central and most important of the cluster of towns known as the "Potteries" in Staffordshire,—is of two orders externally, Doric and Ionic, and promises to be a satisfactory structure. Its origin and purposes may be briefly stated. The Mechanics' Institution of the town,—which, it may be remarked *en passant*, was one of the earliest of such societies—has for some years suffered on account of the inadequate accommodation afforded by the premises in which it is at present located, and of its inconvenient and obscure situation. Some time ago, a site for a new building was purchased near to one of the principal thoroughfares of the town, but a want of funds prevented the erection from being proceeded with; until a few months ago Wm. Brownfield, esq., then mayor of the borough, wisely deciding to devote the money usually spent in corporation dinners and similar festivities to the permanent improvement of the town, offered out of his private purse 500*l*. to the committee of the institution for providing, in connection with the contemplated building, a Working Men's Reading-room, capable of affording comfortable accommodation to 150 readers,—on condition that the valuable library of the institution should be made available for reference in the room, and that

the rate of subscription should be so low as to be little more than nominal. This generous offer was at once accepted, and the foundation-stone of the building in question was laid by Mr. Brownfield on Thursday, the 25th October last, in the presence of a very large assembly, in which almost every grade of society in the Pottery district was numerously represented. Besides the reading-room advertised to, the edifice will contain a large hall, capable of seating 1,000 persons, for lectures, concerts, exhibitions, &c.; a commodious library; a suite of excellent class-rooms; a spacious museum; a laboratory; chess, coffee, and conversation rooms; apparatus for providing dinner, tea, and other refreshments; a keeper's house, &c.

Mr. Robert Scrivener, of Hanley, is the architect, and Mr. Edward Matthews, builder, of the same place, has undertaken the erection for the sum of 2,770*l*. The building is expected to be completed by October, 1860. It may be added that, besides his gift for founding a Workmen's Reading-room, Mr. Brownfield is a liberal contributor to the general fund for the erection of the building. He is also providing, at his own cost, the first public drinking-fountain in Hanley, which is similar to one to be placed near the Royal Exchange, London.

CHURCH-BUILDING NEWS.

Wallingford.—Plans for laying out the new cemetery ground and erection of chapels and other buildings requisite were submitted to the Burial Board Committee for their selection on the 15th inst. Messrs. Poulton and Woodman, of Reading, were the successful competitors. The design selected is of the Elizabethan style. The cost of the buildings will be 1,100*l*. exclusive of boundary walls.

King's Langley (Herts).—The church of King's Langley was opened for Divine service on December 21st, after undergoing restoration, with additions, being enlarged, to afford accommodation for forty additional persons. It has been resecated with open benches. The north aisle has been rebuilt, with an addition of porch. New roofs have been put on the chancel and north aisle, and the roof of the nave has been altered and repaired. The defective stonework of the interior of the church has been restored with Tottenhoe stone, obtained from the ruins of a farmhouse in the neighbourhood; the quarries from which the original stone was obtained having ceased to be worked. New stained glass windows have been fixed in the east and west ends by Mr. Wailes, of Newcastle. Heating apparatus has been fixed by Messrs. Hayden & Son, of Trowbridge. The chancel is laid with tiles. The architect was Mr. D. Brandon, of London. The contractor for the whole of the works was Mr. G. C. Cooper, builder, Aylesbury. Mr. Short was clerk of works.

Wington (Somerset).—The parish church of Wington, the interior of which has for some time been undergoing restoration, has been re-opened for Divine service. The improvements effected are numerous. The timber and headwork of the roofs have been examined and put into a state of repair. The carved oak ceilings have been freed from paint and varnished. The walls have been newly stuccoed, and the whole of the internal stone-work cleaned and restored. The old pewing has been removed, and replaced by new oak fittings. The pulpit is of Caen stone, and the reading-desk of English oak. In the chancel, in lieu of former plastered ceiling, a new panelled red deal ceiling has been substituted, with carved and gilded bosses and traceried cornices. The floor has been laid with encaustic tiles. The chancel stalls are of oak. The work has been executed by the general contractor, Mr. Frederick Knowles, of Wington, under whom the stone carving has been done by Mr. Martill, and the oak carving by Mr. William Ship. The warming apparatus was supplied by Messrs. Haden, of Trowbridge. The architects were Messrs. Fosters and Wood, of Bristol. The new organ, in carved oak case, was built by Mr. J. W. Walker, of London, and has two complete manuals of the German compass.

Eaton Bishop (Herefordshire).—Eaton Bishop church, which has undergone some restoration of the interior, has been reopened for divine service. The flat modern ceiling which concealed the ancient oak roof has been removed. The timbers of this part have been cleaned, and the rafters, which are all framed as principals to a pattern, have been ceiled between. The stone pillars and the arches of the nave have also had the thick coats of plaster which concealed the mouldings scraped off. On the removal of the plaster from the arches on the north side, says the *Hereford Times*, traces were discovered of their having

been once illuminated with a pattern of stripes and stars. The arches on the south side were plain. A modern gallery has been removed from the west end, and also the whole of the pewing, which has been replaced by open framed elbow sittings. These and the new pulpit, desk, and chancel seats, are formed of enriched patterns, after the remains of the old carving. The main portions of this work are executed in deal, stained and varnished. The carved parts in pulpit, desk, and chancel are executed in oak. The aisles between the pews have been wholly relaid, the principal central one with Godwin's encaustic tiles. Externally, the chief improvement has been the removal of a lath and plaster porch, and the substitution of one formed of stone and carved timber. By the alterations the number of the sittings have been increased from 195 in the old, to 227 in the new. The amount expended in effecting the present improvements has been about 320*l*. The work has been carried out under the superintendence of Mr. John Clayton, architect, by Mr. Wm. Beavan, builder, Hereford.

Halifax.—The new organ for All Souls' Church, Halifax, has been built by Messrs. Forster & Andrews, of Hull, at the sole cost of the founder of the church, E. Akroyd, esq. We gave a description of the church at the time of opening, but at that time the organ was not completed. The following is a summary of the instrument:—

Great organ	13 Registers and 713 Pipes.
Swell organ	10 Registers and 558 Pipes.
Pedal organ	2 Registers and 88 Pipes.
Complets	5 Registers
	39 Registers 1,391 Pipes.

The organ is enclosed with an oak screen, with bands of wrought-iron scroll work to support the front pipes, which are illuminated on gold grounds. The peculiarity of the position of the instrument rendered it necessary to have a very large number of ornamental pipes (upwards of eighty). Patent combination pedals are introduced for the first time in this organ.

Hull.—Steps are to be taken immediately for the restoration of the exterior of Holy Trinity Church, Hull. A meeting of influential gentlemen was held in the vestry on Friday last, to hear the report of Mr. G. G. Scott, who stated that to carry out the restoration would require from 10,000*l*. to 12,000*l*. At present it is in a fearfully dilapidated state.

A PLEA FOR THE PRESERVATION OF OLD CHANCEL SCREENS.

SIR,—There is very seldom a month that passes which does not contain among the notices of church "restoration," so called, some such notice as "The ancient screen has not been replaced." "It was thought desirable to remove the screen and throw open the whole length of the church," &c. &c. Now there is no doubt that the chancel screens existing in our old churches are seldom of real use; but even on this plea some few have a claim to be preserved. In many cases, the screen is the only mark of division between nave and chancel, chancel arches being often omitted in the design. But even if no actual use can be now assigned to a screen, is it any excuse for the wholesale destruction that modern improvers are making among our Mediaeval woodwork? Are not features equally useless restored with care—piscine, hagioscopes, and many other things—which are now purely ornamental, and of no real service? May I beg to lay before your readers some few reasons for not destroying their chancel screens? In the first place, most old churches were built with the intention of receiving them, and the architectural effect is in such cases incomplete without them, especially where there is any amount of carved wood-work, which is always made to harmonize with the screen. The screen, in very many churches, is absolutely the only ornamental portion of the building, and rich screens exist and give to some churches not only an ecclesiastical character, but even a fame for beauty, which, if destroyed, would leave the building little better than a barn.

If any one objects that these structures interfere with the sight and the hearing of that part of the service conducted at the altar, I would only ask him to examine for himself nine out of ten of our old screens, and I am sure he will find the accusation false. The mediaeval builders were as desirous as ourselves to prevent such an inconvenience, and it will be found that at the most convenient height the woodwork is usually very slight, and is left open in such a way as to interfere very little with the view into the chancel. The same cause allows the voice to be

heard with little interruption; but here I know of cases where the screen has evidently been intended to improve the acoustic property of the structure, as the front side next to the congregation is covered in such a way as to act as a sounding board. In one church, where a handsome screen was ruthlessly sawn down to the level of the pews, and covered with green baize, some fifteen years ago, a large sounding-board had at the same time to be constructed over the pulpit, to prevent the preacher's voice from edifying the sparrows which built among the roof timbers.

It may also be objected, that the division between nave and chancel is in our Reformed Church no longer required. This may be very true; therefore let new churches be built without screens if so desired, but let consistency be the order of the day; and if this is any reason for destroying old work, it will apply with equal force to chancel-arch and chancel itself, and it will be just as reasonable to insist on the abolition of spires, bells, and, in fact, everything that may interfere with the pure barn and whitewash style. It is melancholy enough to visit, as I have done, church after church, and find the ruins of screens cut down and mutilated, most of which have been destroyed within the last thirty years. In one district, in a line of some eighty miles, I could point out about a score in this condition, some once celebrated as fine works that have belonged to the churches of abbeyes, and have been rescued from their ruins at the dissolution; but the modern system is far worse, for now the screen, with all its elaborate carving, is thought unworthy of restoration, and is cleared away: some are sold as curiosities, some carted off by the contractor, many, within my own knowledge, broken up by village churls for fire-wood, and irrevocably lost. E. W. C.

THE HARTLEY INSTITUTION, SOUTHAMPTON.

SIR,—As the time draws near for submitting designs for the Hartley Institution, it is to be hoped that the council appointed to carry out the intentions of the liberal benefactor will revise their decision in not offering a premium to two or three of the best designs, when we take into consideration the liberal funds that have been bequeathed by the late Mr. Hartley, without calling on the town or the public to come forward with their aid. There are many that may be induced to enter into the competition with the faint hope (and very faint indeed) of success, who can ill afford to bestow the time, labour, and expense of such an undertaking. The subject is one that requires practical experience and judgment to carry into effect, and which cannot but prove highly advantageous to the council in carrying the building into execution; for, without such professional aid, they could not act both as regards the arrangement of the building, the construction, and expense; and, as the council cannot be competent to form their own design, or enter into the merits of the case,* it is (as I have already stated) to be hoped that they will revise their decision, and take into consideration the vast expense and labour of competing for such a public building by professional men.

AN ARCHITECT.

THE MAUSOLEUM AT HALICARNASSUS.

It is to be regretted that so few facts can be brought forward in support of Mr. Fergusson's ingenious theory, for it is undeniable that the effect of a pyramid with bold convex sides would be grand and imposing when seen from a distance, and that it would possess that feature of novelty which seems from all descriptions of it to have been so remarkable in the mausoleum. But I think it will be found upon examination that the 6-inch stone of which he speaks bears no evidence of having been a pyramid-stone, and that the 9-inch stone, though it has the groove which is common to all other pyramid-stones that have been discovered, has not the ridge on the tread at the joint, which is also general.

Again, it is unaccountable (if his theory be correct) why all the pyramid-stones that were discovered, with the exception of one, should have had either 1 foot 9 inches or 1 foot 5 inches treads; for why should one course only have been preserved? Mr. Fergusson may be assured that all the stones that were found were accurately measured, and that all data that have been arrived at will be given to the world in

* They have since decided to refer the merits of the designs to some eminent architect.

Mr. Newton's forthcoming account of the Budrum expedition; and then, unless a satisfactory explanation of the whole be there given, the matter must rest until the Columbus shall arise who shall set this egg upon its end.

R. POPPLEWELL PULLAN.

Wimborne Minister.

FALL OF AN IRON BRIDGE.

SIR,—Respect for the *Builder* induces me to correct a mistake in the *Liverpool Post*, quoted in your number of Saturday last. The fact is, that this bridge (near Walton station) is not of "cast-iron,"—neither is it a stone bridge, as represented in the *Illustrated News*, but consists of three wrought-iron tubular girders, 13 feet apart, and 88 feet span, carrying over the Liverpool and Yorkshire Railway a new highway, which is being constructed by Lord Derby, about 60 feet wide, at a point about two miles from Liverpool, where there are about fifty passenger trains going through in the day. The total height of the girders is 3 feet 11½ inches, and they bear about 3 feet 6 inches on the abutments. That it fell, you are right, and without warning, of a fine frosty night, about two o'clock in the morning! The girder broke near the middle, clean through the rivet-holes.

A READER.

LABOUR'S NOBILITY.

I READER you my grateful acknowledgments for the distinction conferred upon me by the publication of my verses, entitled "The Artisan's Anthem," in the columns of your influential journal. At the same time I am not a little disconcerted at the sentiment of the chorus being taken literally, and being simply an exaggeration similar to those contained in most partisan songs: for example, when a poet sings of his native land, he speaks of it as though no spot of earth could be its parallel, in any one particular; when a moment's reflection would tell him that all poets have written the same on the same subject; and some of them, if not all, must be wrong.

You spoke, sir, in your note, of the troubles and triumphs of the two classes. That is exactly the point I am driving at; and whereas, honours and emoluments abundant and abiding attend and follow these circumstances in the upper sections of society, we groundlings in the social scale have to wrestle with our troubles in obscurity, unassisted, and to triumph or sink beneath them unnoticed and unknown.

With the view, therefore (under correction, of course, if I am presumptuously thrusting forward unacceptable lucubrations), of illustrating in song the inconveniences, struggles, and victories of us, brewers of wood and drawers of water, the inclosed effusion is respectfully submitted for your approbation.

W. C.

Tun.—"O' Gaidin Lann."

Oh, the Soldier wins renown,
And the Bard his laurel crown,
And the Lawyer for his cunning gets a name—gets a name;
The actor wins applause,
And the Parson for his saws,
In addition to his stipend, wins fame—wins fame.
But why's this homage paid?
They've but exercised their trade,
And done no more than we do every day—every day!
Though the sunshine of renown
On our efforts ne'er looks down
We've shown as much ability as they—as they.
Who gains the spoil will bear it!
And the weak we know must ways graze the wall
graze the wall.

It matters not how poor,
How humble or obscure,
The honest man 's the hero after all—after all,
The honest man 's the hero after all.

As the captain at his gun,
When the field of battle 's won,
Feels his bosom with high exultation burn'd, burn'd,
burn'd;
So the workman throbs with pride,
With his young ones at his side,
When he counts (though small) the wages he has earn'd,
—he has earn'd.
Then he's not faint of heart,
Because a humble part,
The senechal of life has assign'd you to play!
The lark upon the ground
Is in greater safety found
Than the eagle in his eyry at the threshold of the day—
In his eyry at the threshold of the day!
Who gains the spoil, &c.

There are brighter deeds of glory
Than are famed in song or story,
Which the earner of his daily bread must daily do!
There are foes that he must pierce,
More implacable and fierce,
Than our soldiers met at Inkermann or Waterloo—
Met at Inkermann or Waterloo.
There's hunger, want, and care,
And sickness and despair,
And that sinking of the heart which the soul of hope destroys.
With these he urges strife,
Every hour of his life,
For his ill-lit hearth and wife, for his girls and his boys—
For his wife, for his girls and his boys.
Who gains the spoil will bear it,
Who wins the palm, &c.

The soldier stanch and good,
Who fights ancle-deep in blood,
In the service of his king, and his dear native shore,
Fights not so hard a fray,
As the man who keeps at bay
The wolf that every day comes howling at his door—
Every day comes howling at his door.

Though the battle wins no bays,
And the victory no praise,
His glory is the greater who unpaid the danger ran;
For the coward can be bolder must graze the wall,
—
When he's spur'd by hope of gold;
But to fight for duty only shows the courage of a man—
Fight for duty shows the courage of a man.
Who gains the spoil, &c.

There's a far severer trial,
And a stricter self-denial,
The sons of toil must practice and endure—endure:
When they've borne without complaint,
What would make a prince a saint,
They're but thought to do their duty, and no more—no more.

They're but thought to do their duty, and no more, and no more.
Oh, the soldier from the wars,
With his medal and his bars,
His country may cry quits with him; but we who nothing get,
Who by steady honest labour,
Without wrong to foe or neighbour,
Bring the young ones up to manhood, leave the country
in our debt.

Leave the country for ever in our debt.
They who win the spoil will share it,
He who gains the palm will bear it,
And the weakest will we know must graze the wall,
—
Graze the wall.

It matters not how poor,
How humble or obscure,
The honest man 's the hero after all—after all,
The honest man 's the hero after all.

Books Received.

Self-Help; with Illustrations of Character and Conduct. By SAMUEL SMILES. London: John Murray. 1859.

THE title of this work, and the reputation of Mr. Smiles's previous book, "The Life of George Stephenson," sufficed, we believe, to sell the first edition of "Self-Help," with little assistance from the reviewers. Let us give our good word in aid of the second. It is a very charming book, full of hopeful information. The origin of it is thus stated by Mr. Smiles in the Introduction:—

"Two or three young men of the humblest rank resolved to meet in the winter evenings, for the purpose of improving themselves by exchanging knowledge with each other. Their first meetings were held in the room of a cottage in which one of the members lived; and as others shortly joined them, the place soon became inconveniently filled. When summer set in, they adjourned to the cottage garden outside, and the classes were then held in the open air, round a little boarded hut, used as a garden-house, in which those who officiated as teachers set the sums, and gave forth the lessons of the evening. When the weather was fine, the youths might be seen until a late hour hanging round the door of the hut like a cluster of bees; but sometimes a sudden shower of rain would dash the suns from their slates, and disperse them for the evening unsatisfied. Winter, with its cold nights, was drawing near, and what were they to do for shelter? Their numbers had by this time increased, that no room of an ordinary cottage could accommodate them. But they were youths of pluck, and determined to go forward with the work they had taken in hand. They resolved, therefore, to hire a room; and on making inquiry, they found a large dingy apartment to let, which had been used as a temporary cholera-hospital. No tenant could be found for the place, which was avoided as if a plague still clung to it. But the mutual-improvement youths, nothing daunted, hired the cholera-room, lit it up, placed a few benches and a deal table in it, and began their winter classes. The place soon presented a busy and cheerful appearance in the evenings. The teaching may have been, as no doubt it was, of a very rude and imperfect sort; but it was done with a will. Those who knew a little taught those who were improving themselves, while they improved the others; and, at all events, setting before them a good working example. Thus these youths—and there were also grown men amongst them—proceeded to teach themselves, and each other, reading and writing, arithmetic and geography, and even mathematics, chemistry, and some of the modern languages."

This may serve as encouragement for others; and if they read the book itself, they will find more, and much pleasure into the bargain.

The Boy's Playbook of Science. By J. H. PEPPER, F.C.S., A. Inst. C.E., &c. Illustrated with upwards of 400 engravings. Routledge, Warne, & Routledge, Farringdon-street, London. 1860.

THERE are doubtless many thousands of young and old who remember with pleasure the numerous popular lectures, illustrated with an abundance of interesting and brilliant experiments, which have been delivered within the walls of the Royal Polytechnic Institution, in Regent-street, during the last twenty years. Of many of these experiments and lectures Mr. Pepper was the presiding genius. This very able lecturer and successful experimenter has of late transferred his genial and valuable services to the Crystal Palace, where still greater multitudes are now becoming familiarized with his happy and sportive modes of teaching science.

A work such as this, from the pen of so experienced and skilful a teacher, cannot be too highly appreciated by the public. To compare

facts with illusions, such a work reminds one of a wizard's revelation in print of the *modus operandi* of his most astounding wonders. This "Play-book of Science" comprises an account of the various manipulations and arrangements of chemical and philosophical apparatus required for the successful performance of scientific experiments, in illustration of the elementary branches of chemistry and natural philosophy. Its numerous illustrations have been executed chiefly from Mr. Pepper's own graphic sketches.

We would fain give some adequate idea, by quotation, of the merits of this excellent work; but, unfortunately, we cannot transfer the engravings, with which almost everything is illustrated. Perhaps, however, we cannot do better at this holiday season than to present the author's remarks (for one thing) on the grotesque shadow-sheet with which he is amusing the Crystal-Palace goers,—old boys and girls, as well as young:—

"A most amusing effect can be produced, on the principle that the light casts its own shadow, called the 'dance of death,' or the 'dance of the witches.' Either of these agreeable subjects are drawn and the outlines cut out of a sheet of card-board. If a wet sheet is stretched or hung on one side of a pair of folding-doors partly open, and between which the card-board is tacked up and the space left at the top and bottom closed with a dark cloth, directly the room before the sheet is darkened the lighted candle held behind the figure cut out in the card-board, one shadow or image is thrown upon the sheet, and these shadows may be increased according to the number of candles used, and if they are held out by two or three persons, and moved up and down, or sideways, the shadows follow the direction of the candles, and present the appearance of a dance."

"Another very comic effect of shadow is that called 'jumping up to the ceiling,' and when carried out on a large sheet by the aid of an enormous sheet suspended in the centre transept of the Crystal Palace, Sydenham, it had a most laughable effect, and caused the greatest amusement to the children of all ages."

"This very simple effect is produced by placing an oxy-hydrogen light some feet behind a large sheet; and, of course, if any one passes between the two, a shadow of the individual is cast upon the sheet; then, by walking towards the light, the figure diminishes in size; and, by jumping over it, the shadow appears to go up to the ceiling, and to come down when the jump is made in the opposite direction over the light and towards the sheet. The rationale of this experiment is very simple, and is another proof of the distribution of light from a luminous source being in every direction. By jumping over the light, the radii projected from the candle over the sheet are crossed, and the shadows rise or fall as the figure passes upwards or downwards."

Those portions of the work which relate to magnetism and diamagnetism, photography and cognate phenomena connected with light, &c., are particularly interesting and amusing; and, from never losing sight of his special purpose, the author has managed throughout to explain science in general in very simple language, and to beguile the reader into the really erroneous idea that he is merely being entertained, whereas he is being seriously and effectively instructed, often in the most recondite mysteries of nature.

On the Resistance of Glass Globes and Cylinders to Collapse from External Pressure; and on the Tensile and Compressive Strength of various Kinds of Glass. By W. FAIRBAIRN, C.E., F.R.S., and THOMAS TATE.

THE recently-published experiments upon the collapse of tubes of wrought iron suggested those here detailed. In course of the paper, and after narrating a series of the experiments, the authors say:—

"The mean resistance of glass to a crushing force is, therefore, from the above experiments, equivalent to 13,450 tons per square inch. Assuming the above numbers to represent the comparative values of each kind of glass, and taking flint-glass as the standard, we have their respective strengths as follows:—

Green glass.....	1152
Crown-glass.....	1124
Flint-glass.....	1000

The specimens were crushed almost to powder from the violence of the concussion, when they gave way: it however appeared that the fractures occurred in vertical planes, splitting the specimens in all directions. This characteristic mode of disintegration has been noticed before, especially with vitrified brick and indurated limestone. The experiments following on cubes of glass, which were exposed to view during the crushing process, illustrated this subject further: cracks were noticed to form some time before the specimen finally gave way; then these rapidly increased in number, splitting the glass into minute irregular prisms of the same height as the cube; finally, these bent or broke, and the pressure no longer bedded on a firm surface, destroyed the specimen."

Metropolis Gas Reports; made at various Meetings of the Delegates. By SAMUEL HUGHES, C.E., Honorary Engineer to the Delegates, and printed for them. 1859. (Circular, No. 61.) MR. HUGHES is doing good service to the metropolitan public by these reports, in which the force of sound reasoning and common sense is brought to bear upon various questions connected with the gas supply. He proves and urges the perfect fairness and liberality of a maximum price of 4s.

MACKENZIE WALCOTT, M.A.

MR. DEMPSEY, C.E.—The newspapers announce the death, on the 14th of November, in Bombay, by dysentery, of Mr. G. D. Dempsey, civil engineer, late architectural engineer of the Great Indian Peninsula Railway, vice-president of the Bombay Mechanics' Institution, and author of several works on engineering and other subjects.

GRAND STAND ON BATH RACE-COURSE, LANS-DOWN.—We hear that alterations and improvements are about to be made to the stand before the ensuing spring meeting. A weighing-room for the jockeys is to be added, with an additional covered stand for the duke's party, the stewards, and their friends. Contracts are taken for the work, which is at once to be carried out under the direction of Mr. C. J. Phipps, architect.

THE LAW AS TO WET PAINT.—"The law of wet paint" has just received an elucidation by an action, Tredgett v. Parker, in the London Sheriff's Court. The plaintiff sought to recover 12. 5s., the value of certain articles of clothing damaged by some wet paint upon the defendant's premises. The Judge (to plaintiff).—I suppose you ran against the paint? Plaintiff.—Yes. Judge.—I am sorry for you, but you cannot recover. Ought he not to put up a notice of "wet paint"? His Honour.—No. Some protection should be afforded pedestrians, but you cannot recover.

BUILDERS' BENEVOLENT INSTITUTION BALL.—The annual ball of this charity, we must remind our readers, takes place at Willis's Rooms, St. James's, on the 16th of February next. We have every confidence that there will be a large assemblage at this now highly popular ball; but hope that no friends will fail to go merely, on the supposition that there will be a large enough attendance without them. To secure the fulfilment of so charitable an object as that in view, there cannot be too many,—more especially as there is little fear of an absolute want of space in such rooms as those of Willis's. We are glad to observe that a good list of stewards has already been secured.

RECREATION FOR BOYS AFTER WORK-TIME.—A laudable effort is about to be made by a philanthropic clergyman of the metropolis to establish a small institution for the amusement and recreation of operative youths in the evening, after the hours of work, in the hope that its counteracting influence may induce boys to renounce those less innocent places of resort known to the police as penny theatres and "gafts." It is intended, at Christmas, to open a room in the west central district, and therein to provide means of amusement, including games of chess and draughts, music and singing, exhibitions of various kinds, and interesting lectures. The musical department will, it is understood, be conducted for the most part by amateurs, ladies and gentlemen, who have kindly undertaken to perform occasionally at stated intervals. The founder of this new Boys' Home is the Rev. Henry White, Associate of King's College, and Chaplain of the Savoy, and his plan is approved, sanctioned, and patronised by the Bishop of London and other influential personages. The weight of the pecuniary burden will be borne by Mr. White himself.

METALLIC BUILDINGS.—In constructing the roof or other part of a building, either with plain or corrugated metal sheets, Mr. E. Maw, of the Doncaster Ironworks, Yorkshire, proposes to employ an inner and outer casing, and he connects the inner and outer casing with metal tubes, which form purlins, joists, and framing of the roof, and very much increase its strength, and at the same time serve as distant pieces to separate the inner and outer casings to an extent equal to the diameter of the tubes employed. One great advantage in this construction is, that there being a cavity between the two casings, neither extremes of heat nor cold can penetrate to the interior of the building, and at the same time means are afforded for regulating its temperature. To facilitate the connection of the tubes and two casings in erecting a building, holes are formed in the tubes for the passage of the bolts employed, and these holes are made oblong, and extend either longitudinally, laterally, or obliquely. This arrangement of the holes renders unnecessary an exact correspondence between the holes in the tubes or the casing plates: the tubes are joined one into the other where necessary. In constructing the walls, floors, or ceilings, and sometimes in connecting them with the roof, metal dovetails and wedges are used, which simplifies the construction, facilitates the erection of the building, and at the same time sustains the whole of the parts firmly together, allowing of the contraction and expansion of the parts when acted upon by heat and cold.

FIRE AT ST. LUKE'S CHURCH, LEAMINGTON.—On Saturday night before last, this church was discovered to be on fire, and considerable damage was done before the fire could be extinguished. The property was insured. Some of the pews were reduced to ashes, the pillars supporting the building greatly injured, and books, curtains, &c., were completely spoiled. There is no question as to the cause of the fire: it arose through a beam becoming ignited by a fire running underneath it. The fires must have been put on to warm the church for Sunday service on the Saturday night. We expect to hear of more of such cases, as usual, before the winter is over.

FALL OF A WALL IN THE BIRMINGHAM THEATRE.—An accident, unfortunately resulting fatally, occurred in this theatre last week. Beneath the stage, and below the level of what is technically known as the "cellar," is an excavation into which the "flats" and "set pieces" are let down when a rapid change of scenery is requisite. For the purposes of the forthcoming pantomime, it was found necessary to extend the length of this; and the soil that was got out being of soft sandstone, it was considered prudent to erect a wall to prevent any subsidence. This was done about a month ago; and to guard against its falling during the time the mortar was setting, it was shored up. In the excavation, some 16 feet in depth, a carpenter named Thomas Field, who has been in the employ of the proprietors of the theatre on and off for about twenty-five years, had been working in laying down some machinery for winding a "bridge" up and down, and he was so engaged at the time of the occurrence. He was quite alone when the wall in question fell in, and about 7 feet of brickwork descended upon the poor fellow, crushing him beneath it. The unfortunate man was found quite dead, death having apparently been caused by suffocation.

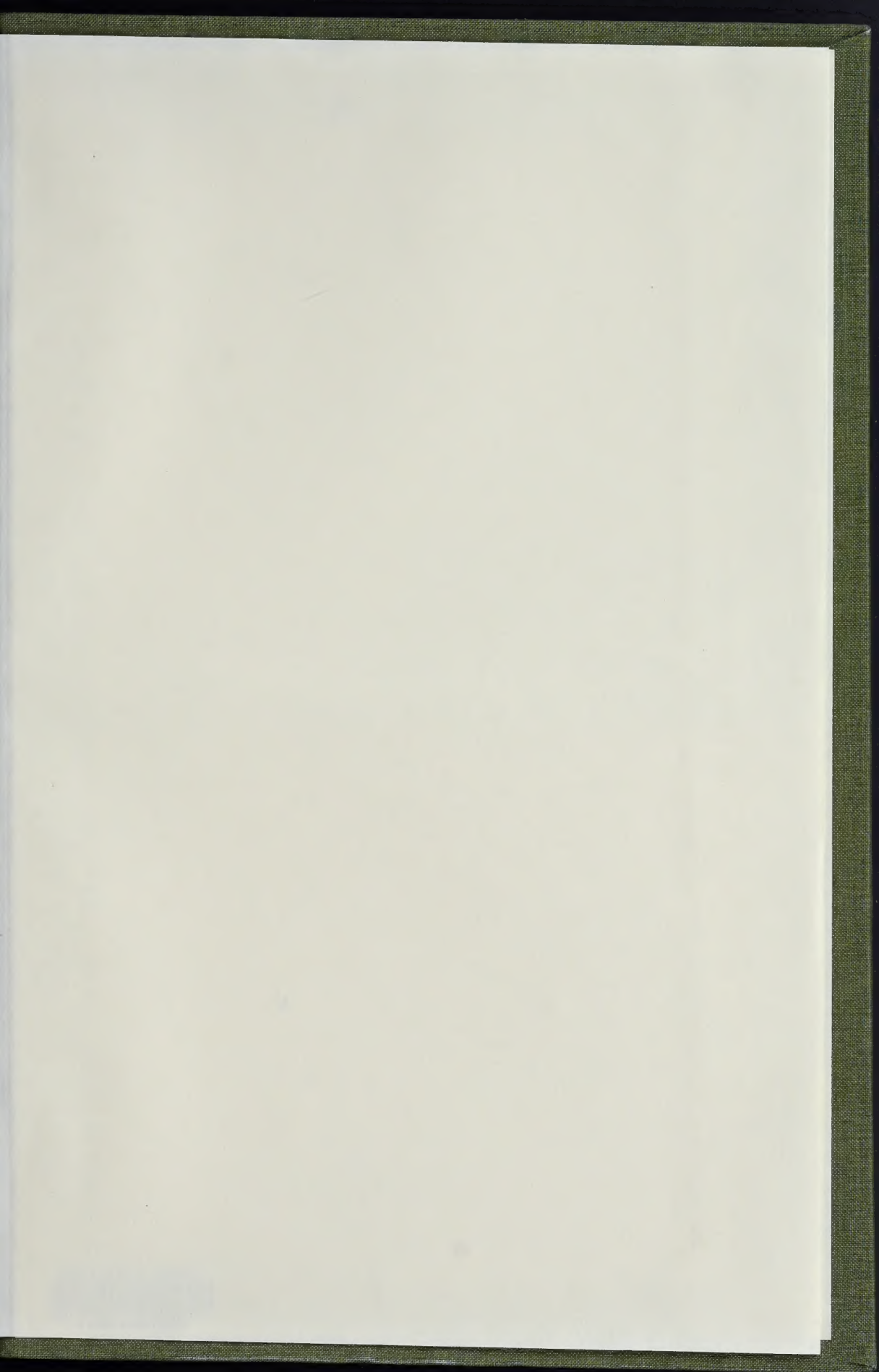
WORCESTER SCHOOL OF ART.—The eighth annual meeting of the donors and subscribers to this institution has been held at the Music Hall, Worcester. The works of the students, and books of prints, photographs, and other works of art, were exhibited in the school. Lord Ward, the President of the School, presided at the meeting. The hall was not so well filled as usual. In the report of the committee it was said: "The committee have much pleasure in announcing to the donors and subscribers to the Government School of Art, on this, its eighth anniversary, that the institution progresses most satisfactorily, continuing to increase in numbers and advance in position. During the past year 292 students have received instruction in the Central School, being an increase of nine over the previous year. A class at Pershore has been open for seven months, numbering 44 students, which number being added makes a total of 386 students. The same public schools as during the previous year continue to receive instruction in drawing, viz., St. Martin's, St. Peter's, St. John's, Clap Gate, and the Railway School. These are attended by upwards of 800 children, about 600 of whom are taught elementary drawing by masters from the School of Art, who are now greatly aided in their work by the masters and pupil teachers of their respective schools. Thus upwards of 900 persons receive more or less instruction through this institution." The president distributed the prizes.

SCHOOL FOR FEMALE STUDENTS, GOWER-STREET.—A minute has been passed recently by the Lords of the Committee of Council on Education, particularly addressing itself to those who are interested in providing women with suitable occupations. It sets forth the cost of the School for Female Students, at 37, Gower-street, at above 500*l.*; and goes on to say that, as the State bears no part of the local expenses in the district schools of the metropolis, the school at Gower-street is to that extent an unfair competitor with them. For all the requirements of the female students, whose means are limited, the various district schools do, or may, afford ample and cheap opportunities for study. The Council consider that the time has arrived when the Department should no longer be charged with the local expenses, which, in other cases, are paid by the voluntary principle; and that, if the school at Gower-street is to be maintained, some voluntary agency must undertake its local management. Towards accomplishing this, the department will give every aid in its power; but it should be clearly understood that the rent and local expenses of the school will cease to be paid by the Government in the course of next year, and that, if no voluntary agency should come forward, the school will be closed. Steps should at once be taken to secure the maintenance of this school, which has done much good service.

THE ACCIDENT AT NORWICH NEW FISH-MARKET.—At the last meeting of the Town Council the Markets Committee, in a report of the late accident, recommended that a survey be made by some impartial architect, and his opinion obtained as to the present state of the building, and the course to be hereafter taken for the protection, safety, and completion thereof. In course of a discussion which followed on the motion that the report be adopted, the mayor suggested "that the surveyor should report on any question relating to the plan or the execution of the work." This suggestion was adopted, and the motion agreed to.

"SELF-CONSUMING" STOVES.—When fuel is completely consumed, in a stove or furnace, so that no smoke appears, many seem to imagine that all danger from noxious emanations from the fuel is at an end; whereas it is only then that the fuel is completely consumed into the deadly though invisible carbonic gases; and wherever this occurs, if these gases be not freely ventilated, and removed, by the attachment of a chimney tube to the stove or otherwise, there is the utmost danger, and especially in bed-rooms, when the doors and windows are closed, or in the cabins of ships. Accordingly, one hears, every now and then, of cases of insensibility or death, produced by these "self-consuming stoves." A recent case, which calls for these remarks, has just occurred near Plymouth. Two servant girls, in a household at Maristown, near that town, were found insensible in their bedroom on Sunday week, caused by a patent stove. Animation was restored with some difficulty. It is fortunate they were discovered in time to save them from death, which a very little longer continuance in the "self-consuming" atmosphere would have occasioned.

THE EMPRESS'S APARTMENTS AT THE TUILERIES.—A correspondent of the *Independence Belge* writes:—I had the good fortune to visit the other day the private apartments of the Empress at the Tuileries. Workmen had been engaged on them for two years, during the absence of her majesties. These suites of rooms, which run in a parallel line with the reception-rooms on the drawing-room floor, consist of an ante-chamber, a waiting-room for the ladies of honour, a saloon of audience, a private room for her Majesty; that is to say, the most retired and private rooms of the suite. The emperor, whose preference for the style of Louis XVI. is well known, has desired her apartments in question to be entirely decorated after the fashion and taste of Marie Antoinette. M. Lefuel received orders to renew the elegant ornamentation of Trianon in this Parisian palace. Art and industry have done marvels under his superintendence, so that we see again the graceful arabesques, the rounded tapering volutes, the exquisite garlands, and the fine carvings of the latter part of the eighteenth century. All the models are unique, and executed with admirable nicety, from the door handles to the chimneypieces, the panels and squares of glass; and the whole furniture, from the timepieces to the tongs in the fireplace, is in harmony with this style of decoration. The first saloon, of a pale green, is adorned with arabesques of a rather deeper tint. Medallions glisten in the panels, and within them are birds, painted by M. Appert. The prevailing colour of the second saloon is a rosy white; the arabesques are rose-coloured. The tops of the doors, the enclosures or frames of the panelling, the medallions, contain natural flowers, sometimes on a white ground, sometimes on a gilt one, executed with charming freedom and freshness, by a young artist, whose name has slipped my memory. Then comes the private saloon of the empress, the ground of which is likewise of a very light green, and the panellings of which contain the portraits of her ladies of honour, painted by M. Dubuffe; then her first withdrawing-room lined with green stuff, on which are hung valuable pictures; the doors of this cabinet and the next are of amaranth and palisander set off by bronzes, gilt, and admirably chased. The tessellated floors, ceilings, chimneys, reveal a taste so pure and refined that they reflect honour on M. Lefuel. The staircase leading to these apartments is entirely of stucco, and its accompanying balustrade looks like a fringe of iron and gold. Between the two spiral turns of the staircase a medallion contains a group of three children bearing the attributes of the empire, and sculptured by Madame Noëmi Constant. These private apartments, which have been already occupied by her Majesty the Empress since her return from Compiegne, are a work of art, and decidedly one of the masterpieces of decorative art in our age, owing to the delicate care that has been bestowed on every part of their arrangements.



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